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Doktorska disertacija

Ljubljana, 2018

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"I hope I was able, despite my limited linguistic capabilities, to convince you that complexity lies within social reality and not in a somewhat decadent desire to say complicated things."
(Bourdieu, 1989, p. 24)

"Having rights but no resources and no services available is a cruel joke."
(Rapapport, 1981, p. 13)

Socio-structural properties and psychological empowerment in health-related online support communities

Abstract

Health-related online support communities (HROSCs) have become one of the most important sources for users to search for and exchange health-related information. Such online communities are, however, much more than this. HROSCs are a subset of online communities that provide many-to-many communicative spaces based on one specific Web-based social software (such as discussion forums, social networking sites) or a combination of two or more online application services. HROSCs can range from small-knit groups to encompassing hundreds of thousands of users, covering a wide variety of health conditions, from general and acute issues to specific (chronic) conditions, such as heart disease, diabetes, cancer, and mental health issues, to name just a few. In HROSCs, users, usually patients, caregivers, and other individuals interested in health-related issues, can participate, searching for and exchanging health-related information, experiences, advice, social support, and/or influencing public opinion, as well as interacting with other users and health professional moderators (usually doctors and healthcare providers), or just observing others' interactions.

Public and research interest in HROSCs has increased extensively in the last decade. The reason for such increased attention in this type of online community is not only due to the emergence of several very popular and internationally well-known HROSCs, such as PatientsLikeMe, MedHelp, and HealthUnlocked, and the appearance of HROSCs on popular social media, such as Facebook and Twitter, but also the abundant evidence that participation in HROSCs can potentially provide users and patients with several positive outcomes. Usage of and participation in HROSCs has been associated with feelings of higher self-esteem, self-efficacy, and control among users related to managing their health issues. It also leads to enhanced satisfaction from helping others, improved confidence in the relations with doctors, more competent use of health services, and even improved social well-being and quality of life. HROSCs have thus been characterized as fostering users' empowerment and the concept of psychological empowerment has become one of the central phenomena studied in research on HROSCs.

In the context of healthcare, psychological empowerment refers to individuals' abilities to develop a sense of control over personal health, self-efficacy, and competence in managing health conditions. It also concerns the development of analytical understanding and knowledge of the individual and collective resources important for (potential) changes in social circumstances that affect their health conditions, and the accessibility and quality of health services or healthcare (system) in general. Psychological empowerment comprises two dimensions, i.e., intrapersonal and interactional. Existing research on HROSCs has extensively studied their role for users, and how the usage of and participation in HROSCs affects the development of their psychological empowerment. However, in existent research at least three limitations can be identified that call for further theoretical and methodological investigations.

First, research on HROSCs has predominantly focused on conceptualizations of psychological empowerment merely through the intrapersonal dimension, which has limited the conceptualization of psychological empowerment only to the understanding that it relates to individuals' abilities to increase their self-efficacy, competence, and control over events that

determine their lives and health. However, psychological empowerment does not pertain solely to the intrapersonal dimension, but is also crucially related to the interactional dimension, and thus the transactions and interactions between individuals and development of their critical awareness and understanding of the specific environment. These include the social relations, and cooperative and collective practices that are needed to bring about possible changes that can improve individuals' sociopolitical situation. Second, since conceptualizations of psychological empowerment in HROSCs have not been predominant in research, and have not been comprehensively addressed by including both the intrapersonal and interactional dimensions, the measurement instruments, especially for interactional empowerment, have not yet been consistently developed. The third limitation in current research on HROSCs is related to the fact that studies have predominantly been concerned with the identification of socio-psychological factors derived from social support and social identity theory, and with investigation of the participatory patterns that significantly affect psychological empowerment in HROSCs. However, these examinations have often neglected the fact that HROSCs are complex socio-technical systems, which include the interconnection of individuals and their social practices, technology, and the environment or structures. To the best of our knowledge, no study has so far researched how different social practices associated with empowerment depend on and interact with the particular socio-structural properties that accompany these types of communities, and how these properties affect the psychological empowerment of users of HROSCs.

The main aim of this doctoral dissertation is to overcome the shortcomings of previous studies on psychological empowerment in HROSCs, and to investigate comprehensively the impact of the socio-structural properties of HROSCs on the intrapersonal and interactional dimensions of psychological empowerment. To achieve the main aim of the thesis, we first undertook a comparative critical literature review conceptualizing the socio-structural properties of HROSCs, and developed a theoretical framework for understanding individual- and community-level factors that have an impact on psychological empowerment, namely intrapersonal and interactional empowerment, in HROSCs. In particular, through the integration of Giddens' structuration theory and Bourdieu's theory of capital, we conceptualize socio-structural properties as the interrelation between rules, resources, and social practices. On the basis of this theoretical framework and empowering community setting theory, the theory of managing common resources in online communities, and the theory of implicit and explicit norms, we apply the sociological concepts to the context of HROSCs, and conceptualize the socio-structural properties of HROSCs on the basis of a mutual relations between their organizational characteristics, the distribution of different forms of capital, and involvement in HROSCs.

Next, by using complementary mixed-methods research design with (data and method) triangulation of qualitative and quantitative research methods we first with qualitative in-depth semi structured interviews conducted with users and health professional moderators of the largest HROSC in Slovenia, Med.Over.Net, explored the perceived differences and/or similarities in organizational characteristics among different type of HROSC subcommunities (online counseling forums, online support group forums, and online socializing forums). The interview data were analyzed using deductive-inductive thematic analysis. Five main themes were identified: (1) moderation, (2) sanctions, (3) participation in the formation of norms, (4) positive sanctioning, and (5) sense of virtual community. These findings provided important insights used to contextualize the quantitative results, as well as to inform the design and development of quantitative (survey) measurement instruments for identifying (some of) the socio-structural properties of the HROSC. In the second quantitative phase, we conducted a

cross-sectional Web-based survey with an integrated probability and nonprobability sample of Med.Over.Net's users. The data were analyzed with multiple regression analyses and provided important findings on the impact of socio-structural properties on intrapersonal and interactional empowerment in the HROSC. After the collection and analysis of both qualitative and quantitative data separately, the last phase of this study comprised the triangulation and integration of the qualitative and quantitative results to interpret the research findings, and to provide a more nuanced understanding of the role played by the socio-structural properties of the HROSC as factors of users' intrapersonal and interactional empowerment.

The findings reveal that involvement in the HROSC in the form of discussion does not have a direct effect on users' intrapersonal empowerment, rather the effect is conditioned by the specific organizational characteristics of the HROSC. The study also shows that among different forms of capital, e-health literacy and economic capital play an important role in users' intrapersonal empowerment outcomes. The findings of this doctoral dissertation also reveal that different HROSC subcommunities, i.e., online counseling forums, online support group forums, and online socializing forums, have organizational characteristics that are perceived differently, and these have an important impact on the development of users' intrapersonal empowerment. As the results of the thesis demonstrate interactional empowerment dimensions "knowledge of resources" and "resource mobilization for collective action" can develop in the HROSC. Involvement in the HROSC does not have a direct effect on users' knowledge of resources, but under the condition of negative sanctions in online support group forums or online social support received in online counseling forums, users' knowledge of resources is much more easily obtained. For resource mobilization for collective action to develop in the HROSC, on the other hand, users' active participation and involvement in various activities in the HROSC are required, with an especially important role played by users' different forms of social capital. The study also shows that different HROSC subcommunities and their organizational characteristics can play different roles in the development of users' knowledge of resources and resource mobilization for collective action. The results reveal that online counseling forums and online support group forums, as HROSC settings and their characteristics, have the greatest potential for users' interactional empowerment. This dissertation, with its innovative theoretical and empirical framework, demonstrates how crucial it is to understand that there is a mutual interrelation between HROSC users' social practices and the specific structural properties of HROSCs, and how the processes involved might present opportunities and constraints for the development of users' psychological empowerment.

Keywords: health-related online support communities (HROSCs), psychological empowerment, socio-structural properties, intrapersonal empowerment, interactional empowerment, socio-technical system

Družbeno strukturne lastnosti in psihološko opolnomočenje v spletnih zdravstvenih skupnostih

Povzetek

Spletne zdravstvene skupnosti (SZS) so med pomembnejšimi viri za izmenjavo z zdravjem povezanih informacij, hkrati pa so tovrstne skupnosti mnogo več kot zgolj vir. SZS so podvrsta spletnih skupnosti, ki omogočajo komunikacijske prostore mnogi-z-mnogimi in temeljijo na specifični spletni programski opremi (kot so diskusijski forumi, družbena omrežja) ali na kombinaciji dveh ali več spletnih aplikacij. SZS so lahko majhne skupine ali pa skupine z več sto tisoč uporabniki in pokrivajo raznolike, z zdravjem povezane teme: od splošnih in akutnih zdravstvenih težav do specifičnih (kroničnih) zdravstvenih stanj, kot so bolezni srca in ožilja, sladkorna bolezen, rakava obolenja, težave z duševnih zdravjem itd. V SZS uporabniki – običajno pacienti, skrbniki pacientov ali drugi posamezniki, ki jih zanimajo teme, povezane z zdravjem – participirajo tako, da iščejo ali si izmenjujejo z zdravjem povezane informacije, izkušnje, nasvete, socialno oporo, in/ali vplivajo na javno mnenje, stopajo v interakcijo z drugimi uporabniki in moderatorji-zdravniki ali pa le opazujejo interakcije drugih uporabnikov.

Javno in raziskovalno zanimanje za SZS je v zadnjem desetletju izjemno naraslo. Rastoče zanimanje za SZS se ni pojavilo le zaradi oblikovanja zelo priljubljenih in mednarodno priznanih SZS, kot so PatientsLikeMe, MedHelp, HealthUnlocked, ali zaradi pojava tovrstnih spletnih skupnosti, temelječih na družbenih omrežjih, kot sta Facebook in Twitter, pač pa zlasti zaradi številnih dokazov, da udeležba v SZS pogosto pozitivno učinkuje na uporabnike in paciente. Uporaba in udeležba v SZS je povezana z občutki povečane samozavesti, samoučinkovitosti in nadzora nad upravljanjem z zdravstvenimi težavami, povečanim zadovoljstvom in samozavestjo v odnosu z zdravnikom, bolj kompetentno rabo zdravstvenih storitev in celo z boljšo kvaliteto življenja. Sodelovanje v SZS je bilo prepoznano kot spodbujevalec opolnomočenja uporabnikov SZS, pri čemer je koncept psihološkega opolnomočenja postal eden osrednjih proučevanih pojavov v študijah o SZS.

Na področju zdravstva se psihološko opolnomočenje nanaša na posameznikove zmožnosti, da razvije občutek nadzora nad osebnim zdravjem, samoučinkovitost in kompetence, pomembne za upravljanje z zdravstvenimi težavami, hkrati pa tudi analitično razumevanje in znanje o individualnih in kolektivnih virih, pomembnih za (potencialne) spremembe družbenih okoliščin, ki vplivajo na posameznikovo zdravstveno stanje, dostopnost in kvaliteto zdravstvenih storitev ali zdravstvenega sistema na splošno. Psihološko opolnomočenje vključuje dve dimenziji, in sicer intrapersonalno in interakcijsko opolnomočenje. Obstoječe študije s področja SZS so v veliki meri raziskale vlogo SZS za uporabnike in kako uporaba in udeležba v SZS vplivata na razvoj njihovega psihološkega opolnomočenja. V teh študijah pa je mogoče identificirati vsaj tri pomembne pomanjkljivosti, ki zahtevajo nadaljnje teoretično in metodološko proučevanje.

Prvič, raziskave o SZS so se do sedaj pretežno osredotočale na konceptualizacijo psihološkega opolnomočenja zgolj preko intrapersonalne dimenzije, ki je opredelitev psihološkega opolnomočenja omejila le na razumevanje, ki se nanaša na sposobnosti posameznikov, da izboljšajo svojo samoučinkovitost, kompetence in nadzor nad dogodki, ki vplivajo na njihova življenja in zdravje. Psihološko opolnomočenje pa se ne nanaša le na intrapersonalno

dimenzijo, ampak je pomembno povezano tudi z interakcijsko razsežnostjo; nanaša se še na povezave in interakcije med posamezniki in na razvoj kritičnega zavedanja in razumevanja specifičnih družbenih odnosov, sodelovanja in kolektivnih praks, ki so potrebne za morebitne spremembe, ki bi vodile v izboljšanje posameznikove družbeno-politične situacije. Drugič, konceptualizacija psihološkega opolnomočenja v SZS v večjem delu raziskav ni bila celostno obravnavana in ni vključevala obeh dimenzij, kar med drugim pomeni, da merski inštrumenti zlasti za interakcijsko dimenzijo psihološkega opolnomočenja niso bili konsistentno razviti. Tretja omejitev trenutnih raziskav o SZS se nanaša na dejstvo, da so se do sedaj študije pretežno posvečale identifikaciji socio-psiholoških dejavnikov, pri čemer so izhajale iz teorij socialne opore, družbene identitete in proučevanj participativnih vzorcev, ki pomembno vplivajo na psihološko opolnomočenje v SZS. Tovrstne študije so pogosto zanemarjale dejstvo, da so SZS kompleksni socio-tehnični sistemi, ki vključujejo medsebojne povezave med posamezniki in njihovimi družbenimi praksami, tehnologijo in strukturo. Kot nam je znano, do sedaj nobena študija ni raziskala, kako so družbene prakse, ki so povezane z opolnomočenjem, odvisne in povezane z določenimi družbeno-strukturnimi lastnostmi, ki spremljajo te oblike spletnih skupnosti, in kako te lastnosti vplivajo na psihološko opolnomočenje uporabnikov SZS.

Glavni cilj doktorske disertacije je bil premostiti predstavljene pomanjkljivosti predhodnih študij o psihološkem opolnomočenju v SZS in celovito raziskati vpliv družbeno-strukturnih lastnosti SZS na intrapersonalno in interakcijsko dimenzijo psihološkega opolnomočenja. Za dosego glavnega cilja doktorske naloge smo najprej s komparativnim in kritičnim pregledom literature konceptualizirali družbeno-strukturne lastnosti SZS in razvili teoretični okvir za razumevanje individualnih in skupnostnih dejavnikov, ki vplivajo na psihološko opolnomočenje, tj. intrapersonalno in interakcijsko opolnomočenje v SZS. Natančneje, z integracijo Giddensove strukturakcijske teorije in Bourdieujeve teorije kapitala smo družbeno-strukturne lastnosti opredelili kot povezave med pravili, sredstvi in družbenimi praksami. Na podlagi tega teoretičnega okvira in s pomočjo teorije opolnomočenih skupnosti, teorije upravljanja s spletnimi skupnostmi in teorije implicitnih in eksplicitnih norm, smo sociološke koncepte aplicirali na kontekst SZS in družbeno-strukturne lastnosti SZS opredelili kot povezavo med organizacijskimi karakteristikami SZS, distribucijo različnih oblik kapitalov in vključenostjo v SZS.

Z raziskovalnim načrtom komplementarnih mešanih metod, ki je vključeval triangulacijo kvalitativnih in kvantitativnih raziskovalnih metod in podatkov smo najprej s kvalitativnimi poglobljenimi semi-strukturiranimi intervjuji, izvedenimi med uporabniki in moderatorji-zdravniki največje SZS v Sloveniji, Med.Over.Net, proučili zaznane razlike in/ali podobnosti med organizacijskimi značilnostmi različnih tipov SZS podskupnosti (forumi spletnih zdravstvenih posvetovalnic, forumi spletnih podpornih skupin in spletnimi družabnimi forumi). Podatke, ki smo jih zbrali z intervjuji, smo analizirali z uporabo deduktivno-induktivne tematske analize. Z analizo je bilo identificiranih pet glavnih tem: (1) moderiranje, (2) sankcije, (3) participacija pri oblikovanju norm, (4) pozitivno sankcioniranje in (5) občutek pripadnosti spletni skupnosti. Rezultati kvalitativne analize so zagotovili pomembne vpoglede v organizacijske značilnosti posameznih tipov forumov, ki so bili uporabljeni za kontekstualizacijo kvantitativnih rezultatov, prav tako pa so predstavljali pomemben del oblikovanja in razvoja kvantitativnih merskih inštrumentov za merjenje (nekaterih) družbeno-strukturnih lastnosti SZS. V drugi fazi raziskave smo izvedli presečno spletno anketo na integriranem neverjetnostnem in verjetnostnem vzorcu uporabnikov Med.Over.Net. Zbrane kvantitativne podatke smo analizirali z multiplo regresijsko analizo, s pomočjo katere smo pridobili pomembne rezultate o vplivih družbeno-strukturnih lastnosti na intrapersonalno in

interakcijsko opolnomočenje v SZS. Kvalitativni in kvantitativni podatki so bili zbrani in analizirani ločeno, vendar smo v zadnji fazi raziskave s triangulacijo in integracijo kvalitativnih in kvantitativnih rezultatov pridobili bolj poglobljeno razumevanje vloge družbeno-strukturnih lastnosti SZS kot dejavnikov intrapersonalnega in interakcijskega opolnomočenja uporabnikov SZS.

Rezultati doktorske naloge so pokazali, da vključenost uporabnikov v diskusije v okviru SZS nima neposrednega učinka na intrapersonalno opolnomočenje uporabnikov in hkrati da povezanost med vključenostjo uporabnikov v diskusije v SZS in intrapersonalnim opolnomočenjem pogojujejo specifične organizacijske značilnosti SZS. Raziskava je tudi pokazala, da med različnimi oblikami kapitalov le e-zdravstvena pismenost in ekonomski kapital igrata pomembno vlogo pri razvoju intrapersonalnega opolnomočenja uporabnikov SZS. Z rezultati doktorske naloge smo tudi ugotovili, da so različne organizacijske značilnosti podskupnosti SZS, tj. forumov spletnih zdravstvenih posvetovalnic, forumov spletnih podpornih skupin, spletnih družabnih forumov, zaznane na različne načine, pri čemer imajo razlike pomemben vpliv na razvoj intrapersonalnega opolnomočenja uporabnikov. Dimenziji interakcijskega opolnomočenja, in sicer znanje o razpoložljivih sredstvih in mobilizacija sredstev za kolektivno akcijo, se lahko, kot so pokazali rezultati raziskave doktorske naloge, razvijeta v SZS. Vključenost uporabnikov v SZS nima neposrednega vpliva na uporabnikovo znanje o razpoložljivih sredstvih, je pa pod pogojem prisotnosti negativnih sankcij v forumih spletnih podpornih skupin ali pod pogojem prejete socialne opore v okviru forumov spletnih zdravstvenih posvetovalnicah vključenost v SZS pozitivno povezana z znanjem o razpoložljivih virih. Za razvoj mobilizacije sredstev za kolektivno akcijo je potrebna aktivna udeležba in vključenost uporabnikov v SZS, pri čemer ima pomembno vlogo socialni kapital uporabnikov. Rezultati doktorske naloge so tudi pokazali, da imajo različne podskupnosti SZS in njihove organizacijske značilnosti različno vlogo pri razvoju znanja o razpoložljivih sredstvih uporabnikov in pri mobilizaciji sredstev za kolektivno akcijo. Forumi spletnih zdravstvenih posvetovalnic in forumi spletnih podpornih skupin imajo kot prostori v SZS največji potencial za razvoj interakcijskega opolnomočenja uporabnikov. V doktorski nalogi smo z inovativnim teoretičnim in empiričnim okvirom pokazali, kako pomembno je razumevanje vzajemne medsebojne povezanosti spletnih praks uporabnikov SZS in specifičnih strukturnih lastnosti SZS ter kako lahko ti medsebojno povezani procesi predstavljajo priložnosti in omejitve za razvoj psihološkega opolnomočenja uporabnikov v SZS.

Ključne besede: spletne zdravstvene skupnosti (SZS), psihološko opolnomočenje, družbeno-strukturne lastnosti, intrapersonalno opolnomočenje, interakcijsko opolnomočenje, socio-tehnični sistem

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List of abbreviations and symbols

HROSCs	Health-related online support communities
OHCs	Online health communities
ICTs	Information and communication technologies
CMC	Computer-mediated communication
KMO	Kaiser-Meyer-Olkin test for sampling adequacy
BTS	Bartlett’s test of sphericity
EFA	Exploratory factor analysis
CFA	Confirmatory factor analysis
BMA	Bayesian Model Averaging

1. Introduction

1.1 Scientific background

Searching for health-related information via the Internet has in the last decade become one of the most frequent activities of Internet users (Fox & Duggan, 2013). According to the Statistical Office of Slovenia (SURS, 2017), 69.0% of Slovenian regular Internet users in 2017 searched for online health-related information. Similarly, approximately 60.0% of Internet users in the EU28 countries used the Internet in the last year to search for health-related information (Eurobarometer, 2014). **Health-related online support communities (HROSCs)** have become one of the most important sources for searching for and exchanging health-related information (Johnston, Worrell, Di Gangi, & Wasko, 2013). As Internet-based platforms, HROSCs connect various groups of individuals with similar health-related interests; thus, they represent important venues for connecting people with similar (chronic) health conditions and often also access to health professionals (Johnston et al., 2013; van der Eijk et al., 2013). However, HROSCs have become much more than just a source where users can search for and exchange health-related information. These types of online communities also present venues where users can share health-related experiences and social support; socialize and communicate with others that are having or have had similar experiences with health issues; compare information on health issues; exchange patient-generated guidance, advice on treatments, personal histories, diagnoses, and advice on health risks; and evaluate medication side effects with peer patients and health professionals (Hartzler & Pratt, 2011; Zhang, Liu, Deng, & Chen, 2017; Zhao, Ha, & Widdows, 2013).

HROSCs have today become one of the most popular types of online communities (Li, Yan, & Tan, 2016). If early HROSCs were based primarily on online discussion forums, Usenet, BBS and other similar software and online discussion systems, we are witnessing today the proliferation of HROSCs on various platforms and social media applications. For instance, today HROSCs can be found based around Twitter hashtags (Berry et al., 2017) and Facebook groups (Partridge, Gallagher, Freeman, & Gallagher, 2018). In the early beginnings of HROSCs, the development of which started as early as in the 1980s, these types of online communities were usually based on one specific Internet-based platform and were more or less dedicated to one specific purpose. It should be noted that the first HROSCs could be divided

into two types. The first are online communities that are mainly devoted to peer support groups and are usually referred to as "online support groups" and "online self-help groups" (Coulson, Buchanan, & Aubeeluck, 2007). The second type, which are most commonly associated with the term "online health communities" (OHCs) or more rarely "online counseling communities," refer to online platforms that include both patients (users) and health professional moderators that are usually healthcare professionals or doctors. Today the distinction between online support groups and OHCs is becoming blurred, with most popular health-related online communities (such as PatientsLikeMe, WebMD, MedHelp, HealthUnlocked and the Slovenian Med.Over.Net) both offering online support groups and integrating health professional moderators. The use of the term **HROSC** thus portrays most comprehensively the complexity of this type of online community.

As is evident in the case of HROSCs, different types of online communities today hardly give us an option to argue that online communities are committed to only one purpose and functionality. More likely they are *hybrids* (Atanasova & Petrič, 2014), combining different interests, purposes, intentions, experiences, contexts and uses of a variety of technological and communication platforms and applications (Stanoevska-Slabeva, 2002). Today's HROSCs, on the one hand, offer patients, potential patients and caregivers[1] exchange of support, emotional relief, information, experiences and opinions about their conditions, symptoms, treatments and remedies; and on the other hand, in HROSCs users can discuss, question or request help from health and medical professionals, which can provide them with additional or more validated health-related knowledge and resources. Moreover, because of the increased inclusion of various social media tools and social networks, Swan (2009) even argues that today's HROSCs are transforming into websites where users may be able to find various types of services, and thus health resources, at a number of different levels including basic online supportive communication between peers, online counseling with health professionals, quantified self-tracking and clinical trial access.

[1] Caregiver is someone who takes care of a person that is incapable or unable to care for themselves, for instance children, elderly people, individuals with acute and temporary illnesses or individuals with chronic health conditions. Caregiver usually do not have medical or clinical knowledge or expertise and thus in HROSCs often participate as users who search for health-related information in relation to the health-related issues of the person they are looking after. Many times caregivers use HROSCs also for themselves to receive experiential knowledge and social support when experiencing stress associated with caregiving (Rupert et al., 2016).

Although the nature of HROSCs is very dynamic and complex, we can establish a common definition (Barak, Boniel-Nissim, & Suler, 2008; Coulson, Bullock, & Rodham, 2017; Huh et al., 2016; Johnston et al., 2013; Mo & Coulson, 2010; Peng, Sun, Zhao, & Xu, 2015; Petrič, Atanasova, & Kamin, 2017b; Petrovčič & Petrič, 2014b; Tommasetti, Troisi, & Cosimato, 2014; van der Eijk et al., 2013; Vennik, Adams, Faber, & Putters, 2014; Yang, Guo, & Wu, 2015; Zhao et al., 2013): **HROSCs** are a subset of online communities that provide many-to-many communicative spaces based on one specific Web-based social software (such as discussion forums or social networking sites) or a combination of two or more online application services. HROSCs can range from small-knit groups or they may encompass hundreds of thousands of users, covering a wide variety of health conditions, from general and acute issues to specific (chronic) conditions, such as heart disease, diabetes, cancer and mental health issues, to name a few. In HROSCs, users, usually patients, caregivers or other individuals interested in health-related issues, can participate, i.e. search for and exchange health-related information, experiences, advice and social support, and/or influence public opinion, as well as interact with other users and health professional moderators (usually doctors and healthcare providers), or just observe others' interactions.

The public and the research interest in HROSCs has increased extensively in the last decade. The reason behind such increased attention to this type of online community is not only because of the emergence of several very popular and internationally well-known HROSCs, such as PatientsLikeMe, MedHelp and HealthUnlocked, and the appearance of HROSCs on popular social media, such as Facebook and Twitter, but is also due to the abundance of evidence indicating that participation in HROSCs might provide users and patients with several positive outcomes. The usage of, and participation in HROSCs has been associated with feelings of higher self-esteem, self-efficacy and control related to managing their health issues, enhanced satisfaction from helping others, improved confidence in the relationship with their doctors, more competent use of health services, and even improved social well-being and quality of life (Bartlett & Coulson, 2011; Mo & Coulson, 2012; Petrovčič & Petrič, 2014b; van Uden-Kraan, Drossaert, Taal, Seydel, & van de Laar, 2009; Wentzer & Bygholm, 2013). HROSCs have thus been characterized as fostering users' empowerment (Barak et al., 2008), with several empirical studies having provided evidence associating socio-psychological processes in HROSCs with various empowering outcomes in patients, the professional-patient relationship and healthcare in general (Mo & Coulson, 2010; Petrič et al., 2017b; Visser, Bleijenbergh, Benschop, Van

Riel, & Bloem, 2016). It is thus not surprising that the concept of psychological empowerment has become one of the central studied phenomena within HROSC studies.

1.2 Psychological empowerment and HROSCs

Psychological empowerment can be generally defined as individuals' perceptions of their ability to have control over issues, possess decision-making and problem-solving skills and critical awareness of their socio-political environment and the participatory behaviors needed to influence changes in a setting and/or daily life domain (Zimmerman, 1990, 1995). In the context of healthcare, psychological empowerment refers to individuals' abilities to develop a sense of control over personal health, self-efficacy and competence for managing health conditions, and the establishment of analytical understanding and knowledge of individual and collective resources important for (potential) changes of social circumstances that affect their health conditions and the accessibility and quality of health services or healthcare (system) in general (Israel, Checkoway, Schulz, & Zimmerman, 1994). The concept of psychological empowerment is of great relevance in the field of healthcare, as it incorporates individuals' beliefs regarding important goals that need to be achieved for health condition management, as well as the understanding of resources and other factors that might enhance or hinder individuals' efforts to achieve those set goals.

Psychological empowerment pertains to two essentially different phenomena: to the empowerment process and to empowerment as an outcome (Perkins & Zimmerman, 1995; Rappaport, 1987; Zimmerman, 2000). Psychological empowerment, defined as a participatory-developmental process, includes a series of actions through which individuals, organizations and communities gain greater control, self-efficacy, access to and control over resources, social justice, personal, interpersonal or political power, and awareness of the socio-political environment to address issues of powerlessness and to influence decisions that affect their lives (Perkins & Zimmerman, 1995; Zimmerman, 1995). A feeling of powerlessness and being in a disadvantaged position in a specific setting has usually been characterized as the first stage of the empowerment process. Individuals in stressful circumstances, such as experiencing health issues or having chronic health conditions, are more likely to experience several restrictions in daily life, which can often lead to feelings of helplessness, weakness and lack of control (van Uden-Kraan et al., 2008a). In such situations, HROSCs have often been recognized as an

important source of social support and as a haven for (chronic disease) patients that are in the process of receiving medical treatments and confronted with insufficient or excessive information, burdensome responsibility for disease management and/or a feeling of being left out of the decision-making process concerning their health condition(s) (Huh, McDonald, Hartzler, & Pratt, 2013).

However, the process is considered empowering if it results in empowered outcomes. Generally, empowerment outcomes refer to the specific consequences or effects of empowerment processes and are usually used for the (empirical) study of the processes that might empower individuals, groups, organizations or communities (Zimmerman, 1995, 2000). When (empirically) studying empowerment, empowerment processes are usually seen as various factors that have different effects on empowerment outcomes. Accordingly, in this doctoral dissertation, empowerment will be primarily considered as an outcome. Drawing from Zimmerman's argumentation (2000), empowerment outcomes in HROSCs refer to the consequences of users' attempts to gain a greater sense of control over their health conditions and critical awareness of their social/political environment. Since empowerment outcomes often present the main "operationalization of empowerment" (Zimmerman, 1995), they are often described in conceptualizations of empowerment through empowerment dimensions.

Psychological empowerment consists of at least two dimensions, i.e. *intrapersonal* and *interactional empowerment* (Zimmerman, 1990, 1995; Zimmerman, Israel, Schulz, & Checkoway, 1992). Drawing on Zimmerman's (1995) conceptualization of empowerment, *intrapersonal empowerment* refers to the cognitive perception of one's *self-efficacy*, *control*, *motivation* and *competences*, as well as one's belief in the ability to use these components to engage in practices that would bring about desired outcomes. The concept of intrapersonal empowerment has been quickly adopted in the context of health, as it has been demonstrated that if individuals who are experiencing health problems possess positive thinking, attitude, confidence and other abilities to manage their health, they will have better health outcomes than individuals that are disengaged, and feel apathetic and resigned (Schulz & Nakamoto, 2013a).

Recent studies have demonstrated that HROSCs play an important role in building users' intrapersonal empowerment. An extensive number of studies have suggested that HROSCs present important online settings that help develop intrapersonal empowerment components

for individuals with various health issues and conditions, such as mental health issues, diabetes, Parkinson's disease, breast cancer and arthritis, to name just a few (Brady, Segar, & Sanders, 2017; Petrič, Rogelj, Petrovčič, & Dremelj, 2015; van Uden-Kraan et al., 2008c; Visser et al., 2016). More specifically, researchers have shown that sharing health-related experiences in HROSCs provide users with the knowledge of, and strategies for how to cope with the disease, what treatments are available and how to manage disease in everyday life, which contributes significantly to users' perceptions of their disease management self-efficacy and overall control over health issues (van Uden-Kraan et al., 2008c; Willis, 2016). Furthermore, scholars have demonstrated that HROSCs help to cultivate health-related competences, where users can, by searching for, providing and exchanging health-related information, construct knowledge and skills urgently needed for self-management of the disease (Zhang, 2016). However, HROSCs not only play an important role in users' perceived control, self-efficacy and competence, but they also foster users' motivation control. The possibility of users exchanging informational and emotional support, receiving patient expertise and reading about positive health stories from users that are going through similar experiences has been associated with users' increased optimism, self-determination and motivation to achieve similar health outcomes (van Uden-Kraan et al., 2008c).

Although an extensive body of research on HROSCs has confirmed that various social processes in this type of online community lead to intrapersonal empowerment, the studies have so far predominantly focused on investigating only the socio-psychological factors, such as exchange of social support, finding understanding and meaning, self-expressing, and the form and intensity of participation (Johnston et al., 2013; Mo & Coulson, 2012; Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2009). Research conducted from different angles and with various approaches has confirmed that exchange of social support in HROSCs has an effect on users experiencing empowering health-related outcomes, such as being better informed, having enhanced confidence and control over their medical treatments and social environment, improved acceptance of the disease, enhanced optimism, self-esteem and social well-being (Aardoom, Dingemans, Boogaard, & Van Furth, 2014; Mo & Coulson, 2012; van Uden-Kraan et al., 2009). Furthermore, studies have also suggested that there are no major differences between active (i.e. posting) and passive (i.e. lurking) participation in HROSCs in terms of intrapersonal empowerment, where lurking may be as empowering as posting messages and actively participating in HROSCs (Mo & Coulson,

2010; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2008b). Although these findings present a great knowledge base on intrapersonal empowerment processes and outcomes in HROSCs, other factors that importantly facilitate the development of intrapersonal empowerment in HROSCs have not yet been addressed.

However, interpersonal conversations and social interactions in HROSCs do not necessarily only evolve around exchange of health-related information, interests, support, and personal health stories. HROSC users can also engage in political discussions, and topics related to individuals' or groups' lifestyle and values. HROSCs thus function as communicative spaces that can, like other types of online communities, enable participants to collectively engage and increase their social power as an interest group with the aim of influencing institutionalized arrangements and political decisions that affect their quality of life (Heidelberger, El-Gayar, & Sarnikar, 2011; Petrič & Petrovčič, 2014b; Swan, 2009). Thus, HROSCs also play an important role in developing the second dimension of psychological empowerment, i.e. *interactional empowerment*. Compared to the intrapersonal dimension, interactional empowerment has been scarcely studied in the HROSC context. Petrovčič and Petrič (2014b) explain that such asymmetry in research attention might be due to the fact that intrapersonal empowerment often presents a goal of various public health campaigns, social marketing programs and other interventions that focus on empowered citizens, and in the healthcare context, empowered patients that act as responsible, active and efficient partakers in their health status and healthcare in general.

Nonetheless, interactional empowerment presents a crucial dimension of psychological empowerment, as it includes critical understanding of the socio-political environment, knowledge of available resources and methods of obtaining, using and mobilizing those resources to collectively achieve goals that would otherwise be hard to accomplish individually (Zimmerman, 1995). Interactional empowerment refers to critical understanding of the socio-political environment and thus to having *knowledge about needed resources* and problem-solving skills and methods for identifying, obtaining, cultivating, managing and *collectively mobilizing those resources* in order for individuals as members of community to gain influence as a whole and, consequently, produce change in the structure of the socio-political environment (Miguel, Ornelas, & Maroco, 2015; Peterson, 2014; Peterson, Lowe, Aquilino, & Schneider, 2005; Speer, 2000, 2008; Speer & Peterson, 2000; Zimmerman, 1995).

So far the phenomenon of interactional empowerment has been in the context of HROSCs investigated by only a few studies (Ammari & Schoenebeck, 2015; Li, 2016; Lundström, 2014; Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014a, 2014b; Wentzer & Bygholm, 2013). However, these studies have importantly shown that HROSCs represent venues where users can develop a collective consciousness and engagement that unite them as members into a belief that personal health-related issues can be effectively solved with collaboration with others and by enacting influence in wider social structures collectively (Petrovčič & Petrič, 2014a; van Uden-Kraan et al., 2008c). Such efforts can be presented, for instance, in the case of the Slovenian HROSC Med.Over.Net, where collective actions of patients with lymphoma, infertility and thyroid problems have found the HROSC to be an important medium for the development of formal initiations directed toward the improvement of the patients' group position in public healthcare (Med.Over.Net, 2005; Verovšek, 2015). The studies on interactional empowerment in HROSCs have also importantly demonstrated that several participation-related factors, such as intensity of participation, involvement in community organization and participation in external (offline) activities, and a sense of virtual community, can have a crucial role in the development of users' interactional empowerment outcomes. Active participation, involvement in community organization and a sense of virtual community importantly affect interactional empowerment in HROSCs, as they help users to develop the opportunity to participate in different activities that address their health-related needs and goals, increase their sense of responsibility for the community and willingness to participate in supportive tasks in the community, as well as feeling a social cohesion that presents the basis for community members to collectively organize, develop a common goal and collectively engage in efforts to achieve it. However, further studies of both interactional and intrapersonal empowerment in HROSCs are needed that will incorporate a wider set of important factors, which will not only expand beyond socio-psychological and participation-related factors, but will also incorporate the understanding of HROSCs as socio-technical systems. As we will show later, the understanding of HROSCs as socio-technical systems gives a more comprehensive perspective on the relevant factors that can influence users' intrapersonal and interactional empowering outcomes.

1.3 Identification of the research problem

The current research on HROSCs has undoubtedly contributed to the knowledge and understanding of the role of HROSCs for its users and thus how the usage of, and participation in, HROSCs affect the development of psychological processes and outcomes for the users, i.e. patients, caregivers and other individuals interested in health-related topics. However, in the current research on HROSCs at least three limitations can be identified that call for further theoretical and methodological investigations:

1) The research on HROSCs has been predominantly focused on conceptualizations of psychological empowerment only through its intrapersonal dimension, which has limited the conceptualization of psychological empowerment to just the understanding that it relates to individuals' abilities to increase self-efficacy, competence and control over events that determine their lives and health. However, as we have demonstrated in the previous section, psychological empowerment not only pertains to the intrapersonal dimension, but is also vitally related to the transactions and interactions between individuals and development of their critical awareness and understanding of specific environments and social relations, cooperative and collective practices that are needed to bring about possible changes that can consequently improve individuals' sociopolitical situation (Zimmerman, 1990, 1995). In the context of HROSCs, interactional empowerment, on the one hand, refers to the users' understanding of the online community in which they participate, and on the other hand it relates to the users' awareness of sociopolitical issues concerning the public healthcare system, health policies and medical treatment programs. In the studies on HROSCs the interactional dimension of psychological empowerment has been very often overlooked in theoretical and empirical investigations, which means that the comprehensive research and understanding of psychological empowerment in HROSCs has so far been scarcely addressed. In order to fully capture the outcomes of users' psychological empowerment in HROSCs, both intrapersonal and interactional dimensions should be included in theoretical and empirical models.
2) Since conceptualizations of psychological empowerment in HROSCs have not been comprehensively addressed in most research on HROSCs by including both intrapersonal and interactional dimensions, measurement instruments especially in regard to the interactional empowerment, have not yet been consistently developed. Although

intrapersonal empowerment has been extensively researched in HROSC studies, the measurement instruments have not yet been fully adapted to the HROSC settings. Often HROSC studies have adopted measurement instruments and scales developed in the field of community psychology (e.g. Zimmerman's (1991) Sociopolitical Control Scale) or have used a combination of various instruments that have been developed in other research fields. Since the concept of (psychological) empowerment is a contextually dependent concept, which means that it differs for different populations, settings and over different time points (Zimmerman, 1995), it is of crucial importance that the measurement instruments for both dimensions of psychological empowerment are appropriately adapted to the setting under study, i.e. HROSCs.

3) Another important shortcoming of the current research on HROSCs is related to the fact that studies have been predominantly concerned with the identification of the socio-psychological factors deriving from the social support and social identity theory and with the investigation of participatory patterns that affect psychological empowerment importantly in HROSCs. Studies on empowerment in HROSCs have thus comprehensively presented their social and healthcare aspects. However, these examinations have often ignored the fact that HROSCs are complex socio-technical systems that include the interconnection of individuals and their social practices, technology and environment or structures. More specifically, to fully understand the development of psychological empowerment in HROSCs it is not enough to investigate only the effect of individually based factors and the impact of different types of social practices. To the best of our knowledge, no study thus far has researched how different social practices that are associated with empowerment depend on, and interact with, particular **socio-structural properties** that accompany these types of communities, like the patterns of relations, rules and resources (Rosenbaum & Shachaf, 2010), and how these properties affect psychological empowerment of HROSC users. Socio-structural properties of HROSCs can present both opportunities and constraints for social practices, including those that can provide individuals with greater feelings of empowerment.

   In the online community research the socio-structural properties of such communities have been studied to some extent (Butler, 2001; Ravi, Pang, Rastogi, & Kumar, 2014; Ridings & McLure Wasko, 2010), but these studies have been mostly focused only on technical characteristics of communities such as membership size, message volume, topic ordering

among related questions, etc. These studies have often overlooked the complexity and comprehensiveness of possible socio-structural properties of online communities. Few studies have considered such issues. Petrovčič and Petrič (2014b) discovered that the inclusion of users in the organizational structure of HROSCs is important for the sense of (interactional) empowerment. Further, Armstrong, Koteyko, and Powell (2012) showed that reactive moderation and nonauthoritative participation guidelines in an online community can contribute to the participatory practice of users and thus provide support for the development of empowering benefits. Although the above-mentioned studies provide us with valuable insights regarding the structural characteristics of HROSCs and their effect on patients' empowerment, little is known about the relation between other socio-structural properties of HROSCs, their interaction with individual/interactional processes and empowerment outcomes.

Moreover, if today's HROSCs are hybrids that include various features ranging from online support groups, counseling communities, quantified self-tracking applications etc., this also implies that HROSCs consist of different subcommunities[2] that do not necessarily comprise similar socio-structural properties. These different subcommunities might anticipate different types of social practices from the users, they might comprise different rules, and might provide and expect from the users the need for different resources. Different subcommunities of HROSCs and their socio-structural properties may facilitate or hinder users' psychological empowerment differently. For instance, Visser et al.'s (2016) study of online counseling communities demonstrated that implicit social norms related to the number and content of users' postings developed in interactions between users and health professional moderators might hinder users' empowerment. In the research on HROSCs, no theoretical framework exists that can account not only for socio-psychological and individual processes in HROSCs, but also for **community-level aspects and understanding of HROSCs as socio-technical systems**.

[2] In the thesis the notion of subcommunity is used to describe a specific and distinct grouping of users that are in online community, i.e. HROSC, brought together based on the common communicative space in the HROSC, which usually incorporates specific (social and technical) design, modes of interaction and technological features. In HROSCs, which are based on the online discussion forums, subcommunities refer to the different types of forums that are usually a part of this type of online communities, i.e. online counseling forums, online support groups forums, and online socializing forums.

The main aim of this doctoral dissertation is to overcome the presented shortcomings of previous studies on psychological empowerment in HROSCs and to comprehensively **investigate the impact of the socio-structural properties of HROSCs on the intrapersonal and interactional dimensions of psychological empowerment**. Several research objectives will be pursued in order to accomplish the main aim of the thesis.

1.4 Research objectives

To attain the main aim of the thesis we will pursue the following five research objectives:

1. to conceptualize the socio-structural properties of HROSCs and to develop a **theoretical framework for understanding individual- and community-level factors that have an impact on psychological empowerment, namely intrapersonal and interactional empowerment in HROSCs**;
2. to explore and explain the differences and/or similarities in organizational characteristics among different types of HROSC subcommunities;
3. to develop a methodological framework for measuring socio-structural properties of HROSCs;
4. to develop a theoretical and methodological framework for measuring intrapersonal and interactional empowerment in the context of HROSCs;
5. to **empirically examine the impact of socio-structural properties on intrapersonal and interactional empowerment in HROSCs**.

The first research objective will be achieved with a comparative critical literature review and the development of a theoretical framework that will help us conceptualize socio-structural properties of HROSCs in a comprehensive manner. In particular, the doctoral thesis takes a social informatics perspective of HROSCs and an understanding of them as socio-technical systems. As such, the thesis aims to address socio-structural properties of an online community as a mutual interaction and intertwinement of both social practices and structural properties within one analytical framework. Moreover, we conceptualize socio-structural properties of HROSCs as effects brought about by a structuration process, in which the structure of an online community is both a medium and outcome of social practices (Giddens, 1979). With this conceptualization we emphasize the fact that socio-structural properties of HROSCs are not static, but evolve and vary according to the different

(intra)organizational structures and accumulated different forms of resources (Orlikowski, 2000). The proposed PhD thesis will show that the process of structuring HROSCs can be conceptualized with the integration of Giddens' structuration theory (1979, 1984) and Bourdieu's theory of capital (2002[1986]), which will provide the basis for the conceptualization of socio-structural properties that include the interrelation between rules, resources and social practices. On the basis of such a theoretical apparatus and on the basis of empowering community setting theory (Maton & Salem, 1995), the theory of managing common resources in online communities (Kollock & Smith, 1996; Kraut et al., 2012; Petrič & Petrovčič, 2008, 2014a; Smith & Kollock, 1999) and the theory of implicit and explicit norms (Burnett & Bonnici, 2003), we will apply sociological concepts to the context of HROSCs and conceptualize socio-structural properties of HROSCs on the basis of a mutual relationship between organizational characteristics of HROSCs, distribution of different forms of capital and involvement in HROSCs.

All research objectives, especially objectives two to five, will be achieved by using a complementary mixed-methods research design with (data and method) triangulation of qualitative and quantitative research methods. The second objective of the thesis will be mainly accomplished through qualitative in-depth semi-structured interviews with users and health professional moderators of the largest HROSC in Slovenia, Med.Over.Net. This objective will also be partially achieved through a quantitative study based on a cross-sectional Web survey conducted on an integrated probability and nonprobability sample of Med.Over.Net users. Combined with a detailed literature review and the results of the deductive-inductive qualitative thematic analysis, the design and development of quantitative (survey) measurement instruments will present the main source for achieving the third and fourth objective of the doctoral thesis. The fifth objective of the empirical examination of the impact of socio-structural properties on intrapersonal and interactional empowerment in HROSCs will be achieved through data collection and analysis of quantitative Web survey data with various multivariate statistical analysis methods.

The findings of the doctoral dissertation will importantly contribute to the understanding of the role of HROSCs and their specific socio-structural properties in users' (or patients') abilities to manage their health issues, cope with stressful health-related situation, and address and solve health-related needs. The thesis will provide an important knowledge on the HROSCs' potential of being an arena of (patient) engagement and action, and spaces where users can form discourses that can challenge existing healthcare circumstances and the wider

sociopolitical environment. Moreover, the findings of this doctoral dissertation will provide a detail insight into specific organizational characteristics of HROSCs and their subcommunities, different types of resources, participation and involvement patterns that facilitate or hinder users' development of psychological empowerment. The findings of the thesis will extend existing theoretical and empirical knowledge on HROSCs and provide important practical implications for managers, designers, and developers of HROSCs, as well as for health care policy makers.

1.5 The structure of the doctoral dissertation

This doctoral dissertation is structured in seven additional chapters, which pertain to five important parts of the thesis: the theoretical framework, research design and methodology, research results, discussion and conclusions.

In the first part of the thesis we present the theoretical framework of the study (Chapters Two, Three and Four). In Chapter Two we focus on the history and emergence of HROSCs, with the emphasis being put on presenting the background of the definition and conceptualization of HROSCs. In the last section of this chapter we also discuss the positive or beneficial, and negative or challenging, effects of HROSCs on their users, healthcare and society in general that were identified in the previous research. We believe that this is an important task, since such effects present the basis for identifying factors that have an impact on empowerment outcomes in these types of online communities. In the third chapter we focus on empowerment theory and the conceptualization of psychological empowerment. We start the discussion with the emergence of the concept of empowerment, which presents the basis for identifying the major controversial characteristics that this concept has been confronted with in the current literature. The presentation of the controversial characteristics of the empowerment concept gives us an insight into the specific aspects and features of this concept and theory that mainly derive from the field of community psychology. In the last section of this chapter we focus on the conceptualization of psychological empowerment and its dimensions of intrapersonal and interactional empowerment in HROSC settings. In the third chapter of the theoretical framework, which is also the most extensive, we focus on the development of socio-structural properties of HROSC theory. In the first section we outline the theoretical framework based on Giddens' and Bourdieu's theories, which in the second section is applied to the specific socio-

structural properties in the HROSC context: organizational characteristics of HROSCs, different forms of capital in HROSCs, and involvement in HROSCs. Each of these socio-structural properties of HROSCs are conceptualized in detail, in relation to the previous HROSC research and empowerment theory.

Next, in Chapter Five we focus on the presentation of the research design and the methodology of the study. First, we present the research questions and theoretical hypotheses that guide our research and the research design that frames our empirical study, which is based on a complementary mixed-methods research design using (data and method) triangulation of qualitative and quantitative research methods. In the third section we present in detail the setting of the qualitative and quantitative study and thus the biggest HROSC in Slovenia, Med.Over.Net, and its structure. The fourth section of the research design and methodology chapter is dedicated to a detailed description of the recruitment process and sampling, data collection, ethical considerations, participants and data analysis techniques of the qualitative study of the thesis. In the last section of this chapter we focus on the presentation of the development of measurement instruments, questionnaire design and testing, the data collection procedure, ethical considerations, data analysis techniques and methods, and the operationalization of theoretical concepts and measurement instruments of the quantitative study of the thesis, which is based on a cross-sectional Web survey among Med.Over.Net users.

In the sixth chapter of this doctoral thesis the research results of both qualitative and quantitative studies are presented. First, we focus on the presentation of the qualitative results, which are based on the data collected through in-depth semi-structured interviews conducted among users and health professional moderators of the HROSC Med.Over.Net. The main aim of this qualitative study was to identify the perceived similarities and differences between organizational characteristics of the HROSC subcommunities, namely online counseling forums, online support group forums and online socializing forums. The second part of this chapter consists of a presentation of the quantitative study results, which were obtained from the Web survey data collected among Med.Over.Net users and hierarchical ordinary least squares multiple regression analysis. These results provide us with the main questions about the impact of socio-structural properties in HROSCs on intrapersonal and interactional empowerment of HROSC users.

The seventh chapter of this thesis is focused on the discussion and interpretation of the research results of the study. In this chapter we connect the results obtained from the qualitative study and the results of the quantitative study and thus interpret the qualitative and quantitative results together in order to triangulate our analysis and arrive at a better understanding of how socio-structural properties of HROSCs affect users' intrapersonal and interactional empowerment. In this chapter we also discuss the contribution, significance and implications of this doctoral dissertation and its limitations. In the final chapter of this thesis, we present a summary of the conclusions drawn and discuss the implications for future studies.

2. Health-related online support communities (HROSCs): History, emergence and conceptualizations

The emergence of information and communication technologies (ICTs), and more particularly the Internet, presented in the 1980s one of the important beginnings for acknowledging the potential of such information technologies in the field of health. These opportunities were recognized by both regular and lay Internet users as well as (health) professionals. While the beginnings of the development of health-related online support communities (HROSCs) as we know them today can be mostly ascribed to the participation and initiations of Internet users, an important contribution was also made by health professionals, who played a crucial role in bringing health and medical science and expertise to these types of online communities. Thus the development of HROSCs in the 1980s started from two parallel courses, which were led by two types of actors: (1) the participation of lay Internet users, who saw in the Internet the opportunity to search for and exchange (health-related) information, advice, support and experiences, to build relationships and connections with other individuals with similar health conditions and situations. General online communities were transformed, using specific health topics, into online self-help groups and online support groups; (2) health professionals, who saw in the Internet the opportunity to expand the access to care, cost, quality and portability of healthcare services for users and patients and also to use healthcare's business component over the Internet. These types of health-related online communities, which are most commonly associated with the term "online health communities" (OHCs), refer to online platforms that include both patients and health professional moderators, who are usually healthcare professionals or doctors. Today the distinction between online support groups and OHCs is becoming blurred, with most popular health-related online communities (such as PatientsLikeMe, WebMD, MedHelp, HealthUnlocked and the Slovenian Med.Over.Net) offering both online support groups and integrated health professional moderators and thus being referred to as "health-related online support communities" (HROSCs).

In this chapter we first present the development and main characteristics of online support groups and self-help groups. Next, we focus on OHCs and the role of health professionals as moderators in providing users with medical expertise and knowledge. Since the study of this thesis (empirically) focuses on investigating the biggest HROSC in Slovenia (Med.Over.Net),

we briefly present the Slovenian context of HROSC development and compare it to the main developed (and influential) HROSCs abroad. Next, we focus on conceptualizing HROSCs by first presenting the concept of an online community, which presents the foundation for defining HROSCs and describing their main characteristics. In the last section of this chapter, we present the "dual lives" (Rice, 1999) of HROSCs and thus both positive and negative consequences and implications of these types of online communities for their users, healthcare and society in general.

2.1 Online support groups and online self-help groups

The first term related to online support groups was mentioned as early as in 1984 (Dunkel-Schetter, 1984) and proliferated in the 1990s. Support groups had already proved useful in traditional environments, in groups such as Alcoholics Anonymous and other similar programs (Barak et al., 2008). Such programs showed significant success due to the peer-to-peer patient support and "patient expertise" (Hartzler & Pratt, 2011), which has been recognized as having an important effect on patients' health-related recovery, distress management and emotional coping (Batenburg & Das, 2014). Online support groups resembled traditional health-related support groups and were primarily focused on providing patients and caregivers with (additional) information resources, supportive and emotional communication, and possibilities for relieving health-related distress and for exchanging coping strategies for dealing with specific health conditions (Coulson & Knibb, 2007; Weis, 2003; White & Dorman, 2001). The first online support groups were based on Internet platforms that nowadays are almost obsolete, such as Listservs, Usenet, Bulletin Boards and chat rooms. Today online support groups are most commonly based on online discussion forums and social networking sites, such as Facebook groups (Coulson & Smedley, 2015; Oh, Lauckner, Boehmer, Fewins-Bliss, & Li, 2013). Unlike the online counseling communities, online support groups are usually only associated with individuals sharing patient expertise on common interests related to health conditions, but in some cases they may also include professional clinicians (Taylor, Falke, Shoptaw, & Lichtman, 1986).

Although some scholars do not distinguish between *online support groups* and *online self-help groups*, there are distinctions between them. According to Hsiung (2000), online self-help groups are usually autonomous and emerge bottom-up and are thus often initiated by patients

themselves. Online support groups, on the other hand, can be initiated by health professionals or health organizations and institutions (i.e. top-down), and although the communication and interactions in a group are not mediated by health professionals, they can sometimes include moderators who are not necessarily health professionals, but can be former or experienced patients that play the role of a discussion moderator. Barak et al. (2008) also warn that online support groups can often be mistakenly understood as e-therapy groups. Although they share some similar characteristics, online support groups, unlike e-therapy groups, do not include preplanned treatment protocols: The purpose is based on offering its users relief and support when dealing with health issues and not a therapeutic change of emotions or behavior. Furthermore, e-therapy groups always include trained health professionals and are limited by time, whereas online support groups might include nonprofessional moderators and do not have specific time limits (Barak et al., 2008). On the basis of these distinctions, online support groups can in general be defined as online communities "with a health-related focus, which provide an online environment where individuals can connect and interact with other people who have had similar experiences to exchange information, social support and advice" (Coulson & Smedley, 2015, p. 198).

Online support groups can be found today in almost every health-related distress topic possible and usually focus on one specific medical condition. The vast majority of online support groups are provided for patients with diabetes (Zrebiec & Jacobson, 2001), different types of cancer (van Uden-Kraan et al., 2008c), impaired hearing (Cummings, Sproull, & Kiesler, 2002), irritable bowel syndrome (Coulson, 2005), Parkinson's disease (Attard & Coulson, 2012) and eating disorders like bulimia or anorexia (Eichhorn, 2008). There are also online support groups for individuals that are dealing with stressful and life-changing situations such as the loss of a loved one (Massimi, 2013), divorce, separation or family reorganization (Christian, 2005), weight loss (Hwang et al., 2010) and addiction problems like drugs, alcohol, smoking etc. (Shahab & McEwen, 2009). There are also many online support groups for caregivers: for example, parent communities for parents with children with disorders like autism (Clifford & Minnes, 2013), for children with parents with Alzheimer's disease (White & Dorman, 2000), or for adolescents and their family members with mental health disorders (Barak & Dolev-Cohen, 2006). Research has shown that individuals who have a specific health condition such as depression, anxiety, stroke, diabetes, cancer or arthritis are more likely to use and visit online support groups (Owen et al., 2010). Online support groups are also appealing for individuals

with socially stigmatized and rare diseases, since it is harder for them to receive information and support in their local environments (White & Dorman, 2001).

The major benefit of online support groups that is often emphasized pertains to the possibility of users connecting and exchanging experiences, advice and support with other users and patients. “Experiential knowledge” or “patient expertise” (Hartzler & Pratt, 2011) refers to patient information, understanding and insights gained from personally managing the day-to-day experience of illness. It has often been demonstrated that compared to health professionals, patients, especially those that have a chronic health condition, have a greater knowledge of symptoms, alternative treatments and personal issues that come along with a specific illness (Loane & D’Alessandro, 2014). In online support groups, patients, in the form of narratives or personal stories, often reveal how they manage their illness on a day-to-day basis, how the illness has impacted their lives, relationships and work, and importantly how they have responded emotionally to health issues and situations (Hartzler & Pratt, 2011). Although a mixture of treatment-related (i.e. the topic that usually pertains to professional-patient interaction) and personal topics has been identified in discussions in online support groups, there is a great distinction noticed by patients themselves between the information provided by peer-patients and that which they receive from health professionals. The experiential knowledge provided by users in online support groups presents an important source for personal health guidance for other patients, where peer-patients can be seen as teachers and health educators that have an important role in other patients’ health management and coping (Hartzler & Pratt, 2011; Vennik et al., 2014).

The support provided by peer-patients in online support groups can also have some disadvantages that often relate to inaccuracy and invalidity of information disseminated online and have been linked to users’ tendencies to self-diagnose and self-medicate (Bartlett & Coulson, 2011). While to some extent users of online support groups are aware of the possible unreliability of information received from peer-patients, they often find patient expertise compared to information from health professionals to be more relevant for their individual situation (Vennik et al., 2014). It has thus been demonstrated that patients value information from different sources, with online support groups presenting one such source. Studies have shown (Henwood, Wyatt, Hart, & Smith, 2003) that online support groups present one of the important sources for patients’ triangulation process of gathering health-related information.

Besides receiving patient expertise and support, participation in online support groups has been associated with numerous health-related outcomes that have often been characterized as empowering. Processes such as sharing information and experiences, obtaining different types of social support, and finding meaning, recognition and understanding in online support groups have been associated with empowerment outcomes such as informed decision-making, increased control and self-efficacy in dealing with health issues, better confidence when interacting with health professionals, and increased optimism, self-esteem and social well-being in general (Mo & Coulson, 2010; van Uden-Kraan et al., 2008c; van Uden-Kraan et al., 2009). Although online support group users value the peer-patient support, advice and information that they can receive in this type of community, many users also understand the benefits of having access to evidence-based and reliable clinical expertise and health-related information provided by health professionals (Vennik et al., 2014).

2.2 The role of health professionals in HROSCs

The role of online communities in the field of health was first recognized by health professionals from the field of psychology and psychotherapy. This was particularly well documented in the field of mental health (Mallen & Vogel, 2005), where the first case of an online mental health advice column, *Ask Uncle Ezra*, was founded in 1986 at Cornell University in Ithaca (New York) and in 26 years of its operation has offered more than 20,000 expert answers to questions from Cornell's students and other members (Lang, 2007). This was the beginning of the e-therapy or Internet therapy alternative, i.e. online free advice given by professional therapists (Mallen & Vogel, 2005), and is defined as "any type of professional therapeutic interaction that makes use of the Internet to connect qualified mental health professionals and their clients" (Rochlen, Zack, & Speyer, 2004, p. 270). This initiated the establishment of so-called *online counseling communities* in other areas of health, featuring question-answer (Q&A) platforms, where patients could pose (usually publicly displayed) questions directed to health professionals, who offered medical recommendations, preliminary diagnoses and guidance regarding additional (informational) resources (Huh et al., 2013; Swan, 2009).

The vital role of health professionals as experts or moderators was more specifically acknowledged in OHCs in the 1990s, especially against critiques of possible liability issues

and misinformation exchange in nonmoderated online spaces (Davis, 2008). In addition to the value of peer-to-peer healthcare, in hospital-led support and therapy groups, health professionals have maintained an important role, especially as clinical moderators of peer-patient discussions and additional providers of clinical expertise (i.e. through knowledge about medical conditions, remedies and treatments gained from professional training and education) (Hartzler & Pratt, 2011; Huh & Pratt, 2014). Similarly to the idea of including health professionals as moderators in (hospital-led) peer-to-peer support groups, some OHCs also recognized the value of health professionals as moderators, who can provide users or patients with health consultations and offer professional and reliable health-related information and medical advice.

Prior to the ubiquity of Internet communications, interactions between patients and health professionals occurred mainly as conventional, face-to-face medical encounters in healthcare settings (Yang et al., 2015). With the introduction of interaction between patients or caregivers on the one hand and health professionals (doctors) on the other, OHCs have become new venues of communication and professional-patient interaction (Vennik et al., 2014). OHCs have broadened and diversified channels for professional-patient interactions, which has transformed the perceptions of face-to-face medical encounters (Wu & Lu, 2017; Xitong, Shanshan, Vogel, & Yijun, 2016). Patients, as OHC users, are now beside interacting with their personal doctors, also able to consult with other health professionals (i.e. health professional moderators) and can thus receive additional information before or after meeting their personal doctor (Li, Orrange, Kravitz, & Bell, 2014; Umefjord, Petersson, & Hamberg, 2003).

The involvement of health professional moderators, usually healthcare providers or doctors, in OHCs has been reported to be beneficial for group dynamics, facilitation of discussions and the provision of additional medical resources (Eysenbach, Powell, Englesakis, Rizo, & Stern, 2004). Online counseling supported by health professionals has been proven to be a particularly important source of health-related information for adolescents, who value the accessibility, confidentiality, anonymity and interactivity of such a medium for retrieving personal health information usually related to issues and questions about relationships, body development, sexual health and mental health (Lekić et al., 2014). Consultations with health professional moderators in OHCs provide not only adolescents but users in general with many benefits: a convenient, accessible, geographically independent and reliable source for informational and emotional support (Himmel, Meyer, Kochen, & Michelmann, 2005; Peng et al., 2015;

Umefjord et al., 2003; Vennik et al., 2014). OHC users often perceive online professional-patient interaction as being beneficial for their health outcomes, health-related knowledge, management of personal health issues, and competence in their relationship with their doctors and the use of health services (Peng et al., 2015; Vennik et al., 2014). Himmel et al. (2005) demonstrated that interaction with health professional moderators in OHCs can increase users' informational and emotional support when confronted with health-related issues and distress. The exchange of evidence-based medical knowledge provided by health professional moderators is most valued by OHC users, as it makes an important contribution to their health-related knowledge and management of their own disease (Vennik et al., 2014).

These studies have mainly focused on the exchange of social support in OHCs with an emphasis on users' perspectives and behaviors. Recent research indicates that OHCs also provide benefits for health professional moderators: They can gain professional recognition and respect, and access additional education and research, social and even economic resources (Atanasova, Kamin, & Petrič, 2017; Guo, Guo, Fang, & Vogel, 2017; Guo, Guo, Zhang, & Vogel, 2018). Online supportive communication, which refers to the social support resources produced through online interpersonal communication aimed at providing assistance to another person in need (Bambina, 2007; Burleson & MacGeorge, 2002; Chang, 2009; Chuang & Yang, 2010; Oh, Ozkaya, & LaRose, 2014), also presents an important aspect of online professional-patient interactions (Peng et al., 2015). Health professional moderators can provide social support resources to users, which can meet various health-related needs and potentially bring about beneficial and/or even challenging health-related outcomes (Chang, 2009; LaCoursiere, 2001).

Interactions between health professional moderators and users in OHCs are not without challenges. Although in OHCs health professional moderators provide clinical expertise and reliable health-related answers to users' queries, users nevertheless rely on information from different sources in OHCs, which are not necessarily screened and verified by professionals (Vennik et al., 2014). Because of the availability of an online health delivery service in OHCs, users often have high expectations of receiving rapid responses from health professional moderators (Yang et al., 2015), which can be a challenging task, especially when health professional moderators are confronted with users' serious and complicated health-related situations (Atanasova et al., 2017). OHCs can thus also have a disempowering effect for health professional moderators. In the study of Atanasova et al. (2017), health professional moderators

reported on several disadvantages related to their participation in OHCs, such as feelings of overload, overcommitment, uncertainty and a lack of control over their personal life as well as their professional role.

Incorporating health professional moderators can also be challenging for OHCs and their managers. Maintaining a base of health professional moderators who are actively involved in the OHC is a difficult task for online community managers, as it often demands a high level of resources, both human and financial. It is thus not surprising that in the US only 19% of prominent OHCs have incorporated health professionals as moderators (Huh et al., 2013; Huh & Pratt, 2014). Moreover, in the OHCs where health professionals do provide moderation, the level of active engagement of health professional moderators (such as question answering) was rather low. Although some OHCs that include health professional moderators were established by nonprofit or governmental organizations, many OHCs have been established with profit-led business models. For example, in MedHelp, positing a question directly to a health professional is fee based and is charged at approximately $22, whereas posing a question in subcommunities where peers or professionals may respond is free of charge (Swan, 2009). Such payable online health delivery services can have important consequences for users, as they might affect the quality of online health information, limit the accessibility and create (new) inequalities in the provision of healthcare in online contexts.

2.3 HROSCs in Slovenia and abroad

Slovenia is one of the most typical European Union (EU) countries with respect to the usage of ICTs, and with approximately 2 million inhabitants it has at least 1.1 million weekly Internet users. According to many of the Eurostat information society indicators, it takes close to the median position among all EU countries (Zupan, 2017). Among the regular Internet users in Slovenia, approximately 69.0% have used the Internet for searching for health-related information (SURS, 2017). More than 57.0% of regular Internet users have also used social networking sites and related platforms in the last three months. Similarly, approximately 60.0% of Internet users in the EU28 countries have used the Internet in the last year to search for health-related information, with Internet search engines, specific websites, blogs and online discussion forums being the most frequently used sources for seeking this type of information (Eurobarometer, 2014). HROSCs are becoming an important source of health-related

information not only in EU countries and North America, which has been the most advanced in this area, but also in Slovenia.

The development and establishment of HROSCs in Slovenia dates back to the late 1990s and has progressed rapidly in the last 20 years. Especially from the year 2000 onward, the Slovenian Web witnessed the emergence of various health-related online communities: vizita.si (HROSC), viva.si (HROSC), zdravniški-nasveti.net (online counseling community), tosemjaz.net (online counseling community for adolescents), nebojse.si (online self-help community for connecting people with depression and anxiety disorder), forum.aa-slovenia.si (online support community of Slovenian Alcoholics Anonymous), diabetes-zveza.si (online support community of Slovenian Diabetes Association), etc. These online communities are mostly supported by online discussion platforms, but since 2008, when social networking sites had gained in popularity in Slovenia, social media such as Facebook have also become important communication spaces for many informal support groups (e.g. support groups for parents with ADHD/ADD children) as well as formal groups and patient organizations (e.g. cancer patients, patients with allergies, diabetes etc.).

One of the biggest HROSCs in Slovenia that emerged in 2000 is Med.Over.Net, which also presents the main research setting for the empirical study of this thesis, and has become one of the most popular HROSCs in Slovenia, with more than 400,000 monthly visits and, on average, more than 70,000 monthly users. Its success might be related to the structure of the online community, which incorporates different types of subcommunities that consist of online support groups, online counseling forums with health professional moderators, and places not necessarily related to health topics, but to socializing, networking or merely having fun. This dynamic structure has in the last 18 years established a basis of regular users that according to research have also developed a strong sense of belonging (Petrič, 2016).

Med.Over.net, HROSCs and the Internet in general have been recognized in Slovenia as an important source for overcoming problems of accessibility to healthcare services, especially on the micro level, i.e. for patients and other healthcare service users. The Slovenian healthcare system today consists of elements of both the conservative-corporate and social-democratic welfare systems (Kavčič, Pahor, & Domajnko, 2015). This more particularly means that the health insurance system comprises compulsory health insurance, which is covered by the employer and presents a social protection for the employed and their family members, and co-

payments for various healthcare services that are, to a varying extent, covered by voluntary health insurance (Kavčič et al., 2015). Although the Slovenian healthcare system works with a strong public sector healthcare delivery service, which is also the primary service provider for all types of services to which all citizens are equally entitled, private healthcare sector delivery services have shown an increasing tendency toward the privatization of healthcare, especially in the last decade. One of the reasons behind this might be related to the systemic issues of the public healthcare sector services that are increasingly confronted with difficult bureaucratic mechanisms, episodic treatments, overcrowded clinics and long waiting periods, all of which hinder the accessibility of healthcare services (Kavčič et al., 2015; Ule, Malnar, & Kurdija, 2014). In relation to such issues, a majority of Med.Over.Net users have reported that the accessibility to health professionals they receive in the HROSC has provided them with the feeling that their needs will be better met than in the (public) healthcare services, the accessibility of which they often question (Atanasova, Kamin, & Petrič, 2018).

HROSCs have thus become an important source for Slovenian healthcare users and could also present an important catalyst for changes from a paternalistic culture of healthcare to a more collaborative approach between patients and health professionals in the healthcare system (Kavčič et al., 2015). While patient involvement and the development of a partnership model of the doctor-patient relationship have often been promoted as paths for reducing the reinforcement of medical power and dominance, in praxis these processes are understood and enforced in a variety of ways. Kavčič et al.'s (2015) study has demonstrated that in the Slovenian context patient involvement has often been seen at the preventive level as a healthy lifestyle choice, whereas in medical encounters patient involvement has most often been hindered by traditional understanding of the doctor-patient relationship. In a study on the case of the Slovenian HROSC Med.Over.Net (Atanasova et al., 2018), online professional-patient interaction in HROSCs was recognized as a resource where both patients and health professionals can compensate and overcome the weaknesses that are often present in face-to-face medical encounters. These findings are not limited to the Slovenian context. In many studies it has been shown that HROSCs are used as a valuable supplement to personal doctor visits. For example, the Swedish noncommercial public service Ask the Doctor has been recognized as being of value, especially for patients with needs that the regular healthcare service has not been able to meet (Umefjord et al., 2003).

The proliferation of HROSCs and the issues related to the accessibility of the healthcare services are not limited to the Slovenian healthcare context, but are commonly present in many European countries as well as further abroad. Accordingly, the UK National Health Service has been aware of these potential disadvantages of the accessibility of the healthcare service since the late 1990s, when it decided to extend its services to the Internet and thus introduced NHS Direct Online in 1999 (Eminovic, Wyatt, Tarpey, Murray, & Ingrams, 2004). As well as offering a website with information about illnesses and treatments, they have since added a Clinical Enquiry Service, offering a secure, confidential one-to-one Web-based consultation with a nurse (Eminovic et al., 2004). Today the UK National Health Service is promoting and sponsoring the development of health-related (mobile) applications and connecting with HROSCs, such as HealthUnlocked, which has 4.5 million monthly visits and more than 650,000 registered users (HealthUnlocked, 2017).

As in the UK, in the US the accessibility to an adequate healthcare service is a constant and increasing problem for many of the country's citizens, where e-health solutions have been an important resort for patients, caregivers and also health professionals (Hill & Powell, 2009). With an increasing focus on innovation and the development of ICT and online application services supported by various business models, it is not surprising that the US is the most advanced area when it comes to HROSCs. Not only are American HROSCs the most widely proliferated, they also include various structural and design features and business models. Based on the analysis of HROSCs in the US, Swan (2009) reports that most general patient-centered HROSCs offer online support group features (e.g. WebMD, DailyStrength, OrganizedWisdom, HealthChapter, Trusera, Wellescent, Experience Project, Peoplejam) and half of them also provide users with online counseling with health professionals (e.g. HealthTap, WellSphere, iMedix, WeGoHealth, eHealth forum, MDJunction), whereas only a few of them also include services such as quantified self-tracking and access to clinical trials (e.g. PatientsLikeMe, CureTogether, MedHelp, Inspire).

2.4 Conceptualization and definition of HROSCs

From the early 1980s until today, HROSCs have appeared in various forms and been supported by various technologies, which is one of the reasons why there is no universally accepted definition of HROSCs. Although HROSCs have been around for more than three decades, the

public and research attention only escalated in the last decade, mainly for two reasons: (1) the consolidation of several internationally well-known HROSCs (PatientsLikeMe, MedHelp, WebMD) and the emergence of HROSCs on popular social media, such as Twitter and Facebook; and (2) the abundance of evidence that HROSCs satisfy users' and patients' need for informational and emotional support, which often leads to psychosocial health-related benefits, such as increased control, self-efficacy, motivation, self-determination in coping, decision-making and management of health issues (Barak et al., 2008; Mo & Coulson, 2010; Petrič et al., 2017b; Tanis, 2008; van Uden-Kraan, et al., 2008c). One of the reasons why the concept of HROSCs lacks a common definition derives from the fact that the concept of an *online community* that presents the core of an HROSC has not been conceptualized in one unified and universal way. Accordingly, in the first part of this section we focus on an overview of conceptualizations of the online community concept. Next, we focus our discussion on the concept of HROSCs, presenting their definition and their main characteristics.

2.4.1 The concept of online community

From a historical perspective, the first online communities were named after technology that supported the online community, i.e. listservs, newsgroups, bulletin boards, chatrooms and free-nets (Sproull & Arriga, 2007). By researching these applications and identifying their common social and communication processes and characteristics, the first attempts to establish an umbrella term were made by referring to them as *cybercommunities* (Fernback, 1999), *cyberspace communities* (Kozmus, 2004), *electronic communities* (Giese, 1998) or *Internet communities* (Valauskas, 1996). Among these terms, the concepts of *virtual community* and *online community* have become the most widely accepted and used. Despite the many critics of the concept of a virtual community, the first and presumably the most cited definition of virtual communities was produced by Rheingold (2000, p. 5), who defines them as "social aggregations that emerge from the Net when enough people carry on public discussions long enough with sufficient human feeling." With further research on virtual communities it has become clear that such communities are not separated from (everyday) reality, but present its very important part (Jones, 1997; Jones & Rafaeli, 2000), and the definitions have also started to include this important aspect. Porter (2004) defined virtual communities as associations of social actors that interact on the basis of shared interests, whereby the interaction is at least

partially supported and/or mediated through technology and managed by specific rules and norms.

Due to a wave of criticism of the concept of a virtual community (van Dijk, 1998; Watson, 1997; Wilbur, 2012), the concept of an *online community* has become a commonly accepted term that is used in public and scientific circles. The most recognized definition of an online community is proposed by Jennifer Preece (2000), who approached the examination of online communities from the administrator's viewpoint and the process of developing and constructing such communities, which gives us crucial information about the basic elements and characteristics of online communities. According to Preece (2000, p. 10), an online community consists of four high-level criteria:

> *"People* who interact socially as they strive to satisfy their own needs or perform special roles […]. A shared *purpose*, such as interest, need, information exchange, or service that provides a reason for the community. *Policies*, in the form of tacit assumptions, rituals, protocols, rules, and laws that guide people's interactions. *Computer systems*, to support and mediate social interaction and facilitate a sense of togetherness."

Based on a review of many cited definitions of online communities (de Souza & Preece, 2004; Lazar & Preece, 1998; Maloney-Krichmar & Preece, 2002; Plant, 2004; Preece, 2000; Stanoevska-Slabeva & Schmid, 2001), we can define them as a group of people who connect (regularly or occasionally) on the basis of a specific purpose, and share common values, norms, rules, interests, goals, activities, histories, rituals, vocabulary, a sense of belonging and community identity. Every online community has a specific organizational structure and defined social roles played by its members, who build social relationships, trust and support. By connecting in an online community, members share a common online meeting space, where they can communicate with each other via electronic media and technology and can meet exclusively online or in local (offline) environments.

With the constant emergence of new technologies, today's online communities are supported by a wide range of software and applications, where the potential of online communities has been recognized in the fields of organizations, education, health, social movements and business. From the early cybernetics subcultures, online communities have developed into mass entities that have developed in various fields and contexts. As such, online communities present complex social aggregations that unify different social interests and contexts. If early

online communities developed as groups of individuals with specific common interests, using the same communication and information software (e.g. Usenet, MUDs, MOOs, Bulletin Boards), today's online communities can be defined as *hybrids* that connect and intertwine different interests, purposes, experiences, contexts, and the use of different software and applications, which help people to unite not only online but also in local offline environments (Atanasova & Petrič, 2014).

2.4.2 The concept of HROSCs

In the last decade newly emerged HROSCs have combined the online support from peer-patients and online counseling and expertise from health professional moderators. Moreover, the different types of online communities today hardly give us an option to argue that online communities are committed to only one purpose and functionality. More likely they are *hybrids* (Atanasova & Petrič, 2014), combining different interests, purposes, intentions, experiences, contexts and the use of a variety of technological and communication platforms and applications (Stanoevska-Slabeva, 2002). Accordingly, HROSCs implement different levels of multifunctionality and relationship orientations,[3] i.e. on the one hand, they offer patients, potential patients and caregivers exchange of support, emotional relief, information, experiences and opinions about their conditions, symptoms, treatments and remedies, and on the other hand, they can discuss with, question or request help from health and medical professionals, which can provide them with additional or more validated health-related knowledge and resources. To incorporate the complexity of these types of online communities that include features of both online support groups and OHCs with health professional online counseling, we refer to them as **health-related online support communities (HROSCs)**.

Defining HROSCs as hybrids more specifically means that no two HROSCs would incorporate exactly the same characteristics related to their purposes, policies and structure, and to individuals that participate in communities as members. This also means that there is no consensually accepted conceptualization and definition of HROSCs. However, in order to establish a useful research background and context for this study we proceed from the

[3] Multifunctionality, according to Matzat (2009), refers to the distinction of how many different purposes, goals and common interests are fulfilled in a specific online community. The greater the variety of purposes the online community provides for its members, the higher the multifunctionality (Matzat, 2009). The relationship orientation of the online community, on the other hand, refers to the prevalent relationships and interactions developed among community members, e.g. social, professional, commercial, nonprofit or government (Porter, 2004).

viewpoint that the definition of an HROSC in its ideal type can present a valuable research framework for studying these types of online communities. Although the nature of HROSCs is very dynamic and variable across different contexts, we can establish a common definition (Barak et al., 2008; Coulson et al., 2017; Huh, et al., 2016; Johnston et al., 2013; Mo & Coulson, 2010; Peng et al., 2015; Petrič et al., 2017b; Petrovčič & Petrič, 2014b; Tommasetti et al., 2014; van der Eijk et al., 2013; Vennik et al., 2014; Yang et al., 2015; Zhao et al., 2013): **HROSCs** are a subset of online communities that provide many-to-many communicative spaces based on one specific Web-based social software (such as discussion forums, social networking sites etc.) or a combination of two or more online application services. OHCs can range from small-knit groups or they may encompass hundreds of thousands of users, covering a wide variety of health conditions, from general and acute issues to specific (chronic) conditions, such as heart disease, diabetes, cancer and mental health issues, to name just a few. In HROSCs, users, usually patients, caregivers or other individuals interested in health-related issues, can participate, i.e. search for and exchange health-related information, experiences, advice and social support, and/or influence public opinion, as well as interact with other users and health professional moderators (usually doctors and healthcare providers), or just observe others' interactions.

According to the definition of HROSCs, three main characteristics that present the basis of HROSCs and are most often referred to in studies investigating these types of online communities can be identified: (1) users of HROSCs; (2) purposes and motives for using HROSCs; and (3) technology, software and application services supporting HROSCs. The first and second characteristics of HROSCs, namely users and their motives for participating in these types of communities, will be more specifically addressed and discussed in the chapter on socio-structural properties of HROSCs and participation and involvement in HROSCs. However, to present the technological diversity of HROSCs, we focus on this important characteristic of HROSCs in the following pages.

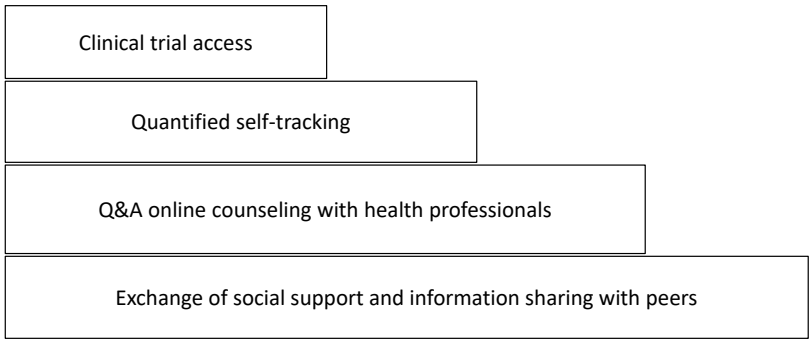
Technology, software and application services supporting HROSCs

If early HROSCs were based primarily on online discussion forums, Usenet, BBS and other similar software and online discussion systems, we are witnessing today the proliferation of If early HROSCs were based primarily on online discussion forums – Usenet, BBS and other similar software and online discussion systems – we are witnessing today the proliferation of

HROSCs on various platforms and in various social media applications. For example, today HROSCs can be found based around Twitter hashtags (Berry et al., 2017) and Facebook groups (Partridge et al., 2018), which are still most often used for exchanging supportive communication between patients or caregivers associated around specific health topics or (chronic) health conditions. Social media tools and applications have also become additional channels of already established HROSCs. Besides the main website and services that were the usual, indeed the only entry point for users, many HROSCs have created Facebook, Twitter, Instagram etc. profiles as additional sources for users. HROSCs' social media profiles also work in many cases as a promotion and distribution channel for recruiting new users. In particular, this is a practice of business-oriented HROSCs, where the number of visitors presents a crucial indicator of HROSCs' success and an important element of online marketing for attracting new advertisers or even investors.

Because of the increased inclusion of social media tools and social networks, Swan (2009) argues that today's HROSCs are transforming into *health social networks*, i.e. websites where users may be able to find various types of services and thus health resources at a number of different levels including basic online supportive communication between peers, online counseling with health professionals, quantified self-tracking and clinical trial access (see Figure 2.1).

Figure 2.1: Services provided by HROSCs as health social networks



Source: Adopted from Swan (2009)

Besides features of online support groups and online counseling, which we have already discussed, so-called "health social networks" also incorporate quantified self-tracking and clinical trial access services. Quantified self-tracking functionalities in HROSCs consist of easy-to-use data entry features, where users can track their symptoms, treatments, conditions

and other health-related information. The entered data can be graphically displayed in charts and graphs. The tracked information, besides being for users' personal use such as relevant information in medical encounters with health professionals, is also an important source for HROSC filtering systems and algorithms that, according to the data produced by users in HROSCs, find similar users who are in HROSCs for each other and are usually the most relevant source for providing and sharing health-related information (Swan, 2009).

Compared with the first three services of health social networks, clinical trial access incorporates not only users and health professional moderators but also representatives from pharmaceutical companies, the health industry, the health policy field and other interested parties (Swan, 2009). The availability of large searchable online databases in HROSCs that include information about users' (patients') health history and condition has important implications for two of the parties usually involved in clinical trials (Swan, 2009): (1) for pharmaceutical companies, researchers and research labs, HROSCs can offer access to clinical trials, recruit patients in clinical trials at lower costs, recruit patients with rare health conditions and retrieve anonymized patient data, which may lead to new findings, and can also provide feedback data directly to HROSCs on how to improve online community functionalities for users; (2) for users, HROSCs can present a learning place for informing users about specific clinical trials that are important for their health conditions, and additionally, based on their experience, users can provide feedback on their experience, such as their response to drugs and treatments, that might be a valuable source of information for other users or patients.

Besides advancements in HROSCs as health social networks, with the intensive arrival of various eHealth devices (i.e. wearables), mHealth, access to electronic health applications and blockchain-based eHealth solutions, there will be a further need for informational and emotional support, demanding an increasing role for HROSCs. The increasing (especially technological) development of HROSCs is bringing to the field many opportunities for transforming healthcare into more collaborative and co-care models between patients, health professionals and other relevant parties. Furthermore, HROSCs could help identify opportunities or even become a main platform for the development of so-called "co-creation processes in healthcare" – that is, the active co-creation of healthcare services, products and technologies by patients, health professionals and healthcare organizations (Osei-Frimpong, Wilson, & Lemke, 2018). On the other hand, new technological advancements in HROSCs open up the terrain for (new) possible risks and challenges, ranging from abuses of sensitive

health information, (easier) distribution of fake or misleading health information, and expansion of commercial persuasions regarding the successfulness of specific medical treatments and remedies. This indicates that HROSCs, like any other new or traditional technology and media, have "dual lives" (Rice, 1999) and thus both positive and negative consequences and implications for their users, healthcare and society in general.

2.5 The "dual lives" of HROSCs

From the early beginning in the 1980s when the first online communities started entering into people's work and everyday life, there have been many skeptically or enthusiastically oriented discussions about their impacts and implications for users' work environment, interpersonal communication and relationships, belief system, identity construction etc. On the one hand, online communities and the Internet in general have often been seen as places for the creation of new forms of liberation, revolution, a future filled with hope, benefits and developmental progress (Kitchin, 1998; Scolari, 2009). On the other hand, the other side of debates has expressed rather negative and dystopic views that often resorted to the romanticization and idealization of traditional media and technologies and developed critical attitudes towards new information technologies, including online communities. Although the first discussions about the role of the Internet and online communities in society were often not based on scientifically proved studies and were thus frequently based on technologically deterministic views, they showed one important characteristic, as emphasized by Rice (1999), that is possessed by every technology – its "dual life." The concept of "dual life" refers to both the positive and the negative effects and implications of specific technology that are manifested as consequences of different types of uses of this specific technology and can be observed on multiple levels and in various temporal, social and cultural contexts (Rice, 1999).

Like every other technology, HROSCs have often been discussed and studied from the perspective of having both positive or beneficial and negative or challenging effects and consequences, especially for their users, healthcare and society in general. Studying and presenting such often diametrical or even paradoxical effects of HROSCs is an important task, as such effects present the basis for identifying important factors that have an impact on empowerment or even disempowerment processes and outcomes in these types of communities. In this section we thus focus on presenting both the positive and negative effects

of HROSCs that have been presented so far by scholars and their studies. Since the effects of HROSCs can be evaluated and demonstrated on various levels and in various contexts, we limit our discussion to the effects of HROSCs on their users, especially patients, caregivers and to some extent also health professionals, who present the main target population of this study. The "dual life" Of HROSCs is presented through three themes: (1) the access, quality and validity of health-related information; (2) the dynamic nature of online communication and relationships in HROSCs; and (3) impacts on health and illness experiences.

2.5.1 The access, quality and validity of health-related information in HROSCs

One of the advantages of HROSCs that has been mentioned most often by scholars pertains to the **accessibility of health-related information to users**, which importantly relates to users' **increased access to healthcare services**. HROSCs have the potential for users to have a convenient, accessible, geographically independent and reliable source for informational and emotional support (Vennik et al., 2014). The role of OHCs on the level of accessibility to healthcare services has also been emphasized because of the emergent difficulties in healthcare systems (which is especially relevant for the Slovenian context) that are increasingly confronted with long waiting times to see a physician and shortened visits with physicians (Kavčič et al., 2015). The potential of OHCs has also been recognized for patients with rare diseases that gained an additional channel to interact with peer-patients with similar conditions as well as receiving information and access to clinical trials and innovative treatment options (Lasker, Sogolow, & Sharim, 2005). Moreover, OHCs provide many opportunities to reduce the physical limitations of access to healthcare services by reducing the urban-rural disparities (Mein Goh et al., 2016).

HROSCs thus present an important source for collecting health-related information from both other patients, and their experiences with specific health conditions, and health professionals that can provide users with medical and scientifically based knowledge about health symptoms, treatment options, remedies etc. (Hartzler & Pratt, 2011). Although the accessibility of health-related information presents one of the important beneficial aspects of HROSCs, especially because such retrieved health information can present an important decision support system in the health condition management process, it is not without pitfalls. Studies of the effects of online peer support groups revealed that users are confronted with a **large amount of health-related information**, which can be misleading and confusing, and can guide users towards

problematic self-diagnosis and/or self-treatments (Bartlett & Coulson, 2011). HROSCs can thus also be places where users might be **exposed to information of low relevance and questionable validity** (Huh & Pratt, 2014; Petrič, Atanasova, & Kamin, 2017a; Shoebotham & Coulson, 2016), which might lead users to suffer confusion, distress, anxiety and panic (Ahmad, Hudak, Bercovitz, Hollenberg, & Levinson, 2006). A large amount of information in HROSCs is generated by their users, with research having shown that users who participate most actively in HROSCs and produce the most content are not necessarily the most e-health literate (Petrič et al., 2017a). As health professionals have also warned, shared peer-patient information can be problematic too, because individual differences between patients can be unnoticed and the experiences of one patient cannot simply be transferred from one individual to another (Huh & Pratt, 2014). Often users generalize experiences that come from small sample sizes, for instance "my family and friends," and such information can present a basis for users' health-related decisions, choices that might also pertain to drug dosages and even the use of unconventional remedies that might be (un)beneficial in different health situations (Huh & Pratt, 2014). The problem is thus not only inaccurate information, but also accurate information used by users who are not capable of using information appropriately (Schulz & Nakamoto, 2011). Moreover, there are examples of OHCs in which users have been encouraged to practice unhealthy lifestyles and practices, such as the pro-anorexia OHC (Gavin et al., 2008) and the anti-vaccination OHC on Twitter (Wilson & Keelan, 2013). Recent research also shows that messages in OHCs are very rarely equipped with references to external professional websites (Sudadu et al., 2014) and that users reject advice from credible websites when they are not in accordance with their beliefs and lifestyles (Stearns et al., 2014).

The health-related information produced by HROSC users, especially those who participate in online support groups, is often not intentionally inaccurate. However, HROSCs and the Internet in general can **promote unintentional misuse of information**, that is, "bad literacy" (Schulz & Nakamoto, 2011, p. 67), "a case in which more knowledge leads to worse decisions." As warned by Schulz and Nakamoto (2013b), users might get trapped in biased information searches and commercial persuasions. It might happen that search for health-related information is not random, but driven by commercial interests that promote specific health products, services and tools that are not necessarily beneficial for users. A lot of searched for health-related information can also be a result of so-called "filter bubbles," where users' preferences, wishes and interests will govern the information search, which is based on pre-

existing biases and might lead users to make self-fulfilling choices (Schulz & Nakamoto, 2011).

Many scholars (Huh & Pratt, 2014; Petrič et al., 2017a) have stated that the problem of inaccurate and misleading information in HROSCs can to some extent be regulated and controlled by the inclusion of health professional moderators, who might intervene in online discussions and correct any misinformation and provide valid information that will also give HROSCs more credibility when it comes to acknowledging them as a valid and reliable source of health-related information. Health professionals (moderators) can also guide users to use and approach HROSCs and the Internet in general with appropriate skepticism (Schulz & Nakamoto, 2011). Although health professional moderators can have an important role in providing users with credible and valid health-related information, they are often limited in the provision of specific diagnoses and advice in HROSCs. Health professional moderators are often very careful when it comes to the possible liability issues around providing online health consultations, which often results in telling users to go and see their personal doctor (Atanasova et al., 2017). Such advice is sometimes not very well accepted by HROSC users and has been shown to be a real conversation stopper in HROSCs (Huh & Pratt, 2014).

2.5.2 The dynamic nature of online communication and relationships in HROSCs

HROSCs are important sources of health-related information, and in addition to this main characteristic HROSCs also present a place for the development of personal relationships and interactions. Coulson et al. (2007) argue that asynchronous communication (e.g. discussion forums, bulletin boards, mailing lists) might be even more personal than face-to-face communication and interactions. **The possibility of being anonymous** in HROSCs releases the pressure and concerns about initial impressions, which encourages users to discuss sensitive issues more easily and express opinions with fewer concerns about negative judgements and embarrassment than in face-to-face group interactions. In literature (Barak et al., 2008; Suler, 2004) this refers to the **disinhibiting effect of online communication** that in the context of HROSCs can encourage users towards self-disclosure, expression and reflection. This is especially important since health-related issues can be by their very nature very sensitive and intimate, and with the possibility of users' identity remaining unknown HROSCs can be presented as comfortable and safe venues for discussing and exchanging such issues (Buchanan & Coulson, 2007). Because of HROSCs convenience and the possibility for users to remove

barriers such as social status and physical appearance, HROSCs have opened up as spaces for marginalized and/or stigmatized discourses about intimate health problems such as infertility, mental health issues, sexually transmitted diseases etc. (Merolli, Gray, & Martin-Sanchez, 2013; Mo & Coulson, 2010; Wright & Bell, 2003). As such, HROSCs have become important platforms for health prevention and education.

The opportunity for users to express their personal health stories and exchange health-related experiences also creates conditions for **developing a sense of belonging, personal relationships and friendships**. As demonstrated by Attard and Coulson (2012), users suffering from Parkinson's disease have described online support groups as venues where they express compassion, love, concern and sorrow for other users among whom true friendships have developed. For users it is particularly important that they can receive empathy and understanding, and feel less alone and isolated with their disease. Another advantage of HROSCs is their ability to provide a place for the development of weak-tie relationships, which offer objectivity and anonymity, which are usually not present in personal relationships, and can thus provide a helpful alternative for social support (Turner, Grube, & Meyers, 2001). With the possibility of meeting and socializing with different users of HROSCs, users are also given an opportunity to **access opinions and experiences from a heterogeneous group of people** that they would not be able to interact with in offline environments.

The disinhibiting effect and anonymity in HROSCs can also have some negative consequences, such as irresponsible, insensitive and unhelpful messages, criticism and rude behavior (Jones & Ashurst, 2013). The diversity of group membership can also lead to different and opposing opinions, which can lead to **disagreements and conflicts that may impact group cohesion**. Close friendships and relationships in HROSCs can also be temporal, as users may leave the groups without any warning, which can be a cause of other users' distress, a loss of connection to the community and the development of a (new) feeling of loneliness (Attard & Coulson, 2012).

The source of misunderstandings and conflict in HROSCs can also be related to the **lack of nonverbal information and social cues in online communication**. These present an important ingredient in particular of doctor-patient interaction, which in online professional-patient interaction in online counseling communities can present some challenges. In a study on comparing views between users and health professional moderators in HROSCs (Atanasova

et al., 2018), most of the challenges of online professional-patient interaction were related to the limitations of computer-mediated communication (CMC). The lack of nonverbal social cues, interactivity and immediacy of conversation, long discussion posts and threads, and users' anonymity may lead to disconnection and barriers in communication between users and health professional moderators (Coulson & Knibb, 2007). Asynchronous communication in HROSCs can also create a considerable **delay between a posted message with a question and the actual answer to the proposed query**, if the message gets answered at all (Attard & Coulson, 2012). Although some time delay can be good, for instance having the time to think about what to write, develop messages at your own pace, and have time to evaluate and digest others' posts and responses, it can also increase anxiety, worries, frustrations and anger, and lead to a "black hole experience" (Suler, 2005).

2.5.3 Impacts on health and illness experiences

Besides the effects of HROSCs on the accessibility and quality of health-related information and the influence of the usage of HROSCs on various levels of communication and interactions, HROSCs have been importantly associated with **health-related outcomes and experiences of users' health and illness**. This is especially relevant for users who have chronic health conditions that require continuity of informational, management and relational care. The availability of information provided by both peer-patients and health professionals, and more importantly the opportunity to exchange social support in HROSCs, has often been reported as being associated with HROSC users' better management of their illness, greater acceptance of their health situation, the development of coping skills, and increased self-esteem and emotional well-being (Johnston et al., 2013; Mo & Coulson, 2010; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2008c).

The opportunity for users in HROSCs to see that other people are also dealing with similar health-related issues gives them **a chance to enact social comparison**, which can be especially important for users that have (rare) chronic health conditions or illnesses (Coulson & Smedley, 2015). Through downward social comparison, users can realize that their situation is not as bad as they think and that others might be in a much worse situation. However, social comparison can also be upward, with users becoming aware that other HROSC members do not have the health issues that they are experiencing, which can make them feel alone in coping with their health situation. Often users are also confronted with the negative side of their disease that their

illness might lead them to, which was reported in the study by van Uden-Kraan et al. (2008c) as one of the disempowering outcomes of using HROSCs.

Besides the beneficial effects of users' HROSCs usage on their psychosocial aspects of health issues, such as enhanced self-esteem, social well-being, increased optimism and feelings of control, HROSCs have been associated with users' **development of specific skills and competences** that play an important role in users' communication and interaction with their personal doctors. Research has demonstrated (Himmel et al., 2005; Peng et al., 2015; Yang et al., 2015) that users who participate in HROSCs experience more productive visits with their personal doctors, increased confidence in their interaction with doctors, increased satisfaction with their subsequent care and enhanced motivation to actively collaborate with their personal doctors. Although users' empowerment in relation to their doctors has been more frequently researched and reported, this is not necessarily always the case. As reported by Petrič et al. (2017b), HROSC users might also develop a dysfunctional empowerment in relation to their doctors, which can lead to negative encounters, nonadherence, conflicts and unproductive or even manipulating relationships.

3. Empowerment theory and psychological empowerment in HROSCs

The concept of psychological empowerment has become, especially in the last two decades, a central concept of HROSC studies as it appears to represent a vital concept for understanding and analyzing the impacts of HROSCs. As we have demonstrated in the previous chapter, HROSCs have been associated with many beneficial and disadvantageous health-related processes and outcomes that have been directly and indirectly linked to empowerment processes and outcomes for their users, i.e. patients, caregivers and even health professionals. Empowerment has become one of the delicate and essential issues that have attracted a growing interest among HROSC scholars and practitioners from various disciplines and scientific fields. However, there is still little agreement about what is meant by empowerment in HROSCs and what are its dimensions and levels of analysis. Moreover, the studies of HROSCs have thus far been mainly focused on one (intrapersonal) dimension of empowerment, which has limited the research to one aspect of empowerment that cannot fully capture the picture of psychological empowerment in HROSCs.

In order to provide a comprehensive understanding of psychological empowerment in HROSCs that will help us build the **theoretical framework for understanding individual- and community-level factors that have an impact on psychological empowerment in HROSCs**, we start our discussion by describing the emergence and development of the concept of empowerment in general, which may provide answers as to why and how empowerment has become a cross-disciplinary concept that is comprised of various conceptualizations and definitions. Next, we focus on the main controversial characteristics of the concept of empowerment, which mostly emanate from the interdisciplinary nature of empowerment. We identify the main characteristics of empowerment that present important guiding principles for conceptualizing empowerment in HROSCs. In accordance with our research problem, we focus on the individual level of empowerment, i.e. psychological empowerment, in HROSCs. In the last two sections of this chapter we provide a comprehensive conceptualization of psychological empowerment in HROSCs by introducing both intrapersonal and interactional dimensions. In order to provide a basis for the theoretical framework for understanding individual- and community-level factors that have an impact on psychological empowerment

in HROSCs, the conceptualization of intrapersonal and interactional empowerment in HROSCs also includes the presentation of the main factors that have been identified in previous studies as important predictors of both dimensions of psychological empowerment in HROSCs.

3.1 The emergence of the concept of empowerment

In the last two decades the concept of empowerment has been increasingly present in social science research and literature, although the concept is also widely studied in other scientific fields (Hur, 2006). In order to understand the variety of conceptualizations, the challenges and the many dilemmas around the concept of empowerment, examining the concept from the historical perspective can be a valuable path that can tell us more about why the concept is bombarded with many different definitions and interpretations.

In terms of the etymological definition of empowerment, the core of the concept of *empowerment* derives from the French word *pouair*, which in the thirteenth century had the meaning of "power, being able to, powerful" and is more indirectly associated with ownership and possession (Hermann, 2003). According to Lincoln, Travers, Ackers, and Wilkinson (2002, p. 272), the verb "to empower" originates from the seventeenth century and means "to impart or bestow power to an end or for a purpose; to enable, permit," and it was used primarily in legal contexts. The Slovenian word for empowerment, i.e. *opolnomočiti*, was also first used in legal terminology and it meant "to authorize, give power or control," and it is rarely used today (Kamin, 2006, p. 81). However, on the basis of these initial meanings of empowerment, a conceptual approach was formed that defined empowerment as a process in which someone "bestows power upon" somebody else, and this process is conducted with a specific purpose and goal (Thomas & Velthouse, 1990).

The contemporary use of the concept of empowerment is in most cases related to the proliferation of the term that emerged during social movements in the 1960s and 1970s (Carstensen & Winker, 2007; Fortunati, 2009; Stromquist, 1995). The concept of empowerment (re-)emerged in the social sciences in the 1960s in the context of social and political activism and academic civil rights discussions, and its more widespread use began during women's movements in the 1970s (Fortunati, 2009; Stromquist, 1995). The social action movements at the time emphasized the importance of citizen participation in decision-making

in various fields of human lives. These contexts presented the framework of an "empowerment as increasing social power" approach that was concerned with the participation processes of people in marginalized positions in which they developed their own sources of power that helped them articulate their interests, participate in political processes and gain social power in order to change their disadvantaged position (Carstensen & Winker, 2007). At the time this was most clearly emphasized by Paulo Freire's book *Pedagogy of the Oppressed*, which was translated from Portuguese into English in the 1970s. Freire's theory proposed a participatory education process in which individuals are actors that are able to understand, be aware of and address their personal and social problems and identify possible solutions in order to change themselves and the oppressive situation and circumstances they are living in (Wallerstein & Bernstein, 1994). Freire recognized the importance of empowerment as a process of recognition or "consciousness" that can lead, through improving individual lives, to wider social change:

> "Even when you individually feel yourself most free, if this feeling is not a social feeling, if you are not able to use your recent freedom to help others be free by transforming the totality of society, then you are exercising only an individualist attitude towards empowerment or freedom […] While individual empowerment, the feeling of being changed, is not enough concerning the transformation of the whole society, it is absolutely necessary for the process of social transformation." (Shor & Freire, 1987, pp. 109–110)

Freire's ideas in the field of education were transferred soon after to the fields of black studies, social work, political science, health, organizational studies and women's studies (Fortunati, 2014). The concept of empowerment entered the field of (community) psychology in the 1980s, with the concept of empowerment being similar to Freire's concept and not only used to criticize the existing power relations and situations, but as a perspective of potential change. In the field of psychology the introduction of the concept of empowerment served to counteract perspectives that viewed people with health problems as unequal participants in society and the empowerment approach was seen as the importance of including all groups in society in health decision-making processes, especially in the field of policymaking (Herbert, Gagnon, Rennick, & O'Loughlin, 2009). The empowerment perspective was also seen as an important alternative to the medical models of mental health and disabilities and thus presented a key concept in more socially oriented models of, and approaches to, mental illnesses (Clark & Krupa, 2002).

Similar ideas drove Rappaport to introduce the concept of empowerment in community psychology in the early 1980s, which is today considered a founding field of the concept of psychological empowerment. He argued that the practices of social and community institutions have become paradoxical, meaning that "the institutions and organizations developed by well-meaning scientists and professionals – and often 'solutions' – create more problems than they solve" (Rappaport, 1981, p. 8). He also urged that community psychology should be used more as a social movement than a profession of prevention. By doing so, Rappaport (1981, p. 15) urged that the concept of empowerment should become a central "ideology" that aims to enhance the possibilities for people to control their own lives:

> "We will, should we take empowerment seriously, no longer be able to see people as simply children in need or as only citizens with rights, but rather as full human beings who have both rights and needs. We will confront the paradox that even the people most incompetent, in need, and apparently unable to function, require, just as you and I do, more rather than less control over their own lives; and that fostering more control does not necessarily mean ignoring them. Empowerment presses a different set of metaphors upon us. It is a way of thinking that lends itself to a clearer sense of the divergent nature of social problems."

This way of thinking has been increasingly adopted in the health field and literature, especially in the 1990s. As Herbert et al. (2009) report, the concept of empowerment has been exponentially introduced in studies related to chronic conditions, mental illness and disabilities, diabetes, and childhood emotional and behavioral disabilities, where the main focus has been on health education interventions. The concept of empowerment in the field of health was not only seen as a set of specific social processes and outcomes that are explored and examined in different health contexts, but has become a part of the theory or even paradigm that involved "a fundamental redefinition of roles and relationships of healthcare professionals and patients (Anderson & Funnell, 2005). Especially from the 1990s onward, patient empowerment has become related to the paradigm shift from the traditional biomedical model of care to a more patient-centered approach in healthcare (Palumbo, 2017). Empowerment has thus become a central concept of the contents of the healthcare reforms in Western countries, emphasizing patient involvement and engagement in the design and delivery of healthcare services. Patient empowerment has been associated with enhanced health outcomes, reduced health-related costs, increased patient satisfaction, increased effectiveness of care and improved healthcare service quality (Palumbo, 2017). As such, many fears have appeared that the concept of empowerment is used as another *buzzword* that covers for reproduction of the existing relations in healthcare or even an attempt to promote a consumeristic approach to healthcare and the

desire to transfer the responsibility for critical health decisions to patients (Fraenkel & McGraw, 2007; Mosedale, 2005). While such concerns have been completely justified, the concept of empowerment has still been most commonly associated with beneficial processes and outcomes that present a crucial opportunity to transform individual, interactional and collective situations in a variety of fields, including health.

With the development of ICTs and the use of digital tools at various levels of our everyday lives that have in many ways transformed how we perceive, understand, act and perform in the social world, the language of empowerment has also entered, since the 1990s, the field of information technology and areas in which this technology is embedded. Various ICTs have been characterized as "empowerment tools" (Amichai-Hamburger, McKenna, & Tal, 2008), including HROSCs. In the field of health it was quickly acknowledged that ICTs foster the process of (patient) empowerment (Lemire, 2010; Palumbo, 2017). More precisely, digital tools, various application services, social media and also HROSCs have been considered a crucial part of the path to empowerment, as they present an important overarching infrastructure that enables individuals, users, patients, caregivers and other social groups to improve their ability to access, obtain, process and apply health-related information and increase their willingness to be (actively) engaged in the provision of care and to partner with health professionals to co-create value (Palumbo, 2017). Introducing the concept of empowerment in the field of HROSCs thus opens up (new) terrain for rethinking different meanings, conceptualizations and interpretations of empowerment, a task that is not without challenges.

3.2 The controversial characteristics of the empowerment concept

The concept of empowerment is confronted with a variety of conceptualizations and interpretations, which opens up a discussion for many questions that need to be answered and resolved in order to provide a consistent definition that can be used in the field of HROSCs. During the last two decades the literature on the theoretical underpinnings of empowerment has proliferated and many scholars have proposed various and differing orientations towards empowerment. Although the literature on empowerment has developed differently on some occasions in contrast to theoretical views, the discussions on empowerment have many fundamental similarities. These similarities mostly pertain to the controversial characteristics

of empowerment that need to be addressed before conceptualizing and defining the concept of empowerment for a specific context and research problem. With the extensive literature review (Anderson & Funnell, 2005; Boškić, 2005; Hamelink, 1995; Hur, 2006; Kieffer, 1984; Lincoln et al., 2002; Mosedale, 2005; Narayan, 2005; Page & Czuba, 1999; Peterson & Zimmerman, 2004; Rappaport, 1987; Riger, 1993; Rowlands, 1995; Speer, 2008; Speer & Peterson, 2000; Thomas & Velthouse, 1990; Zimmerman, 1995, 2000), we identified eight main controversial characteristics of the empowerment concept that are most often addressed and discussed in the theoretical or empirical research on empowerment: (1) no universally accepted definition of the empowerment concept; (2) empowerment and its contextual dependence; (3) empowerment as a process and an outcome; (4) empowerment as a multilevel and multidimensional construct; (5) the underlying concept of power in empowerment; (6) an illusion of empowerment; (7) what is the goal of empowerment?; and (8) how to measure empowerment? Although the identified controversial characteristics address (potential) issues of the empowerment concept, they also present an important introduction to the main aspects and features of empowerment. In the following sections we address each of these controversial characteristics, which will help us lead the way toward a conceptualization and definition of empowerment in the HROSC context.

3.2.1 No universally accepted definition of the empowerment concept

As a concept with many complexities, empowerment has been bombarded with various definitions and thus no clear and universally accepted conceptualization. As such, empowerment can be defined as a cross-disciplinary concept, since it is established and used in various scientific fields and disciplines (Hur, 2006; Page & Czuba, 1999; Woodall, Warwick-Booth, & Cross, 2012), for instance managerial and organizational studies (Conger & Kanungo, 1988; Hardy & Leiba-O'Sullivan, 1998; Jha, 2010), community psychology (Speer, 2000; Zimmerman, 1995), healthcare (Anderson & Funnell, 2005; Johnson, 2011), social work, education (Gutierrez, GlenMaye, & DeLois, 1995) and political science (Beteille, 1999; Narayanan, 2003), to name just a few. Each of the fields has developed its own definitions and interpretations of the concept, which has consequently led to the development of various forms of empowerment, ranging from personal empowerment, organizational empowerment, patient empowerment, political empowerment, etc. While in many cases

different types of empowerment have different definitions, some of the empowerment types also conceptually overlap.

Hur (2006) was one of the few that on the basis of theoretical synthesis attempted to develop an overarching framework of empowerment. While his study provided an important overview of different interpretations of the empowerment concept that were synthesized into five progressive stages and four cognitive dimensions of personal and collective empowerment (Hur, 2006), his approach was mainly based on defining empowerment as a process and the main conceptual outline of his synthesis derived from the field of community psychology, which is not surprising since this field is most comprehensively dedicated to theorization and empirical examination of empowerment.

The current dispersion of the empowerment concept that appears in various forms and with different meanings across theories and disciplines has made it impossible to uniformly provide one valid definition. Although no universally accepted definition might be seen as a limitation, this, as emphasized by Bahovec (2005), should not be perceived as the main priority: It is not the aim for definitions to be universal and valid, but rather the emphasis should be on their usefulness in a particular research framework and context.

3.2.2 Empowerment and its contextual dependence

Empowerment is a cross-disciplinary concept and, as we demonstrated in the previous section, has been established in various fields and disciplines. The cross-disciplinarity and different types of empowerment not only indicate that the concept has been studied in various (scientific) fields, but also that empowerment is a contextually dependent concept (Hur, 2006; Page & Czuba, 1999; Perkins & Zimmerman, 1995; Zimmerman, 1995; Zimmerman et al., 1992). More specifically, different forms and definitions of empowerment have been developed precisely because the concept is and can be used in various (research) contexts.

In relation to the contextual specificity of empowerment, Zimmerman (1995) explicated three underlying assumptions of empowerment:

First, empowerment differs in different populations, meaning that different characteristics of individuals, whether related to sociodemographic or cultural characteristics, importantly influence the meaning and process of empowerment. If we take an example from HROSC studies, it could not be expected that users with chronic health conditions or even life-

threatening illnesses would need the same perceptions, skills and levels of social support to increase their sense of control, self-efficacy and competences as HROSC users with acute and temporary health issues. For instance, in the study of Atanasova et al. (2018), users with chronic health conditions reported being more actively involved in, and committed to, becoming more informed about their health issues and involved in self-care than users who reported having acute health issues.

Second, according to Zimmerman (1995), empowerment varies in different contexts, or more specifically in different settings. Zimmerman (1995, p. 586) illustrates this assumption of empowerment with an example of two different types of organizations with a hierarchical and participatory structure: "Empowered individuals in an authoritarian organization may need to use collective action or learn how to circumvent official channels of communication, while competency in group problem-solving and decision-making skills may be more relevant for individuals in a more participatory organization." Similarly, Klemm (2012) demonstrated that there are differences between moderated and peer-led online support groups, especially when it comes to the extent of users' participation, which presents one of the important factors of psychological empowerment. While the importance of the setting characteristics has been implicitly acknowledged in HROSC studies on empowerment, the effects of different setting characteristics of HROSCs on the empowerment of HROSC users has not yet been comprehensively examined.

The third underlying assumption about the contextual nature of empowerment is that empowerment and its forms vary over time. The concept of empowerment is extremely time dependent and cannot be observed as a static condition. Empowerment can increase or decrease over time, and if the time also brings changes in the characteristics of settings and individuals, the indicators of empowerment might change as well. As such, empowerment is a very delicate concept that is contextually embedded and interdependent among different levels of analysis and includes both process and outcome features (Speer & Hughey, 1995; Zimmerman, 1995).

3.2.3 Empowerment as a process and an outcome

In empowerment theory, which was mainly developed in the field of community psychology, a tension between two (competing) conceptualizations of empowerment has occurred: One centered its emphasis on a temporal perspective of empowerment, defining it as a process, and the other emphasized empowerment as an outcome (Speer, 2008; Zimmerman, 1995, 2000).

Because empowerment processes are needed to achieve empowerment outcomes, empowerment theory has often placed more emphasis on empowerment as a process (Rappaport, 1981; Speer, 2008).

In this perspective, empowerment is defined as a participatory-developmental process through which individuals, organizations and communities gain greater control, self-efficacy, access to and control over resources, social justice, personal, interpersonal or political power, and awareness of the sociopolitical environment to address issues of powerlessness and to influence decisions that affect their lives (Perkins & Zimmerman, 1995; Zimmerman, 1995). An empowerment process is always transactional and thus includes interactions between individuals, groups, organizations or communities (Gibson, 1991). It occurs over time and considers the whole trajectory of different stages that have not been uniquely defined in various studies. For instance, Kieffer (1984) identified four stages of the empowerment process, i.e. entry, advancement, incorporation and commitment. The entry stage includes the "act of provocation," which triggers individuals' motivation to change their personal situation. In the advancement stage, individuals, through interactions with others, support and collective organization, develop critical understanding of their social and political conditions. The incorporation stage includes building on political consciousness, and in the final stage of commitment individuals apply their new competences and skills in order to change, or at least try to change, their disadvantaged position in one or more life domains (Kieffer, 1984). Similarly, Hur (2006) defines five stages that lead to empowerment. The first stage is the existence of powerlessness and alienation, which proceeds into a stage of conscientizing, in which individuals learn and gain awareness about their disadvantaged position and develop a willingness to change their limited power and position in a specific setting. Next, individuals enter the stage of mobilization, in which, by interacting with other people, they collectively engage in and organize a social action or movement. The fourth stage is the maximization stage through which individuals share their power, and build on their desires, competences and abilities to potentially bring about change. In the final stage of empowerment, as presented by Hur (2006), individuals overcome social oppression, achieve social justice and create a new social order. Gutierrez (1994), on the other hand, described the process of empowerment as consisting of four stages, i.e. increasing self-efficacy, developing a critical consciousness, developing skills of reflection and action, and becoming involved with similar others. Similarly but from the perspective of a feminist theoretical framework, Carr (2003) proposed four

empowerment process stages, consisting of (powerless) position, conscientization, political action and change.

Changing the focus from general conceptualizations of the empowerment process to the field of health, empowerment processes have often been investigated among patients with various (chronic) illnesses. In particular, when a person has a lifelong chronic health condition it can substantially affect their quality of life. In order for individuals in such situations to lead normal lives it is important to (self-)manage the disease and make specific lifestyle decisions. To achieve these specific goals, individuals need to develop competences and skills that will enable them to obtain greater control, self-efficacy and motivation, and thus become empowered (Anderson & Funnell, 2005). In the study of the empowerment process in diabetes patients, Abdoli, Ashktorab, Ahmadi, Parvizi, and Dunning (2008), with a qualitative grounded theory research design, identified five stages that diabetes patients go through in the process of empowerment. The first stage relates to being embarrassed by the diagnosis, which is followed by the thirsting-to-learn stage. The third stage of empowerment is described as living in the shadow of fear, meaning that patients become afraid of complications and the consequences of their chronic illness. In the fourth stage patients accept diabetes as a reality and in the fifth stage patients accept the illness and attain control and management skills for mediating the effects of the disease.

According to interpretations of empowerment as a process and presentations of its trajectory, empowerment is a cyclical process that can also be characterized as a lifelong endeavor that never unfolds in a linear fashion (Whitmore & Kerans, 1988; Zimmerman, 1995). While labels of specific stages of the empowerment process vary across different authors, the idea behind them generally relates to the transformation of the distribution of power relations on the level of personal interpersonal relationships, both at institutional and social level (Beteille, 1999; Stromquist, 1995). Although the final stage of the empowerment process is characterized by a social change and actual transformation of individuals' life domains, empowerment does not necessarily result in positive and "real" changes, or, as Lincoln et al. (2002) emphasize, empowerment is a process that never ends, but it needs constant confirmation. This can be very well portrayed by the process of patient empowerment, where management of the (chronic) illness is a never-ending process; it must be constantly nurtured, whereby with the progression of the disease patients must adopt their practices in order to accomplish positive (empowered) outcomes.

Empowerment processes vary across different levels of analysis. Leaning on the community psychology field, Zimmerman (2000) presents examples of empowerment processes across individual, organizational and community levels. The empowerment process at the individual level might consist of individuals' involvement in organizations and communities, while empowerment processes at the organizational level might consist of shared leadership and decision-making processes. At the community level, the empowerment process might incorporate the availability of government, media and other community-related resources (see Table 3.1).

Table 3.1: A comparison of examples of empowerment processes and outcomes across levels of analysis

Levels of analysis	Process	Outcome
Individual	Learning decision-making skills	Sense of control
	Managing resources	Critical awareness
	Working with others	Participatory behaviors
Organizational	Opportunities to participate in decision-making	Effectively competing for resources
	Shared responsibilities	Networking with other organizations
	Shared leadership	Policy influence
Community	Access to resources	Organizational coalitions
	Open government structure	Pluralistic leadership
	Tolerance of diversity	Residents' participatory skills

Source: Adopted from Zimmerman (2000, p. 47)

However, the process is considered empowering if it results in empowered outcomes. Generally, empowerment outcomes refer to the specific consequences or effects of empowerment processes and are usually used for (empirically) studying the processes that might empower individuals, groups, organizations or communities (Zimmerman, 1995, 2000). When (empirically) studying empowerment, empowerment processes are usually seen as various factors that have different effects on empowerment outcomes. In the qualitative study of van Uden-Kraan et al. (2008c) exploring empowering processes in online support groups, it was demonstrated that empowering processes such as exchanging information, encountering emotional support, finding recognition, sharing experiences and helping others might lead to empowering outcomes for users such as being better informed, feeling more confident in the relationship with their doctor, increased control over disease, improved acceptance of the disease, and enhanced self-esteem and social well-being.

Just as empowerment processes vary across different levels of analysis, empowerment outcomes also have different forms at different levels of observation (Zimmerman, 2000). Empowerment outcomes at the individual level might include perceived control, critical

awareness or proactive behaviors. At the organizational level, empowerment outcomes might pertain to effective resource acquisition, policy leverage or established organizational networks. Empowerment outcomes at the community level might include the existence of organizational coalitions, pluralistic leadership or residents' participatory skills However, the process is considered empowering if it results in empowered outcomes. Generally, empowerment outcomes refer to the specific consequences or effects of empowerment processes and are usually used for (empirically) studying the processes that might empower individuals, groups, organizations or communities (Zimmerman, 1995, 2000). When (empirically) studying empowerment, empowerment processes are usually seen as various factors that have different effects on empowerment outcomes. In the qualitative study of van Uden-Kraan et al. (2008c) exploring empowering processes in online support groups, it was demonstrated that empowering processes such as exchanging information, encountering emotional support, finding recognition, sharing experiences and helping others might lead to empowering outcomes for users such as being better informed, feeling more confident in the relationship with their doctor, increased control over disease, improved acceptance of the disease, and enhanced self-esteem and social well-being.

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3.2.4 Empowerment as a multilevel and multidimensional construct

Empowerment is a concept that is present on multiple levels, and according to empowerment theory (Rappaport, 1987; Zimmerman, 1995, 2000; Zimmerman & Rappaport, 1988), each particular level comprises multiple dimensions. This complexity of the empowerment concept introduces ambiguity in the field and presents one of the major reasons why the concept of empowerment lacks a comprehensive and overarching conceptualization. Community psychology is one of the few fields that have extensively focused on the theorization of empowerment and can provide us with a comprehensible framework for understanding the multidimensionality of empowerment.

As already portrayed in the first empowerment theorization, empowerment "conveys both a psychological sense of personal control or influence and a concern with actual social influence, political power and legal rights" (Rappaport, 1987, p. 121). In this perspective, empowerment exists on three levels (see Table 3.2): (1) at the **individual level**, where empowerment refers to the experiences of individuals of gaining increasing control, self-efficacy and competence, interacting with others in collective engagement and influencing a given setting and/or daily life domain (Perkins & Zimmerman, 1995; Zimmerman, 1990, 1995). Individual-level empowerment is often referred to as **psychological empowerment**, which became one of the most established concepts in empowerment theory; (2) at the **organizational level**, where organizational empowerment consists of organizational-level efforts that generate empowerment among an organization's members, as well as organizational cooperation and efforts and influence to enact various transformations at the community level (Peterson & Zimmerman, 2004; Wilke & Speer, 2011); (3) at the **community level**, i.e. **community empowerment**, which refers to the connections among community members and organizations that may increase collective engagement directed toward improving community control and thereby influence the social justice and power relations in the wider society (Wallerstein, 1992).

Table 3.2: Dimensions of empowerment on different levels of analysis

	Dimensions on different levels of analysis		
Level of analysis	**MICRO**	**MEZZO**	**MACRO**
INDIVIDUAL empowerment	Intrapersonal empowerment	Interactional empowerment	Behavioral empowerment
ORGANIZATIONAL empowerment	Intraorganizational empowerment	Interorganizational empowerment	Extraorganizational empowerment
COMMUNITY empowerment	Intracommunity empowerment	Intercommunity empowerment	Extracommunity empowerment

Source: Author's elaboration

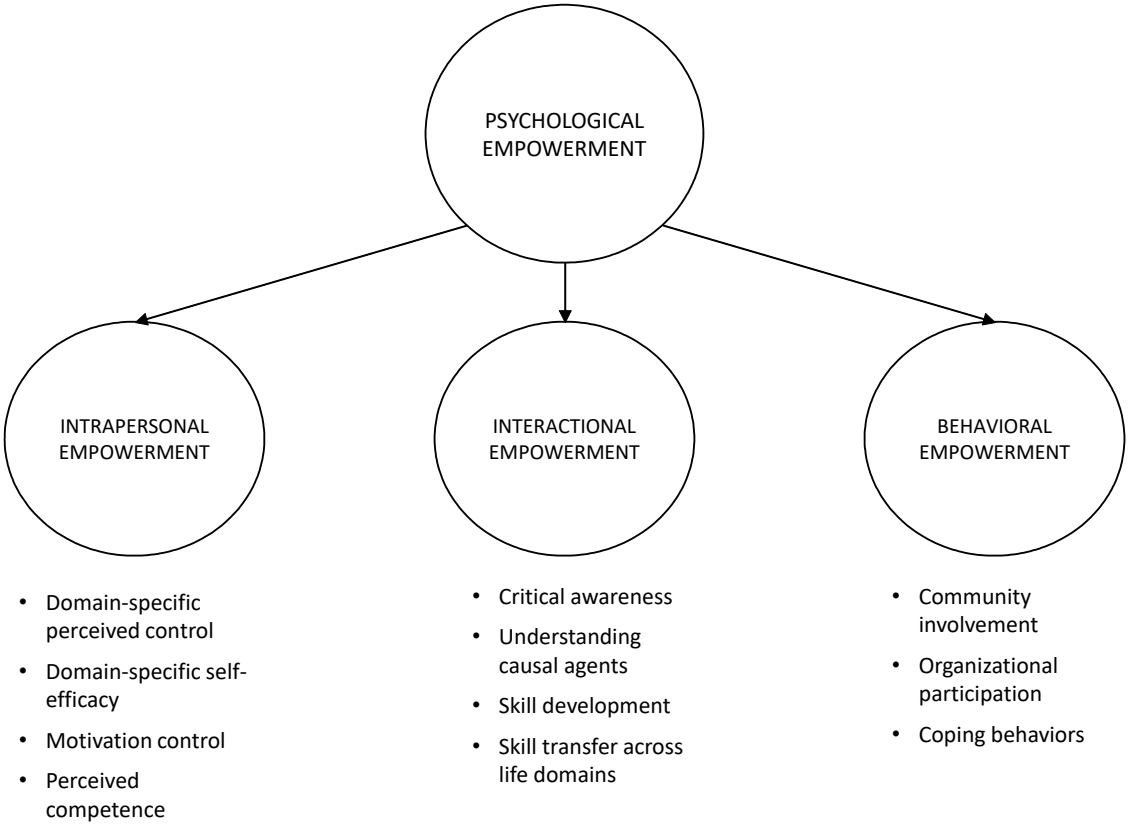
Each level of analysis, i.e. individual, organizational and community empowerment, consists of three dimensions that can be divided according to the three levels of observation: **micro, mezzo, and macro** (see Table 3.2). Micro-level dimensions focus on individuals and their perceptions, views and experiences, whether related to their personal stories and experiences in various life domains or as organizational and community members. Mezzo-level dimensions of empowerment are in between micro and macro levels and deal with interpersonal interactions and relationships, cooperation and collective engagement, whether among individuals of (informal) small-size groups, members of organizations or communities. Empowerment efforts in larger systems are covered by macro-level dimensions of empowerment: For individuals this larger system might pertain to the specific life domain or group setting, for organizations the macro empowerment dimension focuses on enactment of influence in wider communities, and community empowerment at the macro level focuses on opportunities for citizen participation to enact behaviors that modify the broader society in which they are embedded.

In an attempt to achieve a better understanding of empowerment, we briefly define dimensions of empowerment developed on different levels of analysis.

Dimensions of individual or psychological empowerment

Psychological empowerment, i.e. empowerment at the individual level of analysis, is a construct that, according to Zimmerman (1995, p. 588), includes "a sense of and motivation to control; decision-making and problem-solving skills and critical awareness of one's socio-political environment; and participatory behaviors." Psychological empowerment consists of three dimensions, namely intrapersonal, interactional and behavioral (Figure 3.1):

Figure 3.1: Psychological empowerment and its dimensions



Source: Adopted from Zimmerman (1995, p. 588)

Intrapersonal empowerment is defined as individuals' self-perceptions of their abilities to exert influence in different life domains and to conduct influence-related activities and tasks that affect their lives and living conditions. More specifically, the intrapersonal dimension of psychological empowerment includes domain-specific perceived control, self-efficacy, motivation control and perceived competence (Zimmerman, 1990, 1995; Zimmerman et al., 1992; Zimmerman & Zahniser, 1991). These beliefs are important for individuals to engage in proactive behaviors that are needed to achieve specific goals related to the changes in different life spheres. As emphasized by Zimmerman (1995, p. 589), "it is unlikely that individuals who do not believe that they have the capacity to achieve goals would either learn about what it takes to achieve those goals, or do what it takes to accomplish them."

On the other hand, *interactional empowerment* has been conceptualized as critical understanding and awareness of one's sociopolitical environment and thus the ability to evaluate the circumstances or systemic dynamics in one's environment (Speer, 2000, 2008;

Wilke & Speer, 2011). This dimension of psychological empowerment refers to transactions between individuals and their environment and the understanding of factors that might hinder or enhance their ability to change their disadvantaged position (Zimmerman et al., 1992). In order for individuals to exert control and changes to their environment they must: develop critical awareness and thus learn about their options in a given setting; gain knowledge of causal agents in the environment, such as influential people (e.g. political and community leaders), objects (e.g. policies and legislations) or events (e.g. petitions, demonstrations) that might enhance or inhibit individuals' effort to exert control in the sociopolitical environment; develop problem-solving and decision-making skills that they can transfer across life domains; and gain knowledge about the resources needed to achieve goals (Kieffer, 1984; Peterson et al., 2005; Zimmerman, 1995). Interactional empowerment thus includes both psychological capacities of understanding and knowledge about one's environment; however, it is seen as a preparation for actual participation and is indirectly associated with the behaviors that are needed for exerting influence and achieving outcomes (Zimmerman, 1995).

Behavioral empowerment, the third dimension of psychological empowerment, refers to the specific actions that are needed to exercise influence and to directly affect outcomes in one's environment. In the literature it has often been associated with participation in collective action, involvement in organizations, and other participatory behaviors that are focused on community and social change (Zimmerman, 1995, 2000). This dimension of psychological empowerment in comparison to the intrapersonal and interactional dimensions relates directly to individuals' active participation and has often been researched in empowerment studies separately from the other two psychological empowerment dimensions. In our further discussion we will also more clearly present the reasons for not including the dimension of behavioral empowerment in our (empirical) study on HROSCs.

According to Zimmerman (1995, p. 590), all three dimensions of psychological empowerment merge the main idea behind the concept, i.e. that it consists of an individual "who believes that he or she has the capability to influence a given context (intrapersonal component), understands how the system works in that context (interactional component), and engages in behaviors to exert control in the context (behavioral component)."

Dimensions of organizational empowerment

Organizational empowerment generally refers to the efforts conducted in organizations that produce psychological empowerment among members of organizations and their influence and effectiveness needed for goal achievement (Peterson & Zimmerman, 2004). A conceptual model of organizational empowerment includes three dimensions, namely intraorganizational, interorganizational and extraorganizational empowerment.

Intraorganizational empowerment has been considered a crucial dimension of organizational empowerment as it provides the basis for actions of members to achieve organizational goals. More specifically, intraorganizational empowerment refers to the ability of members of an organization to: achieve meaningful involvement in organizational functioning and organizational viability; gain the capacity to collaboratively influence decisions and issues affecting the organization; develop decision-making strategies that are in line with organizations' values and ideology; and identify crucial resources needed for organizational sustainability and achievement of goals (Minkler, Thompson, Bell, & Rose, 2001; Peterson & Zimmerman, 2004).

Compared to the intraorganizational dimension of empowerment, *interorganizational empowerment* includes the associations between organizations and addresses a collaboration across organizations (Peterson & Zimmerman, 2004; Speer, Peterson, Armstead, & Allen, 2013). Interorganizational empowerment refers to the ability of organizations, through collaboration, to gain resources, share information, attain legitimacy and achieve specific goals (Peterson & Zimmerman, 2004). For organizations, interorganizational empowerment can be achieved by accessing the social network of other organizations and by participating in alliance-building activities with other organizations. This dimension of empowerment is especially important in collaboration between health departments and (non)governmental organizations in the field of (public) healthcare services. The study conducted by Beatty, Harris, and Barnes (2010) demonstrated that partnership and collaboration between local health departments and nongovernmental organizations increases the health service provision and can help reduce many health disparities.

Extraorganizational empowerment, on the other hand, refers to the activities undertaken by organizations that exert control and make an effort to influence larger environments of which they are part in order to change public policy and practice, provide alternative programs and

deploy organizational resources in a community (Peterson & Zimmerman, 2004). This dimension of organizational empowerment is important for organizations to achieve changes in broader settings, which might present a basis for the achievement of more specific organizational goals.

Dimensions of community empowerment

Community empowerment consists of linkage between community members and community organizations that exert a collective effort to enhance the control of communities, improve the quality of life in communities and focus on increasing social justice and equity in the wider society (Wallerstein, 1992; Zimmerman, 2000). Empowerment of the community levels includes three dimensions: intracommunity empowerment, intercommunity empowerment and extracommunity empowerment.

Intracommunity empowerment refers to the ability of community members and organizations to develop competences and skills, identify resources and mobilize them in collective efforts that lead to community betterment that meets the need of its members and organizations (Schulz, Israel, Zimmerman, & Checkoway, 1995). If the focus of intracommunity empowerment is community itself, *intercommunity empowerment* focuses on collaboration between communities and the exchange of their resources that might help improve the conditions of communities and develop the capacity of the community and thus the ability to identify, mobilize, and address community and social problems (Minkler & Wallerstein, 2005). *Extracommunity empowerment* in comparison to intra- and intercommunity empowerment focuses on the wider social system environment and its limitations that might hinder a community's opportunities for citizen participation, community decision-making and influence on social policies that affect community members' lives. More specifically, extracommunity empowerment refers to the collective action of community members and organizations directed toward enhancing power and influence over sociopolitical decisions that affect the community, community organizations and members' quality of life in a community (Schulz et al., 1995).

Since empowerment is most easily deduced through its results, the presented dimensions of empowerment on different levels of analysis relate to the empowerment outcomes. However, each of the presented dimensions on separate levels of analysis can also be observed and studied from the process perspective. For instance, the intraorganizational and intracommunity empowerment processes have been related to the identification of specific internal

organizational and community mechanisms that might help to empower members and lead them in a direction toward modifying their perceptions and/or behaviors, and in community psychology this has even been developed as a specific theory of *empowering community settings* (Maton & Salem, 1995). The multilevel and multidimensional model of empowerment implicitly implies that processes within any empowerment dimension may have effects on the outcomes of any other dimension. Intraorganizational processes, such as subgroup linkages, leadership, social support, an opportunity role structure and a group-based belief system (Maton & Salem, 1995; Minkler et al., 2001; Peterson & Zimmerman, 2004), for instance, may have effects on outcomes within intrapersonal, interactional, interorganizational or extraorganizational dimensions. For example, a setting that comprises shared and committed leadership, a multifunctional role structure, a peer-based support system and a greater commitment to a group-based belief system may contribute significantly to the psychological empowerment of individuals (Maton, 2008; Peterson & Speer, 2000). The crossover between empowerment dimension processes and outcomes has been related to another characteristic of empowerment, i.e. the distinction between *vertical and horizontal empowerment* (Andersen, Jørgensen, & Larsen, 2011). Horizontal empowerment relates to the interlinkages between dimensions of empowerment on one level of analysis, for instance intrapersonal and interactional empowerment, whereas vertical empowerment refers to the connections between dimensions on different levels of analysis, such as between intraorganizational empowerment (processes), which pertains to the organizational level of analysis, and intrapersonal and interactional empowerment on the individual or psychological level. This clearly highlights the need to take into account the different levels, dimensions and interlinkages between them when conceptualizing and defining empowerment in a specific (research) setting and context.

3.2.5 The underlying concept of power in empowerment

The concept of empowerment, according to its etymological meaning and development, is associated with its root concept, i.e. power. Different meanings and definitions of empowerment are related to different conceptualizations of the concept of power. The general definition of empowerment that defines it as a process through which individuals, groups, organizations and communities gain greater control, mastery and power over their lives (Rappaport, 1987) does not explicitly explain how power is actually acquired and what type of power is actually exercised in the process to achieve empowerment outcomes.

In relation to the question of how the power in the empowerment process is gained, conceptualizations of empowerment have adopted two approaches to understanding the power behind empowerment: one presenting empowerment as a process in which "power is bestowed upon" individuals by someone else, while the second focuses on understanding empowerment as "increasing social power" by individuals themselves, which, in contrast to the first approach, argues that power cannot be given and individuals can only empower themselves.

The first approach to understanding the notion of power in empowerment defines empowerment as to bestow on or to give someone power for a specific purpose (Thomas & Velthouse, 1990). Since the notion "to empower" semantically derives from the understanding of power as bestowing on or authorizing someone with power (Lincoln et al., 2002), the approaches that link empowerment with "increasing social power" understanding have been defined in this perspective as inappropriate (Kamin, 2006). This is not merely a disagreement about the terminological use of the concept, but the approach of "increasing social power" has been criticized of lacking an awareness that empowerment does not provide individuals only with certain opportunities and rights, but importantly also includes specific duties, responsibilities and limitations (Kamin, 2006, p. 82). This approach to understanding the empowerment concept has been most commonly applied in the fields of education (Ravid, Kalman, & Rafaeli, 2008), social work (Thompson & Thompson, 2001), health and medicine (Christensen & Hewitt-Taylor, 2006), sociology of work (Hales, 2000), organizational studies and management of human resources (Thomas & Velthouse, 1990). These fields and areas of research are most often concerned with issues of unequal positions between individuals or groups, with some individuals, usually professionals (e.g. educators, social workers, health professionals, managers, etc.), having the role of empowering and thus bestowing on others (e.g. students, families, patients, employees etc.) power and specific rights, and at the same time responsibilities and duties that present an important part of such empowerment (Boškić, 2005; Kamin, 2006). Through the lens of this approach, empowerment is understood as a passive process in which those with authority share their knowledge, resources and capabilities with those in subordinate positions (Fortunati, 2014).

The approach of understanding empowerment as "increasing social power" in comparison to the first approach emphasizes that power in the process of empowerment cannot be given, but individuals have to actively obtain it through their own efforts (Fortunati, 2009; Mosedale, 2005; Page & Czuba, 1999; Stein, 1997). From this perspective, empowerment is defined as

the ability of individuals, groups or organizations to increase their power and gain control over their lives with participatory practices (Woodall et al., 2012). Thus, empowerment is defined as a process of redistribution of power relations in a specific context; however, what kind of power relations are included in this process has become an important and often discussed issue of empowerment. The concept of power is itself disputed and can be experienced and understood in different ways (Rowlands, 1995). The major problem of the empowerment concept is that, as emphasized by Rowlands (1995), many frameworks and conceptualizations do not problematize the concept of power and how it is actually distributed in specific contexts, which makes it seen as something neutral.

Conventionally, the concept of power is most often defined in relation to obedience, or *power over*, which in the context of classical sociology and Weber's (1978, p. 53) definition refers to the "probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which this probability rests." This definition of power is located in a distributive approach to power that relates it to conflict and force and could be described as a "zero sum," i.e. the more power one individual or group has, the less the other has (Heiskala, 2001; Rowlands, 1995). Weber's definition also emphasizes one fundamental characteristic of power as well as empowerment, namely that it always develops in relationships between social actors (Dahl, 1957). However, this type of power is not necessarily explicit and visible, but can also be in the form of implicit domination. This conception of power can be exercised subtly and "invisibly" as ideological hegemony and symbolic power (Bourdieu, 1991). This type of power is exercised with the collaboration of those who are actually oppressed and do not know, or do not want to know, that they are actually exercising it by themselves (Bourdieu, 1991). With the process of "misrecognition" individuals or groups who are often systematically denied power internalize the oppression as a survival mechanism that becomes so well internalized that the effects of domination and oppression become mistaken for reality (Bourdieu, 1991; Rowlands, 1995).

This understanding of power that is seen as an instrument of domination in relation to the understanding and conceptualization of empowerment has often been subjected to criticism. Empowerment does not mean that some individuals or groups gain power and become empowered at the expense of others (Beteille, 1999; Fortunati, 2009; Woodall et al., 2012). Empowerment does not refer to the increase of social power in order to exercise it over other individuals or groups, but is defined as being produced in relationships with other people and

presents the basis for enacting influence for (social) change (Wallerstein & Bernstein, 1988). However, this does not mean that empowerment does not embrace the challenge against specific power relations, often seen as resisting power structures through organizing, advocacy, collective actions etc. On the other hand, the resistance and demand of individuals and social groups for rights and power "which others already have, does not mean that they will lose them" (Boškić, 2005). As emphasized by many scholars (Foucault, 1982; Lukes, 1974; Page & Czuba, 1999), the concept of power is relational, and in association with the concept of empowerment it is based on the idea that power relations are transformable and that the power behind empowerment can be transmitted and expanded (Page & Czuba, 1999). Therefore, the conception of "power over" is not appropriate for the concept of empowerment.

Since the concept of empowerment consists of multiple dimensions that appear on different levels, it is difficult to expect each dimension of empowerment to include the same meaning of power. This can be clearly demonstrated with the case of psychological empowerment, which has been most often theorized and empirically examined in the literature. Psychological empowerment consists of three dimensions, namely intrapersonal, interactional and behavioral.

Based on the conceptualizations and definitions of three dimensions of psychological empowerment, we can directly draw parallels with different types of power (see Table 3.3). Intrapersonal empowerment as self-perception and beliefs about one's ability to exert influence and change the situation that one is living in can be related to the *power within* and creation of dispositions that are needed for actual action directed toward social change. More specifically, power within refers to "personal power" and individuals' awareness of their capacities that motivate their actions (Mosedale, 2005) and is thus crucially needed for further stages of the empowerment process. If we relate to the stages of the empowerment process as defined by Hur (2006), the development of power within presents one of the crucial elements for individuals to achieve *conscientizing*, i.e. to gain awareness of their limited power and to realize that they have the ability and motivation to potentially change individual and/or social disturbances.

Table 3.3: Relation between different dimensions of psychological empowerment and types of power

Dimension of psychological empowerment	Intrapersonal empowerment	Interactional empowerment	Behavioral empowerment
Highlights of the dimension's definition	- Self-perceptions of individuals' abilities to exert influence in different life domains; - Beliefs that individuals could engage in proactive behaviors that are needed to achieve specific goals related to the changes in different life spheres (Zimmerman, 1995, 2000).	- Transactions between individuals and their environment; - Critical understanding of socio-political environment; - Knowledge of resources and methods that can be used to produce social change; - Resource mobilization for collective action (Speer, 2008; Zimmerman et al., 1992).	- Actions that are needed to exercise influence; - Participatory behaviors to directly affect outcomes in one's environment; - Participation in collective action that resists or draws attention to limitations of the current social conditions (Zimmerman, 1995, 2000).
Type of power	***Power within***	***Power with***	***Power to* AND *power from***

Source: Author's elaboration

On the other hand, interactional empowerment that emphasizes the development of the ability of critical awareness, understanding of causal agents and the development of knowledge of resources, how to transfer them across life domains and how to mobilize them in order to collectively engage (Table 3.3) can be related to the concept of *power with*.[4] As emphasized by Speer (2008), interactional empowerment encompasses the collectivist construct of power, which more specifically refers to the "power that is experienced through relationships with others, as well as an understanding of political functioning, and the role of conflict in the process of change" (Wilke & Speer, 2011). The concept of *power with* that denotes the ability "to act together to obtain collectively what is impossible to obtain alone" (Pansardi, 2011b) thus fits perfectly in the domain of interactional empowerment (Mosedale, 2005).

The behavioral dimension of empowerment as actual behaviors and actions directed toward exercising influence and forming collective action that resists or draws attention to limitations of the current social conditions can be related to the notions of *power to* and *power from* (Table 3.3). As emphasized by Minkler and Wallerstein (2005), empowerment comprises both the

[4] In the literature also other terms have been used as synonyms for the concept of *power with*, such as *relational power*, *power together*, *power emerging from interaction*, *power in connection* and *mutual power* (Surrey, 1991). Similarly, scholars have used the terms *integrative power* (Kreisberg, 1992) and *shared power* (Hur, 2006), which refer to power that individuals dynamically create together and provides the basis for social development and change.

resisting of power structures with the underlying concept of *power from* that includes the resistance and challenge of "power over" and the ability to build efforts to expand power relations to bring about desired outcomes, which more specifically relates to the notion of *power to*. Relating empowerment to the concept of *power to* emphasizes the main meaning of empowerment, which consists of "ability," "capacity," "enabling" and "facilitating" (Fortunati, 2009; Lukes, 1974; Morriss, 1987; Mosedale, 2005; Pansardi, 2011a).

The presentation of empowerment in relation to different types of power gives us a clearer understanding of different dimensions of empowerment, emphasizes the relational nature of the empowerment concept and distances it from the view of power as a "zero sum," but at the same time it does not deny that power can be asymmetrically distributed in society (Fortunati, 2009).

3.2.6 An illusion of empowerment

Different understandings of the concept of power that underlies empowerment have opened debates about when somebody can really be considered empowered. The criticism has evolved around the definition of empowerment as authorizing and "giving" or "bestowing power" upon someone, as such an understanding implicitly means that individuals or groups that are in a disadvantaged position always need someone else, e.g. a professional, to become empowered. According to scholars (Boškić, 2005; Lincoln et al., 2002; Wallerstein & Bernstein, 1988), this approach to, and understanding of, empowerment is not oriented toward changing the power relations in a specific context or society in general, but is focused on maximizing the potential that individuals or groups have in a society. Hamelink (1995) warns that this approach to empowerment is problematic, especially because it is not focused on transforming (power) relations in society. Understanding empowerment as bestowing power upon someone can (un-)intentionally create new social dependencies and can reproduce the inequalities in society. As such, empowerment can be quickly transformed into having "power over another," where specific terms are set that condition whether someone can become empowered or not and how empowerment is actually performed. This understanding of empowerment, as many scholars have warned (Boškić, 2005; Hamelink, 1995; Lincoln et al., 2002), represents an illusion of empowerment, where the concept of empowerment is used as a *buzzword* that distracts from existing power relations and legitimizes the status quo.

Many critics have pointed also to the concept of psychological empowerment, which is defined as a sense or feeling of increased motivation, competence, self-efficacy and control over one's own life domain. As emphasized by Conger and Kanungo (1988), empowerment thus refers to a process in which an individual strengthens their belief in their own self-efficacy, control and competences and weakens their belief in their own helplessness. Because empowerment in this approach is understood as a feeling, sense or belief, scholars have described it as limited (Christens, 2012; Riger, 1993). According to their debates, psychological empowerment is focused only on the emotional and cognitive processes of feelings and motivations of individuals or groups, while forgetting the actual realization of social practices that lead to empowerment. They fear that individuals may possess the feeling of empowerment without even having the knowledge and resources needed for actual social change (Wilke & Speer, 2011). Riger (1993) argues that psychological empowerment is focused only on the perceptions of individuals and is thus not concerned with social and/or political contexts. Having a feeling of power and control can be illusional and is not necessarily related to the actual ability to influence and change power relations in a specific context.

Although these critics of psychological empowerment emphasize important characteristics of the concept, they disregard one of the important aspects of the empowerment concept: Empowerment is a process that occurs on different levels, comprised of various dimensions and stages. As such, empowerment cannot be defined as a direct social change, but is a process that might lead to social change and the transformation of power relations in a specific setting. Understanding empowerment as a process also means that it might not result in positive or beneficial outcomes for the actor involved, but it might also have disempowering outcomes. Acknowledging that empowerment is a multilevel construct also means that the individual level of empowerment presents one of the main stages of the empowerment process. Without social actors' understanding of their personal or social position in a setting, and sufficient awareness of the sociopolitical environment, perception and wellness to change their disadvantaged position, it is not possible for empowerment as a process to proceed to further stages, i.e. mobilization, collective action and actual changes of power relations in a setting or even in society in general (Hur, 2006; Page & Czuba, 1999).

One of the important issues with psychological empowerment that has been missed by its critics (Christens, 2012; Riger, 1993) is that a sense or feeling of empowerment can be based on unproductive and inappropriate competences that might give a social actor a misleading feeling

of control and self-efficacy and thus illusory empowerment, leading to dangerous choices that might impede positive health outcomes (Petrič et al., 2017a; Schulz & Nakamoto, 2013b). For instance, in the HROSC context it is often assumed that users gain health-related knowledge that is based on accurate and valid health information, which might lead users to have the requisite expertise to effectively participate in the decision-making process related to their health issues. Given the nature of health-related information distributed in HROSCs, it is possible that received information that presents the basis of the users' knowledge is misleading, invalid and of low quality, and might be unintentionally used by users, leading them into an illusory feeling of control, self-efficacy and competence, and thus dysfunctional empowerment (Petrič et al., 2017a). This opens up the question of what actually the main goal of empowerment is, and if empowerment varies among different populations, contexts and temporal stages, how it can be achieved.

3.2.7 What is the goal of empowerment?

The literature on empowerment has often highlighted the question about the main goal of empowerment and how this goal should be achieved. These questions can be clearly portrayed by an example related to the situation of women in Bangladesh: "If a woman works hard and saves enough money to buy a cow, she feels more competent and has more assets; she is empowered. If she inherits the cow or receives a gift of a cow because of her social relationships, she might be wealthier, but is she empowered?" (Narayan, 2005, p. 22). In the case of a woman that inherits or receives a cow, one would say that she is empowered, but, as emphasized by Narayan (2005), those scholars who define empowerment as a participatory process in which an individual or group goes through a learning experience that might bring about changed perceptions, skills, self-efficacy and control would say that merely receiving a specific resource needed for changing one's position or state is not enough to be considered as being empowered. This is importantly related to two characteristics of empowerment: that empowerment is relative and always in progression. Whether an individual or group is empowered or not is always in relation to their prior status, context, time and other individuals or groups in a setting.

This importantly implies that the trajectory to empowerment is not necessarily the same for two individuals in a similar social or health situation. For instance, in a situation where a patient must provide for therapies and remedies with their own financial resources, because they are

not covered by their health insurance, a patient with such financial resources might feel empowered by actively following the prescribed treatments and receiving information relevant to imporving of their health issues, while for a patient without such financial possibilities, this might not be a viable option. A patient without financial resources might feel empowered by finding a system of alternative options for how to take part in the prescribed treatments, for example by visiting pro bono clinics, following treatment with a shortened program or even taking the initiative in collective action and presenting the problem as an important issue of public concern. In both described examples we can say that patients have improved their situation relative to their prior status, although a patient without financial resources might not have followed the prescribed treatments in the similar way as a patient with financial support. For them, the path to becoming empowered might not be the same, might require different efforts and might even for some individuals more easily lead to disempowerment. The importance in empowerment, especially for intrapersonal empowerment, is that an individual given a (disadvantaged) position and situation begins to feel differently about themself – have a feeling that they have, in a specific situation with (health) issues, gained more control, self-confidence, determination and efficacy (Narayan, 2005; Zimmerman, 1995). This example also demonstrates that the process and the outcome of empowerment are always embedded in a specific social structure and in the distribution of different resources or forms of capital that can importantly facilitate or hinder the path toward empowerment and should be seen more often as crucial factors when empirically studying empowerment.

Another important question that has emerged in relation to the question about the goal of empowerment has emphasized the problem of misusing the concept of empowerment in relation to the processes and struggles of individuals, groups or even organizations and communities with ideological and politically exclusive interests. Can initiatives and actions to enforce the ideas of (violent) extremist groups be seen as their empowerment? Or to give a less severe example and relate it to the field of health, can social movements and collective actions of health activists be described as empowerment? The answer to these questions is not straightforward, as it relates to the questions of what the purpose of individuals or groups is, what the goal is and what kind of power is used in such "empowerment" processes. In the case of extremist and violent groups we can hardly argue that such practices can be characterized as empowerment, since the purpose of such groups lies in the achievement of goals that include violence, create risks, and encourage intolerance and enactment of "power over" and thus

dominance and supremacy over other people and social groups. The goal of empowerment is not to take away the social rights of one social group and give them to another, but to challenge power relations in terms of reducing social inequality.

What about the case of health activists and movements that usually pursue goals such as health promotion, advocacy, health and social justice, and the reduction of health inequality? And what if the health activist group promotes ideas that they believe follow the principles of health equality and justice, but actually are based on "bad health literacy" (Schulz & Nakamoto, 2011) and thus on misused information? For example, anti-vaccination movements and collective actions might fit with the idea of pursuing social and health equality and their activities could thus be characterized as empowering. Such movements have often pursued the goal of ensuring that a vaccination program is an individual's choice and not a legal obligation. The free choice to vaccinate your own child, for instance, generally does not interfere with the option to vaccinate them, which means that the social rights of one (anti-vaccination) group are not violated by the social rights of another (pro-vaccination) group. However, the main idea of empowerment is that it leads to individual, community and social betterment. Although anti-vaccination movements might seem like they are involved in the empowerment process, this process might not lead to empowering outcomes, but rather disempowering ones, and might in the anti-vaccination example lead to serious public health consequences and risks. Based on these examples, we demonstrated that the holistic examination of the empowerment concept incorporates specific principles and conditions that need to be fulfilled before we can characterize actions and practices as empowering. The questions of what the goal of specific activities, actions and practices is and how it contributes to individual, community and social betterment could present important guidelines for conceptualizing empowerment and its actual manifestations in the social reality.

3.2.8 How to measure empowerment?

Based on previously presented controversial characteristics of empowerment, it is clear that measuring the empowerment concept is not an easy task. As there is no one universally accepted definition, there is also no unified, consensually accepted measurement instrument of empowerment. A systematic review of health-related empowerment measurement instruments identified 50 distinct, modified or translated questionnaires measuring empowerment (Herbert et al., 2009). One of the biggest challenges of empowerment is that it is a latent construct and

as such "its presence can only be deduced through its actions or its results" (Narayan, 2005, p. 15), depending on whether we want to measure empowerment as a process or an outcome. Furthermore, empowerment has many dimensions, and because empowerment is a population-dependent, setting-dependent and time-dependent concept, it is important that context- and population-specific measures of empowerment are developed (Zimmerman, 1995). However, the variability of the empowerment concept and the proliferation of its measurement instruments have limited the possibilities of comparing and evaluating the reliability and validity of existing measures. Herbert et al. (2009) thus urge that in order to assess the reliability and validity properties of the instruments, further studies should adapt existing measurement instruments to new studied contexts and iteratively collect data in new study populations. Zimmerman (1995) even warns that because of the characteristics of empowerment a measurement instrument developed for one study may not be applicable and appropriate for another. Moreover, scholars even emphasize that the development of a universally applicable measure of empowerment is not only impossible but also inappropriate (Cheryomukhin & Peterson, 2014; Zimmerman, 1995; Zimmerman & Zahniser, 1991). However, to build on the body of knowledge on empowerment and its measurement instruments it is important not only to use the same theoretical framework but also to use a similar approach to the conceptualization of empowerment and its multidimensionality, meaning that all dimensions of empowerment of one level of analysis should be studied simultaneously (Peterson, 2014; Speer, 2000).

3.3 The conceptualization of psychological empowerment in HROSCs

In HROSC studies the concept of empowerment has become one of the central studied phenomena, with the main research attention being given to the individual level of empowerment, i.e. psychological empowerment. Psychological empowerment is one of the most developed concepts in empowerment theory, and the community psychology field in particular has dedicated extensive theoretical and empirical research to the conceptualization of its dimensions, processes and outcomes. This study adopts the psychological empowerment concept from the field of community psychology.[5] The most recognized definition of

[5] The field of community psychology has developed in the 1970s in the last century and has dedicated a great attention and interest to the development of empowerment theory with the work of Julian Rappaport, Mark A. Zimmerman, Andrew N. Peterson, Paul W. Speer and other scholars. Rappaport (1987, p. 122) even called for

psychological empowerment was proposed by Zimmerman (1995, p. 581), who defines it as "perceptions of personal control, a proactive approach to life, and a critical understanding of the sociopolitical environment," and it thus consists of three dimensions: intrapersonal, interactional and behavioral empowerment. In the context of healthcare, psychological empowerment refers to individuals' abilities to develop a sense of control over personal health, self-efficacy and competence in managing health conditions, and establishing an analytical understanding and knowledge of individual and collective resources that are important for (potential) changes of social circumstances that affect their health conditions and the accessibility and quality of health services or healthcare (system) in general (Israel et al., 1994). The concept of psychological empowerment is of great relevance in the field of healthcare, as it incorporates individuals' beliefs in important goals that need to be achieved for health condition management, as well as an understanding of resources and other factors that might enhance or hinder individuals' efforts to achieve those set goals.

In the studies on HROSCs, the conceptualizations of empowerment derive from the community psychology field and draw from psychological empowerment theory, but often interchangeably also use other notions, such as patient empowerment, sense of empowerment or personal empowerment. These conceptualizations mostly emphasize the features of empowerment that pertain to the intrapersonal dimension of psychological empowerment and thus refer to it as individuals' enhanced perceived ability to control and manage health conditions, self-care and health-related decisions, and improved competences for acting effectively in relation to their personal health and in the relationship with their health professionals (Armayones et al., 2012; Bartlett & Coulson, 2011; Broom, 2005; Coulson & Shaw, 2013; Griffiths, Crisp, Christensen, Mackinnon, & Bennett, 2010; Malik & Coulson, 2008; Mo & Coulson, 2014).

HROSC studies on intrapersonal (or patient) empowerment often focus on two connected but separate types of intrapersonal empowerment (Petrič et al., 2017b). The first one focuses on individuals' personal health and their health-related personal transformation, while the second

study of empowerment to become a main theoretical development of the field of community psychology, "because it captures the essence of both the field's *world view*, and its *phenomena of interest*." One of the important goals of the field of community psychology includes empowerment of individuals, groups, and communities that are in disadvantage and marginalized position in society. One of the core values of this field is advocacy, education and prevention, citizen participation, and seeking social justice and equality through action and research. In the studies on empowerment in the field of community psychology the scholars argue that the transformations in people's lives and community betterment derives "bottom-up" and from the active role of people themselves, and thus their engagement, participation, power, critical understanding and ability to have social influence on situations and a wider social structure that affect their lives (Rappaport, 1987).

type occurs in realms of the professional-patient relationship and interaction. The studies focused on the latter have been mainly concerned with the effects of HROSC use on patients' and health professionals' perceptions of the professional-patient relationship and how users or patients enhance their control, self-efficacy and competences in their encounters with health professionals (Audrain-Pontevia & Menvielle, 2018; Bartlett & Coulson, 2011; Broom, 2005; Oh & Lee, 2012; Petrič et al., 2017b). These studies' examinations of patient empowerment are often concerned implicitly or explicitly with the role of HROSCs in the transformation of the professional-patient relationship, where patient empowerment is understood in relation to patient (non-)adherence, trust in health professionals, patient commitment to health professionals etc. On the other hand, the studies on HROSCs focused on the first type of intrapersonal empowerment understand it as HROSC users' ability to achieve control, decision-making self-efficacy, and the competences needed to understand and influence their own health status (Barak et al., 2008; Johnston et al., 2013; van Uden-Kraan et al., 2009). Since this understanding of intrapersonal empowerment is broader and directly linked to the degree to which HROSC users develop control, self-efficacy and competences as benefits gained from different social processes in an online community, we will focus in this study on intrapersonal empowerment as users' personal outcomes in relation to their health conditions and status.

While HROSC studies have extensively investigated the intrapersonal dimension of psychological empowerment, the interactional and behavioral dimensions have been very seldom addressed. The reason why the behavioral dimension of empowerment, to the best of our knowledge, has almost never been studied in the context of HROSCs or in other settings and/or fields might be related to several issues with the dimension itself. First, early empirical research in the field of community psychology demonstrated a relatively weak association between measures and dimensions of intrapersonal and interactional empowerment and behavioral empowerment (Peterson, 2014). Because of the weak associations among dimensions, studies have started to exclude the behavioral dimension of psychological empowerment not only from the measurement of psychological empowerment but also from its conceptualization. Second, issues have also appeared as it has often been shown that measures that are consistent with indicators of the behavioral empowerment dimension, such as community involvement and participation, can be considered predictors of the intrapersonal and interactional dimensions of psychological empowerment rather than as an equal part of the psychological empowerment construct (Peterson, 2014). By acknowledging the above-

mentioned difficulties with the behavioral dimension of psychological empowerment, and due to our research focus on HROSC users' emotional and cognitive capabilities in relation to their health, the behavioral dimension of psychological empowerment is not further discussed nor applied in the further theoretical and empirical framework of this study.

Interactional empowerment presents one of the important parts of the psychological empowerment construct; however, in comparison to the intrapersonal dimension it has undergone very little examination. In the context of HROSCs, interactional empowerment has been investigated in only a few studies (Ammari & Schoenebeck, 2015; Li, 2016; Lundström, 2014; Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014a, 2014b; Wentzer & Bygholm, 2013). These have importantly demonstrated the need for, and relevance in, studying both intrapersonal and interactional empowerment in order to present a complete understanding of psychological empowerment in the HROSC setting. Psychological empowerment, as emphasized by Zimmerman (1995), should not be reduced only to individuals' "self-perceptions of competence but includes active engagement in one's community and an understanding of one's sociopolitical environment."

In the following sections, we first comprehensively conceptualize intrapersonal empowerment and identify and present its main dimensions. Based on the literature review of previous HROSC studies on empowerment we describe the main factors of intrapersonal empowerment outcomes in HROSCs and discuss what research has so far demonstrated to be the main facilitators and barriers in the development of intrapersonal empowerment. In the last section of this chapter we focus on the often unaddressed dimension of psychological empowerment in HROSCs, i.e. interactional empowerment. Similarly to intrapersonal empowerment, we conceptualize and define its dimensions and discuss the main predictors that will help us provide the basis for a theoretical framework for understanding individual- and community-level factors that have an impact on psychological empowerment in HROSCs.

3.3.1 Intrapersonal empowerment in HROSCs

Intrapersonal empowerment, also often referred to in literature as *individual empowerment* (Miguel et al., 2015) or *emotional empowerment* (Speer, 2000), and in the field of healthcare addressed as *patient empowerment* (Anderson & Funnell, 2005), has been in general described as the way individuals think about themselves and their abilities to effectively achieve desirable goals that are important for their personal situation. The concept of intrapersonal empowerment

has been quickly adopted in the context of health, as it has been demonstrated that if individuals who are experiencing health problems possess positive thinking, a positive attitude, confidence and other abilities to manage their health, they will have better health outcomes than individuals that are disengaged, and feel apathetic and resigned (Schulz & Nakamoto, 2013a). In the studies on HROSCs, scholars have been predominantly concerned with the question of how users' participation in various social processes in HROSCs, such as social support, information exchange, finding recognition etc., can lead to users' empowerment, with researchers very often having adopted Zimmerman's (1995) definition of intrapersonal empowerment.

Intrapersonal empowerment is defined as individuals' ability to effectively and successfully cope with adverse circumstances and solve problems, with *perceived control* presenting one of the crucial components of intrapersonal empowerment (Zimmerman, 1995; Zimmerman & Zahniser, 1991). Perceived control includes personality, cognitive and motivational components that according to Zimmerman (2000) provide the basis for studying the intrapersonal dimension of psychological empowerment. Based on empowerment theory, the personality component of perceived control corresponds to the internal locus of control, often referred to just as *perceived control*, cognitive perceived control includes *self-efficacy* and *competence*, and motivational perceived control has most often been referred to as *motivation control* (Zimmerman, 1995; Zimmerman & Zahniser, 1991). According to Zimmerman (1995), the intrapersonal dimension of psychological empowerment comprises four subdimensions, namely perceived control, self-efficacy, competence and motivation control.[6]

Perceived control refers to individuals' expectancy beliefs about the relationship between their actions and outcomes (Smith, Wallston, & Smith, 1995; Zimmerman & Zahniser, 1991). More specifically, perceived control has been understood as the extent to which individuals see themselves as being in control of the forces that affect their specific situation (Jerusalem & Schwarzer, 1992; Zimmerman, 1995). In the field of health, being in control is especially important for individuals with health issues, as it reduces psychological stress and can predict

[6] In the literature some authors have understood and defined intrapersonal empowerment in four subdimensions: meaning, competence, self-determination and impact (Hur, 2006; Spreitzer, 1995; Thomas & Velthouse, 1990). Although the presented subdimensions to some extent overlap with those defined by Zimmerman (1995), these studies have been focused on conceptualizing empowerment in a workplace setting and have thus adopted the conceptualization of intrapersonal empowerment in relation to the cognitive processes through which workers develop intrinsic task motivation and specific orientation toward their work role. Since this conceptualization of intrapersonal empowerment is focused on specifics of the workplace context, Zimmerman's (1995) general conceptualization and definitions appear to be a more appropriate framework for conceptualizing intrapersonal empowerment in HROSCs.

positive health outcomes (Anderson & Funnell, 2005). As reported by van Uden-Kraan et al. (2008c) in investigating users of online support groups for breast cancer, arthritis and fibromyalgia, perceived control presented one of the important empowerment outcomes that were influenced by users sharing their health-related experiences and learning from other each other in online support groups. Sharing health-related experiences provides users with knowledge and strategies on how to cope with their disease, what treatments are available and how to manage their disease in everyday life.

The subdimensions of intrapersonal empowerment self-efficacy and competence present one of the key cognitive mechanisms that influence individuals' adjustment to their acute or chronic health-related problems (Arora et al., 2002; Willis, 2016). *Self-efficacy* generally refers to the perceptions of one's ability to carry out certain tasks and influence outcomes (Zimmerman, 1995) and it relates to the willingness of individuals to engage in different behavioral challenges, such as preventive and disease management behaviors (Anderson, Funnell, Fitzgerald, & Marrero, 2000). More specifically, Bandura (1994, p. 71) defined self-efficacy as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives." Health issues can have a significant effect on individuals' everyday life, where perceiving yourself as possessing the ability to perform specific behaviors can lead to the development of capabilities for confronting issues competently and making choices in order to achieve desired outcomes. Self-efficacy importantly determines individuals' ability to initiate changes in health behavior that might result in positive health outcomes (Willis, 2016). It has also been emphasized that self-efficacy presents one of the most important motivators and qualities for disease self-management (Bandura, 1990). It has been demonstrated that HROSCs can also play an important role in disease management practices, where sharing similar health-related experiences help HROSC members to relate to one another and practice effective disease self-management behaviors by enhancing self-efficacy (Willis, 2016).

Although self-efficacy has often been associated with perceived competence, and in some cases even understood as having the same meaning (Arora et al., 2002), the sense of competence presents the third subdimension of intrapersonal empowerment. *Perceived competence* refers to individuals' self-perception of their abilities and the skills needed to accomplish specific tasks, cope with specific situations and achieve meaningful outcomes (Zimmerman, 1995). Perceived competence is different from self-efficacy. Self-efficacy refers to individuals' sense

of how to carry out specific tasks in order to achieve desired outcomes, including knowing about options and which choices and decisions need to be made, whereas perceived competence refers to the perception of having the specific skills and expertise needed to successfully deal with challenging situations, such as communication skills, goal-setting skills, time management skills etc. Both self-efficacy and perceived competence can be significantly influenced by social processes in HROSCs. For instance, Zhang (2016) demonstrated that online diabetes communities help to cultivate health-related competences, where users can develop the knowledge and skills needed for self-management of the disease by searching for, providing and exchanging health-related information.

Motivation control, on the other hand, can be defined as the motivation to achieve health-related goals and having the desire to control health-related issues (Oh & Lee, 2012). This subdimension of intrapersonal empowerment relates to the anticipation of gratification expected after specific goals or outcomes have been achieved. For instance, if individuals are aware of desirable outcomes and how they will improve their life situation or even their quality of life, they will be more willing to persist with tasks, activities and practices that will help them accomplish such outcomes. If individuals with health issues have the desire to minimize or solve health problems, this motivation can lead them to actually achieve such positive health outcomes. Alongside control, self-efficacy and competence, motivation control plays an important role in disease self-management for patients with chronic conditions (Maes & Karoly, 2005). Since chronic health conditions are long-lasting and demand from the patient constant involvement in management, it is crucial that patients have the motivation to effectively manage this health condition and are determined to achieve positive health outcomes, such as stable remission and recovery after the acute phase of the disease and reduced side effects of the medical treatments. As has already been demonstrated, HROSCs can foster users' motivation control, since exchanging informational and emotional support, receiving patient expertise and reading about positive health stories from users that are going through similar experiences can increase users' optimism, self-determination and motivation to achieve similar health outcomes (van Uden-Kraan et al., 2008c).

In the studies on HROSCs, extensive research attention has been given to examining the factors that facilitate or hinder intrapersonal empowerment of HROSC users (Aardoom et al., 2014; Brady et al., 2017; Campbell, Coulson, & Buchanan, 2013; Johnston et al., 2013; Mo & Coulson, 2010, 2012, 2014; Petrič & Petrovčič, 2014b; Petrič et al., 2015; Petrovčič & Petrič,

2014b; van Uden-Kraan et al., 2008c; van Uden-Kraan et al., 2009). Many of these studies have referred to intrapersonal empowerment as patient empowerment and often it has been studied in HROSCs dedicated to a specific health (chronic) condition, such as Parkinson's disease (Visser et al., 2016), cardiovascular disease (van Beijnum, Pawar, Elloumi, & Hermens, 2011), prostate cancer (Campbell et al., 2013), diabetes (Brady et al., 2017), breast cancer, arthritis, fibromyalgia (van Uden-Kraan et al., 2009), HIV/AIDS (Mo & Coulson, 2010), eating disorders (Aardoom et al., 2014) and mental health issues (Petrič et al., 2015). Patient empowerment has been defined in studies as being analogous to intrapersonal empowerment and thus as individuals' capacity to have or take control over health-related aspects of their lives and to make decisions about their health (Aardoom et al., 2014; Mo & Coulson, 2014).

A group of HROSC studies have focused on identifying the social processes in HROSCs that lead to empowerment outcomes for HROSC users. Through the qualitative interviews conducted among users of breast cancer, arthritis and fibromyalgia online support groups, van Uden-Kraan et al. (2008c) identified six empowering processes, namely exchanging information, encountering emotional support, finding recognition, sharing experiences, helping others and amusement. Similarly, Mo and Coulson (2014), in their study on HIV/AIDS-related online support groups, identified almost identical empowering social processes and additionally emphasized the importance of networking and connecting to others. Overall, the identified empowering social processes correspond to the different types of social support processes and features of supportive (online) communication that present an important part of online support groups and HROSCs in general. Studies on HROSCs have thus extensively examined the impact of *exchanged social support* in HROSCs on patient empowerment and confirmed that in particular exchange of informational support, such as exchange of advice, experiences, guidance and emotional support like encouragement, empathy, affection and caring, leads to empowerment outcomes (Aardoom et al., 2014; Johnston et al., 2013; Mo & Coulson, 2012; Petrič & Petrovčič, 2014b; van Uden-Kraan et al., 2009). It has been confirmed that exchange of social support in HROSCs has an effect on users experiencing empowering health-related outcomes, such as being better informed, having enhanced confidence and control over their medical treatments and social environment, improved acceptance of the disease, and enhanced optimism, self-esteem and social well-being (Aardoom et al., 2014; Mo & Coulson, 2012; van Uden-Kraan et al., 2009).

However, different types of exchanged social support in HROSCs have also been associated with different empowerment outcomes. In the study of the HIV/AIDS online support group, Mo and Coulson (2012) reported that receiving useful information and finding positive meaning in online support groups was important for the development of users' adaptive coping with health issues, while receiving social support and helping other users in online support groups was associated with an increase in self-care self-efficacy. On the other hand, Johnston et al.'s (2013) study reveals that while information utility in HROSCs, i.e. usefulness and satisfaction with the form, presentation and content of information distributed in HROSCs, was related to patient empowerment, the results did not support the relation between social support and patient empowerment. Petrič et al. (2015), in the case of online social support groups dedicated to mental health issues, have demonstrated that exchange of emotional social support plays a significant role in patient empowerment, whereas this was not the case for informational social support. The reasons behind such differing results among studies can be different. One explanation may be that informational social support can, with quality and overload of information provided in HROSCs and with the possible negative nature of health information (e.g. users get confronted with downsides of the diseases, receiving invalidated information), lead to disempowering rather than empowering outcomes.

HROSCs, besides empowering outcomes, have also been related to some disempowering processes and thus factors that might hinder patient empowerment. Van Uden-Kraan et al.'s (2008c) qualitative study demonstrated that although disempowering processes were mentioned less often by online support group users, they were still present and included being unsure about the quality of provided information, confrontation with negative sides of the disease, and being confronted with complainers and users who were too self-involved. In addition, Mo and Coulson (2014) showed that HROSCs, and particularly online support groups, can be associated with disadvantages such as being unable to connect physically, consequences of inappropriate behavior online, users declining intrapersonal "real life" relationships and interactions, and dealing with misinformation present online.

Users' experiences with both empowering and disempowering processes and outcomes in HROSCs have also often been associated with *intensive and active participation* in HROSCs. Participation in communities, including HROSCs, has already been demonstrated in the early empowerment studies in the community psychology field (Peterson & Speer, 2000; Rappaport, 1987; Zimmerman et al., 1992) as an important factor that increases intrapersonal

empowerment by providing opportunities for members to learn new competences, obtain resources, control and self-efficacy, and achieve personal goals. Several studies on HROSCs have demonstrated a positive relationship between participation in an online community and intrapersonal or patient empowerment (Mo & Coulson, 2010; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2008b). These studies have also compared the level of intrapersonal empowerment among users that participate actively, i.e. posters, and those who participate passively and observe discussions and interactions in HROSCs, i.e. lurkers. The findings of the studies have shown that in terms of intrapersonal empowerment there are no major differences between posters and lurkers in HROSCs. Van Uden-Kraan et al. (2008b) reported that the only difference regarding empowerment outcomes was that posters have experienced significantly higher enhanced social well-being than lurkers. These results were also supported by the study of Mo and Coulson (2010), which emphasized that lurking may be as empowering as posting messages and actively participating in HROSCs.

While the effects of participation and exchange of social support on intrapersonal empowerment in HROSCs have been extensively studied, other factors that might importantly impact the development of users' competence, self-efficacy and control over their health conditions and issues have been scarcely addressed. For instance, empowerment theory emphasizes the role of *involvement in community organization* in intrapersonal empowerment, as it gives members meaning, increases their feeling of self-relevance and self-esteem, and leads to the development of new skills that can also be used in self-management of the disease (Schulz et al., 1995). Involvement in community organization pertains to individuals' participation in strategic discussions and decision-making processes in community events, vision and other activities that are important for internal and external community functioning (Novek, 1999). This factor of intrapersonal empowerment, to the best of our knowledge, has only been addressed and researched in the study of Petrič and Petrovčič (2014b), which demonstrated that involvement in community organization contributes significantly to the development of HROSC users' intrapersonal empowerment.

Moreover, other important factors that have not thus far been studied directly in the studies on HROSCs and empowerment have also been overlooked. Since the exchange of health-related information and thus informational social support presents one of the important empowering processes in HROSCs, the effects of users' knowledge of how to access, obtain, process and understand such information, also often referred to as "e-health literacy" (Norman & Skinner,

2006a), have not yet been addressed in the HROSC studies on intrapersonal (and also interactional) empowerment. Studies have demonstrated that the level of e-health literacy differentiates between HROSCs users (Petrič et al., 2017a) and that exchange of irrelevant and misleading information can lead to negative health outcomes (Huh & Pratt, 2014). E-health literacy and other resources of individuals might play an important role in their intrapersonal empowerment. Furthermore, factors that pertain to the social and structural characteristics of specific HROSCs might also have an important effect or even moderate the effect of other factors, e.g. social support exchange, on users' intrapersonal empowerment outcomes. For instance, Visser et al.'s (2016) study on online counseling communities demonstrated that implicit social norms related to the number and content of users' postings developed in interactions between users and health professional moderators hinder patient empowerment. Accordingly, the investigation of psychosocial factors of intrapersonal empowerment should be advanced with a more comprehensive model that could help identify important factors that have an impact on psychological empowerment in HROSCs. However, such a model should first also include the second dimension of psychological empowerment, i.e. interactional empowerment.

3.3.2 Interactional empowerment in HROSCs

The concept of interactional empowerment, also often referred to as *collective* or *cognitive* empowerment (Christens, Collura, & Tahir, 2013; Drury & Reicher, 2009; Speer & Peterson, 2000; Wilke & Speer, 2011), has been compared to the often overlooked intrapersonal empowerment aspect of psychological empowerment. As emphasized by Zimmerman (1995), psychological empowerment also includes critical understanding of the sociopolitical environment, knowledge of available resources and methods of obtaining, using and mobilizing those resources to collectively achieve goals that would otherwise be hard to accomplish individually.

In the studies on HROSCs it has often been demonstrated that they foster intrapersonal empowerment outcomes; however, the dynamics in HROSCs also aid in interactional empowerment outcomes (Wentzer & Bygholm, 2013). HROSCs unite a range of informal conversations and social interactions, which do not necessarily evolve only around the exchange of health-related information, interests, support and personal health stories. HROSC users can also engage in political discussions, and topics related to individuals' or groups'

lifestyle and values. HROSCs thus function as communicative spaces that can, like other types of online communities, enable participants to collectively engage, and increase their social power as an interest group with the aim of influencing institutionalized arrangements and political decisions that affect their quality of life (Heidelberger et al., 2011; Petrič & Petrovčič, 2014b; Swan, 2009). Such efforts and bottom-up collective engagement in HROSCs address topics such as access to or provision of healthcare services, health inequality, disease prevention and illness advocacy, healthcare reform, patients' rights, power relationships in the healthcare arena etc. Moreover, HROSCs often act as platforms for discussions and exchange of information related to the accessibility of remedies and medical treatments, access to healthcare services and health professionals, misconceptions of specific, often stigmatized illnesses, such as AIDS/HIV, infertility and mental disorders, and other disease-related issues that often pertain to the disadvantaged social position of specific patient groups (Radin, 2006; Rykov, Meylakhs, & Sinyavskaya, 2017). HROSCs have thus become an important arena for individuals, patients, caregivers and groups to voice their stances that challenge health policy, belief systems, health practices in healthcare institutions and services (Orr, Baram-Tsabari, & Landsman, 2016).

Interactional empowerment has been generally defined as individuals' critical awareness and understanding of the sociopolitical environment (Speer, 2000, 2008; Zimmerman, 1995; Zimmerman et al., 1992). More specifically, critical understanding of the sociopolitical environment includes having knowledge about needed resources and problem-solving skills and methods for how to identify, obtain, cultivate, manage and collectively mobilize those resources in order for individuals as members of the community to gain influence as a whole and, consequently, produce change in the structure of the sociopolitical environment (Miguel et al., 2015; Peterson, 2014; Peterson et al., 2005; Speer, 2000, 2008; Speer & Peterson, 2000; Zimmerman, 1995). According to the definition, interactional empowerment thus consists of two main subdimensions: (1) knowledge of resources and methods that can be used to produce social change; and (2) resource mobilization for collective action.

Knowledge of resources is one of the fundamental features of interactional empowerment, as it relates to the use of individual knowledge and competences that might be used to collectively initiate change (Wentzer & Bygholm, 2013). As already emphasized by early empowerment theorists (Freire, 1974; Speer, 2000; Zimmerman, 1995), knowledge of resources comprises critical assessment of individuals' social and political source(s) of their problem and the

development of strategies concerning how to collectively overcome obstacles in order to achieve their goals. Online health-related settings such as HROSCs can have an important role in users' or patients' process of gaining knowledge on actions, strategies or assets needed and applying it in order to address or solve health-related problems. Such knowledge can be obtained in HROSCs in the interactions among users through which users can identify (collective) resources that can potentially lead to collaborative efforts to collectively develop strategies and solutions to overcome limitations and barriers in the issues affecting their health. For instance, the qualitative study of Ammari and Schoenebeck (2015) that explored online support groups of parents of children with special needs demonstrated that parents with children with rare health conditions, because of limited resources related to their child's disease, were more likely than others to connect, interact and share their knowledge with other parents in order to provide each other with insights into practices and strategies for solving their child's health-related problems. Often such collective efforts pushed parents to embrace advocacy beyond the needs of their own child, leading to the development of interest and active (collective) participation in legal, policy and budgetary issues related to their children's health condition (Ammari & Schoenebeck, 2015). As demonstrated, without having knowledge of the resources needed for solving a specific problem that does not affect only one individual, but pertains more broadly, for instance, to high-order social structures and relationships that structure individuals' lives, it is highly unlikely that individuals will develop the need to mobilize and with collective efforts influence the challenging social circumstances (Speer & Hughey, 1995).

The second dimension of interactional empowerment, *resource mobilization for collective action*, relates to individuals' awareness of the possibility of collectively engaging and, with other individuals, collectively influencing arrangements in the specific social setting (Speer, 2000; Speer & Peterson, 2000). This dimension of interactional empowerment addresses individuals' recognition of the need for collaboration and coordination among a larger number of individuals, for instance community members, and strengthening interpersonal relationships among them in order to have an impact on wider social circumstances that affect their lives and place them in a disadvantaged position (Speer, 2000). It has been demonstrated that HROSCs are not only important for users to exchange information, social support, personal health experiences and stories, but present an important platform for the development of a collective consciousness and engagement that unite online community members in a belief that personal

health-related issues can be effectively solved through collaboration with others and by enacting influence in wider social structures collectively (Petrovčič & Petrič, 2014a; van Uden-Kraan et al., 2008c). Such efforts can, for instance, be demonstrated in the case of breast cancer patients in New Zealand. As reported by Radin (2006), breast cancer patients, through participation in an online support group, identified an important issue regarding a national health insurance plan that did not cover a new expensive but more efficient treatment. With collective engagement and action in an online support group these patients influenced a national health insurance plan change that started to cover new treatment for breast cancer patients (Radin, 2006).

So far the phenomenon of interactional empowerment has been investigated in the context of HROSCs by only a few studies (Ammari & Schoenebeck, 2015; Li, 2016; Lundström, 2014; Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014a, 2014b; Wentzer & Bygholm, 2013). The study of Wentzer and Bygholm (2013) that qualitatively analyzed messages of users of two online support groups, one dedicated to lung disease and one to women's fertility health issues, demonstrated that online support groups present important platforms for the development of interactional empowerment. Their qualitative analysis revealed that narratives of interactional empowerment can be presented through the development of a shared collective identity among users that includes shared interests, needs, hopes and history. Similar findings were also reported in the qualitative study of Lundström (2014) that explored a Swedish online support group for victims of domestic violence. The exchange of social support between victims that have been in an abusive relationship and broken out of it and those that are still in such a situation has, according to Lundström (2014), created the conditions for emancipatory discourses and a collective identity that presents the basis for the creation of trust and a feeling of belonging. As already demonstrated, collaboration with co-patients can lead users of an online support group to create a shared feeling of belonging or a sense of community that represents one of the important factors of interactional empowerment. A sense of community importantly impacts the development of a shared understanding of patients' position in the wider social domain and leads to collective efforts in challenging existing healthcare institutions and services.

Theorizations and empirical investigations of interactional empowerment have already, from the beginning of the establishment of the concept of empowerment in the community psychology field, emphasized the crucial role of a sense of community in the development of

interactional empowerment (Speer, 2000; Speer et al., 2013; Speer & Peterson, 2000). A sense of community is highly desired in communities, as it leads to a greater commitment to the community and is associated with involvement in community organization and problem-focused coping behavior (McMillan & Chavis, 1986). In HROSCs, a sense of belonging, or more specifically a *sense of virtual community*, is based on the identification of users with the online community, the feeling of influence, emotional connection and users' integration into the online community (Blanchard, 2007). A sense of virtual community presents a key mechanism for the building of interpersonal relationships and the development of awareness among online community members, since it helps them realize that their collaboration is essential for increasing social power as a group that can have an influence on wider social structures (Petrič & Petrovčič, 2014b). The association between a sense of virtual community and interactional empowerment in HROSCs has been demonstrated by the studies of Petrič and Petrovčič (2014b) and Petrovčič and Petrič (2014a). The studies demonstrated, in the cases of the Slovenian HROSC Med.Over.Net and general online communities in Slovenia, that a sense of virtual community plays a crucial role in building interactional empowerment in online communities as it helps users to develop responsibility for the community and a willingness to participate in supportive tasks in the community, as well as a feeling of social cohesion that presents the basis for community members to collectively organize, develop a common goal and collectively engage in efforts to achieve it.

In addition, the studies of Petrič and Petrovčič (2014a; 2014b), among others, demonstrated the importance of participation and involvement in HROSCs for the development of interactional empowerment. *Involvement in community organization* that pertains to online community members' inclusion in discussions about events, vision and strategies of the online community (Leung, 2009; Novek, 1999) and community participation in a wider sociopolitical environment, such as participation in signing petitions, demonstrations, advocacy etc., has been shown to have an important effect on interactional empowerment. As explained by Petrovčič and Petrič (2014a), users perceive HROSCs as a venue where they have an opportunity to participate in organizational activities, such as online community actions and initiatives, that address their health-related needs and goals related to their health conditions and status. For example, in the Slovenian HROSC Med.Over.Net there have been evident (self-)organized actions of patients with lymphoma, infertility and thyroid problems that were focused on the

development of formal initiations for the improvement of the position of patient groups in public healthcare (Med.Over.Net, 2005; Verovšek, 2015).

In relation to participation in HROSCs, special attention has also been given in HROSC studies to examination of the effect of *different forms and intensity of participation in HROSCs* on interactional empowerment. As emphasized by Petrovčič and Petrič (2014b), users who contribute more in HROSCs and thus post messages and interact in discussions with other users (i.e. posters) should be compared to users that participate passively in HROSCs (i.e. lurkers) and according to empowerment theory experience greater benefits and positive outcomes. As suggested by empowerment theory, a certain investment in participation and active behavior is needed in order to become empowered and thus it should be expected that posters would experience a higher level of interactional empowerment than lurkers. The findings of Petrovčič and Petrič (2014b) and Li (2016) have demonstrated that the form and intensity of participation has an important role in interactional empowerment, as it has been confirmed that posters experience a higher level of interactional empowerment than lurkers in HROSCs.

The association between community involvement and interactional empowerment has also been emphasized by community psychology studies that especially emphasized the importance of individuals' involvement in community organization and activities. Having an active role in community organization provides individuals with opportunities to learn new skills, interact with other members, identify needed resources and develop critical awareness of one's environment (Zimmerman, 2000). The findings of studies coming from the field of community psychology that investigated the association between involvement in community organization and interactional empowerment have in many cases reported different outcomes to the studies on HROSCs (Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014a). Many studies have found that involvement in community organization significantly affects the intrapersonal dimensions of psychological empowerment more often than interactional empowerment (Miguel et al., 2015; Peterson, Hamme, & Speer, 2002; Speer et al., 2013; Speer, 2000). Since the results have not been the same in all studies – some have also reported the impact of involvement and participation in community activities and organization on interactional empowerment – the study of Christens, Speer, and Peterson (2011) potentially identified one of the main reasons for such ambivalent findings. According to Christens et al. (2011), previous studies investigating the association between community participation and interactional empowerment did not take into account other important mechanisms that might moderate the effect of

involvement in community organization on interactional empowerment. Their study investigating the psychological empowerment of members of five different local community organizing initiatives in the US demonstrated that the direct effect of community participation on interactional empowerment did not appear to be statistically significant. However, under the condition of the socioeconomic status of individuals (income and educational attainment), community participation had a statistically significant effect on interactional empowerment. It has been shown that individuals of lower socioeconomic status are likely to score higher on interactional empowerment as they are also more involved in community activities and organization than individuals with a relatively higher status (Christens et al., 2011).

The study of Christens et al. (2011) indicated that further studies on interactional empowerment are needed that will incorporate a wider set of important factors that affect the development of interactional empowerment in a specific setting. Although the current studies on interactional empowerment in HROSCs have identified and empirically investigated the factors that facilitate or hinder interactional empowerment outcomes, the range of examined social processes (i.e. the intensity and form of participation, community involvement and participation, and the sense of virtual community) has remained limited, not least due to the little research interest in the interactional dimension of psychological empowerment in HROSC studies. The question of how interactional empowerment can emerge in HROSCs and what other factors also affect it still remains under-researched. These questions could, in our opinion, be addressed and answered by introducing the concept of socio-structural properties in HROSCs.

4. Socio-structural properties of HROSCs

The studies on HROSCs and psychological empowerment have thus far demonstrated, as we have shown in previous chapters, that various socio-psychological processes affect both intrapersonal and interactional empowerment of HROSC users. Most often studies of HROSCs have adopted various theories, e.g. (online) social support theory (Cobb, 1976; Veiel, 1985), the theory of social comparison processes (Festinger, 1954) and social information processing theory (Walther, 1992), to explain the processes and identify factors that have an effect on users' psychological empowerment. While these theories have been very helpful in broadening our understanding and knowledge concerning empowering processes and outcomes, there is a need to focus more closely on HROSCs as socio-technical systems and thus on interactions between the individual-level processes of HROSC users, their social practices and specific structural properties of HROSCs, and investigate how this relates to intrapersonal and interactional empowerment outcomes. Therefore, we propose that conceptualizing **socio-structural properties in HROSCs** offers a valuable theoretical framework through which we can conceptualize the complex interrelationship between social practices and structural features of HROSCs and provide a helpful outline for understanding individual- and community-level factors that have an impact on psychological empowerment in HROSCs.

In the first part of this chapter, we outline the theoretical framework by defining HROSCs as socio-technical systems and present Giddens' and Bourdieu's theories and how we can use their theoretical concepts in relation to HROSCs and their socio-structural properties. Next, based on the conceptualization of socio-structural properties of HROSCs that are defined as interconnections between organizational characteristics of HROSCs, different forms of users' capital and involvement in HROSCs, we present each of these main elements of socio-structural properties in relation to the HROSC context. Thus, we provide the foundation for the theoretical framework for understanding individual- and community-level factors that have an impact on psychological empowerment in HROSCs and the empirical study of the thesis.

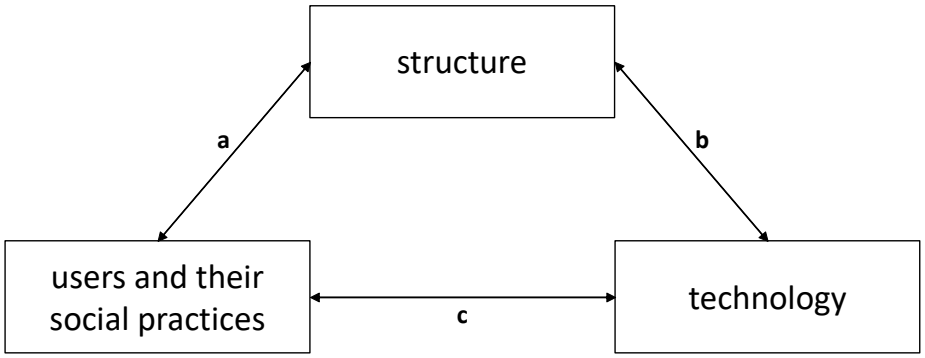
4.1 Outline of the theoretical framework of socio-structural properties in HROSCs

The study of this doctoral thesis is based on the ontological premise that all social phenomena are characterized by a "duality of structure and agency" (Giddens, 1984). In order to explain social phenomena, in our case psychological empowerment in HROSCs, one has to study the interaction between social practices and social structures. This is necessary in order to explain what impact on psychological empowerment the interplay of structures has framing social practices on the one hand, and social practices (re)producing the structure on the other. For this reason, we take a social informatics perspective in the analysis of HROSCs as socio-technical systems and thus incorporate a structuration point of view on HROSCs (Orlikowski, 2000), which "not a priori privilege[s] the technological or material explanation ahead of the social or vice versa" (Sawyer & Tyworth, 2006, p. 50). This is inclusive of two interpretations: On the one hand, individuals with their practices shape, create, enact and change the social and organizational contexts and thus typical uses of technological applications; on the other hand, a set of structural rules, opportunities and constraints influence users' behavior, and thus define the practices of individuals. The socio-technical perspective implies that HROSCs should not be analyzed with the elimination of either the social practices or structural properties of the online community; on the contrary, examination of their continual interaction and intertwinement is very much needed (Geels & Kemp, 2007; Kling, Rosenbaum, & Sawyer, 2005).

Socio-technical systems are generally defined from the social informatics perspective as interdependent "interactions between people, organizations, institutions, and a range of technologies in rather intricate heterogeneous arrangements in which what is 'social' and what is 'technical' cannot be readily isolated in practice" (Lamb, Sawyer, & Kling, 2000, p. 1613). The basic idea of socio-technical systems as defined in the social informatics field is that ICTs are not produced and used in social or technological isolation, which means that analysis of ICTs should always include three interrelated aspects (de Souza & Preece, 2004; Rosenbaum & Shachaf, 2010; Sawyer & Jarrahi, 2014): *people and their social practices*; *technology* and thus hardware, software and a maintenance system that keeps ICTs operating; and *structure*, which more particularly refers to the rules, norms of use and the support systems that aid users. If people and their social practices, technology and structure are mutually connected, then to

understand how psychological empowerment outcomes are brought about in HROSCs it is not enough to focus only on the social processes and individual-level practices, but rather it is also necessary to study the structural properties of HROSCs. HROSCs as socio-technical systems consist of involving interactions among *community users and their social practices* (with goals and aspirations that constitute purposes), *structure* (norms and rules that constitute policies), and technological systems and applications (software and hardware) (see Figure 4.1).

Figure 4.1: Three crucial aspects of a socio-technical system



Source: Author's elaboration

In the context of HROSCs, *structure* can be presented as features that are internal to users and refer more specifically to the rules, policies, norms, sanctions and standards etc. that can on the one hand frame users' social practices and thus both limit and enable users to perform specific tasks and achieve desired goals. On the other hand, the structure of HROSCs is always produced and shaped by users' social practices that present the basis for the (re)production of the HROSC structure (link **a** in Figure 4.1). For example, implicit norms in interactions between users and health professional moderators in HROSCs can present an important facilitator or barrier in the ways in which users communicate and interact with health professional moderators (Visser et al., 2016). Implicit norms are, however, always produced and reproduced in social interactions in HROSCs, which means that specific social practices of users and health professional moderators can also transform the norms in HROSCs and introduce a new set of rules concerning social interactions.

The structure of HROSCs is also always embedded in a specific *technology* of HROSCs that broadly refers to the information systems, software, hardware and applications that support HROSCs, such as social networking sites, online discussion forums, microblogging

applications etc. Technological features of HROSCs can influence, reproduce and change how policies and rules can be enacted in HROSCs and what is characterized as important, dominant and legitimate (Flanagin, Farinola, & Metzger, 2000; Orlikowski, 1992). However, structure also mutually co-creates software, information systems and applications, and gives them meaning and purpose in the HROSC (link **b** in Figure 4.1). For instance, as demonstrated in the study of Park, Conway, and Chen (2018) that analyzed three different mental health Reddit subcommunities, the distribution of the group of users that are part of a specific subcommunity can importantly determine how Web content and discussion websites are used, since users that are more dispersed share fewer common norms and values, which may impact the perception of online application services.

Technological features are also importantly produced by users' *social practices* in HROSCs, since technology cannot exist without users' development, planning, usage, adaptation and transformations of specific technological systems. On the other hand, technology also presents a medium of social practices that can both enable and disable the social practices of users with the provision of specific interpretative schemas, designs and principles (link **c** in Figure 4.1). To illustrate this in the context of HROSCs, online communities that are based on social networking sites, e.g. Facebook, in most cases do not allow users to communicate and interact anonymously, which can have an important impact on users' practices of disclosing information and experiences. However, the technical features of HROSCs are not fixed, but can be transformed and adopted in ways that more closely correspond to users' needs and communication practices. For instance, until recently Facebook group settings allowed closed groups in which the content of group discussions was not publicly available. However, the membership list was still widely visible, which in the case of sensitive medical information meant that specific users could be linked to the membership of a particular group. Based on the appeal of users, Facebook has changed the setting of groups, which now can be closed and have an "invisible" membership list (Brandom, 2018).

Following on from that, socio-technical systems are not structures in themselves, as implied by Giddens (1979),[7] but consist of a structure or structural properties. In the case of HROSCs,

[7] In structuration theory Giddens (1979, 1984) was not particularly concerned about information and communication technology (ICT) and thus about applying the theoretical framework to studying online communities. However, his theoretical framework was recognized by many authors as valuable insight for application in Internet research and information system studies (Jones & Karsten, 2008; Petrič, Petrovčič, & Vehovar, 2010; Rosenbaum & Shachaf, 2010).

structural properties can be described in two ways: (1) in relation to technological attributes referring to configurations of hardware and software features, consisting of information design, supporting platforms and applications; and (2) in relation to users' social practices that we will define as **socio-structural properties**, which refer to patterns in the distribution of social relations, resources and organizational attributes that bring meaning to social practices (de Souza & Preece, 2004; DeSanctis & Poole, 1994; Gleave, Welser, Lento, & Smith, 2009). In order to extend the current research on psychological empowerment in HROSCs that has so far been mostly focused only on individual-level social practices and processes, we will focus in this doctoral dissertation (mostly) on conceptualizing and empirically examining the socio-structural properties of HROSCs. This does not mean that technological features of HROSCs will be disregarded. To some extent technological features are embedded in the structure of HROSCs that are implicitly manifested through different subcommunities of HROSCs and differences in socio-structural properties among them. However, in this thesis we will not closely examine the influence of specific design and technical characteristics of HROSCs, such as message volume, security and privacy settings, topic ordering among related questions, implementation of discovery and browsing options etc.

To conceptualize and define socio-structural properties in HROSCs we will draw from Giddens' (1979, 1984) structuration theory, developed to enable an understanding of how structure and social practices exist in mutual dependence and that structure is both a medium for social practices and an outcome of individuals' social practices. Moreover, using Giddens' theory allows us to define socio-structural properties as sets of rules and resources that can only exist in association between one another and reconstitution through social interaction. Although Giddens (1979, 1984) offers a valuable insight for understanding resources as structural properties of social systems, we propose that Bourdieu's (2002[1986]) capital theory offers a complementary framework for analyzing different types of resources that are accumulated, converted and reproduced in specific contexts, such as HROSCs. This doctoral thesis thus brings together the theories of Giddens and Bourdieu to develop a theoretical framework that can be used to explore and examine socio-structural properties of HROSCs that affect users' psychological empowerment. In the following section, Giddens' structuration theory will be briefly outlined first and then connected with the key concept of Bourdieu's theory of capital. Drawing from these two theories we present a theoretical framework of socio-structural properties in HROSCs.

4.1.1 Central concepts of Giddens' and Bourdieu's theoretical frameworks

Giddens' structuration theory has been used in various disciplines and scientific fields, such as information science and systems, sociology, political science, management and education (Jones & Karsten, 2008; Rosenbaum & Shachaf, 2010). Because Giddens' theory provides an important outline for understanding the complex interrelationship among ICTs and their structure, design and systems, individuals and their social practices, and the wider social context in which ICTs are used, it can present an essential basis for the study of HROSCs and their socio-structural properties. Similarly, in the field of information science it has been recognized that structuration theory can present a constructive theoretical tool "to reveal how technical systems can support or hinder human interaction in societal, organizational, and personal contexts" (Evans & Brooks, 2005, p. 215).

Structuration theory is very complex and includes a range of abstract concepts, with a full and detailed presentation being beyond the scope of this thesis, which aims to develop a constructive approach for conceptualizing and (empirically) examining socio-structural properties in HROSCs. As has already been emphasized by Rosenbaum and Shachaf (2010) in their application of structuration theory to the investigation of online communities of practice, Giddens himself has argued that attempts to incorporate structuration theory as a whole in a specific area of study are unnecessary:

> "In many more confined areas of empirical research it is not especially helpful to drag in a large apparatus of abstract concepts. I like most those usages in which concepts, either from the logical framework of structuration theory or other aspects of my writings, are used in a sparing and critical fashion." (Giddens, 1991, p. 213)

Accordingly, we will follow the Rosenbaum and Shachaf (2010) approach and will discuss key concepts of Giddens' structuration theory (1979, 1984) that are the most relevant for the conceptualization of socio-structural properties of HROSCs: *structuration and duality of structure*, *social system*, *social practices* and *structure*. For this study these key concepts are especially important for two reasons: because they present the basis of structuration theory, and because the concepts are analytically intertwined and complement each other.

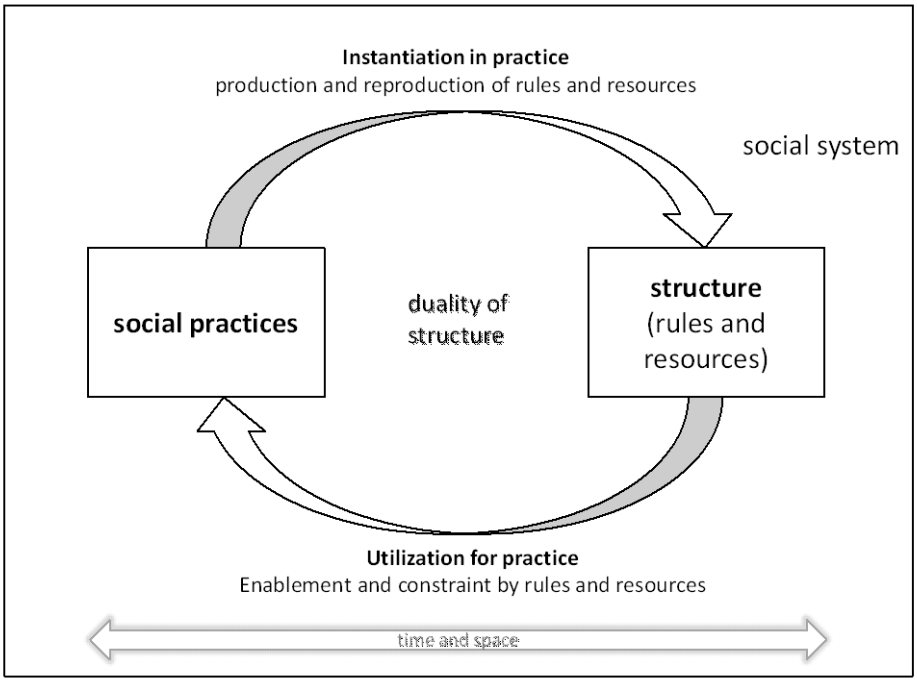
The concept of *structuration* presents the basic idea of Giddens' (1979, 1984) theory and refers to the mechanisms of social systems in which social structure and social practices are mutually intertwined and thus tied together in synthesis. Both social structure and practices emerge as

unintended consequences of the structuration process. The main idea behind the structuration process is the *duality of structure* that specifically asserts that the constitutions of structures and social practices are not independent from each other as in a form of dualism, but represent a duality:

> "By the duality of structure, I mean the essential recursiveness of social life, as constituted in social practices: structure is both medium and outcome of the reproduction of practices. Structure enters simultaneously into the constitution of the agent and social practices, and "exist" in the generating moments of this constitution." (Giddens, 1979, p. 5)

Although structure and social practices exist independently from each other, they are simultaneously interconnected, which means that social phenomena in a specific social system are always outcomes of duality between structure and social practices (Figure 4.2).

Figure 4.2: Structuration process with duality of structure in a social system



Source: Adopted from Giddens (1984) and Groves, Meisenbach, and Scott-Cawiezell (2011)

According to Giddens (1979, pp. 65–66), *social system* refers to the clustering of social structures into reproduced relations between individuals or groups, organized as recurrent social practices. The existence of a social system is based on social interactions and activities of individuals or groups that are always embedded in a specific *flow of time and space*, which provide a cultural and historical context for social practices. One of the main elements of social

systems is *social practices*. Without social interactions between individuals, social systems are empty spaces. Individuals as agents or actors, who are the main subjects of social systems and society in general, have several characteristics in relation to their social practices, according to Giddens (1979, 1984). Individuals in social systems are *knowledgeable*. Giddens distinguishes between two types of knowledge: discursive and practical. Discursive knowledge or consciousness refers to individuals' ability to give an account of their conduct and to verbally express their knowledge about the social conditions of their social practices. Based on discursive knowledge, individuals are *self-reflexive* and thus reflexively monitor their own social practices as well as the social practices of others in given physical and social aspects of the context. As such, individuals' social practices also have the characteristics of *intentionality*. Although individuals can choose what and what not to do, this does not mean that social practices refer only to one's intentions and desired outcomes. Intentional social practices can have both intended and unintended consequences; social practices on the other hand can also be unintentional.

This importantly relates to the second type of knowledge as defined by Giddens (1984). Practical knowledge or consciousness "consist[s] of all things which actors know tacitly about how to 'go on' in the contexts of social life" (Giddens, 1984, p. xxiii). This type of knowledge is especially important for individuals, as it enables them not to examine every aspect of daily life and activities and provides them with knowledge of how to predict the social practices of other individuals in different situations through *routinization*. According to Giddens (1984, p. 60), routines as a product of practical consciousness present an integral part "both in continuity of the personality of the agent, as he or she moves along the paths of daily activities, and to the institutions of society, which are such only through their continued reproduction." Practical knowledge thus presents an important aspect of the development of individuals' ontological security and the predictability of a daily life. Besides discursive and practical knowledge that underlie individuals' social practices, Giddens (1979, 1984) also emphasized the importance of the knowledge contained in the unconscious. This type of knowledge forms from past experiences, individuals are unable to articulate it and it presents the basis of beliefs, ideas and values that regulate behavior.

One of the most important characteristics of social practices is that individuals *instantiate* structure with their social practices (see Figure 4.2). Instantiation in social practices refers to the production and reproduction of structure in a given social system. If social systems are

situated in time and space, s*tructure* on the other hand can be presented as a nontemporal and nonspatial entity or as "*virtual order of differences* produced and reproduced in social interaction as its medium and outcome" (Giddens, 1979, p. 3). This means that structure should not be treated as a barrier to social interaction and practices, but present a utilization for practice in both an enabling and a disabling manner. Accordingly, each social system consists of structure or, more precisely, has *structural properties*, which include *rules* and *resources* (see Figure 4.2). Giddens (1979, p. 66) emphasizes that in order to study a specific social phenomenon in a social system it is necessary to study the structuration of that social phenomenon, which means that it is crucial "to study the ways in which that system, via the application of generative rules and resources, and in the context of unintended outcomes, is produced and reproduced in interaction."

The basic idea behind the concept of rules is that they refer to the guidelines on how to act in a specific social situation. More specifically, rules imply "methodical procedures" of social interactions (Giddens, 1984, p. 18), which means that rules have meaning only in a specific social interaction process and can be understood by individuals involved in such social interaction. Rules can provide the basis for both practical and discursive knowledge, as in the form of what one is supposed to do in a specific social situation and what one can do next. However, as emphasized by Giddens (1979, p. 67) "[r]ules generate – or are the medium of production and reproduction of – practices. A rule is thus not a generalization of what people do, of regular practice. Rules are interrelated to resources of structure, as they present one of the main prepositions of structuration theory and thus the structuration process in social systems: Rules and resources are generated in the production and reproduction of social practices and at the same time present the mean of system reproduction (Giddens, 1984).

Resources refer to the material and nonmaterial capacities of social practices and according to Giddens can be classified in two types: first, *allocative resources* that pertain to individuals' ability to have a control over material objects and goods; and second, *authoritative resources*, which refer to individuals' ability to stipulate command over other social actors (Giddens, 1984). As such, Giddens connects resources with the concept of power and power relations between social actors, as the possession of the most useful resources in a given social system means that one has the "transformative capacity" to change structure and is thus directly related to individuals' social practices (Giddens, 1984). Although Giddens in his work (1979) emphasizes that resources present the main "vehicles" of power and are comprised of structures

of domination that are produced and reproduced in social interactions and thus through duality of structure, his concept of resources has at least two limitations. First, Giddens does not distinguish between different "real world" resources that present the sources of power relations between individuals in a given social system. Second, structuration theory does not provide a detailed explanation of how different types of resources (allocative and/or authoritative) are connected and complement each other and how they present the basis for power relations and (systematic) inequalities between individuals. Willmott (1999) argues that the critical shortcoming of structuration theory is that it is unable to explain how specific rules and resources are more enduring than others, why some rules are more easily changed and which resources are needed for individuals to be able to produce such changes.

Although Giddens (1979, 1984) offers a valuable insight for understanding resources as structural properties of social systems, we propose that Bourdieu's (2002[1986]) capital theory offers a better framework for analyzing different types of resources that are accumulated, converted and reproduced in a specific social system or social field, if we use Bourdieu's terminology. Bourdieu's theory appears to be more useful for a comprehensive explanation of which types of resources correspond to which (pre)defined rules of the structure, as well as how the interactions between the two influence social practices, social interactions and other social phenomena.

Like Giddens, Bourdieu argues that social structure and social practices should always be studied separately and dependently of each other. Bourdieu has consistently demonstrated in his theoretical work (1985, 1989, 1991, 1997, 2002) that the social world is not constructed solely by social practices or a social structure, but is also constituted by their interconnection and interaction. Giddens' theory is compared to Bourdieu's in much greater detail focused on social interaction and social practices and the emphasis is placed on the construction of individuals as knowledgeable, reflexive agents. However, Bourdieu's theory is much more dedicated to explaining power relations between individuals in a specific social field and how and why the social positions of individuals are often more easily reproduced than transformed (Tucker, 1998). Bourdieu's theory can complement the limitation of Giddens' structuration theory, in which individuals and their social practices have often been characterized as overly voluntaristic and predominantly based only on individuals' willingness, motivation and activities (O'Boyle, 2013), and provide an explanation for why individuals can be caught in a "vicious" cycle of subordinate positions and powerlessness. These aspects of the social world

are especially important for investigating empowerment processes and outcomes, since the concept of power underlying empowerment also indicates that different types of resources among individuals are differently and unequally distributed, which indicates that individuals' life chances (for empowerment) are not equal for all (Fortunati, 2014).

Before we look more closely into the concept of resources that Bourdieu (2002[1986]) defines as different forms of *capital*, it is important to first define his notion of *social field* that in relation to structuration theory would correspond to Giddens' concept of structure. Moreover, when we think about social reality through these concepts, we have to, as Bourdieu and Wacquant (1992, p. 96) stress, "think relationally," since the social world consists of relations between social actors. A platform that constitutes these relations is a social field. It is defined as:

> "A network, or a configuration, of objective relations between positions. These positions are objectively defined, in their existence and in the determinations they impose upon their occupants, agents and institutions, by their present and potential situation (*situs*) in the structure of the distribution of species of power (or capital) whose possession commands access to the specific profits that are at stake in the field, as well as by their objective relation to other positions …" (Bourdieu & Wacquant, 1992, p. 97)

Fields are thus closely related to the concept of capital, as its distribution sets up the structure of the field. In the most general way, capital can be defined as an accumulated form of labor, which can be materialized as embodied and can be presented in different types (Bourdieu, 2002[1986]). Introducing the concept of capital in the center of the field presupposes a different distribution of resources or types of capital among social actors (Kamin & Tivadar, 2011) and thus implies "a battlefield, in which participants vie to establish monopoly over the species of capital effective in it" (Bourdieu & Wacquant, 1992, p. 17). Every social field follows its own specific internal logic and its own regulation principles, which means that each field responds to a specific form of capital (Bourdieu, 1991; Bourdieu & Wacquant, 1992), namely: (a) economic capital, which refers to materialized property and can be directly converted into money; (b) cultural capital, which refers to knowledge, competences and skills, which are formally acknowledged or informally recognized; and (c) social capital, which is represented as membership in social groups and in other forms of social association (Bourdieu, 1985, 1989, 2002[1986]). It should be mentioned that the described types of capital do not exist or function except in relation to a field (Bourdieu & Wacquant, 1992).

Besides the above-mentioned main categories of capital, we should acknowledge symbolic capital, which – in relation to any one of the first three types of capital in a given field – brings prestige, social honor, authority and reputation and thus a distinct social position to its owner (Bourdieu, 1985, 1989, 1991). Symbolic capital consequently provides social actors with the power to participate, individually or collectively, in the process of forming the "rules of the game" (Bourdieu & Wacquant, 1992, p. 99). By signifying social life with a "game" metaphor, Bourdieu (1991) pinpoints the importance of possessing symbolic capital that authorizes social actors to determine the exact rules that must be followed to participate in the field and thus to perpetuate the legitimacy of established representations and classifications of the social world.

Despite a rather stable structure of social relations, social fields are not static spaces but spaces of reproduction and transformation where capital plays a key role. On the one hand, types of capital may be seen as instruments of reproduction of the social structure of the field, which can be described as "fields of forces" (Bourdieu, 1998, p. 32), in that they conserve the social positions or relations between social actors and the distribution of capital that can effectively operate in the field. On the other hand, capital may manifest itself as an object of struggle, where fields can be described as "fields of struggle" within which social actors aim to transform the structure of social relations and distinctions (Bourdieu, 1998, p. 32) in their favor.

In this theory Bourdieu gives different forms of capital, especially symbolic capital, a central role in the production and reproduction of social positions and relations between individuals in a social field. However, Bourdieu does not ignore the importance of social practices, which present the main mechanisms through which different forms of capital can be distributed in a social field. Without social practices and social interaction between individuals positioned in a specific social field, different forms of capital are merely objects without meaning. This is why both Bourdieu and Giddens emphasize the importance of acknowledging that the social world is not constructed solely by social practices or a social structure, but is constituted by their interconnection and interaction. Combining the theoretical work of Giddens and Bourdieu allows us to examine social practices and structural properties separately as well as their interrelated process of mutual influence, which present the basis for conceptualizing socio-structural properties in HROSCs.

4.1.2 Application of theoretical framework to socio-structural properties in HROSCs

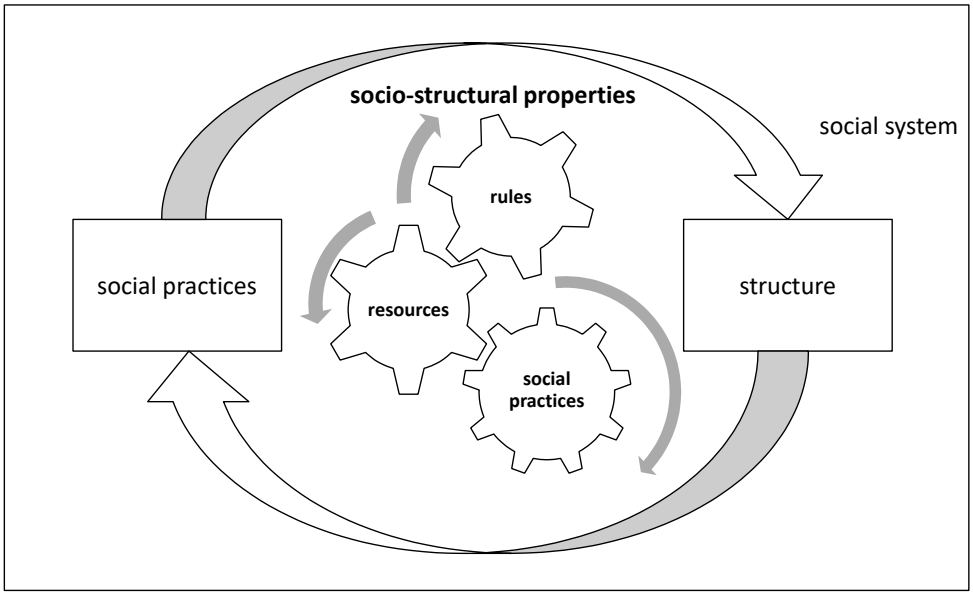
Starting from the view that HROSCs are socio-technical systems that consist of specific structures, social practices and social interactions among members, and technology, it is not difficult to interpret HROSCs through the lens of Giddens' structuration theory. So far some studies (Jones & Karsten, 2008; Rosenbaum & Shachaf, 2010) have already used structuration theory in cases of different ICTs and even online communities, but many of these applications have observed ICTs as "structural *resources* that can enable and constrain human action in different ways" (Rosenbaum & Shachaf, 2010, p. 1936). Thus, ICTs were seen as artifacts that play a specific role in the wider social life, for instance within work organizations, communities or other micro- as well as macro-related entities of society. Although such an approach is vital for understanding the role of technology in various social entities, in this doctoral thesis we will define HROSCs not merely as a resource that can be potentially used in individuals' social life but as *social systems* that in comparison to the view of HROSCs as structural resources recognize that these types of online communities possess their own structure and structural practices, social interactions and practices that are mutually intertwined in the structuration process.

Based on Giddens' theory, HROSCs can be defined as social systems that consist, on the one hand, of patterns of relationship between individuals' social practices, and on the other hand, of structure. An HROSC as a social system is a product of the structuration process and thus produced by social practices and reproduced by structural properties, i.e. rules and resources. In order to investigate the social phenomena in a specific social system, according to Giddens (1979, 1984) one should examine the structuration process and thus the patterns of relations between social practices and structural properties. Since the structuration processes taken from the Giddens theory is a very abstract concept that would be difficult to (empirically) observe, a more concrete implementation and observational simplification of this theoretical concept is needed, which we will provide with the concept of *socio-structural properties*.

We conceptualize **socio-structural properties of HROSCs** as effects brought about by the structuration process, in which the structure of an online community is both a medium and outcome of social practices (Giddens, 1979). Socio-structural properties of HROSCs refer to the interconnection between individuals' social practices and structural properties in a given

social system. More specifically, socio-structural properties of HROSCs consist of relations between social practices, rules and resources (see Figure 4.3). The concept of socio-structural properties allows us to bring the mutual interaction and intertwinement of both social practices and structural properties into one analytical framework. With this conceptualization we emphasize the fact that socio-structural properties of HROSCs are not static but evolve and vary according to the different (intra)organizational structures and accumulated different forms of resources (Orlikowski, 2000). Socio-structural properties are defined as sets of rules and resources that can only exist in association between one another and reconstitution through social interaction.

Figure 4.3: Socio-structural properties: rules, resources and social practices

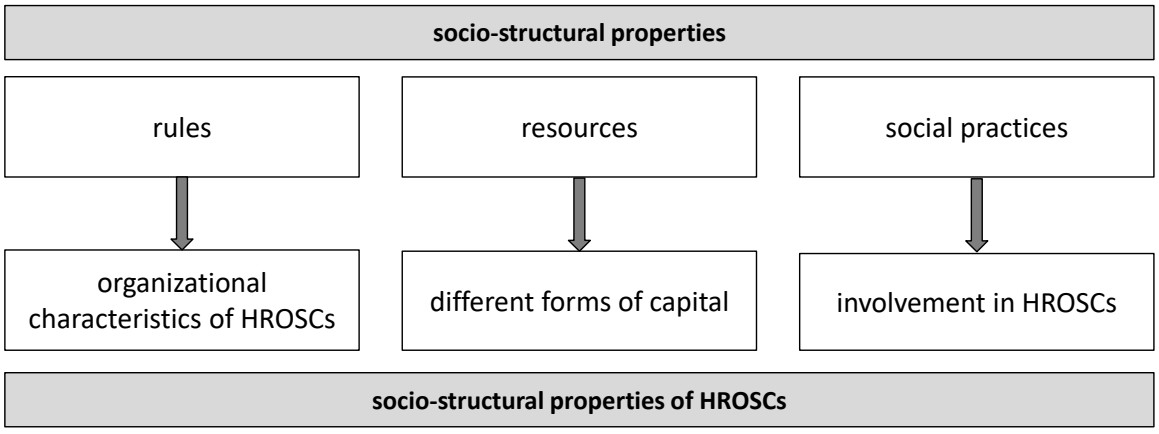


Source: Author's elaboration

Rules in the context of HROSCs refer to generalizable procedures and schemas of social practices and can be considered as organizational features of socio-technical systems. Accordingly, rules in HROSCs can be viewed as organizational properties and characteristics of an online community (see Figure 4.4): as specific codes of conduct like norms, netiquette, principles of practices and sanctions. The organizational characteristics of HROSCs comprise not only formalized structures, i.e. formal agreements, which are usually related to specific job descriptions (e.g. health professional moderators), but also informal structures. The latter are "rather casual, unofficial, loose and not triggered by any rules" and are usually initiated by users themselves (Jahnke & Koch, 2009), e.g. established implicit norms, informal sanctioning, awarding members with specific informally defined and unspoken roles, etc. These two aspects

of organizational characteristics can, in the case of HROSCs (such as Med.Over.Net), be more specifically examined from the organizational characteristics of empowering community settings perspective proposed by Maton and Salem (1995). The empowering community settings approach was proposed in the field of community psychology and is a specific orientation in the research of its leading construct of empowerment (Maton & Salem, 1995). More specifically, it is mainly concerned with identifying the distinctive organizational characteristics that contribute to the development of empowerment in community contexts and thus "to individual development, community betterment, and positive social change" (Maton, 2008, p. 5). As such, this approach can serve as an analytical framework to comprehensively embrace the complexity of the organizational structure of HROSCs and explain how its characteristics are associated with empowered outcomes (Maton, 2008; Maton & Salem, 1995). Since an empowering community setting approach has thus far been applied only in the contexts of local ("offline") communities and not in specific contexts of online communities, such as HROSCs, we will use the tenets and concepts of the theory of managing common resources in online communities (Kollock & Smith, 1996; Kraut, Resnick, & Kiesler, 2012; Petrič & Petrovčič, 2008, 2014a) and the theory of implicit and explicit norms (Burnett & Bonnici, 2003) in order to interpret and apply organizational characteristics to the field of HROSCs.

Figure 4.4: Socio-structural properties of HROSCs



Source: Author's elaboration

Resources, on the other hand, refer to the various material and nonmaterial means that primarily serve as sources for enacting the ability to exercise social practices (Giddens, 1979; Kabeer, 1999). Drawing on Bourdieu's (2002[1986]) capital theory, we base our discussion on the premise that social actors conduct their social practices according to the different forms of

capital they have at their disposal (see Figure 4.4). The social practices of an online community's members are not equally feasible for all members, because different forms of capital are not equally distributed among social actors. Capital can thus be seen as a barrier to, or facilitator of, social actors' practices (Bourdieu, 2002[1986]; Kamin & Tivadar, 2011). Bourdieu distinguishes between economic, social, cultural and symbolic capital. Economic capital refers to materialized property and can be directly converted into money; cultural capital is defined as knowledge, competences and skills that are formally acknowledged or informally recognized; social capital is represented as membership in social groups and in other forms of social association; and symbolic capital, which, in relation to any one of the first three types of capital in a given context, brings prestige, social honor, authority and reputation and thus a distinct social recognition to its owner (Bourdieu, 1985, 1989, 1991, 2002[1986]). Bourdieu's theory and this classification of different types of capital applied to the context of HROSCs appears to be very useful for a comprehensive explanation of which types of resources correspond to which (pre)defined organizational characteristics of an online community, as well as how the interactions between the two influence psychological empowerment.

Rules and resources are always constituted in *social practices* (Giddens, 1979). Drawing from Giddens' and Bourdieu's theories, social practices can, on the one hand, be understood as a response to the structural properties in a social system, where individuals with their activities contribute to a consensus on the meanings and reproduction of the social system. On the other hand, social practices can work as an important instrument for bringing established meanings of the social world and relations between individuals into question and thus encourage renegotiation and redefinition of meaning, which may actually lead to a change of meanings and thus a change of relations in the particular social system. Accordingly, social practices in the context of HROSCs present, on the one hand, an important mechanism for users as reflexive social actors to use the rules and resources in HROSCs to gain competences, skills, control and understanding of the social setting. On the other hand, specific rules and resources of HROSCs can present a barrier to desirable outcomes, where social practices can play a crucial role in changing rules and resources from barriers to facilitators. Social practices thus present one of the most important mechanisms for individuals to achieve positive outcomes such as empowerment. Most of the studies concerned with social practices that can lead to empowering outcomes in HROSCs have been primarily focused on participation in these types of communities and its effect on psychological empowerment (Johnston et al., 2013; Mo &

Coulson, 2010). However, the act of participation in an online community is also always an *involvement in an online community* (see Figure 4.4), which in empowerment theory is considered one of the significant factors of psychological empowerment, especially of its interactional dimension (Hur, 2006; Speer, 2000; Zimmerman, 1995). According to Laverack (2006), involvement and engagement of members in a community's support system, leadership behaviors, belief system and (in)formal role structure provides them with positive circumstances in which to gain skills, competences and abilities that can lead to members feeling empowered and also desirable health outcomes. Accordingly, in this study we will focus on conceptualizing involvement in an online community as one of the important social practices that can bring about HROSC users' empowering outcomes.

Before we proceed to the conceptualization of each individual socio-structural property, we also have to acknowledge the concept of *affordances*, which has very often been appropriated in online community studies and Internet research when referring to specific features and technological design properties, which suggest how they should be used (McGrenere & Ho, 2000). The term "affordance" originated from Gibson's (1979) and Norman's (1988) theories and in its broadest meaning pertains to the action possibilities available in the environment. In relation to technology and social media, the concept of affordances is defined as "relationships among action possibilities to which agents perceive they could apply one or more media within its/their potential features/capabilities/constraints, relative to the agents' needs or purposes, aggregated within or across media contexts, and within or across organizational contents" (Rice et al., 2017, p. 109). According to this definition, the concept of affordance is defined as interaction between users and particular information technology, such as online communities, and its resulting outcomes and thus refers to the process that we conceptualize in this study as interrelation and interaction between structural properties and social practices in a given online community setting. Although the concept of affordances has been proved useful in many studies, the concept has been characterized many times as ambiguous and not well defined, as it is difficult to operationalize the processes and dynamic interrelationship between "attributes and abilities of users, the materiality of technologies, and the context of technology use" (Evans, Pearce, Vitak, & Treem, 2016, p. 36). We believe that for the purpose of this study the concept of socio-structural properties presents a clearer and more comprehensive insight into a complex process of interaction among users, their social practices, perceptions of HROSCs, and their technical, organizational and structural features. The concept of socio-structural

properties, in our opinion, is a very useful theoretical and analytical tool that can help us understand various aspects of, and processes in, HROSCs that can affect the development of users' psychological empowerment.

In the following sections we present the principal conceptualizations of the main socio-structural properties of HROSCs, namely organizational characteristics of HROSCs, different forms of capital, and involvement in HROSCs, and introduce clarification of the relationships among the constructs under study.

4.2 Organizational characteristics of HROSCs

The first socio-structural property of HROSCs pertains to their organizational characteristics that refer to specific features of an online community, which might present important facilitators or barriers for users' various social practices in HROSCs. In the healthcare setting it has been demonstrated many times that organizational structures that provide patients with the opportunity to collaborate with health professionals in a climate where they feel in control and safe contribute significantly to their feelings of self-evaluation, self-efficacy and reflection, which tend to improve their health outcomes (de Jorge, Parra, de la Torre-Aboki, & Herrero-Beaumont, 2015). Specific community settings and their characteristics can promote specific types of relationships in a community, forms of exchanged social support, meaning and a sense of community that very likely determine the community's ability to be a catalyst for empowerment (Christens et al., 2013). The importance of examining the organizational and structural characteristics of communities in relation to the development of psychological empowerment has thus far been mainly recognized in the field of community psychology (Maton, 1988, 2008; Maton & Brodsky, 2011; Maton & Salem, 1995). However, some important recognitions have also been made in online community studies:

> " […] the empowering potential of an online community resides in its social structure, which provides opportunities to set in motion mechanisms – as empowerment theory claims – that allow social groups and individuals to help build psychological dimensions of empowerment. These psychological resources not only help individuals to improve their social position, but also help the group itself to gain control over its resources so as to first recognize and later gain power in society." (Petrič & Petrovčič, 2014b, p. 194)

Thus, organizational characteristics of online communities, including HROSCs, can be important determinants of individuals' social practices that lead HROSC users to empowering outcomes. In the context of HROSCs, specific organizational characteristics have not yet been studied in relation to psychological empowerment. By determining specific features of HROSCs that are associated with users' empowerment, we will be able to better understand which organizational characteristics of HROSCs (in relation to users' social practices and different forms of capital) encourage or constrain users' intrapersonal and interactional empowerment. In this section, we will first focus on the concept of empowering community settings proposed by Maton and Salem (1995) that emerged in the field of community psychology and presents a very useful framework for identifying specific organizational characteristics of HROSCs. In the second part of this section, we will use the empowering community settings theory framework and apply it to the specific characteristics of HROSCs by using the theory of managing common resources in online communities (Kollock & Smith, 1996; Kraut et al., 2012; Petrič & Petrovčič, 2008, 2014a) and the theory of implicit and explicit norms (Burnett & Bonnici, 2003).

4.2.1 The concept of empowering community settings and HROSCs

The processes and outcomes of psychological empowerment within communities and organizations have been extensively studied by community psychology scholars (Laverack & Wallerstein, 2001; Maton, 2008; Maton & Salem, 1995; Wilke & Speer, 2011). These studies reported that community settings can differ in their capacity to empower members. Therefore, empowerment outcomes of community members are associated with features of a community's organization. Many scholars (Maton, 2008; Peterson & Speer, 2000) report that organizational features such as shared and committed leadership, an accessible and multifunctional role structure, an encompassing and peer-based support system and greater commitment to a group-based belief system in the community significantly contribute to the psychological empowerment of a community's members.

In line with these findings, Maton and Salem (1995) introduce the concept of an *empowering community setting*, which draws from theory developed by Zimmerman and Peterson focused on organizational empowerment (Peterson & Zimmerman, 2004; Zimmerman, 1999, 2000). The concept of an empowering community setting (also referred to as empowering organizations) (Zimmerman, 2000) addresses contexts in which internal community (or

organizational) processes help members to achieve their empowerment or lead them toward modifying perceptions and/or behavior (Maton, 2008; Maton & Salem, 1995). An empowering community setting thus encourages members to accomplish important life goals through active participation focused on a sense of control over one's life and a critical awareness of the wider social environment (Wilke & Speer, 2011). These specific settings give their members "an opportunity to actively participate with others, gain power and resources, and achieve primary personal goals" (Wilke & Speer, 2011, p. 976). The investigation of the effects of community setting on intrapersonal and interactional empowerment is important for understanding how the context affects the specific manifestations of psychological empowerment. As emphasized by Akey, Marquis, and Ross (2000), different manifestations of the dimensions of psychological empowerment greatly depend on the level and the specific context in which they occur.

In this doctoral dissertation we apply the concept of an empowering community setting to the context of HROSCs and, in line with our research questions, investigate whether HROSCs can be defined as community settings that have the capacity to empower members. We also explore how different HROSC characteristics affect members' empowerment. As scholars (Maton, 2008; Maton & Salem, 1995; Zimmerman, 2000) emphasize, not every community or organization can be defined as empowering – this quality of a community relates to its characteristics, which importantly determine the potential of a community setting to provide a stimulating environment that fosters members' empowerment. Organizational structures may also undermine the act of empowerment if members of a community do not completely know how to use the features available to them (Rappaport & Seidman, 2000).

In this regard, Maton and Salem (1995) conceptually distinguish between ecological commonality and ecological specificity. Ecological commonality refers to the identification of universal community or organizational characteristics that are uniquely related to empowerment among different settings (Maton, 2008; Maton & Salem, 1995). This means that community or organizational features are generally important for empowerment across various types of communities or organizations. In contrast, ecological specificity focuses on identification of features that apply uniquely to empowerment within one type of setting (Maton & Salem, 1995) and it is thus directly related to investigation of interactions between organizational characteristics, participants and their practices, and empowerment (Peterson & Hughey, 2002). In the context of HROSCs these interactions have not yet been sufficiently explored, and with the examination of HROSCs' ecological specificity further implications can

be drawn in regard to HROSCs' ecological commonality. Thus, a vital consideration in HROSCs is to identify which organizational features facilitate and which provide a barrier to users' individual or collective change and empowerment.

So far only a few models and empirical findings exist that carefully establish organizational characteristics that are important for generating empowerment outcomes in HROSCs or online communities in general. The research conducted by Shen and Khalifa (2013), to the best of our knowledge, is the only study that investigates the extent to which an online community (design) makes use of structures, policies and practices through the empowering community setting approach proposed by Maton and Salem (1995). Shen and Khalifa (2013) argue that organizational characteristics identified within the empowering community setting perspective are not only applicable to physically located settings, but can be also applied to online communities. Based on a survey study among members from seven online communities they demonstrated that organizational characteristics defined as online community design factors impact significantly members' identification with an online community. Although this study was not primarily focused on investigating the effect of online communities' organizational characteristics on psychological empowerment outcomes, it has shown the role of Maton and Salem's (1995) approach in capturing the major aspects of online community organizational characteristics (or "social design" as they refer to it) and in further investigating their effects on different social processes in online communities.

Despite the recognition of Maton and Salem's (1995) outline for online community settings in Shen and Khalifa's (2013) research, their study also has a few shortcomings. First, the study does not investigate how different organizational characteristics in an online community impact members' empowerment, but presupposes that the identified characteristics demonstrate empowerment in an online community setting. Second, the measurement of organizational characteristics in an online community is just partly adapted to the online community setting and is not thoroughly applied to the specific features and aspects of online community contexts such as norms, sanctions, moderation etc., although these aspects are considered theoretically in the study. In this thesis we will overcome these shortcomings and develop a theoretical and methodological framework for investigating organizational characteristics not only in HROSC settings, but also in different types of online community contexts.

Few studies have (implicitly) recognized the importance of organizational characteristics in HROSCs for the development of empowerment outcomes. The study of Petrič and Petrovčič (2014b) demonstrated that the empowering potential of an online community is inherently present in its social structure, which offers its members opportunities that allow individuals and social groups to achieve psychological empowerment outcomes. They showed that under the condition of communicative interaction in an online community the factors of social support exchange, members' involvement in community organization, and education have a positive significant effect on intrapersonal empowerment. Moreover, a sense of virtual community, members' perceived participation in an online community in the wider social environment and involvement in community organization demonstrated a positive significant effect on online community members' interactional empowerment. Further, through the concept of therapeutical affordances and the SCENA (Self-presentation, Connection, Exploration, Narration and Adaptation) model the studies of Coulson et al. (2017) and Shoebotham and Coulson (2016) explored the in-depth mechanisms in online support groups that generate (positive) therapeutic outcomes, such as emotional support, reduced isolation, improved coping mechanisms, reassurance, knowledge and empowerment. Both studies (Coulson et al., 2017; Shoebotham & Coulson, 2016) demonstrated that the affordances enabled by online support groups may be effective aids in coping with and managing specific health conditions.

The theoretical and empirical frameworks for understanding and explaining empowerment processes and outcomes in HROSCs are currently fragmented and often based on unsystematic investigations of the effects of organizational characteristics on psychological empowerment or other social phenomena in HROSCs or the online community in general. So far no theoretical and/or empirical framework exists that can account for organizational characteristics and online community management aspects in relation to resources and practices generated and accumulated by HROSC users. By applying Maton and Salem's (1995) approach we will overcome this gap and advance the theoretical and empirical insights into organizational characteristics of HROSCs and their impacts on users' psychological empowerment.

4.2.2 Application of organizational characteristics to HROSC settings

In the theory of organization characteristics, Maton and Salem (1995) proposed and described four main characteristics of communities that are (potentially) associated with psychological

empowerment of their members. The following characteristics were also recognized in the extensive research in the field of community psychology (Fedi, Mannarini, & Maton, 2009; Peterson & Hughey, 2002; Peterson & Speer, 2000; Wilke & Speer, 2011) as important ecological commonality characteristics that appear to be essential for the development of an empowering community setting: **(1) leadership; (2) a group-based belief system; (3) an opportunity role structure; (4) a support system.** We believe that this approach is also vital for the examination of HROSC settings. Although Maton and Salem's (1995) approach has until now only been addressed in cases of different offline community settings (e.g. religious fellowships, support groups, local communities), their perspective could be adapted, as already shown in the case of general online communities (Shen & Khalifa, 2013), to the context of HROCSs, as specific community settings with a high level of empowering potential (Eysenbach et al., 2004).

Table 4.1: The relation between Maton & Salem's (1995) defined organizational characteristics and their application to the HROSC settings

Organizational characteristics (Maton & Salem, 1995)	Organizational characteristics in HROSCs (Kollock & Smith, 1996)
LEADERSHIP refers to the interpersonal qualities, personal problem mastery and organization skills of a leader(s) that have an important direct and/or indirect influence on group functioning (Maton, 1988, 2008).	**INSTITUTIONS of HROSCs, i.e. MODERATION** refers to management of social interactions between online community members by implementing norms and building a framework for normative behavior in a community (Petrič & Petrovčič, 2014a).
A GROUP-BASED BELIEF SYSTEM refers to the degree of order in an organization and thus to the (minimal) set of rules and norms (Maton, 1988).	**RULES and SANCTIONING MECHANISMS, i.e. NORMS and SANCTIONS** refer to rules that are formally written in specific documents or informally emerge in social interaction among HROSCs members and prescribe which situations and behaviors merit sanctions and thus punishable and rewarding situations and behaviors (Burnett & Bonnici, 2003; Petrič & Petrovčič, 2014a).
AN OPPORTUNITY ROLE STRUCTURE refers to the amount, accessibility and arrangement of (formal) positions and roles that provide chances for members to cooperate, build relationships, take control of group tasks, and build their skills and competences (Maton & Salem, 1995; Peterson & Speer, 2000).	**CREATION of RULES and specific types of MONITORING and SANCTIONING MECHANISMS, i.e. MEMBERS' PARTICIPATION in THE FORMATION OF NORMS,** which refers to the opportunity for members to contribute to how explicit and implicit norms are designed and how they frame users' social interactions in an online community (Kollock & Smith, 1996), and **MONITORING MECHANISMS**, which are often referred to as "reputation mechanisms" and have the function of informal sanctioning of inappropriate behavior, as well as rewarding behavior that is in line with the explicit or implicit norms in an online community (Petrič & Petrovčič, 2014a; Resnick, Kuwabara, Zeckhauser, & Friedman, 2000).
A SUPPORT SYSTEM refers to the degree of socializing and support exchange opportunities, development of a sense of community and reciprocity between community members (Maton & Salem, 1995).	**A SENSE OF VIRTUAL COMMUNITY** refers to members' sense of belonging to the online community, the formation of community identity, feelings of commitment to the online community, emotional attachment, influence and perceived common experiences among community members (Blanchard & Markus, 2004; Petrič & Petrovčič, 2014a).

Source: Author's elaboration

Drawing on a framework proposed by Maton and Salem (1995), we will first describe each of the identified community's characteristics and associate them with specific concepts and phenomena that correspond to the HROSC settings. This will be accomplished by drawing from the theory of managing common resources in online communities (Kollock & Smith, 1996; Kraut et al., 2012; Petrič & Petrovčič, 2008, 2014a; Smith & Kollock, 1999) and the theory of implicit and explicit norms (Burnett & Bonnici, 2003). With the help of these theories we will demonstrate how: leadership in HROSCs corresponds to different types of moderation; a group-based belief system corresponds to HROSC norms and sanctions; an opportunity role structure can be viewed in the HROSC setting as online community members' participation in the formation of norms and monitoring mechanisms; and a support system can be seen as a sense of virtual community (see also Table 4.1).

Leadership – type of online (health) community moderation

Leadership refers to the attributes of individuals that are formally or informally designated with authority in an organization, community or group and has an important influence on its functioning (Maton, 1988). According to Maton's theory of empowering community settings (Maton, 1988, 2008; Maton & Salem, 1995), leadership pertains to the intrapersonal qualities of an individual, his/her personal problem mastery, and organizational skills that have direct or indirect influences on the management of collective goods and resources. Leaders in an organization, community or group should, as scholars (Maton & Salem, 1995; Peterson & Speer, 2000) emphasize, be interpersonally and organizationally talented, committed and dedicated to its members. According to Lieberman and Golant (2002), different types of leadership behaviors play a distinct role in enhancing the positive experiences and outcomes for a community's members. Leaders in a community can influence members either directly, by interacting with them, or indirectly, by influencing other community structures (Maton, 2008).

According to the theory of managing common resources in online communities (Kollock & Smith, 1996), leadership corresponds to institutions in online communities that refer to the rights of community members to participate in the management of rules and to the authority who puts online community rules into practice with or without the cooperation of community members. In HROSC settings and online communities in general, leaders are usually moderators, discussion administrators or health professional moderators who have been

formally appointed by online community managers. Moderation can be conducted in online communities by human moderators, but very often it is also performed with software agents that approve or reject posts to the online community's discussion before they get actually posted or even after they have been posted (Ren & Kraut, 2014). The purpose of software moderation is to minimize the extent of off-topic messages and to prevent spam, antisocial flames and messages posted by trolls (Ren & Kraut, 2014). However, leadership in HROSCs does not exclusively pertain to administrators, expert moderators or even software agents and bots, but rather often includes online community users, usually frequent and loyal posters. For instance, Zhao et al. (2011) report that members of HROSCs often acquire leadership qualities that can be expressed in online discussion forums by prolific posting, initiating and following threads, dealing with community problems, guiding newcomers and inspiring other online community members. These types of users are also often referred to as "opinion leaders," who are usually highly engaged individuals that are recognized by other online community members as trustworthy, honest and open to discussions about specific or general issues (Turcotte, York, Irving, Scholl, & Pingree, 2015). While types of moderation can be categorized as peer-led or professional-led, this classification of moderation in HROSCs usually pertains more closely to the online social support provided by specific moderators. As studies have demonstrated, there are significant differences between health professional moderators, who provide users with clinical expertise and more often offer an informational type of social support, and peer or patient moderators, who in HROSCs usually share their patient experiences and provide help to other members (Klemm, 2012; Lieberman, 2008; Lindsay, Smith, Bellaby, & Baker, 2009; Smedley & Coulson, 2017).

One of the important features of leadership in HROSCs refers not only to who is performing it but also to how specific leadership tasks and activities related to discussions and organization in HROSCs are performed and how they are perceived by other online community members. Leadership thus importantly pertains to **different types of moderation in online communities** and how community building and maintenance is performed. According to the theory of managing common resources in online communities (Kollock & Smith, 1996), moderators have an important institutional role in online communities, as they are the ones who manage the community's resources and have a crucial role in encouraging other online community members to actively participate not only in discussions but also in community organization and external online community activities. Moderation in an online community refers to the

"management of social interactions among members of online communities. It is an effective way of implementing norms as it allows members who do not adhere to normatively expressed behavior to become acquainted with the rules" (Petrič & Petrovčič, 2014a, p. 439). Moderation presents one of the important mechanisms for maintaining the vitality of an online community, since through moderation it is decided which rules should be followed by community members, which discussions and topics get censored and which promoted, and which members can be included in online community debates and who are the ones that get excluded (Ewing, 2008). From this perspective, moderation includes activities such as deleting and editing posts, mediating in conflicts between community members, guiding and encouraging discussions and enforcing (formal) sanctions (Berge & Collins, 2000; Petrič & Petrovčič, 2014a). The extent of different moderation activities and tasks also very much depends, as emphasized by Petrič and Petrovčič (2014a), on online community managers' and owners' self-conceptions, needs and goals.

Drawing from the theory of managing common resources in online communities (Kollock & Smith, 1996; Kraut et al., 2012; Petrič & Petrovčič, 2008, 2014a; Smith & Kollock, 1999), a distinction between two different types of moderation is proposed: *interactive* and *content moderation*. Interactive moderation refers to initiating meaningful discussions and promoting the following of specific online community norms through two-way communication between moderators and members (Petrič & Petrovčič, 2014a; Wright, 2009). In this type of online community moderation, moderators explain and discuss their moderating actions with online community members, and specific norms and sanctions in the community can also be negotiated and on some occasions also changed (Petrič & Petrovčič, 2014a). In contrast, in enacting content moderation, moderators do not discuss or provide explanations for their actions, provide explicit references to norms or include any other type of justification for their moderating activities (Petrič & Petrovčič, 2014a). Content moderation is thus usually perceived as actions that are managed "in the background" or "behind the scenes" in online communities and thus refers to a silent type of moderation (Petrič & Petrovčič, 2014a; Wright, 2009).

In HROSCs, moderation presents one of the crucial aspects in a community becoming an empowering setting. The act of moderation has the power to limit potential damage to the community dynamics that might be violated by conflicts among community members, harmful behavior and content that might importantly influence the specific health-related behavior and outcomes of community members (Coulson et al., 2017). It has also been demonstrated that

moderators' enthusiasm and attitude toward the community influences other community members to feel a greater commitment and belonging to the online community (Koh, Kim, & Kim, 2003). Specific moderation actions and types can also be perceived very differently by community members. On the one hand, content moderation can be viewed as an external pressure that can hinder members' identification and sense of attachment to the community (Petrič & Petrovčič, 2014a), but the lack of off-topic and harmful posts removal can also discourage members from participating and can even motivate them to leave a community (Ren & Kraut, 2014). Interactive moderation can be seen, on the one hand, as a deliberative communication (Wright, 2009) that might present the basis for reciprocity, transparency and trustworthiness between community members (Petrič & Petrovčič, 2014a), but on the other hand, publicly displaying and discussing inappropriate behavior can discourage members from participaing, although such actions might increase their adherence to the norms (Kiesler, Kraut, Resnick, & Kittur, 2012). The type of moderation is thus also importantly related to the norms and sanctions in an online community.

Group-based belief system – online (health) community norms and sanctions

A group-based belief system is broadly defined as "a setting's ideology, values, or culture" (Maton & Salem, 1995, p. 639) and refers to community goals, guidelines, values and (explicit and implicit) norms, which more specifically inform members about "who we are and what we do" (Shen & Khalifa, 2013, p. 988). Further, a group-based belief system refers to the degree of order and organization in a community, which presupposes a minimum set of rules and/or (formal and informal) norms that specify patterns of expected behavior, intended to produce desired outcomes in a community (Maton, 1988, 2008). As such, a community group-based belief system directs members how to achieve individual and community goals (Peterson & Speer, 2000). As Maton and Salem (1995) emphasize, the group-based belief system is empowering in a community when it provides opportunities to provide members with goals and norms that are capable of motivating them to achieve both their personal and the community's goals.

Group and individual belief structures derive from the values and norms of the community (Yu, Lu, & Liu, 2010). According to the theory of managing common resources in online communities (Kollock & Smith, 1996), in the context of HROSCs and online communities in general, a group-based belief system relates to the **rules and sanctioning mechanisms**. These

mechanisms more specifically refer to online communities' implicit and explicit norms, which govern the communities' collective goods and determine who is responsible for producing and maintaining common resources. Moreover, sanctioning mechanisms in an online community not only pertain to the modes of punishing those who do not comply with the online community rules but also to the demonstration to the online community members that rules apply to all participants in an online community (Kollock & Smith, 1996). With a set of norms and sanctions, an online community implicitly or explicitly presents its beliefs, values, patterns of desired behavior and how a member in a community should achieve specific goals. A suitable set of norms is especially important for online communities, as they represent the means to structure and guide online community behavior and actions in a way that they follow the community's beliefs and values, which has a key role in establishing and maintaining valuable common resources among community members and their social cohesion, which are crucial for achieving empowering outcomes.

The social norms prescribe which situations and behaviors in HROSCs merit sanctions and they comprise a set of beliefs that predict punishable and rewarding situations and behaviors (Vyrastekova, Funaki, & Takeuchi, 2011). Social norms are defined as "a set of values peculiar to a group, the purpose of which is to provide a sense of balance, a mechanism through which an individual may gauge what is 'normal' and 'acceptable' within a specific context or situation" (Burnett & Bonnici, 2003, p. 334). The primary function of norms in an online community is to detect, reverse and sanction various forms of misconduct (Petrič & Petrovčič, 2014a). For conceptualizing norms in online communities the theory of explicit and implicit norms (Burnett & Bonnici, 2003) can provide us with clear distinction of different types of norms. Burnett and Bonnici (2003) distinguish between explicit (formal) norms and implicit (informal) norms in online communities.

Explicit or formal norms refer to the rules that are formally codified in documents, such as frequently asked questions (FAQs), and explicitly define the purpose and specific guidelines, principles, methods and standards of behavior in an online community (Burnett & Bonnici, 2003). Implicit (informal) norms, on the other hand, refer to the rules and principles that emerge in social interactions between online community members and are not formally codified in any written document. These types of norms are commonly understood among the members of the online community and are used informally to prescribe what type of behavior is acceptable and which social practices of members are not (Burnett & Bonnici, 2003). Social norms in an online

community, whether explicit or implicit, have a function of structuring social practices and can present both an important opportunity and constraint in achieving specific goals and conducting particular interactions with other community members. In the context of HROSCs it has also been demonstrated that specific explicit or implicit norms can have an important effect on how users seek social support and advice, how they express health-related needs and to whom they turn when they search for health-related information (Visser et al., 2016). In the study of Lovatt, Bath, and Ellis (2017) conducted on a breast cancer forum, using an appropriate tone in discussions was perceived as an important informal norm that enabled users to demonstrate their trustworthiness, which made it possible for them to become a part of the community. On the other hand, ranting and being negative in interaction among members was viewed as being an "attention seeker," which was characterized as inappropriate in comparison to helping and supporting other users.

In the theory of managing common resources in online communities (Kollock & Smith, 1996; Petrič & Petrovčič, 2014a) it has been suggested that for the online community it is not only important what the substance of norms is, but also how they are designed and enforced. Norms are always accompanied and enacted by sanctions in an online community. Sanctions generally refer to punishments or rewards "inflicted by one person on another (or oneself) who engages in a certain behavior" (Interis & Haab, 2014, p. 271). Sanctions can thus be viewed as reactions to violation or obedience to specific explicit or implicit norms in an online community and indicate approval or disapproval of a behavior, which helps in building behavioral standards in an online community (Baeriswyl, Staake, & Loock, 2011). We can distinguish between formal and informal sanctions. The former are usually enacted by moderators and can involve activities such as "giving warnings to users, placing special tags on members' profiles, as well as more rigorous sanctions such as temporary or even permanent disabling of access to the online community" (Petrič & Petrovčič, 2014a, p. 440). In contrast, informal sanctions are usually conducted by other community members and can be defined as spontaneous reactions to (non)conformity of other online community members, and can include appraisal, appreciation, ignorance, mockery, insults etc. Both types of sanctions can be a source for different negative and positive social practices and behavior, such as inflammatory behavior and conflicts, but also a source for establishing solidarity, trust, support and a sense of belonging to the online community, which can present important factors for the development of empowering outcomes.

Opportunity role structure – participation in online (health) community formation of norms and monitoring mechanisms

An opportunity role structure comprises the extent to which organization of the community allows its members to access and configure a variety of social roles established in the community (Maton & Salem, 1995; Peterson & Speer, 2000). The opportunities in the role structure also refer to the distribution of group tasks and responsibilities among community members (Maton, 1988, 2008; Maton & Salem, 1995). More specifically, it refers to the presence of multiple rotating roles and encouragement of members to fill a variety of those roles, which gives community members an opportunity to take charge of different aspects of community functioning. Accordingly, a community with a developed opportunity role structure, i.e. an appropriate amount, access and arrangements of (formal) positions and roles, can provide members with chances to cooperate, build relationships, take control of community tasks, and build their skills and competences (Peterson & Speer, 2000). This aspect of community functioning is especially relevant for the development of psychological empowerment as it encourages community members to actively participate, and develop and utilize a specific set of skills and a higher level of responsibilities for both the community and themselves (Maton & Salem, 1995).

According to the theory of managing common resources in online communities (Kollock & Smith, 1996), an opportunity role structure refers to the opportunities of online community members to influence the nature of the community, which can be more specifically related to **the level of creation of rules and the presence of a specific type of monitoring and sanctioning among community members**. The creation of rules in online communities, including HROSCs, presents one of the important aspects of community functioning, as (formal) rules differ in the level of implementation in online community members' social interaction. Specific rules, including those formally appointed by community managers and moderators, are not necessarily accepted as legitimate among online community members (Kollock & Smith, 1996). As emphasized by Petrič and Petrovčič (2014a), the relationship between different types of rules, i.e. explicit and implicit norms in an online community, is an essential element in understanding the process of creating rules in online communities. While the prominent position of explicit norms is important for community members' awareness about their content (Kiesler et al., 2012), this does not mean that these norms will be unconditionally accepted and assigned as legitimate by online community members (Petrič &

Petrovčič, 2014a). It can also happen that online community users are not satisfied by the implementation of specific norms, which can be followed by their resistance, subversion and transformation of norms (Petrič & Petrovčič, 2014a). Social norms in an online community can thus present a source of conflict among online community members, as well as among community members and online community managers, administrators or moderators, especially when social norms are perceived to be enforced and implemented to exert control over online community participants (Aakhus & Rumsey, 2010). In the theory of managing common resources in online communities, Kollock and Smith (1996) emphasize the importance of online community **members' participation in the formation of online community norms**, which refers to the opportunity for members to contribute to how explicit and implicit norms are designed and how they frame users' social interactions in an online community. Users' participation in the formation of norms has been associated with an increased sense of belonging, higher levels of the acceptance of community functioning, and a feeling of responsibility and having a role in an online community.

The possibility of users participating in the formation of norms has been identified as an important factor of psychological empowerment, as community members can in such settings develop meaning in an online community, find similar others and connect with other community members that share similar personal and social (health-related) issues and experiences. In the context of HROSCs, Aakhus and Rumsey (2010) demonstrated that interactional norms in an online support community present an important subject for community members' discussions about preferences, sequences and exchanges of supportive communication, which essentially contributed to members' expression of emotions, finding recognition and understanding, as well as the development of skills and health-related knowledge. Online support community members' participation in the formation of group norms was crucial for the development of social interactions and communication between community members that satisfies their health-related needs and demands, and plays a role in promoting (new) healthy habits (Aakhus & Rumsey, 2010; Chuang & Yang, 2010).

Another aspect of the opportunity role structure in HROSCs and in online communities in general is related to **monitoring mechanisms**, which refer to peer reviewing among community members (Kollock & Smith, 1996). These mechanisms are also often referred to as "reputation mechanisms," the function of which is informal sanctioning of inappropriate behavior, as well as rewarding behavior that is in line with the explicit or implicit norms in an

online community (Petrič & Petrovčič, 2014a; Resnick et al., 2000). Monitoring mechanisms thus include both rewarding and informal sanctioning, which are performed through community members' social interactions and communication. These mechanisms can be enacted through community members' "ability to assess others' messages, reporting inappropriate behavior, and giving feedback on transactions [which] are ways to express appraisal, appreciation, or ignorance, and mockery" (Petrič & Petrovčič, 2014a, p. 441). Among monitoring and sanctioning mechanisms, positive sanctioning and building on reputation among online community members have, in particular, been associated with a higher level of contribution and involvement in online communities, reproduction of online community norms and increased cooperative behavior, which give members an important opportunity to influence the nature of the online community (Kiesler et al., 2012; Petrič & Petrovčič, 2014a). Positive sanctions reward members for following an online community's formal and informal norms, which gives them an opportunity to increase their reputation, status and visibility in the online community and thus to modify (advance) their role in online community forums. Sanctioning mechanism are thus closely related to the users' social roles in HROSCs, as they provide a distinction and differentiation among users. In some HROSCs and online communities in general social roles are explicitly labelled (e.g. newcomers, experts, caretakers, etc.) or no such names for users' social roles are used and the role is determined by users' status and reputation.

In HROSC settings, monitoring and sanctioning mechanisms might play an important role in members' motivation to interact with other members in an online community and to increase their self-value, relevance, self-esteem, skills and competences, which have important implications for the development of intrapersonal empowerment. In particular, positive sanctioning can encourage HROSC users to take charge of different aspects of online community functioning, as well as achieving their personal goals. Receiving appraisal, gratitude, compliments, approval and recognition gives users feelings of influence, power and the ability that they can impact a course of events, whether related to their personal health issues, social interactions in an online community or mobilizing resources and cooperating with other users (Peterson & Speer, 2000).

Support system – a sense of virtual community

A support system refers to the degree of socializing and support exchange opportunities, the development of a sense of community and reciprocity among community members (Maton & Salem, 1995). This organizational characteristic is very important for members in experiencing (positive) health outcomes, as it contributes to their quality of life and ability to develop coping mechanisms when dealing with health issues. According to Maton and Salem (1995), a support system contributes to the empowering community setting when it offers a wide variety of types and sources of available social support and when it provides members with a sense of community.

Social support, according to the theory of empowering community settings, is one of the important organizational characteristics of communities and refers to the degree to which community members receive support and provide different types of social support to other community members (Maton, 1988; Peterson & Speer, 2000). The exchange of social support in online communities, such as HROSCs, usually occurs publicly, which means that other users of the online community can observe the exchange of different types of social support among online community members, although only a few users are actually involved in such a transaction. According to Blanchard (2008), publicly available exchange of social support gives other online community users a perception that the community is supportive, which might indirectly be beneficial for all community users, including those that were not active in such exchanges. This organizational characteristic in HROSCs is thus visible through possibilities and constraints of specific subcommunities: for instance, the extent to which online counseling forums allow users to contribute their experiences, first-hand information and advice regarding health-related problems as an addition to the health professional moderator answers. Although it is clear that exchange of social support in HROSCs can, to some extent, be defined as an organizational characteristic of an online community, the definition of social support conceptualizes it as a resource exchanged in social interactions and relationships among individuals or groups that provide people with the feeling of being cared, loved and assisted when needing to solve or eliminate different kinds of issues or problems that cause them distress (Barrera, 1986; Cobb, 1976; Cohen & Syme, 1985). Social support has been defined as a "behavioral outcome of social capital" (Beaudoin & Tao, 2007, p. 587). Even Maton (1988, 2008) who defined social support as an important system and organizational characteristic of communities, has, in his studies, observed and empirically measured social support as a

resource exchanged in social interactions among community members. Accordingly, we will conceptualize social support in this study as a form of social capital and thus as an important resource that can be exchanged through communication, relationships and interactions between HROSC users. The concept of social support will thus be more specifically conceptualized in the next section on different forms of capital.

Further, the organizational characteristic of a support system also refers to the extent of the encouragement and enabling of the development of a sense of community, which many studies have emphasized as one of the key factors substantially associated with a higher level of psychological empowerment (Maton & Salem, 1995; Speer et al., 2013; Speer, 2000). A sense of community refers to "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (McMillan & Chavis, 1986, p. 9). The concept of a sense of community was extended by Blanchard and Markus (2004) to online community settings, who defined it as a sense of virtual community. Like the sense of community, a **sense of virtual community** is related in online communities, such as HROSCs, to members' sense of belonging to the online community, the formation of a community identity, feelings of commitment to the online community, emotional attachment, influence and perceived common experiences among community members (Blanchard & Markus, 2004; Blanchard, Welbourne, & Boughton, 2011; Petrič & Petrovčič, 2014a). A sense of virtual community has been identified as one of the important characteristics of online communities that differentiate between those online communities that have a sustainable membership, valuable social relationships among members, and a rich information and knowledge base, and those online communities that have an unstable membership base and produce a small number of posts and limited content (Petrič & Petrovčič, 2014a). To some extent, a sense of virtual community in online communities is dependent on the online community structure, features and management, which must be designed in a way that they ensure and foster the possibility of community members developing a sense of belonging, commitment to the community and identification with other members (Kollock & Smith, 1996; Kraut et al., 2012; Petrič & Petrovčič, 2014a). A sense of virtual community thus only develops in specific socio-technical circumstances that consist of a sustainable normative structure (Blanchard & Markus, 2004; Petrič & Petrovčič, 2014b). However, the online community functionalities cannot contribute to the development of a sense of virtual community just because specific features of online communities have been

theoretically related to it. Specific functionalities in online communities can "set in motion psychosocial processes that will eventually increase members' sense of belonging to and identifying with the online group" (Petrič & Petrovčič, 2014a, p. 442).

A sense of virtual community has been related in an online community setting to increased user satisfaction with the online community, a higher level of users' building of community knowledge, enhanced involvement, commitment and problem-focused coping behavior, all of which have positive effects on online community sustainability and success (Abfalter, Zaglia, & Mueller, 2012; Blanchard, 2008; McMillan & Chavis, 1986). Moreover, a sense of virtual community has been associated in online support groups with positive health outcomes, where the sense of virtual community also had an important role in buffering the relation between stress and health symptoms. The study of Welbourne, Blanchard, and Boughton (2009) conducted on an online infertility support group demonstrated that users with a stronger sense of virtual community experienced a lower level of health symptoms and did not experience a detrimental impact of stress on their health outcomes.

The sense of community phenomenon has already been identified in the field of community psychology and studies on psychological empowerment as an important factor of psychological empowerment (Maton & Salem, 1995; Speer et al., 2013; Speer, 2000). It is thus not surprising that a sense of virtual community has been associated in the contexts of online communities and HROSCs with both users' intrapersonal and interactional empowerment. A sense of virtual community presents a crucial mechanism for strengthening interpersonal relationships and ties among online community members and decreases the feeling of isolation, and enhances users' self-esteem and the feeling of meaning and self-relevance, which has important implications for the development of intrapersonal empowerment (Petrič & Petrovčič, 2014b; Welbourne et al., 2009). Moreover, a sense of virtual community encourages the development of group awareness that the cooperation between community members strengthens their social power in wider social structures, which is crucial for the development of interactional empowerment outcomes (Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014a).

4.3 Different forms of capital in HROSCs

One of the key issues in studying the empowerment outcomes is the disclosure of the accessibility and allocation of the valued resources in the contexts of specific individual, organizational or community issues (Kabeer, 1999; Laverack, 2006; Speer & Hughey, 1995; Zimmerman, 1999). For social settings to be beneficial and empowering for individuals, the social structure of the settings must provide access to, and distribution of, different kinds of resources that can support social processes, which can convert those resources into valuable benefits for individuals (Butler, 2001). Discovering which resources are needed for users of HROSCs to become empowered is of great importance, because it can also give us answers to the differences between users and their achievement of empowering outcomes, which can greatly inform how HROSCs can secure users' and community well-being. Drawing on Bourdieu's (2002[1986]) capital theory, we base our discussion on the premise that individuals conduct their social practices according to the different forms of capital they have at their disposal. The social practices of an online community's members are not equally feasible for all members, because different forms of capital are not equally distributed among individuals. Capital can thus be seen as a facilitator of, or a barrier to, HROSC users' practices (Bourdieu, 2002[1986]; Kamin & Tivadar, 2011).

Bourdieu (2002[1986]) conceptualizes different types of capital in relation to a particular social field. The field is defined as "a network /…/ of objective relations between positions" (Bourdieu & Wacquant, 1992, p. 97) and in our case can be directly associated with the context of HROSCs and their specific organizational characteristics, which consist of particular regulation principles that determine which type of capital corresponds to which (pre)defined organizational characteristic. One of the most fundamental characteristics of Bourdieu's concept of capital is that it represents the power relations among individuals in a specific structure of the field (Bourdieu & Wacquant, 1992). Individuals' position in a social field is the result of previous individuals' social practices and the resources that can enable future social practices. The achievement of empowerment for individuals thus depends on their social position in the field and the likelihood of individuals attaining the stakes needed to achieve specific goals (i.e. empowerment), which are enabled and constrained by different forms of capital that individuals accumulate and distribute inside and outside the social field.

Moreover, Bourdieu (2002[1986]) also presumes that each type of capital transforms into, converts in and complements other types of capital. With different forms of capital, social actors aim to maintain or change (improve or lower) their social position in a particular field (Bourdieu, 2002[1986]). For instance, in many cases of HROSCs, knowledge and experiences concerning specific health conditions are positively valued by online community members (Huh et al., 2013). This means that greater health-related knowledge and skills accumulated by community members can be converted into social capital and eventually presented in a greater number of social ties, in an enlarged social network and useful acquaintances. These may also be perceived as symbolic capital manifested as greater respect, authority and greater opportunity in the role structure of a particular online support group. In this sense, symbolic capital consequently provides community members with legitimization and the power to participate, individually or collectively.

With the introduction of the reconversion strategies among different forms of capital in a specific social field, Bourdieu (2002[1986]) also importantly emphasizes that what is important is not only the accessibility of particular kinds of capital in a field, but also the mobilization, production and demonstration of their capacity in social practices. According to Bourdieu (1985, 1989, 1991, 1998), individuals' position in a social field is based on three dimensions: (1) the amount of capital they possess; (2) the distribution of their capital in a field; and (3) the temporal value of the amount and structure of the capital in a field. Based on these three dimensions, a social field can be defined as a three-dimensional space that is based on the amount of capital, the distribution of different forms of capital and the transformation of these two dimensions over time (Bourdieu, 2002[1986]).

Accordingly, in the context of our study on HROSCs and empowerment, it is of great importance not only to identify the valuable forms of capital in HROSCs but also to investigate under which conditions specific types of capital have an important role in individuals' empowerment. In his theory, Bourdieu (2002[1986]) defined four different forms of capital, namely economic, cultural, social and symbolic capital. In the field of health, the first three forms of capital in particular have often been used for examining individuals' health outcomes and inequalities and have thus been associated with advantages and disadvantages related to health outcomes, healthcare utilization and even to the promotion of healthy behaviors (Abel, Fuhr, Bisegger, Ackermann Rau, & Group, 2011). In the studies on HROSCs, different forms of capital have, to some extent, been addressed and researched (Beaudoin & Tao, 2007; Drentea

& Moren-Cross, 2005). In particular, (online) social support as a form of social capital has been one of the capital types that have been most exhaustively researched in relation to empowerment processes and outcomes (Mo & Coulson, 2012; van Uden-Kraan et al., 2008c). However, so far, to the best of our knowledge, there has been no systematic research that has tried to incorporate all the different forms of capital in one study on empowerment in HROSCs.

In the following subsections we focus on each of the four forms of capital as defined by Bourdieu, interpret them in the field of health, and apply them to the context of HROSCs. In this thesis we will mainly focus on different forms of capital obtained through participation in HROSCs; however, we are aware that community members also accumulate different forms of capital by participating and engaging in other social contexts that can contribute just as importantly to feelings of empowerment and possible positive health-related outcomes. Moreover, some specific types of capital are also inborn, for instance bodily capital or being born in the family with lower level of economic capital, that present important predispositions for further possibilities and options in different social fields. Accordingly, these important aspects of different forms of capital in relation to the HROSC context are also (to some extent) considered.

4.3.1 Economic capital

Bourdieu (2002[1986], p. 281) defines economic capital as a resource that is "immediately and directly convertible into money and may be institutionalized in the form of property rights." Although economic capital is usually defined through income, it also includes other nonincome-related material resources, such as (financial) properties, land or property ownership that can be potentially converted into money. In the field of health, the economic capital of individuals presents one of the crucial resources that has a significant impact on individuals' health-related outcomes and behaviors. As argued by Kamin and Anker (2014), economic capital is of crucial importance as it enables individuals to afford remedies, healthcare services, treatments, devices and instruments for managing health conditions and disorders, physical workouts, healthy food, and other tools and activities that might directly influence health outcomes or at least reduce health risks and alleviate health problems. Economic capital has thus been recognized as an important determinant of one's health, as the lack of material and financial resources causes individuals more stress, and feelings of powerlessness and vulnerability, which negatively influence perceptions of health status,

mental health and also physical health (Ahnquist, Wamala, & Lindstrom, 2012; Pinxten & Lievens, 2014). It has been demonstrated that economic capital also presents one of the important factors of health inequality and social exclusion (Wilkinson, 1997).

In the field of community psychology, the study of Peterson and Hughey (2002) demonstrated that the economic circumstances of individuals importantly influence their intrapersonal empowerment. While these findings pertain to local (offline) communities, to the best of our knowledge, in the studies of HROSCs and empowerment, economic capital has not yet been investigated as a factor that might have an influence on users' psychological empowerment. One of the reasons behind this lack of research on this topic might be related to the fact that economic capital is usually not a resource that users of this type of online community obtain or distribute in interactions with other community members. Economic capital is usually defined as a resource that HROSC users accumulate in social contexts external to online communities, i.e. the offline environment. While this is to some extent true, online communities are increasingly becoming places where financial and material transactions represent an important part of community members' interactions. In consumer online communities, material and also financial transactions and exchange of goods and services represent the primary purpose and interest of these types of online community members (Brodie, Ilic, Juric, & Hollebeek, 2013).

While the primary purpose of HROSCs is not related to exchanges of financial and material resources and assets, these types of online communities also include specific kinds of economic capital transactions. For instance, in HROSCs users might exchange, sell or give away (used) health-related tools, medical equipment and supplies. Moreover, HROSCs might charge users to use services and consultations with health professional moderators (Wu & Lu, 2018). Further, various types of online communities, including HROSCs, might include various reputation mechanisms and functions, such as badges, titles, loyalty points, tags, etc. that might not directly have monetary value but can in some cases also be translated into (health-related) discounts, services, software and goods. With the blockchain technology and incorporation of tokens and cryptocurrency into online community exchanges and contributions, economic capital can be seen as one of the potential resources that will have increasing value among online community (including HROSC) users and will influence users' participation, contributions, exchanges, co-creation practices, ownership rights and consequently also (health-related) outcomes.

4.3.2 Cultural capital

Cultural capital, according to Bourdieu's (2002[1986]) theory, is a construct that consists of three states. First, cultural capital can be observed as an *embodied state* or *incorporated cultural capital*, which refers to the history of the material and cultural conditions in which we have lived and still live and represent an important part of our body. Embodied cultural capital is expressed through our looks, speech and gestures, and can even be reflected in our posture and the movements of our body. This state of cultural capital is what we often refer to as "having culture" or being cultivated to behave appropriately in a given social situation (Bourdieu, 2002[1986]). As such, it refers to cognitive abilities, taste, personal dispositions, habits, competencies and skills (Kamin, Kolar, & Steiner, 2013). The second state of cultural capital is the *objectified state*, which pertains to the specific cultural objects that we possess, for instance books, paintings, monuments, instruments, machines and other materialized cultural goods. These cultural goods can be seen as material objects that incorporate the representation of knowledge and meaning that has been developed and accumulated over a specific period of time in society (Abel, 2007). This state of cultural capital is most closely related to economic capital, but in contrast to the emphasis of objectified cultural capital lies in its ability to use these objects and goods and thus have the culturally learned capabilities to understand, use and apply it. The third state of cultural capital is the *institutionalized state*, which more specifically refers to formal educational qualifications, i.e. the level of our academic degrees and titles that are granted by educational and academic institutions (Bourdieu, 2002[1986]).

In the field of health, cultural capital has been recognized as one of the most relevant determinants of one's health outcomes and lifestyle (Abel, 2007; Kamin et al., 2013). Kamin and Anker (2014) systematically described and presented the manifestations of different states of cultural capital in the field of health (see Table 4.2). Objectified cultural capital is related in the field of health to health-related journals and books, instruments, devices, tools, applications and digital technologies that can be used for delivering healthcare, measuring and monitoring individuals' bodily functions, management of chronic conditions and self-care practices among patients (Kamin & Anker, 2014). As emphasized by Kamin and Anker (2014, p. 98), objectified cultural capital has a dual value, the first being economic and the second symbolic:

> "The first relates to ownership rights, while the second essentially relates to embodied cultural capital: the skills and knowledge needed to appreciate, use or consume the technology, instruments and cultural artifacts concerned (Bourdieu, 1986). It involves the question of whether someone has access to an object and what they can do with the object to use it to their advantage in a particular social field."

In the field of health in general, HROSCs and their application can be observed as objectified cultural capital and thus as a tool and resource that addresses users' health-related needs, where the main questions pertain to the accessibility of HROSCs and users' knowledge and competences related to their usage. In this doctoral dissertation, HROSCs are not examined from the perspective of objectified cultural capital, but we refer to HROSCs as social systems that incorporate their own set of socio-structural properties, i.e. rules, resources and social practices. In HROSCs, objectified cultural capital can refer to writings in the online community, specific technical features and applications within HROSCs that might be used for monitoring, screening and measuring users' health-related practices, symptoms and outcomes.

Table 4.2: Manifestations of cultural capital in the field of health

States of cultural capital	Manifestations of cultural capital in the field of health
Objectified	Health-related books and journals; technical and social tools that can be integrated into the search for health-related information; self-tracking devices and applications; technologies for support in developing, implementing, sustaining and monitoring health-related behavior
Institutionalized	Courtesy and acknowledgement in health care encounters; access to quality health-related information networks; credibility in influencing community members in behavioral change or policy members for changing infrastructure that affects health behavior
Embodied	Health-related knowledge; cognitive and manual skills to incorporate health-related recommendations in everyday life; health-care experiences; attitudes to and the exercise of self-tracking and self-surveillance; health literacy; competencies that are recognized as assets and can be leveraged in health care contexts to effectively engage with medical providers in clinical interactions

Source: Adopted from Kamin and Anker (2014, p. 97)

Institutionalized cultural capital in the field of health mainly refers to the academic qualifications that visibly denote the credibility of individuals' competences and skills. In health studies, cultural capital has often been operationalized and measured only through this state of cultural capital, i.e. education level. Comprehensive research in the field of public healthcare has demonstrated that a higher level of education is associated with better health outcomes and thus it has been widely accepted as an important determinant of health, while other states of cultural capital have often been neglected in such examinations. As Abel (2007, p. 54) explained:

> "While incorporated capital is the state of cultural capital that is most hidden, objectivized cultural capital is the most visible as it evolves in material form. However, when it comes to the processes of how cultural capital works, it is institutionalized cultural capital that is perhaps the most recognizable. As the example of the relevance of formal educational degrees demonstrates, this third state of cultural capital can be understood as a particular mode of status differentiation that is not only highly visible but has also become widely accepted as a determining factor of social stratification in modern societies."

While institutionalized cultural capital is often conceptualized as education and attainment of qualifications, Kamin and Anker (2014) emphasize that this state of cultural capital in the field of health also refers to the specific knowledge and skills used in the framework of healthcare institutions and thus relates to credibility and acknowledgement in healthcare encounters and accessibility to formal health-related information networks, influencing community members and policymakers that can impact healthcare infrastructure and relations that importantly determine the health behaviors and outcomes of individuals or patients (see Table 4.2). In the context of HROSCs, institutionalized cultural capital such as education and formal qualifications is usually not directly visible among online community members, except when users intentionally reveal their educational background in interactions with other community members. While education might be an important determinant in other social fields, in the structure of HROSCs it is not, among community members, the one that is necessarily the most valued. While health professional moderators' qualifications are a key sign of their credibility and the validity of the health-related information they have provided, users' patient expertise, and thus their experience of the disease, knowledge of strategies for coping with everyday health issues and (chronic) condition management capabilities can also be equally as valuable, or even more so, than mere formal medical interpretations of health issues (Atanasova et al., 2018; Hartzler & Pratt, 2011).

As Kamin et al. (2013) demonstrated, education alone does not present an adequate indicator for examination of the potential impact of cultural capital on individuals' health-related (empowering) outcomes. In particular, embodied cultural capital such as health-related knowledge, skills, competences, experiences, attitudes and behaviors that are recognized as assets for the management of everyday life health conditions and issues have a crucial role in the field of health (Table 4.2). This state of cultural capital has also been referred to in the literature as "cultural health capital" (Shim, 2010, p. 2), which refers "to the particular repertoire of cultural skills, verbal and nonverbal competencies, and interactional styles that can influence healthcare interactions at a given historical moment." However, most often in the

field of health embodied cultural capital has been related to the concept of health literacy that presents one of the important skills and competences for searching, understanding, validating, processing and applying health-related information to decisions, perceptions, attitude and behaviors related to promoting and maintaining one's good health (Nielsen-Bohlman, Kindig, & Panzer, 2004). Health literacy has been recognized as a crucial competence in individual and public health (Nutbeam, 2000).

In the context of HROSCs, health literacy is directly related to the concept of e-health literacy, which has been defined by Norman and Skinner (2006a, p. 1) as "the ability to seek, find, understand, and appraise health information from electronic resources and apply the knowledge gained to addressing or solving a health problem." According to Norman and Skinner (2006a), e-health literacy is a complex construct that consists of six types of literacy, namely: (1) computer or digital literacy, which refers to skills related to using a computer and the Internet; (2) information literacy, which includes the competences of searching, evaluating and using retrieved information; (3) media literacy, which pertains to the skills required to interpret various audio and visual forms of resources and create meaning out of their content; (4) traditional literacy, which refers to the basic skills of writing, reading, calculating, understanding and interpreting information in a given context; (5) science literacy, which encompasses the competences of knowing basic scientific concepts, methods and reasoning, which helps individuals to understand, evaluate and give meaning to basic scientific facts; and (6) health literacy, which refers to searching for, validating and using health-related information and applying it in medical encounters, health-related communication, decision-making processes and in healthcare services.

E-health literacy can have important implications for one's health outcomes, since evaluation of the quality and validity of health-related information found and used can significantly impact the health-related decisions one makes, which health-related behaviors and attitudes one adopts and what (if any) treatments and health services one seeks (van der Vaart et al., 2011). Especially with the majority of online health-related sources and information, which are accessible to many different types of users and patients, e-health literacy has become one of the most crucial abilities and resources that enable individuals to make meaningful and informed decisions, undertake effective strategies for coping with and managing health issues, have more confidence in medical encounters with healthcare providers, effectively navigate

the healthcare system and achieve positive health outcomes (Norman & Skinner, 2006b; Petrič et al., 2017a; Seçkin, Yeatts, Hughes, Hudson, & Bell, 2016).

As emphasized by Norman and Skinner (2006a), the acquisition of health-related information that might in relation to digital technology and the Internet come across comprehensive sources and forms of this type of information and data is not enough to have an adequate e-health literacy. The possibility of accessing more information related to specific health-related topics does not say anything about its quality and validity. As shown by the six different types of literacy that are embedded within the e-health literacy construct, it is thus not enough for individuals who use digital technologies, including the Internet and the Web, to merely have the technical and computer skills needed to search for information and know where to find it. With the rapid development of technology and innovations, additional skills and knowledge are needed that pertain to being aware of potential pitfalls on the Web, such as filter bubbles, fake news, commercial persuasions, personalized search engine results etc., that present an important part of the e-health literacy concept. As emphasized by Norman (2011), the rapid shifts in digital technology mean that the concept of e-health literacy should be constantly revisited and advanced.

With the vast amount of online health-related sources and information and the increasing complexity of the health system, greater expectation is being placed on patients to become responsible for their self-care, to make the right health choices, and thus to possess enough health-related knowledge, skills and competences to guide them through complex health-related situations (Kamin & Anker, 2014). The extensive (online) sources for obtaining health-related information and the (new) demands and expectations from individuals and patients have created health literacy or e-health literacy problems (Abel, 2007; Kamin & Anker, 2014). Skills for critically evaluating and validating online health-related information have become an absolute necessity, since misinformation or wrongly interpreted and used otherwise accurate information, i.e. bad literacy, can lead patients to inappropriate choices, decisions, self-diagnosis and treatments, which might result in negative health outcomes (Schulz & Nakamoto, 2011; Zhang et al., 2017).

HROSCs can be seen as important sources for both valid and perhaps even otherwise unattainable health-related information, as well as a source of inaccurate and unreliable information. These types of online communities have often been emphasized in studies as

emerging sources of health-related information, but the relation between e-health literacy and participation in HROSCs has so far scarcely been studied. The study of Petrič et al. (2017a) is one of the few that has examined the e-health literacy of HROSC users and demonstrated that users that actively seek help in HROSCs have the highest level of e-health literacy, while low-engaged users have the lowest level of e-health literacy. Interestingly, the study also showed that core-relational users, i.e. users that most frequently participate and represent the most experienced online community members, have, in comparison to lurkers, who merely observe online community discussions, a lower level of validating information, which is one of the important dimensions of e-health literacy.

However, to the best of our knowledge, no study so far has investigated the effect of e-health literacy on intrapersonal or interactional empowerment in HROSC settings. E-health literacy has an important role in HROSC users' empowerment, as it represents empowerment's essential foundation (Schulz & Nakamoto, 2011). E-health literacy has the potential to empower individuals, since it is "a discursive practice that endeavors to uncover ways in which meaning is produced and inherently organized ways of thinking and acting" (Norman & Skinner, 2006b, p. e9). However, as emphasized by several studies (Rubinelli, Schulz, & Nakamoto, 2009; Schulz & Nakamoto, 2011, 2013a), a clear distinction between e-health literacy and (intrapersonal or patient) empowerment has to be made, since the two concepts can often overlap in their conceptualizations. Since intrapersonal empowerment is defined through the attainment of competences and skills, e-health literacy can in some cases be misunderstood as a dimension of it (Schulz & Nakamoto, 2013a). The dimension *perceived competences* of intrapersonal empowerment refers to the perception of possessing skills and capabilities that are needed to effectively deal with challenging (health-related) situations, which do not necessarily only include health-related skills, but consist of a variety of competences, e.g. time management skills, communication skills and goal-setting skills, with which patients can potentially apply e-health literacy in real-life situations. E-health literacy, on the other hand, focuses on health-related information, its attainment, evaluation of its validity and reliability, processing and interpretation. However, as explained by Schulz and Nakamoto (2013a), e-health literacy and patient empowerment are closely related and this relationship importantly and directly addresses the problem of an "illusion of empowerment" and the question of what the goal of empowerment is. If an individual feels empowered, but does not possess an adequate amount of resources, in this case e-health literacy, they can be

inclined to make dangerous choices and decisions and thus reach disempowering outcomes. On the other hand, having sufficient resources and thus a higher level of e-health literacy, but without the feeling of empowerment, will leave individuals highly dependent on other people's decisions, usually healthcare providers' choices, which takes away patients' confidence, sense of control and self-efficacy, which have a key impact on individuals' self-care, management of the disease and good health outcomes (Palumbo, 2017). This close relationship between e-health literacy as an embodied state of cultural capital and (intrapersonal) empowerment gives us an idea of how crucial it is to incorporate the effect of different types of resources in examining HROSC users' empowering outcomes.

4.3.3 Social capital

The concept of social capital received a substantial amount of attention in previous social science research and was thus conceptualized by many scholars and theoretical approaches. Bourdieu has been considered one of the pioneers in the conceptualization of the concept of social capital (Song, 2013). According to Bourdieu (2002[1986]), social capital can be found embedded in social networks of relationships and interactions among individuals. He defines social capital as "the aggregate of the actual or potential resources which are linked to possession of the durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership in a group" (Bourdieu, 2002[1986], p. 286). Similarly to other forms of capital, social capital is also based on constant material and symbolic exchanges. This means that social capital, like other types of capital, is never independent, but "the volume of the social capital possessed by a given agent thus depends on the size of the network of connections he can effectively mobilize and on the volume of the capital (economic, cultural or symbolic) possessed in his own right by each of those to whom he is connected" (Bourdieu, 2002[1986], p. 286).

As we have emphasized before, social capital, like other forms of capital, is convertible to other forms of capital, and other forms of capital can be converted into social capital. For instance, in the field of health:

> "[S]ocial capital can be utilized in various ways: membership in social networks can be mobilized to gain access to relevant health-related information, draw attention to various needs that affect health-related behavior, access better healthcare services, access physical activity facilities, and support recommended healthy behavior. It can also be used collectively, for agenda-setting, patients' rights movements,

> advocating a certain cause, or influencing policymakers to develop a health-promoting community infrastructure." (Kamin & Anker, 2014, p. 96)

Besides having a positive function in the field of health, social capital can also present a barrier to achieving additional forms of capital or achieving specific health-related goals. Membership of specific groups or subcultures that encourage unhealthy practices might be related to an adequate amount of social capital, but this social capital in the form of ties, relationships and social network limits individuals to effectively exchanging or converting this resource to receiving competences and skills that would lead to disruption of an unhealthy behavior and lifestyle (Kamin & Anker, 2014). As emphasized by Bourdieu (1985, 2002[1986]), we cannot assume that having a greater amount of capital, i.e. social capital, is also directly related to benefits and advantages for individuals, but the value of the capital and its amount is always related to the context, i.e. the social field, in which it is accessed, accumulated, distributed and used.

In health research, Bourdieu's conceptualization of social capital is seen as a network-based resource and a collective feature, where because of the lack of exact operationalization and explanation of how social capital should be measured, Bourdieu's framework of social capital has been limited to theorization (Pinxten & Lievens, 2014). While many scholars, e.g. Coleman (1988), Burt (1992, 2000) and Lin (1999, 2002), have presented theories and conceptualizations of social capital, Putnam's (2000) "measurable" definition and classification of *bridging and bonding social capital* has been applied most often in (empirical) studies on offline and online social capital (Andersen et al., 2011; Williams, 2006). While Bourdieu defined social capital as a resource that is tied to social relations and can be attained and formed by individuals who present a social network, Putnam (2000) broadened this idea and defined social capital as a characteristic of communities and society as a whole. Putnam (1995, 2000) emphasizes that social capital lies in individuals' participation in voluntary organizations and interest groups, as well as being a product of informal networks. Social capital is thus defined as "features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995, p. 67). Putnam distinguished between bridging and bonding social capital and thus two types of social capital that occur when different norms and networks of social relations are in place. This classification of two types of social capital has also often been adopted in online community

studies and studies that emphasize that social capital forms in offline as well as in online social relations and networks (Williams, 2006).

Bridging social capital refers to the connections between individuals that belong to different social networks and thus have different backgrounds (Williams, 2006). This type of social capital is inclusive, since it connects individuals that would otherwise remain separated (Putnam, 1995). The relationships between individuals made with bridging social capital are indefinite, but have the function of broadening individuals' social horizons, experiences and opportunities to accumulate and distribute new resources, such as information, job opportunities and other resources that they would otherwise be unable to locate and attain (Loane & Webster, 2017). According to Granovetter (1983), bridging social capital connects individuals and their resources across "weak ties," which present an advantage in a social network, since they bring individual new resources and opportunities (Williams, 2006). Online communities have been recognized as an important source and place for the development of bridging social capital that connects individuals with different backgrounds and interests, where online technology and applications serve very well in creating and maintaining diffuse networks of connections and relationships of individuals that also present a potential source for other types of resources (Ellison, Vitak, Gray, & Lampe, 2014; Rafaeli, Ravid, & Soroka, 2004). In the context of HROSCs, bridging social capital among community members can be identified in their messages that connect individuals with different (and new) sources of health-related information and with the practice of tagging that incorporates users with specific clinical or patient expertise into online discussions (Loane & Webster, 2017). Moreover, provided medical referrals included in HROSC users' messages connect members with experts that were previously unknown to them (Loane & Webster, 2017). Online bridging social capital shared through HROSCs can bring individuals in specific health-related situations new opportunities and information that are especially vital when an individual is confronted with a new diagnosis, symptoms, treatments and health condition.

Because bridging social capital can provide individuals with various advantages, which lie in the "strength of weak ties" (Granovetter, 1983), this type of social capital can present one of the main resources for interactional empowerment. Bridging social capital has the capacity to mobilize individuals to allocate resources for a certain cause, such as raising awareness, influence policymakers and addressing health issues of public concern (Abel, 2007). Since bridging social capital encourages individuals to broaden their connection through the borders

of their own social network and thus links them with a broader range of people, it opens up the possibility of developing an outward-looking and horizon-broadening, broader community identity and a diffuse reciprocity with an extensive part of the online community (Williams, 2006). All these social processes present crucial factors of interactional empowerment that can importantly contribute to the development of critical awareness of the sociopolitical environment, and trigger the need among online community members to mobilize resources in order to collectively engage and address the health-related issues that pertain to the wider social structure and (health) system.

While bridging social capital is an important source for attaining a broader set of information and advice, it consists of fewer interdependent connections and relations between individuals and common points, which makes it less likely to be related to individuals' strong base of relationships and support. Bonding social capital, on the other hand, is characterized by developed stronger personal connections and emotional and substantive support (Williams, 2006). As such, bonding social capital consists of "strong ties" and relationships (Granovetter, 1983) that are produced in intense, intimate, regular and common-interest social interactions between individuals (Ansari, Munir, & Gregg, 2012). While bridging social capital is inclusive in its nature, bonding social capital is exclusive, as the strong ties and connection within the groups and social networks are more likely to produce distinction between in-group members and others (Putnam, 2000). Accordingly, bonding social capital comprises social support, access to limited resources and solidarity (Putnam, 2000; Williams, 2006). Bonding social capital thus forms in rather homogeneous social groups that are connected by a common interest and purpose, and it plays an important role in creating social cohesion and tendencies for pursuing collective goods (Loane & Webster, 2017). It is thus not surprising that this type of social capital has most often been emphasized as the primary resource that can be accessed and distributed in online communities and HROSCs. The possibility of receiving and providing social support – which is the main product of bonding social capital (Chen & Meng, 2015; Williams, 2006) – has often been reported as one of the main reasons for users' participation in HROSCs and is not only a resource for satisfying users' health-related needs, but also a common good that is available in these types of online communities (Loane & Webster, 2017; McLure Wasko & Faraj, 2005).

In the studies on HROSCs it has frequently been demonstrated that these types of online communities facilitate the formation of new connections between the members as well as the

provision of different types of (online) social support that can be used by HROSC users for addressing health-related issues and needs (Coulson et al., 2007; van Uden-Kraan et al., 2008b). Online social support refers to the social resources produced through online interpersonal communication aimed at providing assistance to other people perceived as needing that help (Bambina, 2007; Burleson & MacGeorge, 2002; Chang, 2009; Chuang & Yang, 2010). In HROSCs, online social support is constructed by collaboratively crafting modes of interaction through posts, usually in the form of questions, responses, remarks, etc. Through their posts, users and health professional moderators can exchange social support resources that can meet various health-related needs and potentially bring about beneficial and/or challenging outcomes in perceived health, healthcare status or psychosocial health aspects (Chang, 2009; LaCoursiere, 2001). Four different types of social support have been identified (Bambina, 2007; Chang, 2009; Chuang & Yang, 2010; Hwang et al., 2010): (1) *informational support*, which includes the provision of advice, useful information, guidance and suggestions for coping with health issues or management of health conditions; (2) *emotional support*, which comprises expressions of empathy, understanding, affection, acceptance, care and encouragement when dealing with difficult health situations; (3) *network support*, which consists of connecting with others, broadening social networks and access to new individuals, engaging with them in similar activities and developing relationships and a sense of belonging,; and (4) *tangible support*, which refers to the provision of material and/or financial goods and services.

Online social support has been identified as one of the main factors of intrapersonal empowerment in HROSCs (Petrič & Petrovčič, 2014b; Reifegerste, Wasgien, & Hagen, 2017). In particular, exchanged informational and emotional online social support have been shown to have a strong association with users' empowering outcomes (Buchanan & Coulson, 2007; Welbourne et al., 2009). HROSC users can seek and receive social support from both peer-patients and health professional moderators. The latter have been mostly related to the provision of informational support, since they can provide clinical expertise and thus advice, suggestions and information that are validated through medical knowledge, which has often been emphasized as an important resource that contributes to users' competences and feeling of self-efficacy and control over health issues (Peng et al., 2015; Petrič et al., 2017b). However, health professional moderators in HROSCs are not only providers of informational social support. In the study of Atanasova et al. (2018), health professional moderators emphasized

that participation in HROSCs also enables them to provide emotional social support to users or patients in HROSCs that is often hindered in time-limited face-to-face medical encounters.

On the other hand, as demonstrated by some studies (Centola & van de Rijt, 2015; Hartzler & Pratt, 2011), peer-patient exchanges in HROSCs, as well as the exchange of informational social support (patient expertise), also play an important role in the exchange of emotional support. Consolation, finding understanding from other HROSC users, the possibility of self-expression, received empathy and affection are important social processes that affect users' development of coping strategies, optimism, self-esteem, self-determination and motivation to take control over health-related issues or conditions (Attard & Coulson, 2012; van Uden-Kraan et al., 2009; Welbourne et al., 2009). Those users in particular who are coping with chronic and life-threatening conditions, which are often associated with negative, uncontrollable events and feelings, often desperately need social support, and HROSCs have frequently been shown to be important sources for such users and their development of a positive attitude and feelings of achievement and improvement of disease management strategies (Turner et al., 2001). Although network social support has been less extensively studied in HROSC settings, it has also been shown to be an important resource that reduces users' loneliness and isolation, especially when they are confronted with medical conditions that are rare, stigmatized and embarrassing (Shoebotham & Coulson, 2016). However, in HROSCs, users are not only the receivers of social support, but their provision of different types of social support to other peer-members also has an important function in their empowering outcomes (Coulson & Smedley, 2015). Users' provision of social support to other HROSC users has been identified as an important helper-therapy principle, personal reward and even moral obligation "to give back" to the community that has been shown to have a positive effect on users' self-esteem, feelings of relevance and meaning – all important mechanisms of achieving empowering outcomes (Atanasova et al., 2018; Coulson & Shaw, 2013; Kordzadeh, Zhechao Liu, Au, & Guynes Clark, 2014).

So far studies have predominantly investigated the effect of online social support in HROSCs on intrapersonal empowerment. However, as Putnam (2000, p. 20) emphasized, social capital has a positive function as a "private good" as well as a "public good." Only a few studies have focused on examining both intrapersonal and interactional empowerment, which calls for further research on these associations and for empirical evidence of how exchange of social

support from various actors in HROSCs (i.e. users and health professional moderators) affects the two dimensions of psychological empowerment.

4.3.4 Symbolic capital

Symbolic capital incorporates all previously presented and described forms of capital, i.e. economic, cultural and social capital, which have been given by individuals in a social field a specific value, a classification and a cognitive scheme that have been integrated into a structure of a social field and lead to their recognition and valuation (Bourdieu, 1998). As emphasized by Bourdieu (1998), symbolic capital is a capital with a cognitive base that responds to socially constructed collective expectations and beliefs and it usually works from a distance and without physical presence. In simple terms, symbolic capital is nothing but economic, cultural or social capital that is recognized in a social field and can be seen as an individual's success, authority, reputation, honor, official recognition or legitimacy and prestige, which impose a distinction between those individuals that possess it fully and those who possess it in smaller amounts (Bourdieu, 1985, 1989).

In the theory of capital (Bourdieu, 2002[1986]) that was expanded to the theory of symbolic power (Bourdieu, 1991), Bourdieu gave symbolic capital a central role: Symbolic capital presents the transformation of resources, which individuals can obtain and distribute, into potential and actual social power. With the concept of symbolic capital, Bourdieu explained how different forms of capital can be facilitators of, or barriers to, social practices and why there are differences, distinctions and also inequalities between individuals in a particular social field. We believe that Bourdieu's theory and its application is also of crucial importance for empowerment theory, since it can help us explain why empowerment is not equally feasible for all individuals in a specific social field and what the differences are between individuals and their achievement of empowering outcomes.

As emphasized by Bourdieu (2002[1986]), all different forms of capital are interrelated and conditional upon each other in a particular field. Only interrelation between the different forms of capital can bring them value and thus symbolic capital in a particular field. Ahnquist et al. (2012) gave very good examples of combinations and reconversions among different forms of capital in the field of health: Insufficient financial resources limits individuals' choice to participate in specific social activities, to provide membership in particular associations or organizations and thus make social contacts, ties and relationships with other people. This

means that a lack of economic capital can lead to a lower level of social capital. On the other hand, a small social network and social support resources might contribute to a lower level of economic capital, as minimized social ties limit individuals' opportunities to receive or work for economic resources. This circle of insufficient resources often brings individuals negative health outcomes, not only because of stress, but also because social and economic capital are valued resources in the field of health, as they bring individuals opportunities to buy appropriate and needed health treatments, services, remedies and medical supplies, and receive social support and connect to a network of people that might assist with individuals' health-related issues.

Very often HROSCs are seen as an opportunity and a source of needed resources for individuals with health problems, as they can provide their users with access to new acquaintances, health professionals, social support and even greater material resources. However, it has often been neglected that HROSCs possess their own principles and regulations, which means that not every individual that participates in an HROSC has an equal likelihood of achieving needed and wanted (health-related) outcomes. If we take an example in the context of HROSCs, users who lack linguistic and communication skills and competences might have a hard time acquiring needed health-related information from other users or health professional moderators, which might lead to difficulties in making social ties, connections and relationships with other users. Newcomers in HROSCs are often not acquainted with online community vocabulary, norms and values between members, which can present a limitation in their social interactions with other online community members.

These examples can give us an idea of how different forms of capital are interrelated, how "in this interdependence lies their power to be accumulated and transferred from one to another" (Kamin & Anker, 2014, p. 95), and how they present the force, because of which not everything is equally achievable or unachievable (Bourdieu, 2002[1986]). Because of the uneven distribution of different types of capital among individuals in a specific social field, the effect of symbolic capital plays an essential role in legitimizing individuals' social practices, including in HROSCs. As such, symbolic capital functions as a symbolic power that can be used in individuals' social practices. This also means that the possession of different forms of capital in a social field can be seen as a potential power of individuals; only when capitals are perceived as symbolically valued, i.e. symbolic capital, does the possibility of exercising actual power emerge.

It is thus of crucial importance that different forms of capital do not receive isolated consideration, but should always be studied together. Since every type of capital can present, in a particular shape and amount, a symbolic capital, this means that there is an indirect relation between, on the one hand, economic, social and cultural capital, and, on the other, symbolic capital. In this study we will thus consider symbolic capital as an indirect consequence of three other types of capital, which more particularly means that symbolic capital will not be addressed in this (empirical) study as a separate and individual form of capital that users of HROSCs possess. Symbolic capital is always created in interrelation between the three main forms of capital and individuals' social practices in particular social fields. In order to investigate the effect of symbolic capital it is thus important to examine the interactions between different forms of capital and social practices in a social field, which in our case is embedded in HROSCs.

As we have demonstrated above, social practices, according to Bourdieu (1991), are instruments of symbolic power that can, on the one hand, preserve objective principles of the social world and thus have the capacity to construct the reality and homogeneous perception of the meaning of the world. On the other hand, symbolic power transmitted by social practices can "reveal things that are already there" (Bourdieu, 1989, p. 23) and challenge perceptions of meanings and objectives of the social world. This process is of crucial importance for empowerment, since only with recognition and awareness of discrepancy between "subjective expectations and objective outcome, which, in turn, stimulated the possibility of critique and protest" (Crossley, 2003, p. 47) can create a critical understanding of a sociopolitical environment. With such awareness individuals can, with their social practices, form discourses that can critically and more innovatively assess their situation in a specific social field and evaluate the possibilities for their personal and social change. Although Bourdieu (2002[1986]) gives different forms of capital, and especially symbolic capital, a central role in his theory, he is very much aware that without social practices individuals cannot ensure the accumulation of a valued type of capital in a social field. Social practices are a constitutive tool in the empowerment process, since they challenge existing tensions in a social field, present alternative ways of thinking and reify solutions that can contribute to the transformation of the field.

4.4 Participation and involvement in HROSCs

The interrelation between the distribution of different forms of capital and HROSCs' organizational characteristics is not feasible, as emphasized by Bourdieu (1990), without users' social practices. Social practices and interactions among individuals present a crucial mechanism for both personal and societal change (Giddens, 1984), as only through social practices individuals can create social meanings, establish critical understanding about their sociopolitical environment and achieve empowering outcomes (Dutta, 2011). In the context of HROSCs, social practices usually relate to users' participation and involvement in an online community, which thus far in relation to empowerment outcomes have been frequently but inconsistently studied. Scholars understand the concepts of participation and involvement in online communities from various points of view and thus investigate their different aspects and levels.

The concept of online participation has, in the last three decades, been one of the emerging themes in communication and Internet research (Rice & Fuller, 2013), yet in many studies the definitions of the concept still remain vague and often suffer from a lack of common understanding (Lutz & Hoffmann, 2017; Lutz, Hoffmann, & Meckel, 2014). Moreover, the literature review conducted by Lutz et al. (2014) classified five different areas that address online participation: business, culture, education, health and politics. The research on online political participation presents the most extensive and clearest conceptualizations of such participation (Lutz et al., 2014), which is not surprising because of the long tradition and comprehensive research investigating political participation and civic engagement that is not necessarily related to the online and social media contexts. According to Lutz et al.'s (2014) review, the most often cited definition of online political participation is by Verba, Schlozman, and Brady (1995, p. 7), who define it as "online engagement in public affairs and online activities geared towards influencing government action." This definition implicitly means that online participation involves social practices that lead to some kind of contribution, which will make some form of impact on the social world. According to Lutz et al. (2014), such a conceptualization leads us to three important dimensions of the online participation concept: (1) the *creative dimension* of online participation, which pertains to the production and sharing of content on the Web; (2) the *social dimension*, which refers to the embeddedness of produced content in various forms of social interactions between individuals or groups; and (3) the

motivational dimension of online participation, which is associated with the constant pursuit of social actors to fulfil some kind of social interest and purpose. As proposed by Lutz et al. (2014), with the incorporation of all three dimensions, online participation can generally be defined as "the creation and sharing of content on the Internet addressed to a specific audience and driven by a social purpose." These dimensions of online participation help us embrace the extensiveness of the concept and also more clearly define different aspects of online participation in the context of HROSCs.

The concept of online participation has been a regular topic of online community studies, as user participation is regarded as a necessary condition for the existence of an online community and thus an important factor of online community success and sustainability (Kordzadeh et al., 2014). What makes users participate in online communities has thus been a key question for community managers and scholars investigating online communities (Malinen, 2015). Similarly to the definition of online political participation, and with just a change in the main focus, online health participation has been defined as any engagement in health-related issues on the Internet, which range from health-related information seeking, online engagement in health campaigns, promotion and awareness programs, and also discussing and participating in different types of OHCs and online support groups (Lutz et al., 2014). This definition of online health participation, which is based only on the area of users' engagement, does not give us much insight into the specific context and social field in which user participation is embedded. Similarly to the general concept of online participation, the notion of participation in HROSCs is also confronted with the lack of a common definition.

In many HROSC studies participation is operationally defined through quantitative measures usually including users' membership length, number of visits in an online community, number of contributions, time spent online, number of views of content, and density of social ties and interactions with other users or members (Malinen, 2015). From this perspective, studies usually undertake a dichotomous typology of users' online community participation: (1) active users, whose participation is clearly visible and easily measurable by the volume of activity; and (2) passive users, generally referred to as "lurkers" (Preece, Nonnecke, & Andrews, 2004), who browse and observe the content of an online community and do not actively contribute to the community. This perspective of online participation is concerned mostly with the level of users' activity and can be related to Lutz et al.'s (2014) first, creative dimension of online participation and partly also features the social dimension, where the focus is mainly on the

quantity of contributions to the online community and the number of created social ties and interactions.

Recently, more and more studies on HROSCs have called for a more diverse classification of participation instead of the simple active-passive dichotomy and view merely quantitative metrics of participation as insufficient to explain the complexity of users' participation in online communities (Malinen, 2015). Studies taking this perspective focus more on the quality of activities and the level of users' involvement in online community activities, tasks and events (Youcheng Wang & Fesenmaier, 2003). Such an understanding of participation and involvement in HROSCs features all three dimensions of online participation, i.e. creative, social and motivational, and often emphasizes the importance of availability of resources and the requirement for users to possess a specific skill set to (fully) realize the activities, efforts or actions of online participation (Hargittai, 2002). These conceptualizations of online participation are also more closely related to Bourdieu's and Giddens' theoretical framework and thus the importance of approaching social practices interrelated to the structural properties and thus rules and different forms of capital available and used by individuals.

Based on the general definition and three dimensions of online participation and the current trend of investigating participation in HROSCs, in this section we first focus on user types, their participation styles and patterns, and motives and purposes that encourage them to use HROSCs. We thus focus on a brief overview of studies concerned with users' typologies defined by users' posting and participation behavior. In the last part of this section we present the concept of involvement in HROSCs, which, in addition to many conceptualizations of users' social practices such as the frequency of HROSC visits, posting and viewing the content of an online community, embraces users' engagement in various online community activities.

4.4.1 Users, participation, motives and purposes in using HROSCs

Generally, users of HROSCs are usually: (1) individuals with specific acute or chronic health issues that participate in HROSCs for themselves; (2) individuals who are caregivers and provide (direct) care for others, usually children, the elderly or the chronically ill; (3) health professionals, usually doctors or healthcare providers, who participate as moderators who provide users with clinical expertise and thus valid medical advice, suggestions and support for health issues; and (4) other discussion moderators and administrators that moderate and manage discussions in HROSCs and can be a part of the community management team, or

moderation can be assigned to recruited or volunteered active, loyal and influential users. In HROSCs, users can be classified not only based on their health-related situation or their role in usual medical encounters (e.g. patient vs. health professional), but also according to their participation patterns and contribution to the online community, which more specifically pertains to users' social roles. As Golder and Donath (2004) emphasize, understanding different social roles in online communities presents an important insight into group dynamics, interactions and behavior patterns. Based on different methodological approaches, studies have distinguished between several different roles that more specifically reveal different user types and their user practices, skills, participation and interaction patterns, motives, purposes, behavioral strategies and many other characteristics.

In a systematic review of studies that have investigated the participation patterns in HROSCs, Carron-Arthur, Ali, Cunningham, and Griffiths (2015) demonstrated that there is no consistent typology of HROSC users and that user types depend on the metrics and variables that are used for defining such typologies. They also found out that differences exist among HROSCs dedicated to different health conditions and there is also little overlap between user types among HROSCs concerned with similar health topics. When classifying users' types of HROSCs most of the studies rely on the unidimensional criterion of the level of engagement in HROSCs, classifying users as high-engaged, moderate-engaged and low-engaged users. Related to such typologies are also those using multidimensional activity-based characteristics and identifying users such as caretakers, "here for you" users, butterfly users, crisis-oriented users, discussants, average users, highly active relational users, topic-focused users, high-activity users and low-activity users (Carron-Arthur et al., 2015). Many of these studies have also examined whether a different level of engagement in HROSCs results in different health-related outcomes. For instance, the study of Petrič et al. (2017a) demonstrated that core-relational users, i.e. users that are the most experienced in an HROSC, have a high frequency of participation in different subcommunities in an HROSC and also occasionally interact with health professional moderators, are not necessarily the most e-health literate in the sense of validating retrieved health-related information on the Internet and considering its potential biases when using the Internet. In comparison, active-help seekers or users who are most engaged in interactions with health professional moderators in HROSCs have a higher level of e-health literacy than other user types.

The review of Carron-Arthur et al. (2015) also showed that many studies have classified HROSC users by considering content-based multidimensional criteria, whereby overall six different types were identified: leaders and influential users, opinion leaders, social support providers, community builders, source-based users and sophisticated contributors. These types of users were related to specific social processes in HROSCs and in many studies were identified as having various roles in influencing other HROSC users, for instance by providing different types of social support, influencing the sentiment of other users or by introducing different types of health-related sources in discussion on HROSCs. Sudau et al. (2014) observed that users of HROSCs tend to favor different sources of information that they reference in their posts. Sophisticated contributors, for instance, have a tendency with references to most often cite scientific publications and research and compared with other source-related user types have the longest posts. Similarly, Huh et al. (2016) discovered four personas, i.e. caretakers, opportunists, scientists and adventurers, based on information-seeking attitude, frequency of posting and reasons for participating in HROSCs. They identified caretakers as experienced users who are highly active and desire more emotional support exchanges. On the other hand, opportunists participated in HROSCs for information-seeking purposes and do not tend to interact with other HROSC users. Scientists search for and provide scientifically based sources of information in HROSCs, whereas adventurers value experiential knowledge and information that are alternative to those they usually receive from health professionals. Studies have also identified specific users that might be of value for researchers and clinical trials. Accordingly, Myneni, Cobb, and Cohen (2013) identified users who had the highest degree of involvement in discussions about particular topics related to personal experiences, advice and adherence to interventions and were thus considered opinion leaders that might be especially valuable for proposing new research and delivering targeted interventions.

Different user types were also often identified in studies based on social network analysis metrics (Carron-Arthur et al., 2015). In relation to other typologies, based on their characteristics these types of users are very similar to those identified with other methods and (participation) metrics, but are usually referred to as key players, authorities, hubs, facilitators, trusted users, help seekers, stars, prime givers, serious and moderate users, and takers. For instance, key players, authorities or stars are users who participate in HROSCs similarly to those described for core-relational users or leaders; facilitators have similar functions in

HROSCs to community builders, and takers; and help seekers have similar characteristics to active-help seekers.

While many of the users and participation typologies in HROSCs and online communities in general have focused on active participants and members that with their various engagements leave traceable, visible and measurable patterns, some of the most prevalent and often present users of HROSCs are lurkers. In online communities, lurkers represent the majority of users. This phenomenon refers to the inequality of participation, in which 90% of users are lurkers, who only read and observe the online content, 9% of users are occasional contributors, whereas 1% are "superusers" who account for most contributions and thus contribute as much as 75% of the posts in HROSCs (Carron-Arthur et al., 2015; Graham & Wright, 2014; Van Mierlo, 2014). While lurking has not, until recently, often been discussed in terms of a "free riding" dilemma and as problematic behavior, recent research has demonstrated the importance of this type of (non-)participation for both users themselves and the online community (Edelmann, 2013). Although lurkers do not contribute to the online community in terms of writing messages and interacting with other users, they present an important source for the development of online community loyalty and representation of the online community as a brand in a wider social context and "offline" environment (Bronstein et al., 2016; Machado, Vacas-de-Carvalho, Azar, André, & dos Santos, 2018). Lurkers also present as potential new posters and active contributors to an online community, and without new possible candidates for active participation, the sustainability and success of an online community can become questioned. Moreover, lurking has also often been seen as beneficial for individuals. In HROSCs, which are usually environments with a rich knowledge base and a wide variety of resources, so-called "pedagogical lurking" (Dennen, 2008) might present an important source for gaining skills, competences and knowledge that might also be very valuable for managing health issues and conditions (Petrovčič & Petrič, 2014b). Pedagogical lurking involves both cognitive and social activities, e.g. information seeking and browsing strategies, discussing and sharing information with others outside the HROSC, and has been related to be beneficial for individuals and their health-related outcomes (Dennen, 2008; Petrovčič & Petrič, 2014b).

The overview of different types and typologies of HROSC users demonstrates that there are no universally distributed characteristics of HROSC users, with the user typologies very much depending on the approach to studying and providing such classifications. Perhaps the unique characteristics of HROSC users, as noted by Huh et al. (2016), are that they are all somehow

related to health topics and thus usually associated with complex, more or less serious and even life-threatening health-related needs. Moreover, studies have recently emphasized the importance of observing users' types and roles in online participation as dynamic entities that, taking into consideration the component of time, undergo various levels of transformation moving from the periphery (as lurkers) to the center (as active users) of an online community (Malinen, 2015). Online participation is thus understood as a transformation process, in which users move back and forth between different types of roles and participation styles and can, at one point in time, be defined as active "power users" and at the next transition to a new online persona (Huh et al., 2016). This also means that online participation cannot be considered a static practice, in which users participate in just one participation style, but through online participation users can possess different traits usually related to individuals' personal contexts and needs (Huh et al., 2016; Malinen, 2015). Participation and users' roles in HROSCs might be closely related to the users' illness trajectory and stages, where users usually start as lurkers and newly diagnosed patients, which eventually translates into becoming an exploring patient and experienced user that not only seeks information and advice, but also actively participates and helps other users (Huh et al., 2016).

Although these typologies are not universally applicable to all HROSCs, they provide an important insight into the various social roles and participation patterns that might be present in HROSCs. The existence of different user types indicates that users of HROSCs have different health-related needs and experiences that are importantly associated with various reasons and motives for using HROSCs, which require different technological platforms, software and application services that can support different interaction and participation needs.

As seen from the different types of HROSC users, the purposes and motives for participating in these types of online communities can range from obtaining health-related information to proposing new scientific research to professionals (Vennik et al., 2014). According to the studies on HROSCs, users have in general most commonly reported that they have participated in HROSCs for: searching for health-related information, sharing health-related experiences and social support, socializing and communicating with others that have had similar experiences with health issues, comparing information on health issues, exchanging patient-generated guidance, advice on treatments, personal histories, diagnosis, advice regarding health risk, evaluation of medication side effects with peer-patients and health professionals (Hartzler & Pratt, 2011; Peng et al., 2015; Petrič et al., 2015; Reifegerste et al., 2017; Yang et al., 2015;

Zhang et al., 2017; Zhao et al., 2013). The range of purposes and motives for using HROSCs correspond to the general typology of the social uses of interpersonal communication technologies (Petrič, Petrovčič, & Vehovar, 2011), since we can identify information-cooperative, relational, expressive and strategic types of motives.

Most often users start visiting and participating and then become members of an HROCS to obtain health-related information, to receive social support, and to communicate with others that have had similar health-related issues and experiences (Matzat & Rooks, 2014). However, studies have demonstrated that there are differences in the motives between HROSC users who post messages with questions, answers, comments and their opinion, i.e. posters, and those who merely observe and do not actively participate in HROSCs, i.e. lurkers. Although the motives for visiting HROSCs in the study of van Uden-Kraan et al. (2008b) did not differ in their information-related reasons, posters reported visiting HROSCs more often for social reasons, such as socializing and networking with other users. These findings are also supported by a study investigating posters and lurkers from an HIV/AIDS online support group (Mo & Coulson, 2010), where posters more often reported visiting and participating in HROSCs because it is a part of their daily routine, to enjoy themselves, to ask questions about their health condition or to help other members with their health issues.

In comparison to lurkers, users who actively participate in HROSCs, besides functional use motives, such as searching for health-related information, are also more often motivated by socially related reasons. However, there are also differences between actively engaged HROSC users. In HROSCs where users can also consult with health professional moderators, the motives to participate in an HROSC are often related to the limited number of healthcare services and face-to-face medical encounters. Umefjord et al. (2003) report that the main reasons for users to interact with and consult previously unknown health professional moderators in HROSCs are convenience, anonymity, accessibility, having no time to visit a doctor, difficulty getting an appointment, feeling uncomfortable in medical encounters and not being able to afford a doctor's visit. On the other hand, in HROSCs where users, besides consulting with health professionals, can also participate in online support groups or communities alike, users' motives more often relate to the exchange of experiential information and social support (Han et al., 2012; Huh et al., 2016). The study of Oh (2012) investigated the motivations of responders on the health-related question and answer (Q&A) site Yahoo! Answers and demonstrated that altruism, enjoyment and efficiency are the most influential

motives for participating in these types of online communities, whereas personal gain, reputation and reciprocity were not that often reported by users who post answers in these communities.

Furthermore, the study of Zhang et al. (2017) found that posting messages and sharing knowledge in HROSCs is most often motivated by reciprocity, empathy and altruism. Health professionals' motives for sharing their knowledge, on the other hand, besides reciprocity and altruism, also pertain to reputation and knowledge self-efficacy. Similar findings were also presented in a study of health professional moderators' participation in HROSCs, which reported that the main motives for participating in HROSCs is related to altruism, such as the provision of access to health-related information, and also intrinsic reasons such as the opportunity for knowledge exchange, and promotion of their professional field or themselves as experts (Atanasova et al., 2017). Although both regular users and health professional moderators participate most often for altruistic reasons, the provision of help and social support by regular users and health professional moderators may differ substantively. Altruism, as the benevolent provision of medical services in the case of health professional moderators, should be seen on a different level to the altruism of regular users (Zhang et al., 2017). While regular users often provide information, advice, suggestions and support as part of the "helper-therapy principle" (Coulson & Shaw, 2013; Riessman, 1965), health professional moderators often provide their expertise in HROSCs by ensuring accuracy, professionalism and preciseness without any financial compensation and in their free time (Atanasova et al., 2017; Zhang et al., 2017).

Often overlooked, but important users of HROSCs are caregivers, who in HROSCs most often search for health-related information for the people whom they are caring for. Often HROSCs can also be a place where caregivers can receive experiential knowledge and social support when experiencing stress associated with caregiving. The role of caregiver and the process of caregiving have been related to strong emotional involvement, chronic stress, and weakened physical and mental health, where HROSCs have been shown to present an important source, especially for family member caregivers, for patients with terminal and chronic illnesses such as Alzheimer's disease, dementia, late-stage cancer, and other physical and mental disabilities (Cristancho-Lacroix et al., 2015; Rupert et al., 2016). Similarly to patients themselves, caregivers most often visit and participate in HROSCs to exchange social support and search for health-related information, usually mostly related to topics that greatly affect their

caregiving roles, such as disease treatments and possible complications (Lu, Wu, Liu, Li, & Zhang, 2017). Some studies report that caregivers comprise almost one-third of HROSC users (Lu et al., 2017), yet caregivers' motives and reasons for participating in HROSCs have so far been scarcely studied. More research on this topic is needed to provide a better insight into the role of these type of users in HROSCs. However, this topic is beyond the scope of this thesis.

Beside users such as patients and caregivers and health professional moderators, HROSCs often include various types of moderators and administrators who do not have a health-related role in HROSCs, but play an integral role in online community management and thus its sustainability and success. To the best of our knowledge, no study so far has exclusively focused on investigating moderators' and administrators' roles, motives and purposes in HROSCs. Few studies have examined patient moderators (Coulson & Shaw, 2013; van Uden-Kraan, Drossaert, Taal, Seydel, & van de Laar, 2010) who were also initiators of specific online support groups. Most often (patient) moderators reported that initiating and participating in an online support group was related to altruistic reasons, such as providing information, support and a channel for communication and interaction among patients that share similar health conditions and experiences (Coulson & Shaw, 2013). This study also revealed that taking on a moderation role in an online support group had a positive impact on patient moderators' personal and health-related life areas. Several benefits and empowering outcomes have been reported, such as improved illness management, improved relationships with their doctors and a higher level of confidence in accessing health services (Coulson & Shaw, 2013).

4.4.2 Involvement in HROSCs

Another form of participation is involvement in an online community, which refers to individuals' involvement and engagement in online community activities that include various aspects and parts of online community organization, such as involvement in formal or informal moderation, sharing knowledge or values, and taking various social roles and thus tasks and responsibilities (Hur, 2006; Maton & Salem, 1995; Petrič & Petrovčič, 2014b). As emphasized by Xu, Jones, and Shao (2009), involvement is different from participation in the sense that it usually also reflects individuals' beliefs, their importance and the personal relevance of an issue based on which an individual gets involved in a specific community activity. For instance, in HROSCs, users' involvement in activities related to the community's organization, rules and norms indicates how relevant the HROSC is for them. Users who are involved in HROSCs

believe that certain activities are important and also personally relevant to them. Accordingly, they put more effort into such activities, perform better and often gain beneficial outcomes for them as members of the online community as well as for their private life domains (Xu et al., 2009). This is also beneficial for the HROSC itself. Users' involvement in an online community also guides them on how to behave and interact with other users, which contributes significantly to online community sustainability and success (Kordzadeh et al., 2014).

In relation to the healthcare context, Dent et al. (2011) have identified three important aspects of patient involvement in healthcare, namely choice, voice and co-production. Each of these aspects can also be related to the HROSC setting. Involvement in HROSCs might present, for users or patients, an important source for gaining access to health-related information that can inform users' health-related choices. Further, an important aspect of involvement in HROSCs may be related to users finding their voice for stating individually or collectively what the inconsistencies and challenges are that affect their health-related issues and life domains. Through involvement in HROSCs, users can recognize their role in influencing decision-making processes in medical encounters with their healthcare providers or more broadly in challenging decisions related to the provision of healthcare, and health practices in health institutions or organizations. Involvement in HROSCs can also emphasize the role of users not only as active participants in discussions about personal health stories and the sharing of health-related experiences, but also as important co-producers of health information, treatment (and clinical) guidelines, "expert patient" programs for self-management and even health delivery services. As such, involvement in HROSCs can be understood as an advanced stage of users' participation (Palumbo, 2017), where involved users use different tasks and activities to achieve specific goals that users recognize as important sources for building their (personal) meaning, and their role in individual and collective health-related processes, skills, competences and even power – all of which can represent crucial social processes for attaining empowering outcomes.

Members' involvement in an online community can consist of different levels and methods of engagement. The concept of involvement in HROSCs has been rarely conceptualized in studies so far and its dimensions have been scarcely explored. Only few studies (Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014a) have defined the concept and examined the relationship between involvement and intrapersonal and interactional empowerment. According to their conceptualization, involvement in HROSCs can be observed from two levels: as involvement

in community internal organization and activities and as involvement in external activities that pertain to the wider social (offline) environment. Involvement in online community organization refers to engagement in strategic discussion and decision-making processes concerning the development of the community and usually includes activities such as debating online community norms, values and roles, and organizing community events and other activities that build on the online community environment to become a better place for its members (Minkler et al., 2001). Research has indicated that a higher level of online community involvement not only brings members meaning, but also enhances their feelings of membership and affects members' "motivation to process information, attention, and the comprehension process" (Youcheng Wang & Fesenmaier, 2003, p. 36). Moreover, according to Minkler et al. (2001, p. 784), community involvement "may have important by-products," which include members' beliefs in individual and community capacity, a higher level of trust in the community and greater interest in community needs.

Involvement in community organizational activities, such as leadership roles, exchange of support and co-creation of community values and norms, enhances feelings of personal relevance in relation to the community, which are often also reflected as an increased level of psychological empowerment (Minkler et al., 2001; Youcheng Wang & Fesenmaier, 2003). In the context of HROSCs, involvement in an online community means engaging in generating and reading messages, responding to messages, organizing discussions, etc. (Butler, Sproull, Kiesler, & Kraut, 2008), through which members can enact different leadership behaviors, negotiate social roles, build and sustain relationships and group identity, and participate in discussions and decision-making processes regarding the online community or broader sociopolitical environment. Such involvement can have important implications for members' health-related outcomes, such as enhanced control over health conditions, improved competences, skills and critical awareness regarding health treatments and the healthcare system, or even improved confidence in healthcare encounters (Laverack, 2006; Vahdat, Hamzehgardeshi, Hessam, & Hamzehgardeshi, 2014). Involvement in an online community's internal organization and personal investment in an online community also give users meaning, a feeling of personal relevance and an opportunity to meet other members, which reduces the sense of alienation and isolation and increases social cohesion among members in an online community (Butler et al., 2008; Speer, Jackson, & Peterson, 2001). This type of involvement in an HROSC has been shown to increase users' identification with the online community,

which represents the basis for users' perception about an online community and its members as a source for collective action and influence on wider social processes (Petrič & Petrovčič, 2014b).

Involvement in an online community's external activities, on the other hand, includes the engagement of online community actions directed toward wider social structures and systems, such as health-related civic initiatives, humanitarian activities, awareness campaigns and volunteering (Petrič & Petrovčič, 2014b; Xu et al., 2009). The involvement of users in any online community activities, whether focused on internal or external structures and relationships, is crucial for building an awareness and beliefs about members and an online community that can have an important effect on the conditions of individuals' life domains (Minkler et al., 2001). Through involvement in HROSCs, users maintain a contact with their social environment, develop a critical understanding of the social circumstances and recognize the importance of cooperation and opportunities offered by HROSCs for both intrapersonal and interactional empowerment (Petrič & Petrovčič, 2014b).

Involvement in HROSCs presents an important source for users to gain specific resources needed to achieve empowering outcomes. However, the act of involvement itself is not static and isolated from the online community and the context surrounding the community, but is shaped and formed by mutual interaction among different forms of capital possessed by individuals and the rules and organizational characteristics of the online community. For instance, Yuan, Cosley, Welser, Xia, and Gay (2009) emphasized that involvement should be viewed as a contribution and as a proportion of individuals' resources dedicated to achieving specific goals, for themselves, a group of individuals or the online community. Since the concept of involvement has so far been seen in the context of HROSCs and in relation to empowerment outcomes that have been under-researched and scarcely conceptualized, further qualitative and quantitative research on this topic is of crucial importance.

5. Research design and methodology

Following the main aim of the thesis to empirically investigate the impact of the socio-structural properties of HROSCs on intrapersonal and interactional empowerment, we must first present a research framework that will allow us to establish a clear explication of theoretical constructs and a methodologically valid relation between them and their connection to the observed reality. In order to present this research framework we first establish a connection among the main aim of the thesis, research objectives, research questions and theoretical hypotheses that guide the proposed complementary mixed-methods research design using (data and method) triangulation of qualitative and quantitative research methods. Next, we present the main setting of the qualitative and quantitative studies and thus the biggest HROSC in Slovenia, Med.Over.Net. This is followed by a detailed description of the methodology and design of the exploratory (qualitative) part of the study, which set up the outline for gaining new insights into the socio-structural properties of HROSCs. The qualitative phase of the study is the starting point for the necessary reduction of the theoretical constructs and their multidimensionality, as it partly presents the source for quantitative measurement (survey) instrument development and questionnaire design. Next, in the quantitative study section we present, through the operationalization process, the connection between complex theoretical constructs and definite and observable concepts. The process of reducing theoretically defined phenomena on the level of observable and measurable concepts and defining causal relationships between them to a certain point limits our conclusions and the strength of the empirical evidence for the theoretical framework; however, it also gives us a valid and viable procedure to assess the empirical relevance of (certain aspects of) the proposed theoretical framework.

5.1 Research questions and theoretical hypotheses

In order to investigate the associations between socio-structural properties and intrapersonal and interactional empowerment, we examine the following research questions, subquestions and related theoretical hypotheses, which are presented with the accompanied rationale based on theoretical discussion:

RQ1: What role do socio-structural properties of HROSCs have in (users') intrapersonal and interactional empowerment?

RQ1.1: What is the influence of (users') involvement in HROSC on intrapersonal empowerment under the condition of different organizational characteristics of HROSC?

RQ1.2: What is the influence of (users') involvement in HROSC on interactional empowerment under the condition of different organizational characteristics of HROSC?

We believe that involvement in HROSC under the condition of specific organizational characteristics of HROSC significantly influences users' intrapersonal and interactional empowerment. This relation is based on a theoretical framework (Giddens, 1979) emphasizing the importance of examining the mutual relationship between social practices and organizational characteristics. Further on, empowerment theory (implicitly) argues (Christens et al., 2011; Speer & Hughey, 1995) that, on the one hand, organizational characteristics may constrain or facilitate involvement in community activities, and on the other hand, individuals' involvement in a community can challenge individual cognitions of "self," others and the community as a whole. Both described dynamics have been importantly associated, as shown by many scholars (Peterson & Hughey, 2002; Peterson & Zimmerman, 2004), with empowering outcomes, on the basis of which we believe that the interaction between involvement in an HROSC and the specific dimension of organizational characteristics can provide more detailed predictions of intrapersonal and interactional empowerment in HROSCs.

RQ1.3: What is the influence of (users') involvement in HROSC on intrapersonal empowerment under the condition of (users') different forms of capital?

RQ1.4: What is the influence of (users') involvement in HROSC on interactional empowerment under the condition of (users') different forms of capital?

According to Bourdieu's theory (2002[1986], 280), different forms of capital present "the immanent structure of the social world" and can thus be seen as important facilitators of, and barriers to, social practices. As many studies (Mathwick et al., 2008; Rafaeli et al., 2004) have shown, economic, cultural and social capital fostered through participation in online communities can lead to a higher level of involvement in community activities. As Bourdieu (2002[1986]) argues, different forms of capital can be mechanisms for both social inclusion and exclusion. However, the relationship between capital(s) and social practices is never

unidirectional (Bourdieu, 1991), which means that involvement of HROSC users in organizational features of the community is also importantly associated with the accumulation of different forms of capital. Studies have so far been predominantly focused on separately investigating the effects of involvement in an online community and different forms of capital on psychological empowerment. In addressing this interaction effect, the thesis will provide additional insight into the factors influencing intrapersonal and interactional empowerment outcomes in the HROSC context.

RQ1.5: What is the influence of (users') different forms of capital on intrapersonal empowerment under the condition of different organizational characteristics of HROSC?

RQ1.6: What is the influence of (users') different forms of capital on interactional empowerment under the condition of different organizational characteristics of HROSC?

We believe that the explanation of both dimensions of psychological empowerment in HROSCs can be attributed not only to the distribution of different forms of capital obtained by participants of HROSCs, but also to the organizational features of an online community. This idea is directly drawn from the discussions of leading empowerment scholars (Peterson & Speer, 2000; Zimmerman, 1995), who emphasize the need for analysis, which would include both the specific context within which the empowerment is studied and the resources that are needed for (effective) participation (Zimmerman et al., 1992). This interaction has thus far only been conceptualized, and not yet empirically addressed. We believe this will be a viable direction for explaining intrapersonal and interactional empowerment and thus a useful contribution by this thesis to empowerment theory.

In addition to conditional associations, which are addressed in RQ1.1–RQ1.6, we will also investigate hypotheses (see Figure 5.1) that delineate the direct influences of socio-structural properties on both intrapersonal and interactional dimensions of psychological empowerment:

Hypothesis 1.1: Involvement in HROSC is associated with intrapersonal empowerment.

Hypothesis 1.2: Different forms of capital, i.e. economic, cultural and social capital, are associated with intrapersonal empowerment.

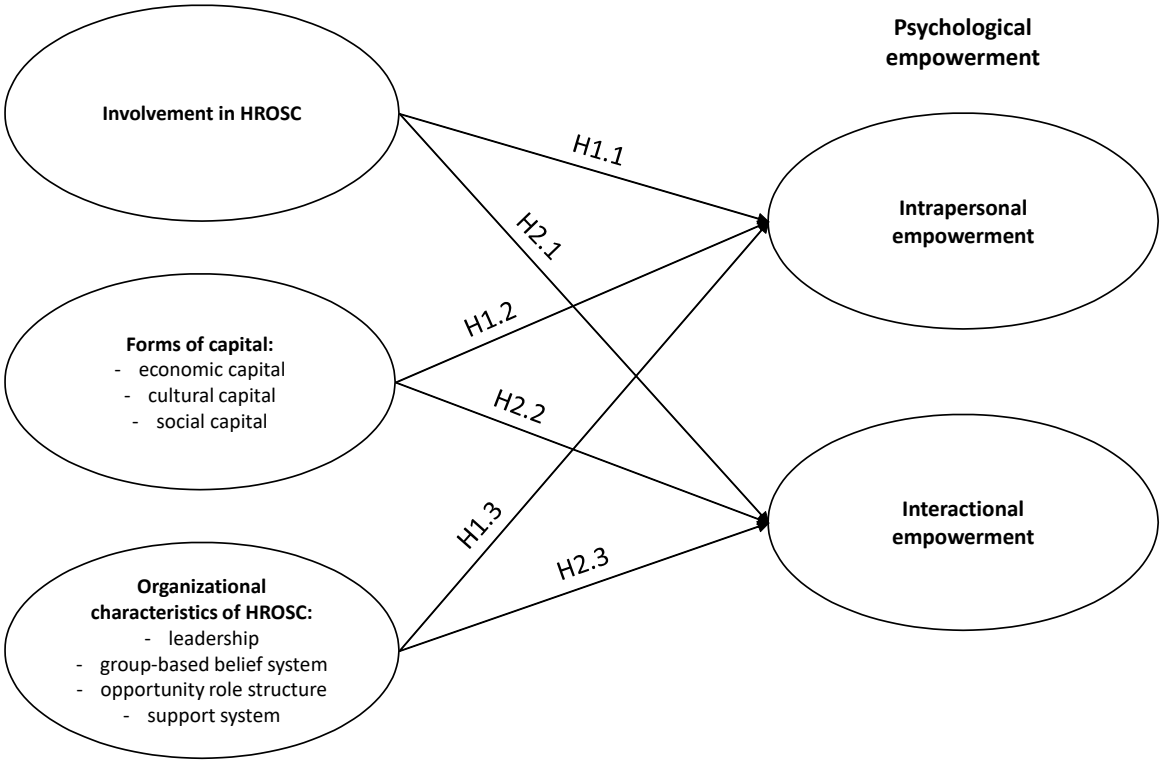
Hypothesis 1.3: Organizational characteristics, i.e. a group-based belief system, leadership, an opportunity role structure and an HROSC support system, are associated with intrapersonal empowerment.

Hypothesis 2.1: Involvement in HROSC is associated with interactional empowerment.

Hypothesis 2.2: Different forms of capital, i.e. economic, cultural and social capital, are associated with interactional empowerment.

Hypothesis 2.3: Organizational characteristics, i.e. a group-based belief system, leadership, an opportunity role structure and an HROSC support system, are associated with interactional empowerment.

Figure 5.1: Theoretical model of the impact of socio-structural properties of HROSCs on psychological empowerment dimensions



Source: Author's elaboration

We believe that involvement in HROSC, different forms of capital and organizational characteristics of HROSC are associated with both users' intrapersonal and interactional empowerment. Involvement in HROSC has often been emphasized in previous studies (Mo &

Coulson, 2010; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2008b) as an important factor of users' intrapersonal empowerment, as it provides opportunities for online community members to learn new competences, obtain resources, increase their control and self-efficacy, and achieve personal goals. Moreover, involvement in HROSC has also been related to users' interactional empowerment outcomes, since users' active role in community discussions and organization provides individuals with opportunities to learn new skills, interact with other members, identify needed resources and develop critical awareness of one's environment (Zimmerman, 2000). Different forms of capital that can be accessed, accumulated and distributed in HROSCs have also been shown to be important determinants of users' intrapersonal empowering outcomes, since different resources present the foundation of empowerment on the basis of which users can address health-related needs, develop coping and self-care strategies, and improve their management of health issues (Johnston et al., 2013; Mo & Coulson, 2012; Schulz & Nakamoto, 2011). Moreover, different types of resources also play an important role in users' interactional empowerment, since different resources are crucial for collaborative efforts of users to collectively develop strategies and solutions to overcome limitations and barriers to the issues affecting their health (Speer, 2000; Wentzer & Bygholm, 2013; Zimmerman, 1995). We also believe that organizational characteristics of HROSCs are an important factor in HROSC users' intrapersonal and interactional empowerment. The empowering potential of an online community is inherently present in its structural characteristics (Petrič & Petrovčič, 2014b), which offer its members opportunities, as well as possible barriers, that allow users to achieve empowerment outcomes.

HROSCs are vibrant online applications that consist of different subcommunities, which encompass different communication spaces and thus specific organizational characteristics. The internationally well-known HROSCs PatientsLikeMe, WebMD, MedHelp and also the Slovenian Med.Over.Net[8] include a variety of online subcommunities, i.e. online counseling forums, online support group forums and online socializing forums, which have a different focus of social interactions and are usually used for different purposes. Online support group forums are designed for peer-to-peer interaction, where users or patients exchange experiential knowledge among peers (Vennik et al., 2014); online counseling forums are structured in a question and answer (Q&A) format, where questions are posted by users and then answered by

[8] The specific structure and characteristics of Med.Over.Net, which is the main research setting of this doctoral thesis, are presented in detail in Section 5.3, "The setting of qualitative and quantitative studies."

health professional moderators, usually doctors or other health professionals, who provide users or patients with clinical and medical expertise (Hartzler & Pratt, 2011; Vennik et al., 2014); and socializing forums provide places for users to converse about daily matters, ranging from health to politics, culture or trivia. Thus, HROSCs' communicative spaces possess different modes of regulation, moderation, management, norms, sanctions, openness, identification and reputation systems. The combination of community management and users' social and communicative dynamic co-creates perceptions of the HROSCs' organizational characteristics that can determine different interactions and influence the accumulation and exchange of different resources, different types of involvement in HROCS, which can have an important effect on the development of (intrapersonal and interactional) empowerment outcomes. As emphasized by Christens et al. (2013), it is important to understand how different organizational characteristics affect the specific manifestation of psychological empowerment. By determining specific organizational characteristics of HROSC subcommunities and how, in relation to different forms of capital and involvement in HROSC, they affect users' psychological empowerment, we may be able to better anticipate the potential empowerment outcomes as well as inform the building capacity to enact individual and collective online community change. Based on this rationale, we formulated the following research questions:

RQ2: What are the differences and/or similarities in organizational characteristics among different HROSC subcommunities?

RQ3: If differences in organizational characteristics among different HROSC subcommunities exist, how do they affect (users') intrapersonal and interactional empowerment in relation to (users') different forms of capital and involvement in HROSC?

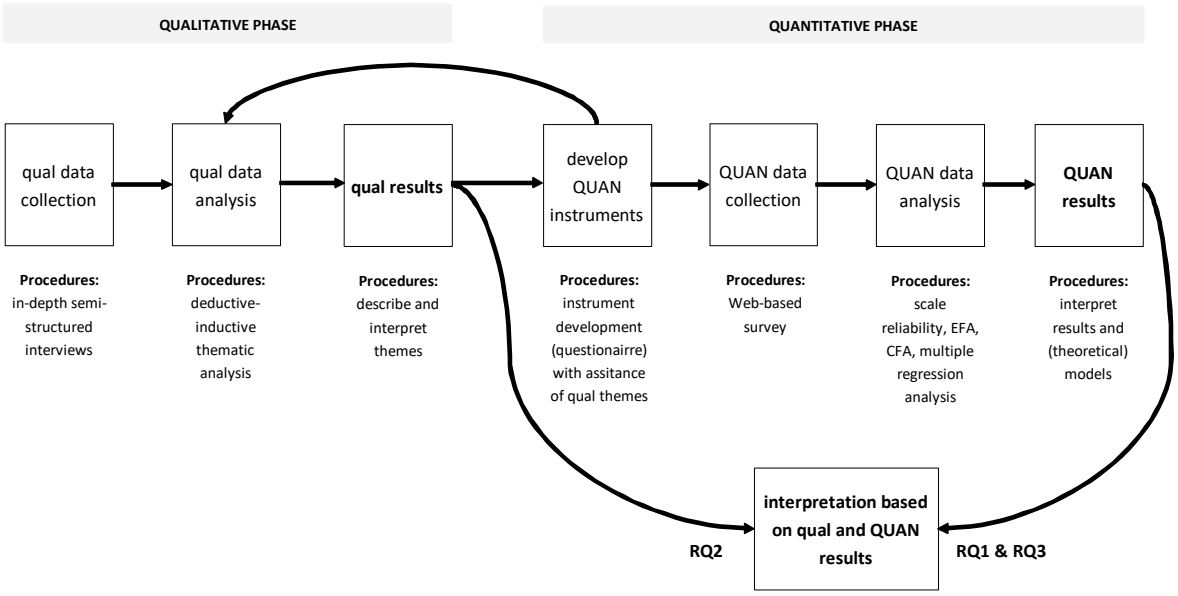
5.2 Research design

The doctoral dissertation undertakes a complementary **mixed-methods research design** using (data and method) triangulation of qualitative and quantitative research methods. The basis of triangulation is to overcome (at least to some degree) the limitation of studying social phenomena with a single research method, where the discrepancies between two (qualitative and quantitative) methods can provide important insights into the research problem and can uncover more diverse dimensions of empirical reality (Kogovšek & Pavlin, 2007). As also

emphasized by Bourdieu (1996), the complexity of the social world demands that both qualitative and quantitative methods be used for a richer account. The triangulation of different methods to investigate a specific domain of social reality, as stated by Erzberger and Kelle (2003, p. 461), can be "compared with the examination of a physical object from two different viewpoints or angles. Both viewpoints provide different pictures of this object that might not be useful to validate each other but that might yield a fuller and more complete picture of the phenomenon concerned if brought together."

The research design used in the thesis according to the established mixed-methods typology (Creswell & Plano Clark, 2007) most closely relates to *sequential exploratory research design* (Creswell, Plano Clark, Gutmann, & Hanson, 2003; Edmonds & Kennedy, 2012), also referred to as *sequential triangulation research design* (Boeri, 2007), or even *partially mixed sequential dominant status design* (Leech & Onwuegbuzie, 2009). More specifically, the research design involves conducting a study in two phases that occur sequentially: qualitative followed by quantitative (see Figure 5.2). In line with the aim of the study and proposed research questions, the quantitative phase has the greater emphasis. Although the proposed research design is generally closely related to the established research design typologies, our research design also consists of its own specific phases and steps developed and led by our research problem and proposed research questions. Each phase and its steps are described in detail below.

Figure 5.2: Visual diagram of the specific phases and procedures of the research design



Source: Author's elaboration

In this design, in order to explore socio-structural properties in HROSCs we first collected and analyzed qualitative data. We conducted in-depth semi-structured interviews with users (*n=8*) and health professional moderators (*n=7*) of Med.Over.Net, the largest HROSC in Slovenia. Data analysis utilized a hybrid process of deductive and inductive thematic analysis. This methodological approach integrated theory-driven codes with data-driven ones. The theory-driven codes were based on the tenets of managing common resources in online communities theory (Kollock & Smith, 1996) and empowering community setting theory (Maton, 2008; Maton & Salem, 1995). The initial (deductive) coding scheme was informed and developed not only by the theoretical framework but also by insights from the operationalization process of defining and developing the quantitative (survey) measurement instruments. Thus, the first step of the quantitative phase of the study – the development of quantitative instruments – started in parallel with the qualitative phase; however, this step was finalized only after attaining the qualitative results of the study.

These steps of the research design did not strictly follow the sequential order of qualitative and quantitative phases, but was conducted as an iterative and cyclical process, where the emphasis was on triangulation and combining qualitative data with data obtained through the process of specifying and defining concepts, providing operational definitions and specific indicators. Finding appropriate operational definitions of the constructs and concepts is always a challenging task. While theory and theoretical concepts can present a solid base for providing a clear meaning of the measurement instruments, an additional relation of concepts to their direct applications of experiences and practices of social actors in a specific setting can make an important contribution to declaring what meaning a particular concept has. As Kaplan (1964, pp. 41–42) explains:

> "Most scientific concepts, especially the theoretical ones, relate to experience only indirectly. Their empirical meaning depends on their relations to other concepts as fixed by their place in the theory, and it is only these others that have a sufficiently direct application to experience to allow for specifying operations. […] Operations are used, but the interpretation of their outcome depends on the meanings of an open set of other terms."

As Kaplan highlights, to find out what a theoretical concept means, it is necessary to examine how the concept and concepts related to it can be applied. To overcome the only indirect relation of a scientific concept with experiences, it is important for specific stages of the research design to be interrelated and developed in close connection. We believe that the

mutual and iterative process of combining the inductive process of qualitative insights into perceptions, practices and actual experiences of social actors in a study setting with the deductive process of defining the operational definitions of theoretical concepts can benefit data collection, analysis and research findings. Although this is not a usual procedure, the process of creating operational definitions of theoretical concepts can provide a starting point for (deductive) qualitative analysis that can be upgraded with (inductive) data-driven analysis, which again conversely informs the additional advancements in the development of (survey) measurement instruments. This research process is especially important for providing answers to the dissertation's research objectives related to the development of methodological frameworks for measuring socio-structural properties, as well as intrapersonal and interactional empowerment in HROSCs.

The purpose of the qualitative data analysis was thus twofold: to explore the organizational characteristics of HROSCs and their differences and/or similarities among HROSC subcommunities, which provides findings for research question RQ2 *("What are the differences and/or similarities in organizational characteristics among different HROSC subcommunities?"*); and to inform the quantitative phase by providing findings that are important for the development of (quantitative) measurement instruments and identifying important variables (see Figure 5.2). More specifically, the qualitative results importantly informed the development of methodological frameworks for measuring socio-structural properties of HROSCs. These developments and inputs connect the initial qualitative phase to the subsequent quantitative components of the study.

The quantitative phase was conducted with a cross-sectional Web-based survey on nonprobability and probability samples of Med.Over.Net users. The quantitative phase of the study was guided by research question RQ1 (*"What role do socio-structural characteristics in HROSCs have in (users') intrapersonal and interactional empowerment?"*) and its subquestions (RQ1.1–RQ1.6), RQ3 (*"If differences in organizational characteristics among different HROSC subcommunities exist, how do they affect (users') intrapersonal and interactional empowerment in relation to (users') different forms of capital and involvement in HROSC?"*) and hypotheses (H1.1–H1.3 and H2.1–H2.3), which anticipate the direct influence of involvement in HROSCs, different forms of capital and organizational characteristics of HROSCs on both dimensions of psychological empowerment. This phase of the study is focused on empirically testing the proposed theoretical model(s) with multiple regression

analysis in order to investigate the effects of socio-structural properties of HROSCs on users' intrapersonal and interactional empowerment.

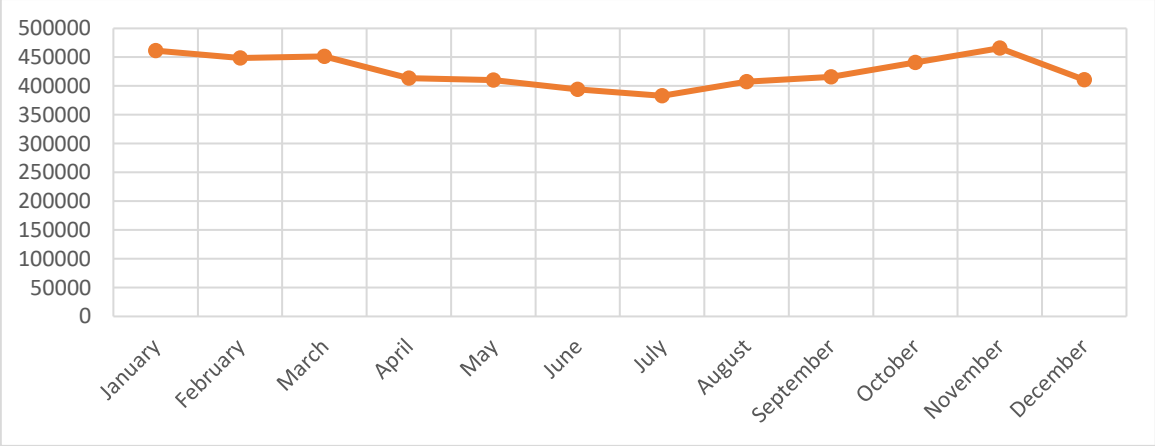
Once the collection, analysis and presentation of the results for the quantitative phase of the study were finalized, we interpreted the qualitative and quantitative results together in order to triangulate our analysis and arrive at a better understanding of how socio-structural properties of HROSCs affect users' intrapersonal and interactional empowerment. Method and data triangulation and thus the process of combining the qualitative and quantitative findings in this way helped to shed light on similarities and differences in organizational characteristics among different types of forums in HROSC. For instance, one of the key differences between different subcommunities in the HROSC that emerged from the analysis of the users' and health professional moderators' interviews was the "absence of moderation." The qualitative analysis revealed that absence of moderation, which has been most often perceived by participants in the online support group forums and online socializing forums of the HROSC, is importantly related to the ways participants perceive social interactions and communication in different HROSC subcommunities. Consequently, combining qualitative and quantitative findings revealed aspects or even mechanisms of different subcommunities that would, with only quantitative analysis, remain invisible to us. The qualitative findings thus provided us with an important insight into why and how specific socio-structural properties (organizational characteristics) of different HROSC subcommunities might influence psychological empowerment differently. Although the prevalent emphasis of this doctoral thesis is on quantitative findings, the integration of qualitative insights has importantly advanced the meaning of, and insights into, the association and interaction between socio-structural properties and (users') intrapersonal and interactional empowerment in HROSCs.

5.3 The setting of qualitative and quantitative studies

Both the qualitative and quantitative studies were conducted on the case of Med.Over.Net (https://med.over.net), the largest HROSC in Slovenia. This HROSC was founded in 2000 and thematically covers areas of health, medicine, social work, law and education. Med.Over.Net has become one of the most visited online communities (and websites) in Slovenia. According to the measurements of the Web traffic in Slovenia (*Merjenje obiskanosti spletnih strani – MOSS*), in April 2018 Med.Over.Net was the eighth most visited website in Slovenia (MOSS,

2018), with more than 400,000 monthly visits and, on average, more than 70,000 monthly users. In 2017, Med.Over.Net had on average 425,240 unique monthly visits (see Figure 5.3), which classifies it as one of the most visited websites in Slovenia. In 2015, Med.Over.Net reached 10 million pages of content (Med.Over.Net, 2016) and in May 2018 this HROSC had 149[9] online discussion forums, 1,425,358 forum threads, almost 12 million published forum posts and 125,107 registered users (personal communication, Verovšek, 2018, May 22). An average Med.Over.Net user is a woman, aged between 30 and 50 years, with at least high school education, employed, and from Central Slovenia (personal communication, Verovšek, 2018, May 22).

Figure 5.3: Number of monthly visits of Med.Over.Net in 2017



Source of data: MOSS (2018)

The Med.Over.Net platform offers 140 different active online discussion forums, where users can asynchronously post messages, which are publicly accessible and archived. Membership for users is free and in most discussion forums users can post either anonymously or as registered users. In some discussion forum topics, participants are required to register with a minimal level of personal information before posting to the forums. This restriction was made because some forum topics, especially in online counseling forums, became very popular and health professional moderators received a very high number of questions, some of which were also not serious and deceptive. When users register on the HROSC, their profile page is

[9] In May 2018, the HROSC consisted of 149 online discussion forums, among which 140 were active and nine online discussion forums were inactive and unavailable for users' discussions. Among the 140 active online discussion forums, 70 were online counseling forums, 30 online support group forums and 40 online socializing forums.

automatically created. The profile page of each user includes information such as joining date and membership length, number of posted messages and a link to posted messages, date and time of their last activity, a link for other users to add them to their friends or foes groups, and a link that users can use to send them a private message. On a profile page users can also view a list of all registered members of the HROSC and their rank based on the number of messages posted to the community.

The integral part of the HROSC Med.Over.Net also presents a voluntary collaboration of 255 different moderators, covering different fields (medicine, healthcare, social work, education and law), among whom there are 87 health professionals, i.e. health professional moderators (personal communication, Verovšek, 2018, May 22). Health professional moderators are usually healthcare experts (medical doctors and specialists), psychotherapists, psychologists and medical staff employed in public and private health institutions in Slovenia and who participate independently as volunteers in this HROSC.

Med.Over.Net was selected as a suitable study setting not only because of its large and active membership and wide-reaching impact in Slovenia, but also because of its complex (organizational) structure and different types of subcommunities, i.e. discussion forums. This HROSC's different discussion forums are distributed among 12 different topics (see Table 5.1).

Table 5.1: Representation of different types of subcommunities in Med.Over.Net according to the main forum topics

	TYPES OF SUBCOMMUNITIES (FORUMS)		
TOPIC	**Counseling forums**	**Support group forums**	**Socializing forums**
Health and medical counseling	✓	✓	
Healthy lifestyle and alternative medicine	✓	✓	
Parenthood and interpersonal relationships	✓	✓	
Social work, law, work and education	✓	✓	✓
Home, technique and free time			✓
Insurance and finances			✓
Chat rooms		✓	✓
Auto.Over.net: Cars and driving			✓
Style.Over.Net: Fashion, makeup and care			✓
Travel.Over.Net: Vacations and traveling			✓
Recepti.Over.Net: Recipes and cooking			✓
About the Over.Net network			✓

Source: Author's elaboration

These topics are distributed among three different types of subcommunities or forums that have specific characteristics:

Online counseling forums are structured in a (loose) question and answer (Q&A) format, where questions are posted by users and then answered by health professional moderators. These types of forums cover topics ranging from acute or chronic health conditions to medical specialties handling particular diseases and medical states (e.g. dermatology, gynecology, oncology, psychiatry, preventive medicine, etc.). In these types of forums users can receive validated clinical expertise from health professional moderators (Hartzler & Pratt, 2011) as well as informational and emotional support when dealing with health issues (Atanasova et al., 2018). Such online forums have also become new venues for professional-patient interaction and present an important setting that can also have effects on face-to-face medical encounters (Atanasova et al., 2018).

Online counseling forums represent almost half of all online discussion forums (n=70) in Med.Over.Net and in May 2018 had on average 3586 forum threads. Online counseling forums are represented in forum topics (see also Table 5.1): Health and medical counseling; Healthy lifestyle and alternative medicine; Parenthood and interpersonal relationships; and Social work, law, work and education. The seventh most visited online discussion forum and the most visited online counseling forum is Family medicine, which in May 2018 had approximately 33,000 forum threads and 33,730 monthly visitors (personal communication, Verovšek, 2018, May 22). The tenth most visited online discussion forum on Med.Over.Net and one of the most popular and best-known online counseling forums is ABC of gynecology and obstetrics. In May 2018, this forum consisted of almost 80,000 forum threads and had approximately 31,237 visitors (personal communication, Verovšek, 2018, May 22).

The typical moderators that take part in online counseling forums are health professional moderators, i.e. doctors and specialists, psychotherapists, psychologists, medical staff, medical students, private clinic representatives and alternative-medicine professionals. Each health professional moderator is assigned to a specific forum topic, which they can moderate independently or in collaboration with other health professional moderators. Counseling forums thus consist of top-down management. This means that health professional moderators provide both discussion and expert moderation and tend to accept direct control of users' engagement in a forum (Matzat & Rooks, 2014). Health professional moderators in online counseling forums also decide the extent to which the structure of the forum keeps strictly to the Q&A dynamic and the degree to which discussions among the forum's users are allowed and encouraged.

In counseling forums users' messages are posted when health professional moderators approve them and make them publicly accessible and visible to other HROSCs' users. Only in these types of forums is there a restriction on users anonymously posting their messages. In the case of three online counseling forums, users are required to register before they are able to post a message in the forum. These forums are ABC of gynecology and obstetrics, Emergency room, and Pediatrics. These forums are moderated by health professional moderators, who have a high reputation in Med.Over.Net, and thus receive the most questions and requests for help from users.

Online support group forums are designed for peer-to-peer interaction and usually focus on specific symptoms or a particular (chronic) health condition. These types of forums are dedicated to HROSC users with the purpose of exchanging experiences, information about symptoms, treatments and medication, social and emotional support, and strategies when coping with (specific) health-related issues. Online support group forums in Med.Over.Net exist in the following topics: Health and medical counseling; Healthy lifestyle and alternative medicine; Parenthood and interpersonal relationships; Social work, law, work and education; and Chat rooms.

These types of subcommunities are represented in the Med.Over.Net HROSC (n=30) and have on average 5588 forum threads (May 2018). Online support group forums present important online spaces for patients with chronic conditions, such as cancer, lymphoma and leukemia, infertility, thyroid disease, diabetes, multiple sclerosis, kidney disease, rheumatism etc. These types of forums are also often visited by caregivers of family members or relatives with mental health conditions (dementia, borderline and narcissistic personality disorder, addiction etc.) or special care needs. Online support group forums in Med.Over.Net also present a meeting place for people that are confronted with new, transformative or even stressful life situations, such as love problems, divorce, sick children, adoption, loss and grieving. Other central topics in support group forums include pregnancy, parenthood and child education. For instance, the forum Parents and children is one of the most visited online support group forums in Med.Over.Net and in May 2018 had 35,739 visits and 67,696 forum threads, which makes it the sixth most visited forum in Med.Over.Net.

These types of forums are usually moderated by different representatives of healthcare societies and associations (e.g. the Slovenian association of patients with lymphoma and leukemia, and

the Society for helping patients with thyroid disease) or by community managers, where there is a tendency to leave the dynamic of the forum discussions to Med.Over.Net's users/posters (predominately bottom-up management). Some support group forums are also moderated by health professional moderators, especially psychotherapists and psychologists.

Online socializing forums provide places for users to converse about daily matters, ranging from health to politics, culture or trivia. Online socializing forums, along with online counseling forums, are a major part of Med.Over.Net (n=40) and are represented in nine different topics, namely: Social work, law, work, and education; Home, technique and free time; Insurance and finances; Chat rooms; Auto.Over.Net: Cars and driving; Style.Over.Net: Fashion, makeup and care; Travel.Over.Net: Vacations and traveling; Recepti.Over.Net: Recipes and cooking; and About the Over.Net network. The biggest and most frequently visited forum in Med.Over.Net is Parental chat, which is located in the forum topic Chat rooms and had in May 2018 approximately 584,541 different forum threads. Online socializing forums are mainly moderated by community managers of Med.Over.Net, but in some cases moderating is also assigned to lay moderators, i.e. recruited or volunteered active, loyal and influential users.

The presented structure of Med.Over.Net is not unique in HROSC contexts, which makes this studied setting comparable with internationally and even globally well-known HROSCs, such as PatientsLikeMe, WebMD and MedHelp. In some HROSCs one type of subcommunity can be more prevalent, or even exclusively represents the whole online community. Although Med.Over.Net's structure is not directly identical to other HROSCs, our theoretical (and empirical) model could also be used and tested in other HROSC contexts.

5.4 Qualitative study

The main aim of the qualitative study was to explore the perceived differences and/or similarities in organizational characteristics among different HROSC subcommunities. The purpose of the qualitative study was also related to the research objective of the development of a methodological framework and thus to provide insights important for the improvement and advancement of specific quantitative measurement instruments. The qualitative study was used to gain additional insights and to complement the findings from the quantitative study.

We designed a small qualitative study to explore the perceived differences and/or similarities in the HROSC's organizational characteristics subcommunities (online counseling forums, online support group forums and online socializing forums). The perceived differences and experiences gained from participation in the HROSC Med.Over.net were retrieved by conducting in-depth semi-structured interviews with users (n=8) and health professional moderators (n=7) of the Med.Over.Net community and the applied deductive-inductive thematic analysis approach. A comprehensive approach to simultaneously study users' and health professional moderators' perspectives on differences among HROSC subcommunities is crucial, since both parties play an important role in the social interactions in HROSCs and co-create the environment and sustainability of different HROSC subcommunities.

In the following sections we first describe the recruitment process and sampling procedure of the qualitative study. Next, we focus on the presentation of data collection and ethical considerations of the qualitative study. In the last part of this chapter, we describe the main characteristics of participants included in the in-depth semi-structured interviews and the details of the data analysis techniques.

5.4.1 Recruitment process and sampling

The study participants were recruited via an online expression-of-interest form. We asked Med.Over.Net community managers for permission to approach potential participants and for their assistance with the recruitment process. The community managers supported our study by publishing the link to the users' online expression-of-interest form in online discussion forums and by sending an email to all health professional moderators involved in the HROSC containing the link to the expression-of-interest form and a request to apply to participate in the study. The users' and moderators' expression-of-interest forms explained the purpose of the study and the participants' rights and requested their contact information.

From the 47 user applicants, we chose eight participants using a mixed purposeful sampling approach composed of both criterion and maximum variation sampling. Based on this approach, we only chose users of Med.Over.Net who had actively participated in the HROSC in the last three months, had posted at least one message and had diverse demographic characteristics. Similarly, we used a mixed purposeful sampling approach, composed of both convenience and snowball sampling, to recruit seven health professional moderators who participated in Med.Over.Net and who were willing to participate in the in-depth interviews.

The sample size follows the guidelines proposed by Braun and Clarke (2013) for thematic analysis, wherein the sample size suggestions are categorized by the type of data collection and the size of the project. For this small-scale study, we followed the guideline of including six to ten participants in the interviews for both users and health professional moderators.

5.4.2 Data collection

The data were collected by conducting in-depth, semi-structured, face-to-face interviews with users and health professional moderators from Med.Over.Net. Following the recommendation to increase the validity of responses in qualitative research (Creswell, 2013), the researcher conducting all the interviews made sure that the participants had a clear understanding of the nature of the study. In the interviews, the users and health professional moderators were asked to share their views and experiences concerning the following topics: the start and reasons for participation; opinions and views about the Med.Over.Net HROSC; modes and approaches regarding participation in the HROSC; views about different subcommunities in the HROSC; benefits and challenges of participation in the HROSC; relationships and interactions with other users and health professional moderators of the HROSC; the role of the moderators; and the role of the HROSC in the healthcare system.

The participants were offered an incentive in the form of a 20 € gift card before participating in the interviews. All the interviews except one were conducted one-on-one in person in quiet and secure rooms at the Faculty of Social Sciences in Ljubljana, participants' workplaces, at their homes, or at remote and quiet spots in public places. One participant was hearing-impaired and undertook the interview via email, as an interpreter was not available at the time. All the interviews, except for the one conducted by email, were audio-recorded with the permission of the participants and transcribed verbatim. The interviews conducted with users lasted, on average, 1 hour and 2 minutes, with a mean length of each interview conducted with health professional moderators of 1 hour and 8 minutes (excluding the one conducted via email). All the interviews were conducted in January and February 2015. The personal characteristics of the participants were anonymized to guarantee confidentiality, and pseudonyms were used to preserve anonymity.

During the data collection process the researcher recorded all observations and reflections from the interviews in observation notes, which were used throughout the whole research process. In the observation notes, the researcher reflected on the participants' experiences and narratives

in relation to personal perspectives and potential biases that might influence the data analysis procedure. Data saturation was indicated by the point when the researcher felt that no new information or potential themes were emerging in the last few interviews conducted and by the overall thematic data replications evident during the data analysis procedure.

5.4.3 Ethical considerations

Respondents included in the in-depth interviews had already been informed in the recruitment process about the purpose of the study and their rights as participants. In the recruitment process we made sure that underage individuals were not included in the study. Before the interviews the participants were asked to sign the informed consent form, informing them about the key aspects of the research. The respondents were also informed that their participation was voluntary and could be ended at any time without consequences. The participants were also guaranteed that all disclosed information and collected data would be used exclusively for scientific and research purposes and would not be forwarded to third parties. In the transcript preparation processes all the identifiers of the respondents were removed in order to anonymize them and protect their confidentiality. Pseudonyms were used to preserve the respondents' anonymity.

The study was retrospective, so no institutional ethics approval was needed. The study was also conducted in line with the Code of Ethics for Researchers at the University of Ljubljana (2014) and the World Medical Association (WMA) Declaration of Helsinki on ethical principles for medical research involving human subjects (2013).

5.4.4 Participants

Users

The average age of the users participating in the study was 39, and ranged between 27 and 50. All users but one were employed, and all except one held an undergraduate degree. The users included in the study had been participating in the Med.Over.Net HROSC for between eight months and nine years (average 4.2 years). All users were in relationships at the time of the interview; two of them were married. The motives for starting active participation in Med.Over.Net were mainly searching for health-related information, seeking and exchanging other types of information, exchanging opinions or just having fun. All users except one had experience with online counseling forums in the HROSC. Similarly, all user participants except

one had experience with online support group forums and all users included in the study had views on, and experience with, online socializing forums in the HROSC. Half of the included users reported being diagnosed with a chronic condition (e.g. lymphoma, breast cancer, infertility or mental health issues) and half had occasionally experienced acute health issues (e.g. vaccination side effects, bone fractures, treatable infectious diseases, etc.).

Health professional moderators

Health professional moderators were, on average, 55 years old, ranging between 42 and 94. Two moderators were male and five were female. All except one were employed. Two health professional moderators held an undergraduate degree and five of them had completed a postgraduate degree. Each had been involved with the Med.Over.Net HROSC for an average of 8.7 years, ranging from 1 to 13 years. The main motives for becoming a health professional moderator were similar to those identified in previous studies (Coulson & Shaw, 2013; van Uden-Kraan et al., 2010) and included altruistic (e.g. provision of access to health-related information) and intrinsic (e.g. the opportunity for knowledge exchange, promotion of their professional field or themselves as experts) reasons. These participants moderated a broad range of health-related topics in the HROSC, including cardiology, general practice, public health, medical genetics, psychotherapy and psychology. Four health professionals were moderators of the online counseling forums and three were moderators of online support group forums. Although the health professionals included in the study were not moderators of the online socializing forums, they reported having experience with online socializing forums as users, most commonly as lurkers.

5.4.5 Data analysis methods

The interviews were analyzed using a hybrid approach of deductive-inductive thematic analysis according to the guidelines provided by Fereday and Muir-Cochrane (2006) and Braun and Clarke (2006, 2013). Thematic analysis is a qualitative method that includes identification of the themes emerging in the data and presents important descriptions of the phenomena (Boyatzis, 1998). The hybrid approach of thematic analysis includes both an a priori template of codes from a codebook and a data-driven inductive approach. This analysis approach enables identification of the specific phenomena in the data defined by a theoretical framework, as well as identification of the common themes that more closely reflect the possible observations and

interpretations of the phenomena. The data analysis was assisted by the use of NVivo Pro v11.0 software.

The aim of the coding procedure was to identify the main differences and/or similarities in organizational characteristics among HROSC Med.Over.Net subcommunities (online counseling forums, online support group forums and online socializing forums) as viewed by users and health professional moderators. The coding procedure followed five main stages that specifically refer to the hybrid deductive-inductive approach of thematic analysis (Fereday & Muir-Cochrane, 2006), i.e. developing the code manual, testing the reliability of the code, applying a template of codes and additional (inductive) coding, connecting the codes and identifying the initial themes, and corroborating and legitimating coded themes. Each of the stages of the coding process is described below.

In the first stage of the analysis, the code manual was developed and was based on the framework of Maton and Salem's (1995) empowering community settings theory and the theory of managing common resources in online communities (Kollock & Smith, 1996). The template of the coding book included codes related to the organizational characteristics in HROSCs, namely "moderation," "norms and sanctions," which included two subcodes, "informal" and "formal," "positive sanctioning," "participation in the formation of norms" and "sense of virtual community." For each of the codes we provided the label, its definition and a description of how to identify the theme of the code in the data.

The second stage of the analysis included a test of the applicability of the proposed codes to the raw interview data. Two interviews, one with a user and one with a health professional moderator, were selected as test pieces. Both documents were coded using the predefined codes in order to evaluate the reliability of the code template. The test analysis revealed that the predefined codes appear in the data of both types of participants.

In this qualitative analysis the deductive part of the thematic analysis was especially important at the beginning of the coding process and presented key guidance for identifying differences between specific organizational characteristics of HROSC subcommunities. However, in the third stage of the analysis the inductive part of the analysis had more clearly started. It is important to note that the aim of the analysis was not (quantitative) content analysis, but the identification of distinct concepts, which were to some extent driven by pre-existing categories. During this analytical process data were provided in the template coding scheme and also

analyzed inductively, meaning that if in the meaning units (groups of words, sentences or statements that share some common meaning) new and relevant codes were identified, they were added to the coding scheme. This also means that if in the data codes emerged that could establish additional meaning and understanding of the predefined codes, these codes were appropriately adopted and converted. For instance, during the analysis we noticed that participants reported that positive sanctioning was perceived as a form of gratitude and recognition. Accordingly, we added these two subcodes to the positive sanctioning code. For all the new codes we developed definitions and established a clear distinction among the codes. In this stage of the coding procedure we mainly identified descriptive codes with explicit meaning of the data.

After the generation of initial codes, the analysis in the fourth stage incorporated different codes with shared commonalities into initial sets of themes. The descriptive codes identified in the previous stage of analysis were thus merged into initial themes with interpretative, broader meaning and implications. This process continuously refined the coding scheme. Each initial theme was verified alongside the transcripts of the interviews to ensure that themes were an accurate reflection of participants' views evident in their replies.

The analysis continued with a revision of the initial themes by searching for coherent patterns, followed by a process that defined and named the themes. In this stage a final set of themes was created by selecting main themes and their subthemes and then determining the meaning and relationships between them.

The interviews were analyzed in turn, starting with each user's interview. This provided a better insight into the views and experiences of both types of participants. However, if a new code emerged in an interview, the data set already coded was reviewed and examined again. Thus, the analysis was an iterative process and the emerging codes were constantly challenged and further refined in each step of the process. Code saturation was achieved with eight interviews (four user and four moderator interviews). The transparency of the coding process was ensured by noting and documenting the overall coding procedure, potential themes, observations, ideas and patterns in the data in memos. The coding process, framework and results were discussed and elaborated among the author of the thesis and supervisors, and any disagreements and discrepancies were resolved with the purpose of preserving the reliability of the findings.

5.5 Quantitative study

In order to investigate the role of, and associations between, socio-structural properties of HROSCs and intrapersonal and interactional empowerment we conducted a quantitative study based on a cross-sectional Web survey to gather primary source data from users of the Med.Over.Net HROSC. The data set of this study was collected by the author of this doctoral thesis in collaboration with the HROCS provider Med.Over.Net. In this chapter we present an overview of measurement instrument development, questionnaire design and testing. The phase of the development of the measurement (survey) instrument was also informed by findings of the qualitative study. The process of qualitative and quantitative data and method triangulation for the purpose of measurement instrument development is laid out in detail in the next subsection. Next, in the subsection about the data collection procedure, we first demonstrate the sampling process, which is based on nonprobability and probability samples of Med.Over.Net users. Following the sampling process, we compare the characteristics of data sets obtained with different sampling procedures, missing data treatment methods and basic demographics. Next, an overview of ethical considerations and data analysis techniques is presented. In the last part of this chapter we present all measurement instruments used in the study and thus the operationalization of dependent, explanatory and control variables that were used in quantitative data analyses.

5.5.1 Development of measurement instruments

Two important objectives of this doctoral dissertation are the development of a methodological framework for both measuring socio-structural properties of HROSCs and for measuring intrapersonal and interactional empowerment in the context of HROSCs. The literature reviews, explications and comparisons of the empowerment concept indicate a varying and inconsistent use of the term (Herbert et al., 2009; Hur, 2006). Debates include whether empowerment should be measured as a process or as an outcome, with the inclusion of the context in which it is studied and whether different levels of empowerment should be included in the measurements (Hayes, 1994; Narayan, 2005; Peterson, 2014; Zimmerman & Zahniser, 1991). Although empowerment processes and outcomes have been studied to some extent in the context of HROSCs (Mo & Coulson, 2010; Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2009), such instruments often excluded the specifics of HROSC settings or were developed in cases of very narrow and specific HROSCs, usually dedicated to

a specific health condition. The value in operationalizing psychological empowerment in the context of HROSCs lies in the potential for measuring and analyzing it across multiple HROSC settings and including the empowerment concept in multivariate models of HROSC adoption and use. Despite the growing analysis of empowerment processes and outcomes in HROSC contexts, little research has attempted to investigate the role of socio-structural properties of HROSCs in users' intrapersonal and interactional empowerment. This led to the question of how to measure different aspects of socio-structural properties, i.e. organizational characteristics, different forms of capital, and involvement in HROSCs.

Our development of the measurement instruments procedure roughly followed the recommendations defined by MacKenzie, Podsakoff, and Podsakoff (2011), including the following steps: (1) develop conceptual definitions of the constructs; (2) generate items to represent the constructs; (3) assess the content validity of the items; (4) specify the measurement model; (5) collect and analyze the data; (6) scale purification and refinement; (8) assess scale validity; (10) develop norms to the scale. For this study, we did not include steps (7) and (9), which incorporate obtaining additional samples for re-examining scale properties and cross-validating the scales. For some measurement instruments we used a pilot study for assessing the scale properties. The pilot study was conducted prior to the main data collection procedure. In addition to the regular (deductive) measurement instrument development process, we also included the findings of the qualitative study in order to gain a deeper understanding and insights into the phenomena of socio-structural properties in HROSCs.

In line with our objectives of developing a better understanding of psychological empowerment and socio-structural properties in HROSCs, our process of developing measurement instruments and identifying and creating appropriate items was thus grounded in three approaches and/or phases:

(1) The qualitative study's findings were used to develop (some) concepts and their definitions, and provide insights for the development of survey measurement instruments;

(2) A deductive scale development process was undertaken that followed the established guidelines for construct measurement and validation procedures;

(3) A pilot study was conducted in order to test some measurement instruments and to ensure that the measurement items were unambiguous.

Each of the approaches is described in detail in the following subsections.

Qualitative study insights for the development of quantitative measurement instruments

One of the objectives of the qualitative data collection and analysis was to use the resulting qualitative findings to inform the design of specific quantitative measurement instruments. Although the main focus of the qualitative study was to identify and explore the differences and/or similarities among HROSC subcommunities, which was based on deductive-inductive thematic analysis, the data-driven exploration in the qualitative data analysis resulted in the identification of the theme *involvement activities*. The participants of the qualitative study, i.e. users and health professional moderators, described several different involvement activities that they practice in the different HROSC forums, which led to the identification of nine subthemes: (1) observation and reading; (2) posing questions to other users; (3) posing questions to (health professional) moderators; (4) writing answers to other users' questions; (5) writing opinions and comments on other users' messages; (6) writing opinions and comments on (health professional) moderators' messages; (7) encouraging discussions; (8) opening new forum threads; and (9) making proposals to community managers.[10] The theme *involvement activities* and its subthemes importantly informed the development of quantitative measurement instrument involvement in HROSCs, which is one of the measurement instruments that have not been extensively developed and used in previous studies. The identified subthemes were modified into specific items of the measurement instrument involvement in HROSCs and were used, together with the items developed based on the literature review and theoretical framework, in further quantitative data collection.

The qualitative findings have also been used not only for involvement in HROSC measurement instruments but also for the development and adaptation of the measurement instruments of the organizational characteristics of HROSCs. In particular, the qualitative results on the organizational characteristics of HROSCs (presented in the research results section) have importantly informed the crucial decisions regarding the measurement instruments for organizational characteristics of HROSC variables. When we were adapting the perceived formal and informal sanctions measurement instrument to the HROSC setting, the qualitative

[10] The detailed report on the qualitative findings that informed the development of the quantitative measurement instruments can be obtained on request from the author of the thesis.

findings played an important role in providing the context for the wording of the items. The qualitative findings also importantly informed the adaptation of the (existing) measuring instruments of participation in the formation of norms, interactive and content moderation, and positive sanctioning instruments, which have so far been used in only a few studies and have not yet been extensively tested for their validity and reliability. The results of the qualitative study thus helped us adapt the measurement instruments to the context of HROSCs and develop additional items needed for more detailed description and operationalization of the phenomena in these instruments, which were included in the final quantitative data collection.

Deductive scale development procedures

The measurement instrument and scale development followed the established process of operationalization, which involves developing a theoretical definition, identifying variables and indicators based on the definition, developing measures of the indicators and evaluating the resulting operational definition (DeVellis, 2003; Hayes, 1994). The operational definition of the measured constructs presents a guide for the creation of items. An extensive literature review was undertaken on each construct of the study in order to develop operational definitions and to identify existing measures. In almost all cases the measurement instruments were developed by adapting and/or modifying the existing measurement items validated in previous empirical studies.[11] Some of the measurement instruments were appropriately adapted and advanced with the help of the qualitative findings of the study. Since the literature did not offer adequate measurement instruments for the involvement in HROSCs, we constructed our own scales based on theoretical definitions and examples provided in empowerment theory and HROSC literature and qualitative study insights. The initial item set that was newly constructed as well as some extensively modified measurement instruments adopted from previous studies were pretested and evaluated in the pilot study.

Pilot study

In preparation for the main study, a pilot study was carried out as part of the cross-sectional Web-based survey study on Med.Over.Net's users, and it was conducted in collaboration with HROSC community managers as part of their annual survey on user experiences and satisfaction with the HROSC. The Web survey was administered during June 2016 by the

[11] The detailed operationalization and adopted measures are described in the measurement instruments section.

HROSC provider and followed all the ethical standards for administering scientific surveys. The Web survey was conducted on a random sample of 15,000 registered users. Our pilot study consisted of testing three measurement instruments: (1) e-health literacy; (2) involvement in HROSCs; and (3) interactional empowerment. These measurement instruments were selected for testing in order to additionally investigate the scales' validity and reliability. The e-health literacy and interactional empowerment scales were extensively modified and adapted to the HROSC context in comparison to the original and existing measurement instruments. This determined the need for additional testing and evaluation. The involvement in the HROSC scale was completely newly developed and the pilot study was needed to optimize the measurement instrument. All three measurement instruments also initially included a high number of items, which needed to be shortened in order to pursue a low respondent burden that is, according to Lozar Manfreda, Berzelak, Vehovar, Bosnjak, and Haas (2008), the primary cause of item and unit nonresponse in Web surveys. Hence, assessment of the validity and reliability for all three measurement instruments was needed.

The extended version of the e-health literacy scale

In the Web survey of 15,000 potential respondents, 2147 clicked on a link to the Web survey, and 29.9% (644/2147) provided answers to items on the revised and extended e-health literacy scale. e-health literacy has been extensively measured in previous studies using the eHealth Literacy Scale (eHEALS) developed by Norman and Skinner (2006a), which comprises only eight to ten items. This small number of items cannot comprehensively grasp the complexity of e-health literacy, which comprises four components (accessing, understanding, appraising and applying online information relevant to health) that have not been completely covered by the eHEALS scale. The revisions and the need to extend the eHEALS scale were also noted by several studies, including Soellner, Huber, and Reder (2014), van der Vaart et al. (2011) and Norman (2011).

By following a strict methodology for developing valid and reliable scales (DeVellis, 2003), we developed the initial item set, in which we retained all original eHEALS items and introduced a small change by reverse-coding two items. An additional set of items was also developed and were based on the essential components of e-health literacy: accessing, understanding, appraising and applying relevant online health information. These components have not been completely represented in the eHEALS scale and include: knowing about or

being aware of professional online resources; performing the search process; cross-validating health-related information obtained from the Internet; grasping meaning from the information obtained from the Internet; verifying the credibility of the online information; and maintaining a critical awareness of biases in Internet-based information. A refined set of 26 items was selected for data collection.

Confirmatory factor analysis (CFA) revealed six factors: awareness of sources; recognizing quality and meaning; understanding information; perceived efficiency; validating information; and being smart on the Net. This solution demonstrated an acceptable fit of the proposed model (RMSEA=.059, SRMR=.058, CFI=.94) and Cronbach's alphas for each dimension demonstrated an adequate internal consistency. The final scale comprises 20 items. More details about the extended e-HEALS (eHEALS-E) scale can be obtained from Petrič et al. (2017a).

Involvement in HROSC scale

The involvement in HROSCs has so far been scarcely studied and measured, usually through specific aspects of participation in HROSCs. According to empowerment theory (Hur, 2006; Minkler et al., 2001), the most important aspect of (users') engagement is involvement in a variety of activities and events in HROSCs. Based on the literature review (Carron-Arthur et al., 2015; Christens et al., 2013; Huh, Marmor, & Jiang, 2016; Jones et al., 2011; Kordzadeh et al., 2014; Lutz & Hoffmann, 2017; Malinen, 2015; Nov, Naaman, & Ye, 2010; Speer et al., 2001; Turner, Smith, Fisher, & Welser, 2005) and qualitative findings,[12] we developed a set of activities in HROSCs that comprise involvement in discussions, being part of various community organization events, or engagement in individual or group activities directed toward identifying and addressing issues of public concern. We developed an initial set of 17 items that represented three types of involvement in HROSCs: discussion involvement (7 items); involvement in community organization (5 items); and civic involvement (5 items). In the Web survey the respondents were asked if they had been involved in the listed HROSC activities in the last 12 months. In order to simplify and ease the process of responding to the

[12] For more details see the section on qualitative study insights for the development of quantitative measurement instruments.

long list of proposed HROSC activities, all items (HROSC activities) were measured on a Yes-No scale.

Of the 2147 respondents who clicked on the link on the Web survey, 31.8% (682/2147) provided answers to the items on involvement in the HROSC scale. Based on the analysis of the distribution of the items, we determined that the variables are distributed according to the power law distribution. This is not surprising, since the pattern of participation inequality is commonly present in all types of online communities. In order to assess the relations between the involvement items, we performed principal component analysis and a correlation matrix using polychoric correlations. Based on the results,[13] we determined that a solution of three components is viable. In accordance with the findings, we changed the discussion involvement item "How often have you posed questions to health professional moderators in the HROSC forum in the last 12 months?" to "How often have you posed questions to moderators in the HROSC forum in the last 12 months?" to be more general. We also split the discussion involvement item "How often have you written comments/opinions in the HROSC forum in the last 12 months?" into two items, one for asking respondents about their written comments or opinions in response to other users' questions and one for written comments or opinions in response to moderators' messages. In order to include more diverse discussion involvement activities, we also added one more item to this set of items, namely "How often have you helped other users to participate in forum discussion(s) in the HROSC forum in the last 12 months?" For the same reason we also added the item "How often have you urged moderators or administrators to intervene in forum discussions in the HROSC forum in the last 12 months?" This resulted in obtaining nine items for measuring discussion involvement, six items for measuring involvement in community organization and five items for measuring civic involvement. A set of 20 items measuring involvement in HROSCs was developed.

Interactional empowerment in HROSCs scale

In comparison with the intrapersonal dimension of psychological empowerment, interactional empowerment has so far been scarcely researched and measured in studies investigating HROSCs or even in studies from the health-related field in general. So far three interactional empowerment measurement instruments have been developed in the field of community psychology: (1) the Cognitive Empowerment Scale (Speer & Peterson, 2000), also referred to

[13] The results of the analysis can be obtained on request from the author of the thesis.

as the Interactional Empowerment Scale (Speer et al., 2001), which includes three subscales of Power through relationships, Political functioning (also referred to as Understanding instruments of power) and Shaping ideology (also referred to as Understanding the role of conflict); (2) the Modified Cognitive Empowerment Scale (Peterson et al., 2002; Peterson et al., 2005), which includes slightly modified items of the original measurement scale and includes the three subscales of Knowledge of sources of social power, Knowledge of the nature of social power and Knowledge of the instrument of social power; (3) the Collective Action and Interpersonal Relationship Scale (CAIRS) (Speer, 2000), which is actually a shorthand version of previous interactional empowerment measurement instruments and is measured by two subscales: Collective Action and Interpersonal Relationship. These interactional empowerment measurement scales have been quite extensively used in community psychology research (Christens et al., 2013; Christens, Peterson, & Speer, 2011; Speer et al., 2013; Wilke & Speer, 2011) and in a few studies (Petrič & Petrovčič, 2014b; Petrovčič & Petrič, 2014b) were also adopted for measuring interactional empowerment in online communities. However, the specific context of HROSCs, which, compared to general online communities, includes topics of personal health issues, and discussions on healthcare services and the healthcare system, requires an interactional empowerment measurement instrument that will relate to such topics and to the functioning of HROSCs and their users. As emphasized by Zimmerman (1995), empowerment is a contextually dependent concept and should thus always be studied in relation to the target population. In line with our research objective, we developed Interactional empowerment in the HROSC scale that could be used for measuring interactional empowerment in online communities dedicated to health and online support issues and topics.

According to the theory (Speer, 2008; Speer & Hughey, 1995; Wilke & Speer, 2011; Zimmerman, 1995; Zimmerman et al., 1992), interactional empowerment refers to the ability of critical awareness and understanding of the specific environment that can be developed through knowledge of available resources and methods of mobilizing collective power among individuals that can be used to (potentially) produce social change. The definition of interactional empowerment thus emphasizes two crucial features that in the field of health refer first to individuals' *knowledge of resources* that are important for informing them about health-related issues and equipping them with the skills for solving these specific issues. In the case of interactional empowerment, the health-related issues do not necessarily pertain only to the individual level of potential health problems, but more widely to issues that indirectly affect

individuals and their personal health, such as issues of public concern related to healthcare services and the healthcare system, which present an important aspect of one's health. The second aspect of interactional empowerment relates to individuals' perception and attitude toward using interpersonal relationships and connections with other individuals (that might even have the same issues or a similar understanding of the specific environment that these issues are related to) and *resources to mobilize and collectively engage* in order to address the issues of public concern. Accordingly, we identified two dimensions of interactional empowerment: *knowledge of (health) resources* and *resource mobilization for collective action*.

We first carefully examined the previous interactional empowerment scales. By following a strict methodology for developing valid and reliable scales (DeVellis, 2003) and based on the identified dimensions of interactional empowerment we developed an initial item set of 20 items. This item set was evaluated for content validity and a refined set of 15 items, including eight items measuring knowledge of resources and seven items measuring resource mobilization for collective action, was selected. For knowledge of resources, three items were adopted from Akey et al. (2000) and five items were newly developed by the authors of the study. The item set of resource mobilization for collective action comprised two items adopted from Akey et al. (2000) and seven items adopted from CAIRS or the Cognitive Empowerment Scale (Speer, 2000; Speer & Peterson, 2000). All items included in the final set for Interactional empowerment in HROSCs scale were adapted and modified for the health-related and HROSC contexts.

In the Web survey 13.0% (280/2147) of the respondents provided answers to the items of Interactional empowerment in the HROSC scale. Descriptive statistics of the items demonstrated that items are likely to be normally distributed. We analyzed the correlations between the items and found that the items "Because of using Med.Over.Net's forums I know where to get information about resources needed for satisfying my health-related needs" and "Because of using Med.Over.Net's forums I know how to get help from others to achieve my health-related goals" of knowledge of resources were highly correlated ($r=0.82$, $p<0.001$). The items "Because of using Med.Over.Net's forums I have realized that the only way to improve healthcare in our country is by collaborating with other HROSC users" and "Because of using Med.Over.Net's forums I feel that I can impact healthcare issues only by working in an organized way with other HROSC users" of resource mobilization for collective action were

also strongly correlated (r=0.82, p<0.001). We determined that items consist of similar wording and we excluded the item "Because of using Med.Over.Net's forums I know where to get information about resources needed for satisfying my health-related needs" from the set of items measuring knowledge of resources and the item "Because of using Med.Over.Net's forums I have realized that the only way to improve healthcare in our country is by collaborating with other HROSC users" from the set of items measuring resource mobilization for collective action. We conducted an initial exploratory factor analysis (EFA) to obtain communalities for each item and eigenvalues for extracted factors. The EFA showed a solution of two factors, where two items, which were both reversed-worded – one item of knowledge of resources ("Because of using Med.Over.Net's forums I have not improved my knowledge about how healthcare services are organized in our country") and one item of resource mobilization for collective action ("Because of using Med.Over.Net's forums I realized that it is difficult for me to publicly talk about important issues in healthcare in our country") – had communalities lower than 0.1 and a factor loading of around or below 0.2. Based on these results, we omitted the items from the set of items included in further analysis. A principal axis factor analysis was conducted on 11 items of interactional empowerment with oblique rotation (direct oblimin).

Table 5.2: Rotated factor loadings for interactional empowerment in HROSC items (N=280)

Items – Because of using Med.Over.Net's forums…	Knowledge of resources	Resource mobilization for collective action
(IE1) …I know whom I can turn to when I have a health problem.	**0.751**	0.035
(IE2) …I know how to use health resources available to me in the HROSC.	**0.883**	-0.038
(IE3) …I know how to get help from others to achieve my health-related goals.	**0.839**	-0.006
(IE4) …I know how to get resources such as information, money, services or support when I deal with health problems.	**0.770**	-0.034
(IE5) …I understand better how the healthcare system works in our country.	**0.559**	0.120
(IE6) …I know which healthcare service I need to use to solve my health problems.	**0.772**	0.042
(IE7) …I actively advocate with other users better healthcare in our country.	0.104	**0.630**
(IE8) …I feel that I can impact healthcare issues only by working in an organized way with other HROSC users.	0.031	**0.753**
(IE9) …I believe that in order to improve healthcare, it is more effective to work with a group of HROSC users than as an individual.	-0.016	**0.818**
(IE10) …I realize that only by working together with other HROSC users can we get the power to change healthcare.	-0.070	**0.965**
(IE11) …I think that a user becomes powerful in the wider environment only through other HROSC users.	0.105	**0.741**
% of variance	**33.1**	**29.1**
α	**0.90**	**0.90**

The KMO measure was well above the acceptable limit of .5 (Hair, Anderson, Tatham, & Black, 1998) with KMO=.89, which verifies the sampling adequacy of the analysis. The BTS was also statistically significant (p<.000), which indicates that sufficient correlations exist among the variables (Meyers, Gamst, & Guarino, 2016). The EFA revealed that two factors had eigenvalues greater than Kaiser's criterion of 1 and in combination explained around 62.2% of the variance (see Table 5.2). All items of intrapersonal empowerment had communalities around or above 0.4. Cronbach's alpha for both knowledge of resources and resource mobilization for collective action (α=0.90) indicated good internal consistency.

The EFA solution was tested with confirmatory factor analysis (CFA) to verify the measurement model of the interactional empowerment in HROSCs. CFA revealed that factor loadings for both factors are all above 0.6. Fit indices suggested a reasonably good fit with χ^2=118.4 (df=43), CFI=.96, TLI=.95, RMSEA=0.08 and SRMR=0.05. The correlation between dimensions demonstrates a satisfactory discriminant validity (0.46, p<0.001). The final version of Interactional empowerment in the HROSC scale was thus comprised of 11 items and was used in the main quantitative study of this thesis.

5.5.2 Questionnaire design and testing

After the development of survey measurement instruments, which were in many cases originally developed in English, we used a forward translation method and translated measurement items into Slovenian. The translator (the author of the thesis) made sure that conceptual rather than literal translations were used and aimed at using simple, clear and concise concepts appropriate for the target respondents. Issues of gender and age applicability were also considered. The questions with measurement items were imported into the open-source online survey application 1KA (Eng. *One Click Survey*, *www.1ka.si*), which was developed at the Center for Social Informatics, Faculty of Social Sciences, University of Ljubljana. The order of the questions in the questionnaire was carefully examined, as was the randomization of the answers (items) to each question. The design of the online survey questionnaire followed the established guidelines and recommendations for questionnaire design (Bradburn, Sudman, & Wansink, 2004; Callegaro, Manfreda, & Vehovar, 2015;

Lumsden, 2007). The online survey questionnaire included 64 questions,[14] which were distributed over 51 pages. All the usability and the technical functionalities of the online survey questionnaire were tested before fielding the questionnaire.

Prior to the release and administration of the Web survey, the initial design of the questionnaire was evaluated for content validity and tested in order to identify potential misunderstandings of questions, to check for ambiguity in wording or format, logical consistencies, contextual relevance, ease of instructions or items as well as potential technical problems. The online questionnaire testing was conducted by 10 expert evaluators: four experts in social science methodology, two experts in online community and Internet studies, one health communication expert, one online survey methodology expert, one expert in the 1KA online survey tool and one HROSC Med.Over.Net user.[15] After the testing,[16] the online questionnaire was amended to incorporate necessary changes, additions and technical fixes. In order to guarantee the quality of the survey, the online questionnaire was once again retested and evaluated by the author and the supervisors of the thesis before the release. The online questionnaire was finally modified and prepared for data collection. The topics of the questions in the survey were distributed in the following order: (1) e-health literacy; (2) offline bridging social capital;[17] (3) offline social support; (4) satisfaction with the healthcare system; (5) intrapersonal empowerment; (6) participation and involvement in HROCS; (7) online bridging social capital; (8) online social support; (9) interactional empowerment; (10) involvement in different types of forums; (11) organizational characteristics of HROSC; (12) satisfaction with HROSC Med.Over.Net; (13) health status; (14) satisfaction with healthcare services; (15) demographic characteristics.

[14] Eight questions (distributed over one page) in the online survey questionnaire were included at the end of the survey for the purpose of the prize competition, which was conducted by HROSC provider Med.Over.Net in the data collection procedure.

[15] The Med.Over.Net user, who was also a participant in the qualitative interviews, was requested to participate in the evaluation of the online survey questionnaire in order to receive feedback related to clarity, the order of questions, the content of the questions and overall review of the questionnaire.

[16] A report of the online questionnaire evaluation and testing can be obtained on request from the author of this doctoral dissertation.

[17] Some of the topics and measurement instruments included in the Web survey were not included in the main data analysis of the thesis in order to reduce the complexity of the quantitative study. However, all important predictors were included in the initial data analysis in the study in order to evaluate their significance for the study. In the final step only the most relevant variables were included, which are presented in the final data analyses and findings.

5.5.3 Data collection procedure

Sample

The quantitative study was conducted using a cross-sectional Web-based survey among Med.Over.Net users. This study is based on data collected through a self-selected Web survey using two types of samples: (1) a nonprobability sample of 367 users and (2) a probability sample of 1123 registered users of the HROSC Med.Over.Net. The Web-based survey data collection was administered between 10 April and 10 May 2018 by the HROSC provider in line with the ethical standards required for administering scientific surveys. The survey was conducted on the platform 1KA (Eng. *One Click Survey, www.1ka.si*). The Web survey was titled *Health online: Experiences and usage of Med.Over.Net.*[18]

First, following the methodological standards and procedures for posting surveys on online discussion forums (Ip, Barnett, Tenerowicz, & Perry, 2010), an invitation to the Web survey was made in the form of an online banner ad published by the online community project manager in Med.Over.Net's news posts, all forum threads and their Facebook account. The main online banner ad included a design image displaying hands on a computer keyboard and hand watch and a caption: "Survey & prize competition HEALTH ONLINE: Experiences and usage of Med.Over.Net. Win a great prize >>."[19] The Web survey was also promoted with various textual ads including different captions, such as: "Have you already filled in the survey about Med.Over.Net? Take 15 minutes of your time, help us improve Med.Over.Net, and participate in a drawing for a prize!"[20] The banner ad with the invitation to the Web survey was also included as one of the news highlights in the HROSC's monthly newsletter, which was sent on 20 April to all registered users. In order to additionally promote the Web survey and to increase the response rate of the survey, the Med.Over.Net project manager also published a pinned post on all forum themes and threads in the HROSC for two days. Data collection on a nonprobability sample of Med.Over.Net users was conducted between 10 April and 10 May 2018.

[18] The original Slovenian Web survey title was *Zdravje na spletu. Izkušnje in uporaba Med.Over.Net*.
[19] The original caption (in Slovenian) in the online banner ad was "Anketa & nagradna igra ZDRAVJE NA SPLETU: Izkušnje in uporaba Med.Over.Net. Osvoji super nagrado >>."
[20] The original Slovenian caption was: "Ste že izpolnili anketo o Med.Over.Net? Vzemite si 15 minut časa, pomagajte nam izboljšati Med.Over.Net in sodelujte v žrebanju za nagrado!"

As already indicated in the banner ad captions, in exchange for completing the Web survey, potential respondents were offered the opportunity to participate in a draw for one of five prizes with a total value of 1000€: 1) a Samsung Galaxy A8 mobile phone; 2) a Fitbit Flex Fitness wristband; 3) a Polar balance smart scale; 4) a Denver action camera; and 5) a Philips Daily Collection minimixer. Respondents could apply to participate in a draw for one of the prizes only once and only if they were users of Med.Over.Net. The conditions for participation in a prize competition were clearly indicated on the introduction page of the Web survey and on the application form for the prize competition that was included at the end of the Web survey. To apply for the draw for one of the prizes, respondents needed to disclose personal information (name, last name, email and address), which was processed by the HROSC provider and saved separately from the data provided in the survey questionnaire and used strictly for the purposes of the competition.

A total of 3807 respondents clicked the link to the Web survey and 650 (17.07% participation rate) viewed the informed consent and clicked the button to start the survey. Of these 206 (31.7%) partially completed and 353 completely finished the survey questionnaire, which led to a 54.3% (353/650) completion rate. The total response rate of 14.68% (559/3807) is small, but not unusual for nonprobability non-list Web surveys (Callegaro et al., 2015). On average, the survey took 21 minutes of the respondents' time. After the exclusion of unit nonresponse and other data screening and cleaning procedures,[21] the final sample for analysis contained 367 respondents.

As the recruitment procedures including a nonprobability sample of Med.Over.Net users resulted in a low response rate (after two weeks of collecting data, 278 Med.Over.Net users had completed the online survey questionnaire), we developed an additional recruitment plan involving a probability sample of Med.Over.Net's registered users. The HROSC provider designed a random sample of 30,000 registered users from the list of all registered users[22]

[21] Units that had a high level of nonresponse or had dropped out from the survey questionnaire before question Q11 ("How long have you been a user of Med.Over.Net?") were eliminated from the data set. Units were also omitted if the respondents were not users of the Med.Over.Net HROSC. Data from respondents who finished the survey questionnaire in less than five minutes were also eliminated from the data set.

[22] Before designing a random sample of 30,000 registered users, the emails from users who had already filled in the survey questionnaire (accessed through the online banner ad) and had thus applied for the competition prize before or on 24 April were eliminated from the list of all registered users. This procedure was conducted by the HROSC provider.

(N=92,034). Potential respondents were invited to participate in the Web survey[23] by the HROSC provider via its email newsletter service. The email invitation consisted of a description of the purpose of the research and brief information about respondents' rights and the length of the survey. The email invitation also requested that if potential respondents had already accessed the survey via an online banner ad published on Med.Over.Net and filled in the survey questionnaire, they should not participate in the survey again. Similarly to the case of collecting data with a nonprobability sample of Med.Over.Net users advertised via banner ads, in the email invitation potential respondents were offered the chance, in exchange for completing the survey, to enter a draw to win one of the five prizes. The same prize competition for a completed survey was used for both types of HROSC user sample.

After clicking the link for the Web survey in the email invitation, potential respondents were taken to the first page of the survey, which included detailed information about the purpose of the study, topics, instructions, duration, an assurance that the data would be dealt with in accordance with national and European Union (EU) laws, conditions for participating in the prize competition and contact information for the Med.Over.Net project manager. Potential respondents were also informed that their participation was voluntary and that all collected data would be anonymized and presented in the aggregated form only for research purposes. After giving their informed consent and clicking the "Next" button, respondents could start to fill in the survey. Approximately 30,000 registered Med.Over.Net users received an email invitation to participate in the survey as well as a thank you email reminder to fill in the survey questionnaire. Data collection with a probability sample of Med.Over.Net registered users was conducted between 25 April and 10 May 2018.

Out of approximately 30,000 potential respondents, 2314 (7.71%) clicked on a link for the Web survey, and 1762 respondents viewed the introduction page with informed consent and clicked the "Next" button to start the survey. Of these 676 (38.37%) partially completed and 893 fully completed the survey questionnaire, which led to a 50.67% (893/1762) completion rate. The total response rate of 14.7% (1569/2314) is small, but not unusual in probability list-based Web surveys, which are long, include sensitive topics, and recruit respondents, who are over-exposed to (Med.Over.Net) marketing and surveys (Callegaro et al., 2015). The survey

[23] The Web survey questionnaire was copied so that data were collected separately for the nonprobability sample and the probability sample.

questionnaire took on average 21 minutes and 33 seconds. After the data screening and cleaning procedures, similarly to the nonprobability sample data set, the final sample for analysis contained 1123 respondents.

Comparison of nonprobability and probability samples of Med.Over.Net users

In total, 1490 (367 via the nonprobability sample and 1123 via the probability sample) usable responses were obtained. In order to compare samples and investigate whether there were differences between the data from the two sources, we first combined data into a chi-square and Kolmogorov-Smirnov Z test. We tested whether there were any differences in terms of participation variables (length of HROSC membership, registration, forum visitation, last forum visitation, average forum visitation, posting messages, last posted message, average frequency of posting messages) and demographic variables, including gender, age, educational level, marital status, employment status, health status and income. The categorical (and nominal) variables were tested and compared with the chi-square test, which essentially tests whether two categorical variables forming a contingency table are associated. The ordinal variables were tested and compared with the Kolmogorov-Smirnov Z (K-S Z) test, which tests "whether two groups have been drawn from the same population, regardless of what that population may be" (Field, 2013, p. 877).

The comparison results for participation variables between two sources of data (Table 5.3) demonstrate that besides membership length, differences exist between the respondents' participation styles in the two samples. These differences are not surprising, since respondents that accessed the Web survey via an online banner published on Med.Over.Net were more likely to have recently actively participated in the HROSC (visited forums in the last seven days). Respondents from the nonprobability sample had on average visited forums every or almost every day, had recently posted messages and had done this on average more frequently in recent timed (see Table 5.3). On the other hand, respondents from the probability sample were to a greater extent registered users, their forum visitation time was more dispersed, they posted messages on forums more frequently, but the time of their last posting was more distant (more than six months ago). The probability sample had a higher percentage of respondents who had on average posted messages on forums less than once a month.

Table 5.3: Comparison of participation variables between two sources of data

Statistics	Nonprobability sample				Probability sample				Comparison tests	
	n	%	n missing	%	n	%	n missing	%	Chi-square (p value)	K-S Z test (p value)
Membership length										
More than 3 years	246	67.0			780	69.5				.404 (.997)
1 to 3 years	80	21.8	0	0	236	21.0	0	0		
Less than 1 year	31	8.4			94	8.4				
Less than 1 month	10	2.7			13	1.2				
Registered user										
Yes	120	32.7	57	15.5	610	54.3	262	23.4	100.27 (.000)	
No	190	51.8			251	22.4				
Forum visitation										
Yes	330	89.9	1	0.3	1048	93.3	4	0.4	5.03 (.027)	
No	36	9.8			71	6.3				
Last forum visitation										
In the last 7 days	211	57.5			316	28.1				5.406 (.000)
1 week to 1 month ago	62	16.9			277	24.7				
1 month to 6 months ago	40	10.9	40	10.9	276	24.6	79	7.1		
6 months to 1 year ago	11	3.0			111	9.9				
More than a year ago	3	0.8			64	5.7				
Average forum visitation frequency										
Every or almost every day	75	20.4			75	6.7				4.04 (.000)
At least once a week	120	32.7	44	12.0	260	23.2	150	13.4		
At least once a month	93	25.3			407	36.3				
Less than once a month	35	9.5			231	20.6				
Posting messages										
Yes	182	49.6	41	11.2	660	58.8	81	7.2	5.92 (.016)	
No	144	39.2			382	34.0				
Last posted message										
In the last 7 days	46	12.5			37	3.3				3.802 (.000)
1 week to 1 month ago	22	6.0			48	4.3				
1 month to 6 months ago	42	11.4	187	50.9	107	9.5	464	41.3		
6 months to 1 year ago	21	5.7			141	12.6				
More than a year ago	49	13.4			326	29.0				
Average frequency of posting messages										
Every or almost every day	9	2.5			11	1.0				2.135 (.000)
At least once a week	29	7.9	236	64.3	20	1.8	793	70.7		
At least once a month	27	7.4			60	5.3				
Less than once a month	66	18.0			239	21.3				

Note: Due to rounding errors the total percentage might not be equal to 100.

Some differences between samples are also evident based on the demographic characteristics of the respondents (Table 5.4). The respondents from the probability sample have a slightly higher percentage of male participants and compared to the respondents from the nonprobability sample have to some extent a higher education and average net income in the last three months. Based on the analysis there are no differences between the respondents of the two samples in terms of age, marital, employment status, chronic condition state and health status.

Table 5.4: Comparison of demographic characteristics between two samples

Statistics	Nonprobability sample				Probability sample				Comparison tests	
	n	%	n missing	%	n	%	n missing	%	Chi-square (P value)	K-S Z test (P value)
Gender										
Male	41	11.2	62	16.9	158	14.1	291	25.9	4.76 (.034)	
Female	264	71.9			674	60.0				
Age										
10–19	3	0.8			14	1.2				
20–29	56	15.3			112	10.0				
30–39	99	27.0			286	25.5				
40–49	74	20.2			238	21.2				.666
50–59	35	9.5	67	18.2	116	10.3	293	26.1		(767)
60–69	27	7.4			54	4.8				
70–79	5	1.4			7	0.6				
80–89	1	0.3			2	0.2				
90–99	0	0			1	0.1				
Education										
Elementary school or less	17	4.6			17	1.5				
2 or 3 years high school	35	9.5			52	4.6				
4 or 5 years high school	115	31.3	62	16.9	230	20.5	290	25.8		2.818 (.000)
College, higher or university education	116	31.6			446	39.7				
MA, MSc, PhD	22	6.0			88	7.8				
Marital status										
Married	108	29.4			322	28.7				
Extramarital relationship	101	27.5			273	24.3				
Partnership	20	5.4	74	20.1	50	4.5	315	28.0	3.92 (.690)	
Single, never married	43	11.7			92	8.2				
Single, divorced	16	4.4			53	4.7				
Single, widowed	5	1.4			18	1.6				
Employment status										
Employed or self-employed	194	52.9			599	53.3				
Unemployed	36	9.8			81	7.2				
Student	25	6.8	61	16.6	57	5.1	293	26.1	9.40 (.093)	
Retired	32	8.7			62	5.5				
Housewife	12	3.3			19	1.7				
Other	7	1.9			12	1.1				
Health status										
Very bad	4	1.1			7	0.6				
Bad	38	10.4			74	6.6				
Fair	130	35.4	62	16.9	377	33.6	289	25.7		0.606 (.856)
Good	78	21.3			256	22.8				
Very good	55	15.0			120	10.7				
Chronic condition										
Yes	111	30.2	89	24.3	320	28.5	348	30.9	0.157 (.722)	
No	167	45.5			455	40.5				
Income										
Up to 500€	43	11.7			71	6.3				
501 to 800€	64	17.4			140	12.5				
801 to 1100€	48	13.1	118	32.2	176	15.7	446	39.7		1.593 (.013)
1101 to 1500€	44	12.0			138	12.3				
More than 1500€	28	7.6			106	9.4				
Have no income	22	6.0			46	4.1				

Note: Due to rounding errors the total percentage might not be equal to 100.

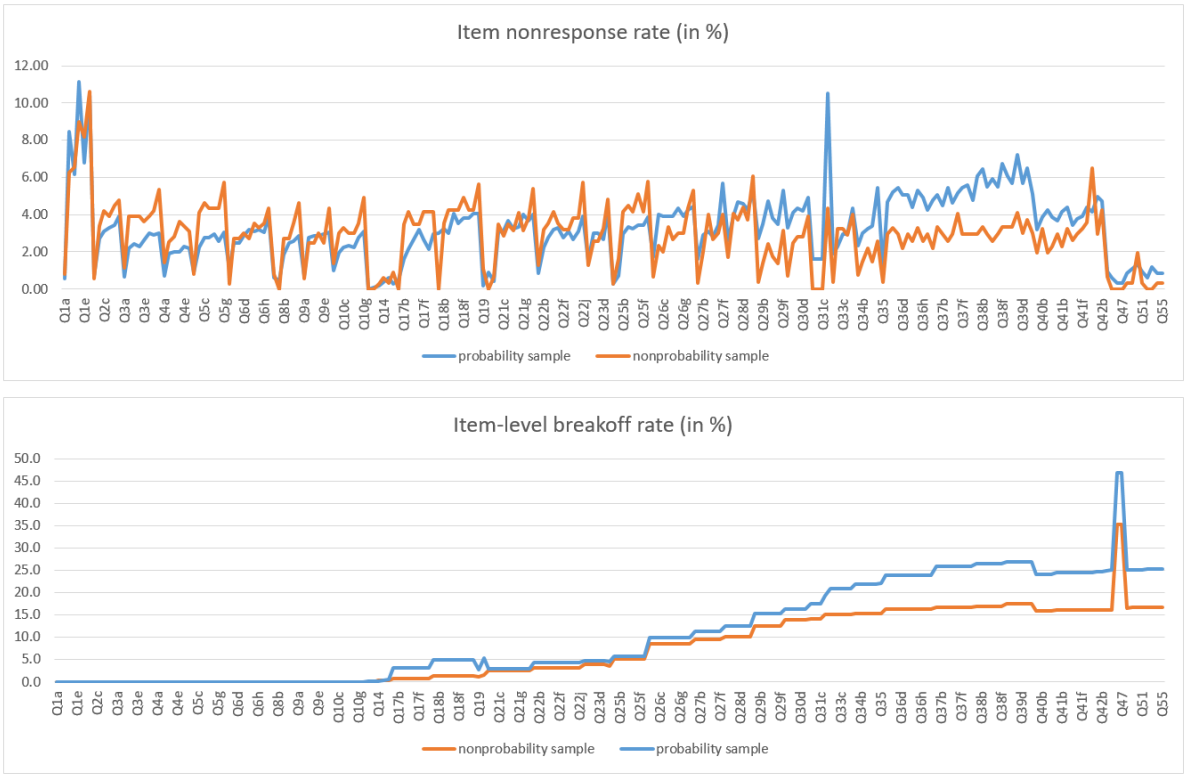
In order to investigate the differences and/or similarities between samples, we also analyzed the item nonresponse and the item-level breakoff rates for all the survey questions used in both

samples. The Web survey nonresponse indicators are a very important criterion for evaluation of data quality and can also be compared across surveys (Callegaro et al., 2015).

Item nonresponse refers to the lack of responses related to specific questions or subquestion in a survey from an otherwise eligible and cooperating unit (Callegaro et al., 2015). The item nonresponse rate is calculated as the number of units with item nonresponse divided by all eligible units exposed to the item (Callegaro et al., 2015). The comparison results (see Figure 5.4) demonstrate that the item nonresponse for the first half of the survey questionnaire was to a greater extent conducted by respondents from the nonprobability sample, whereas in the second half of the questionnaire it was more often performed by respondents from the probability sample. The highest item nonresponse rate for the probability sample was for question Q32, which asked respondents to write down the forum that they most frequently visit in Med.Over.Net. The reason behind differences between samples and the item nonresponse rate might be related to the lower level of recent participation in the HROSC Med.Over.Net forums among the probability sample respondents. This might have led to difficulties in answering such questions, as it made them less aware of the specific forum (that they most often visit) and its characteristics that the survey questions were focused on in the second half of the questionnaire. Besides these differences, the item nonresponse rate was quite similar between the two samples: The highest level of item nonresponse rate was at the beginning of the questionnaire.

On the other hand, breakoffs refer to "the eligible units that started the Web questionnaire, but then left prematurely, that is, before answering the last question in the questionnaire" (Callegaro et al., 2015, p. 138). The *introduction breakoff rate*, which refers to the initial reluctance to participate in the survey questionnaire, was 85% (n=3225) for the nonprobability sample and 31% (n=728) for the probability sample. The levels of the introduction breakoff rate and the differences between the two samples are not unusual, since in nonprobability questionnaires respondents often click on the banner ad in order to get more specific information about the survey, which they receive on the introduction page of the questionnaire, while the list-based Web survey's respondents receive information about the survey in their email invitation and thus filling out the survey is more often based on the decision and motivation to complete the questionnaire.

Figure 5.4: Comparison of item nonresponse rate (in %) and item-level breakoff rate (in %) between the probability and nonprobability sample of the survey



The *questionnaire breakoff rate* that occured later in the questionnaire was equal to 6% (226) for the nonprobability sample and to 30% (n=693) for the probability sample. This means that the total breakoff rate for the nonprobability sample represented 91% of all 3807 clicks on the link for the Web survey and the total breakoff rate for the probability sample questionnaire was equal to 61% and thus 1421 respondents stopped completing the survey questionnaire prematurely. Such differences in breakoff rates between nonprobability and list-based Web surveys are not surprising (Callegaro et al., 2015), since the sampling procedure has an important effect on the root of the reason(s) for not completing the survey questionnaire.

Besides the above indicators calculated at the survey level, breakoff can also be calculated at the item level, as the *item-level breakoff rate* (Callegaro et al., 2015). The item-level breakoff rate refers to the share of units per item that are missing due to breakoffs. By comparing the item-level breakoff rate between the two samples (see Figure 5.4) we found that the trend for item-level breakoffs is similar between the nonprobability and probability samples, although a higher level of item-level breakoff rate is evident for the data collected with the probability sample. The first high level of breakoffs can be detected for question Q26, where the questionnaire asked respondents to once again think about their experience with Med.Over.Net

forums. Some of the questions before Q26 were short and did not demand a high level of effort from the respondents, but Q26 again asked respondents to evaluate on a five-point scale different statements on the topic of online social support. This transition from relatively easy questions to a more complex and demanding question might have been the reason for respondents stopping filling out the questionnaire prematurely. A higher number of item breakoffs also occur in the second half of the questionnaire (for both samples), where the survey consisted of questions about organizational characteristics of the most frequently visited online forum in the HROSC Med.Over.Net. Interestingly, the highest number of item breakoffs occur with questions Q46 and Q47, where the questionnaire asked the respondents to evaluate the state and duration of their (chronic) health condition. The respondents might have felt that such questions are more intensively invasive into their privacy and perhaps felt uncomfortable about providing answers, which might have led to more breakoffs. The item-level breakoff rates can also be explained for both samples as a consequence of the long survey, the content and the question types included in the survey questionnaire.

The results of these analyses suggest that there might be a nonresponse bias present in the data, but we believe that this should not undermine the validity of this study. Although it is not a conventional procedure to combine data collected with different sampling processes and with some different respondent characteristics, we were forced to take such a decision due to the fact that the first collection did not result in the expected sample size. However, this procedure also has its positive sides, as we believe that we obtained a higher variability of individuals regarding some core variables (especially involvement in HROSCs and organizational characteristics of HROSC variables). Although there are differences between participation and demographic characteristics of the samples, both samples' characteristics are similar and comparable to the characteristics of the overall HROSC Med.Over.Net participants (personal communication, Verovšek, 2018, May 22). The merging of the sample also offers us the opportunity to use data analysis techniques and methods that require larger sample sizes. The proposed theoretical model of the thesis is complex and presupposes the inclusion of interaction effects in multiple regression analysis, in which the sample size presents one of the crucial factors that affect the statistical power of the analysis (Aguinis, 1995). In order to increase the power of the data analysis methods, we merged the two data sets and analyzed them as one data set. All the data analysis methods were controlled by the (sample) data source in order to

guarantee that the results of the analysis were not affected by the data collection and sampling procedures.

Missing data

As is usual with large primary data sets, the subjects of the study did not fill out the entire questionnaire. This means that there are missing responses to most questionnaire items and thus measurement instruments. A listwise deletion procedure was used to handle these missing values. In handling missing data, listwise deletion is one of the most common techniques for managing missing values (Allison, 2001). However, handling missing data with a listwise deletion procedure can also be problematic, because it can reduce the sample size and introduce biases into the statistical estimates (Myers, 2011). The current study carefully reviewed the effects of listwise deletion so that the procedure and missing values would not bias the findings.

Basic demographics of the final sample

The (merged and final) survey sample consisted of 17.5% males and 82.5% females (Table 5.5). According to Google Analytics, the gender structure of the HROSC Med.Over.Net is 70.5% females and 29.5% males (personal communication, Verovšek, 2018, May 22), which means that the sample is overrepresented by females. The higher proportion of females in the sample could be partially explained by the usually more active participation of females in online counseling and online support group forums concerned with health topics such as family medicine, pregnancy, obstetrics, gynecology, parenthood and interpersonal relationships. As also reported by review studies on health-related online support groups (Coulson, 2018; Mo, Malik, & Coulson, 2009), females represent the majority of participants, which may also be related to the primary and central role of females in the exchange of (especially emotional) social support and health-related supportive communication (Dremelj, 2002).

The respondents of the survey ranged in age from 12 to 90 (mean=40.9, SD=12.1). More than half of the respondents (59.1%) had at least a college degree and 73% were married or in extramarital relationship (Table 5.5). The majority of the respondents (69.8%) were employed or self-employed, 22.0% had an average net income in the last three months of between 501€ and 800€, and 24.2% had an average net income in the last three months of between 801€ and 1100€. Almost half of the respondents (44.5%) reported having a good health status and 40.9% had a chronic health condition (Table 5.5). The sociodemographic structure (besides gender)

was similar and comparable to the demographic characteristics of the overall HROSC Med.Over.Net participants (personal communication, Verovšek, 2018, May 22).

Table 5.5: Basic demographics of the final and merged survey sample

Statistics	n	valid %	n missing	%
Gender				
Male	199	17.5	353	23.7
Female	938	82.5		
Age				
10–19	17	1.5		
20–29	168	14.9		
30–39	385	34.1		
40–49	312	27.6		
50–59	151	13.4	260	24.2
60–69	81	7.2		
70–79	12	1.1		
80–89	3	0.3		
90–99	1	0.1		
Education				
Elementary school or less	34	3.0		
2 or 3 years high school	87	7.6		
4 or 5 years high school	345	30.3	352	23.6
College, higher or university education	562	49.4		
MA, MSc, PhD	110	9.7		
Marital status				
Married	430	39.1		
Extramarital relationship	374	33.9		
Partnership	70	6.4	389	26.1
Single, never married	135	12.3		
Single, divorced	69	6.3		
Single, widowed	23	2.1		
Employment status				
Employed or self-employed	793	69.8		
Unemployed	117	10.3		
Student	82	7.2	354	23.8
Retired	94	8.3		
Housewife	31	2.7		
Other	19	1.7		
Health status				
Very bad	11	1.0		
Bad	112	9.8		
Good	507	44.5	351	23.6
Very good	334	29.3		
Excellent	175	15.4		
Chronic condition				
Yes	431	40.9	437	29.3
No	622	59.1		
Income				
Up to 500€	114	12.3		
501 to 800€	204	22.0		
801 to 1100€	224	24.2	562	37.9
1101 to 1500€	182	19.7		
More than 1500€	134	14.5		
Have no income	68	7.3		

Note: Due to rounding errors the total percentage might not be equal to 100.

5.5.4 Ethical considerations

The introduction page of the Web survey included all the basic information about the nature and purpose of the research, including an explanation of the rights of participants. All the details of the online survey (topics, duration, instructions, and contact information for Med.Over.Net project manager) were provided on the introduction page of the Web survey. The respondents, who were recruited via an email invitation, were also informed about the research in the email invitation. The participants of the survey were informed that their participation was voluntary and that it could be ended at any time without consequences. The respondents were also guaranteed that data would be handled in accordance with the national and EU laws and that their disclosed information and collected data were going to be used exclusively for scientific and research purposes and would not be forwarded to third parties. The introduction page of the Web survey also informed the respondents that collected data would be anonymized and would not include any identifiers that could be linked to specific individuals. The respondents to the Web survey were also informed that the collected data might, in an anonymized form for research purposes, be submitted for long-term preservation to a data archive and thus publicly available. Consent to participate in the survey was indicated by the respondents agreeing to undertake and then starting the Web survey questionnaire.

The respondents' personal information disclosed for the purposes of participating in the draw for the prizes was processed by the HROSC provider and saved separately from the data provided in the survey questionnaire and handled strictly for the purposes of the competition. Med.Over.Net treats all personal information (including emails) in accordance with national and EU laws and protects data with standard security procedures, which include the deidentification of locally held data files, physical protection of hardware and strong password protection. The author of this dissertation and her supervisors had no access to the emails or any other personal information of respondents and received an anonymized data set containing no identifiable personal information.

No institutional ethics approval was needed, as this was a retrospective study. In all stages of the research process we carefully protected the collected (personal) data and ensured participants' anonymity and confidentiality. The collected data will be publicly presented in an aggregated form. This quantitative study was also conducted in line with the Code of Ethics for Researchers at the University of Ljubljana (2014) and the World Medical Association

(WMA) Declaration of Helsinki on ethical principles for medical research involving human subjects (2013).

5.5.5 Data analysis methods

The data analysis started by analyzing the descriptive statistics of all variables included in the proposed models. We determined whether variables were normally distributed and whether the assumptions (linearity, multicollinearity) of the analysis methods used were or were not violated. Before proceeding to the EFA, we performed the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity (BTS) to determine whether our data were suitable for EFA. The KMO index ranges between 0 and 1 and values above 0.5 are considered suitable for factor analysis (Hair et al., 1998). For factor analysis to be suitable, BTS should be statistically significant ($p \leq .05$), which indicates that sufficient correlations exist among the variables (Meyers et al., 2016).

A series of EFAs were then conducted to determine which items of the scales should be retained. EFA is an exploratory data reduction technique and is most commonly applied in test development and test scoring and is thus used to identify a relatively small number of dimensions or factors underlying a relatively large set of variables (Meyers et al., 2016). Factors were extracted using principal axis factoring, which uses estimates of communalities on the diagonal in the extraction process (Meyers et al., 2016). Since we did not expect an orthogonal factor solution, oblimin rotation was used. We performed EFA using the following criteria: (1) eigenvalue greater than 1; (2) scree test; (3) items loading on the same factor ($\geq .02$); (4) no cross loading; (5) conceptual interpretability of factors. The quality of the measurement instrument was also assessed using reliability analysis and Cronbach's alpha (α) coefficient was computed, which ranges between 0 and 1.0. The rough guidelines are that a value of .9 or higher indicates outstanding internal consistency, a value of .8 or better is good internal consistency, a value of between .7 and .8 indicates acceptable reliability, and a value of between .6 and .7 signifies a questionable reliability (DeVellis, 2003).

To establish the construct validity of some (newly) designed scales, we proceeded with a CFA. As emphasized by Hair et al. (1998), "[e]xploratory factor analysis can be performed to provide a preliminary check on the number of factors and the pattern of loadings. Then proceed to a confirmatory test of measurement theory to establish the construct validity of the newly designated scale." The CFA in our case was included "in a larger structural model, where the

confirmatory portion is usually referred to as a *measurement model* because it assesses the statistical quality of the factors based on the variables that are said to represent them" (Meyers et al., 2016, pp. 850–851). The following absolute and incremental fit indices were used for assessing the model fit: (1) Root Mean Square Error of Approximation (RMSEA) (.08 as a cutoff for poor fitting models); (2) Standardized Root Mean Square Residual (SRMR), where a value of less than .08 is generally considered a good fit; (3) Comparative Fit Index (CFI), which ranges between 0.0 and 1.0, where values closer to 1.0 indicate good fit (CFI≥0.90); (4) Tucker Lewis Index (TLI), which also ranges between 0.0 and 1.0 and TLI≥0.9 indicates a good fit (Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999).

To test our research questions (RQ1, its subquestions and RQ3) and hypotheses (H1.1–H1.3 and H2.1–H2.3) we conducted a multiple regression analysis. As we had three dependent variables,[24] a regression analysis had to be conducted for each dependent variable separately. Because we wanted to examine the differences between different types of subcommunities of the studied HROSC (online counseling forums, online support group forums and online socializing forums), we conducted additional regression analyses of the tested linear regression models on each subcommunity subsample separately. More precisely, we used a hierarchical ordinary least squares multiple regression analysis approach (Cohen, Cohen, West, & Aiken, 2003). The analyses were thus conducted in such a way that three successive linear regression models were estimated for each dependent variable and each regression model was also estimated on three subsamples for each subcommunity separately. Each linear regression model was estimated in three steps. In the first step, a model with only control variables was estimated. In step two, independent variables were added, and in the third step moderating variables and interactions between them and independent variables were added. With these analyses we could assess whether the tested model fitted better than the previous one, which is especially important when testing the effect of moderating variables. The comparison of the models in step two and step three allowed us to obtain answers to RQ1 and to all theoretical hypotheses, and the comparison of the models in step two and step one provided an insight into research questions RQ1.1–RQ1.6. The analyses of each regression model on the subsamples of all three subcommunities allowed us to analyze RQ3.

[24] The three dependent variables are intrapersonal empowerment and the two dimensions of interactional empowerment, i.e. knowledge of resources and resource mobilization for collective action. More details about the variables are presented in the next section.

All variables that were included in interactions were a priori centered to avoid collinearity. Multicollinearity was assessed during the analyses by tolerance parameter, where a value in the range of .40 should be worthy of concern. We also examined the variance inflation factor (VIF), where a value of 2.5 is associated with a tolerance parameter of .40 and is considered problematic, meaning that highly correlated independent variables exist in the model (Meyers et al., 2016).

Since the Web survey data were collected with a probability and a nonprobability sample, we first conducted all the analyses on both samples separately in order to detect any differences and biases in the results. There were no substantial differences between the results of the analyses conducted on the two samples separately, so we conducted all the data analyses on the merged sample.

Data were analyzed using IBM SPSS and R software, with the *lavaan* package (Rosseel, 2012) being used for CFA.

5.5.6 Operationalization of theoretical concepts and measurement instruments

In this section we present the operationalization of the theoretical concepts and all related measurement instruments that were used in the quantitative study and led us to obtain (dependent, explanatory and control) variables used in further data analyses and for testing proposed hypotheses and providing answers to the research questions of the study. The main emphasis in the process of operationalizing the theoretical concepts (in some cases constructs too) was to provide valid operational definitions that would led us to empirical indicators and measurement instruments that would, to the greatest extent possible, correspond to the theorized concepts. The process of analyzing complex theoretical concepts and applying them in the field of studying HROSCs has already to some extent been presented in the theoretical framework chapter and the "Development of measurement instruments" section of this chapter. This process, together with qualitative study insights for the development of quantitative measurement instruments, presented the first major step in the formation of final measurement instruments and actual variables that could be used in data analyses. The second major step in the formation of the final measurement instruments was to find, adapt or develop measurement scales that are able to measure operationalized concepts.

The same theoretical concepts can have different operational definitions, which are always dependent upon the research aims, goals and contexts (Splichal, 1990). Based on the assumption that HROSC users may vary in their exposure to the socio-structural properties of HROSCs, particularly when it comes to the organizational characteristics of HROSCs, in this study, we employ a perceived socio-structural properties approach. The organizational characteristics of HROSCs in particular were regarded as an individual-level construct that refers to the perceptions and beliefs of a particular (surveyed) HROSC user regarding the extent to which an HROSC user exhibits the specific organizational characteristics of the HROSC. Although those organizational characteristics in HROSCs are usually set by online community managers and owners or are constantly produced and reproduced by HROSC users, we argue that unique users' perceptions of an HROSC's organizational characteristics are more important than the actual organizational characteristics of HROSCs. The experiences of users represent their reality in terms of the HROSC and give them a structured impression of how particular subcommunities of the HROSC function as a whole. Arguing with Bourdieu's theoretical outline structured impressions have an important impact on individuals' social practices and (to some extent) also present a determinant of how individuals accumulate and use different forms of capital in specific social contexts. Users of the HROSC were thus asked to evaluate the specific organizational characteristics of the discussion forum that they visit most often in the HROSC. In other words, our measurement scale is intended to assess the users' perceptions of organizational characteristics in the HROSC. We believe that perceived organizational characteristics serve as an important influence on the degree to which HROSC members experience intrapersonal and interactional empowerment.

In the following subsections we present in detail the operationalization and measurement instruments of intrapersonal and interactional empowerment (dependent variables), involvement in an HROSC, cultural capital, social capital, economic capital, group-based belief system, opportunity role structure, leadership, support system (explanatory variables) and control variables.

Operationalization of dependent variables

Psychological empowerment was measured by its two main dimensions, i.e. intrapersonal and interactional empowerment.

Intrapersonal empowerment in the context of HROCSs refers to how users think about themselves and how they confront and cope with their health issues. The intrapersonal dimension of psychological empowerment, according to Zimmerman (1990), includes four important components: perceived competences, self-efficacy, perceived control and motivation control. Intrapersonal empowerment has usually been measured in previous studies with the established Sociopolitical Control Scale (SPCS) developed by Zimmerman and Zahniser (1991). The SPCS was designed to measure leadership competence and policy control and, as Zimmerman and Zahniser (1991, p. 202) emphasize, "it may be most useful as one of many measures used to describe empowerment at the individual level of analysis." Since empowerment is a contextually dependent concept, it is important to analyze and measure it according to the field in which it can be manifested. Accordingly, we adopted different (patient) empowerment measurement instruments and developed an intrapersonal empowerment scale in HROSCs, which specifically focuses on HROSC users' competences, self-efficacy, control and motivation control related to confronting and coping with health-related issues.

Perceived health competences refer to users' perception of their ability and skills to carry out tasks or actions needed to deal with their health-related issues and illness situation (Hur, 2006; Smith et al., 1995; Zimmerman, 1995). To measure perceived health competences among HROSC users we adopted two items from Spreitzer's (1995) competence scale and designed our own items that refer to users' capabilities to address or solve health-related goals. Five items were used to measure users' perceived health competences (IPE1–IPE5). In order to reduce acquiescence bias, one item (IPE2) was reverse-worded.

Self-efficacy refers to overall confidence to cope across demanding health-related situations and to one's beliefs that when needed one is capable of realizing desired health-related outcomes (Barlow, Williams, & Wright, 1996; Jerusalem & Schwarzer, 1992; Sherer et al., 1982). We adopted Schwarzer and Jerusalem's (1995) General Self-Efficacy Scale and designed six items (IPE6–IPE11) to measure health-related self-efficacy, i.e. users' belief that they can perform different tasks or cope with (difficult) health-related issues.

Perceived control pertains to the extent to which one believes that health-related issues, situations and related decisions are under one's own control in contrast to being ruled by different forces that they have no effect on (Pearlin, Menaghan, Lieberman, & Mullan, 1981; Zimmerman et al., 1992). On the other hand, *motivation control* refers to one's desire for

control or even self-determination to achieve disease-related goals and manage health-related issues (Burger & Cooper, 1979; Spreitzer, 1995). Although there is a theoretical distinction between the concepts of perceived control and motivation control in the operationalization process and on the level of developing specific items to measure these concepts, the distinction can hardly be detected. We decided that on the level of measuring these concepts we would include and focus only on perceived control, which is also often mentioned as the only component of intrapersonal empowerment together with perceived competences and self-efficacy. Perceived control was measured by combining and adopting several already developed scales (Burger & Cooper, 1979; Oh & Lee, 2012; Pearlin et al., 1981; Spreitzer, 1995), which led us to design seven items (IPE12–IPE18), among which five were reverse-worded. In the survey questionnaire we asked respondents to evaluate statements about coping with health issues, when they are confronted with them, on a five-point scale of (1) strongly disagree to (5) strongly agree.

Table 5.6: Descriptive statistics of intrapersonal empowerment items

Items	n	μ	σ	skewness	kurtosis
(IPE1) I have the necessary set of skills to treat or reduce my health issues.	1485	3.43	0.833	-.357	.087
(IPE2) It is difficult for me to understand my health issues. (R)	1459	2.37	0.881	.470	-.021
(IPE3) I have enough knowledge about my health issues to decide how to solve them.	1452	3.46	0.879	-.478	.004
(IPE4) I feel confident about my abilities to manage my health issues.	1448	3.43	0.869	-.435	-.012
(IPE5) I can explain my health issues in a simple and understandable way.	1441	3.63	0.795	-.603	.570
(IPE6) I am successful at treating or reducing my health issues.	1480	3.68	0.735	-.613	.822
(IPE7) I remain calm when facing health issues.	1449	3.60	0.868	-.561	.280
(IPE8) I can effectively deal with unexpected events related to my health.	1447	3.53	0.848	-.525	.150
(IPE9) When I have health issues, I can easily manage them.	1448	3.43	0.831	-.313	-.329
(IPE10) I can solve most of my health issues if I invest the necessary effort.	1474	3.65	0.784	-.833	.966
(IPE11) When I have health issues, I can always think of some solution.	1453	3.44	0.776	-.395	-.122
(IPE12) When I have health issues, I would rather that someone else solved them for me. (R)	1450	2.56	1.060	.295	-.681
(IPE13) I like to leave decisions about my health issues to others who are qualified to deal with them. (R)	1440	3.43	1.020	-.508	-.250
(IPE14) Sometimes it feels to me that with my health issues I am trapped in a vicious circle. (R)	1457	2.89	1.056	.067	-.806
(IPE15) I do not have control over things that happen in relation to my health issues. (R)	1453	2.44	0.925	.500	-.042
(IPE16) If I decide to I can take care of my health issues.	1454	3.70	0.796	-.638	.552
(IPE17) I often feel helpless when trying to solve my health issues. (R)	1446	2.65	1.030	.306	-.535
(IPE18) What happens to my health issues mostly depends on my actions.	1437	3.58	.924	-.600	.181

By inspecting the descriptive statistics of all items of intrapersonal empowerment (Table 5.6) we demonstrate that they are likely to be normally distributed, which means that we can proceed to further analysis. An initial EFA was run to obtain communalities for each item and eigenvalues for extracted factors. The perceived control item IPE13 demonstrated low communality value as well as factor loadings and was accordingly omitted from further analysis. The competence item IPE2 cross-loaded on two factors and, based on theoretical considerations, was also excluded from further analysis. A principal axis factor analysis was conducted on 16 items of intrapersonal empowerment with oblique rotation (direct oblimin) (Table 5.7).

Table 5.7: Rotated factor loadings for intrapersonal empowerment items (N=1364)

Items	Perceived health competence	Self-efficacy	Perceived control	Motivation control
(IPE1) I have the necessary set of skills to treat or reduce my health issues.	**.534**	-.028	.034	.086
(IPE3) I have enough knowledge about my health issues to decide how to solve them.	**.877**	-.086	-.022	-.047
(IPE4) I feel confident about my abilities to manage my health issues.	**.798**	.104	-.065	-.060
(IPE5) I can explain my health issues in a simple and understandable way.	**.736**	.065	-.009	.007
(IPE6) I am successful at treating or reducing my health issues.	**.411**	.118	-.177	.192
(IPE7) I remain calm when facing health issues.	-.015	**.818**	-.021	-.040
(IPE8) I can effectively deal with unexpected events related to my health.	.008	**.884**	.037	-.009
(IPE9) When I have health issues, I can easily manage them.	.018	**.673**	-.078	.138
(IPE10) I can solve most of my health issues if I invest the necessary effort.	.101	.047	-.043	**.617**
(IPE11) When I have health issues, I can always think of some solution.	.241	.119	.019	**.494**
(IPE12) When I have health issues, I would rather that someone else solved them for me. (R)	-.040	-.101	**.399**	.001
(IPE14) Sometimes it feels to me that with my health issues I am trapped in a vicious circle. (R)	.020	-.037	**.731**	.068
(IPE15) I do not have control over things that happen in relation to my health issues. (R)	-.004	.091	**.746**	-.085
(IPE16) If I decide to I can take care of my health issues.	-.008	.026	-.027	**.778**
(IPE17) I often feel helpless when trying to solve my health issues. (R)	-.020	.030	**.810**	-.053
(IPE18) What happens to my health issues mostly depends on my actions.	-.056	-.031	-.023	**.617**
% of variance	**40.6**	**9.8**	**8.9**	**6.7**
α	**0.85**	**0.85**	**0.78**	**0.78**

The KMO measure was well above the acceptable limit of .5 (Hair et al., 1998) with KMO=.92, which verifies the sampling adequacy of the analysis. BTS was also statistically significant ($p<.001$), which indicates that sufficient correlations exist among the variables (Meyers et al.,

2016). The EFA revealed that four factors had eigenvalues greater than Kaiser's criterion of 1 and in combination explained around 66.0% of the variance (see Table 5.7). All items of intrapersonal empowerment had communalities greater than 0.2.

The factor analysis results (Table 5.7) demonstrate that the first item of self-efficacy loads on the first factor that represents *perceived health competence*. Based on careful examination of the meaning, we concluded that the item closely relates to the users' ability to deal with health-related issues and thus could be treated as a competence item. The Cronbach's alpha of the factor (α=0.85) indicates a good internal consistency.

The second factor represents *self-efficacy* and includes only three initially prepared items (IPE7–IPE9) and has a good internal consistency (α=0.85) (Table 5.7). The two remaining initial self-efficacy items, IPE10 and IPE11, load on the fourth factor, which also includes two perceived control items, IPE16 and IPE18. Close examination of the meaning of all four items (two from the self-efficacy cluster and two from the perceived control cluster) revealed that these four items could represent the desire and willingness to establish control over health issues, which relates to the *motivation of control* component of intrapersonal empowerment. The factor's internal consistency is acceptable, as the Cronbach's alpha is higher than .7 (Table 5.7).

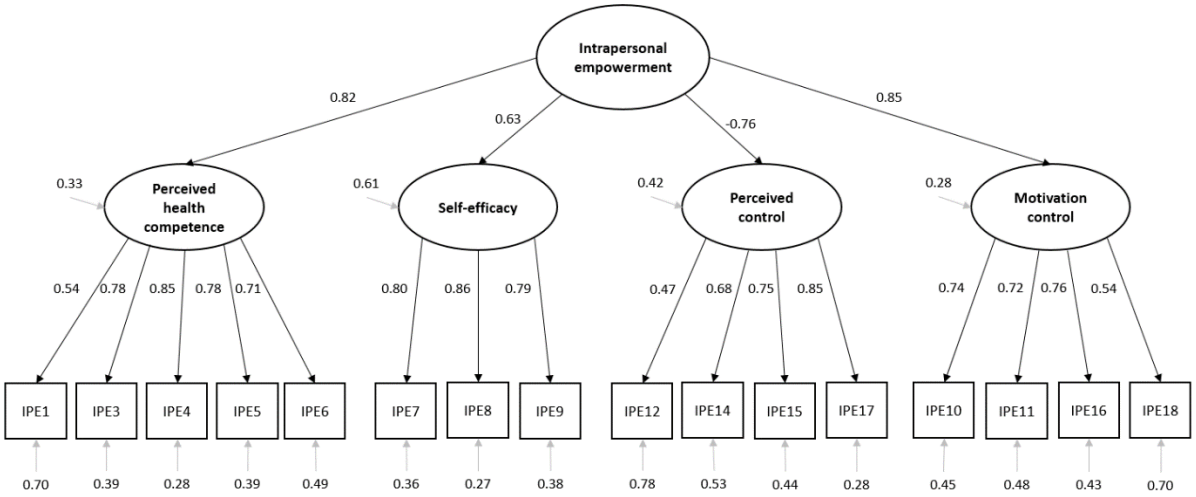
By examining the obtained results we can see that all reverse-worded items are loading on the same third factor, which includes all four remaining reverse-worded items of *perceived control*, which represents an important part of the intrapersonal empowerment concept. The reverse-worded items loading on the same factor is not unusual in self-reported measures and in methodological literature is referred to as a "method factor" (Woods, 2006). In many cases "method factors" do not appear to be substantively meaningful, but this is not the case for the perceived control component of intrapersonal empowerment. The Cronbach's alpha of this factor also indicates an acceptable internal consistency (α=0.78) (Table 5.7).

To verify the measurement model of the obtained solution for intrapersonal empowerment we proceeded with second-order CFA,[25] which revealed that the factor loadings of all four factors

[25] Because of its less complex interpretation usually first-order CFA is performed in order to confirm that the theorized construct loads on a certain number of indicators. The first- and second-order CFA also have (except for χ^2, df) identical model fit indices. In the case of intrapersonal empowerment (as is also explained later on in this section) we wanted to show that the close interrelation between the subconstructs perceived health competence, self-efficacy, perceived control and motivation control indicates that intrapersonal empowerment

are around or above 0.5 (Figure 5.5). Fit indices also suggested a reasonably good fit (χ^2=613 (df=100), CFI=.95, TLI=.94, RMSEA=0.06, SRMR=0.05).

Figure 5.5: Measurement model of intrapersonal empowerment (N=1364)



Correlations between dimensions and intrapersonal empowerment demonstrate a satisfactory discriminant validity (Figure 5.5) and indicate that all four factors of intrapersonal empowerment are closely associated, which is also often emphasized in intrapersonal empowerment theory literature (Zimmerman, 1990, 1995; Zimmerman & Zahniser, 1991). Based on these results and in order to reduce the complexity of the proposed models for further analyses, each factor of intrapersonal empowerment was, as a new variable, computed as the aggregated average of its items. A new *intrapersonal empowerment variable*, which is used in further analyses, was thus calculated as the aggregated average of perceived health competence, self-efficacy, perceived control and motivation control variables.

Interactional empowerment refers to the ability of individuals or a group of people to develop critical awareness of the sociopolitical environment and, with knowledge of resources, resource mobilization and collective action, change their disadvantaged position (Wilke & Speer, 2011; Zimmerman, 1995). In the context of HROSCs, interactional empowerment relates to HROSC users' critical understanding and awareness of the healthcare system, which presents one of the fundamental conditions for users to exercise their right to healthcare in various aspects: for participating in the healthcare system, for making informed health decisions and for accessing

could be included in further analysis as a composite variable in order to reduce the complexity of the proposed and empirically tested models.

healthcare services (Delgado Gallego & Vázquez-Navarrete, 2013). Interactional empowerment thus comprises two dimensions: *knowledge of (health-related) resources*, which refers to users' ability to apply the knowledge gained in the HROSC to address or solve a health-related problem in the healthcare system (Akey et al., 2000); and *resource mobilization for collective action*, which pertains to users' awareness of the possibility of collectively engaging in the HROCS and (potentially) with other users influencing arrangements in the healthcare system and health-related political decisions in general (Akey et al., 2000; Speer, 2000; Speer & Peterson, 2000). Based on our pilot study[26] we used the tested Interactional empowerment in HROSCs scale, which includes 11 items – six items (IE1–IE6) for measuring *knowledge of resources* and five items (IE7–IE11) for measuring *resource mobilization for collective action* (see Table 5.8). All items were measured using a five-point Likert-type scale ranging from (1) strongly disagree to (5) strongly agree.

Table 5.8: Descriptive statistics for interactional empowerment in HROSC items

Items – Because of using Med.Over.Net's forums…	n	μ	σ	skewness	kurtosis
(IE1) …I know whom I can turn to when I have a health problem.	1151	3.54	0.917	-.724	.610
(IE2) …I know how to use health resources available to me in the HROSC.	1141	3.73	0.771	-.967	1.745
(IE3) …I know how to get help from others to achieve my health-related goals.	1127	3.56	0.831	-.677	.844
(IE4) …I know how to get resources such as information, money, services or support when I deal with health problems.	1137	3.24	0.969	-.420	-.088
(IE5) …I understand better how the healthcare system works in our country.	1141	3.17	0.963	-.333	-.193
(IE6) …I know which healthcare service I need to use to solve my health problems.	1120	3.62	0.838	-.936	1.269
(IE7) …I actively advocate with other users better healthcare in our country.	1131	2.44	1.130	.236	-.930
(IE8) …I feel that I can impact healthcare issues only by working in an organized way with other HROSC users.	1119	2.49	1.115	.204	-.871
(IE9) …I believe that in order to improve healthcare, it is more effective to work with a group of HROSC users than as an individual.	1116	3.21	1.128	-.550	-.477
(IE10) …I realize that only by working together with other HROSC users can we get the power to change the healthcare.	1117	2.89	1.091	-.237	-.631
(IE11) …I think that a user becomes powerful in the wider environment only through other HROSC users.	1108	3.08	1.059	-.385	-.413

To assess the distribution of the interactional empowerment in HROSC items we begin by examining their descriptive statistics (Table 5.8). Because the mean values are, with minimal differences, all around 3.0, the standard deviation is around 1.0, and skewness and kurtosis

[26] See Section 5.5.1 "Development of measurement instruments" for more details..

values are for almost all items within the ±1.0 range, they are likely to be normally distributed. Accordingly, we deem them tentatively acceptable for further data analysis.

Table 5.9: Rotated factor loadings for interactional empowerment in HROSC items (N=1044)

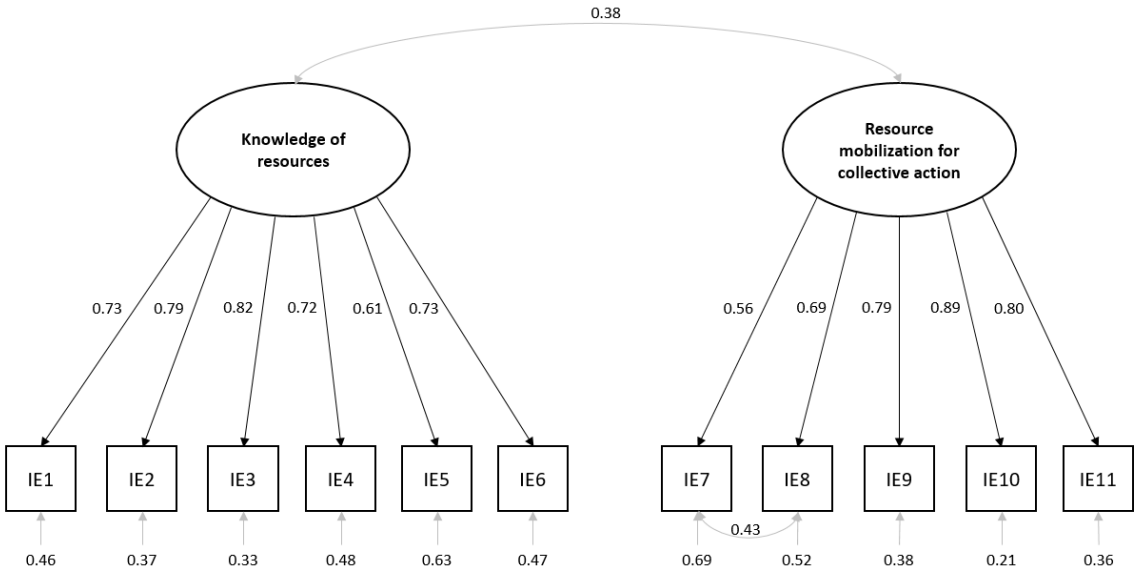
Items – Because of using Med.Over.Net's forums…	Knowledge of resources	Resource mobilization for collective action
(IE1) …I know whom I can turn to when I have a health problem.	**.703**	.024
(IE2) …I know how to use health resources available to me in the HROSC.	**.801**	-.054
(IE3) …I know how to get help from others to achieve my health-related goals.	**.821**	-.033
(IE4) …I know how to get resources such as information, money, services or support when I deal with health problems.	**.742**	-.017
(IE5) …I understand better how the healthcare system works in our country.	**.593**	.073
(IE6) …I know which healthcare service I need to use to solve my health problems.	**.745**	.012
(IE7) …I actively advocate with other users better healthcare in our country.	.013	**.630**
(IE8) …I feel that I can impact healthcare issues only by working in an organized way with other HROSC users.	-.020	**.774**
(IE9) …I believe that in order to improve healthcare, it is more effective to work with a group of HROSC users than as an individual.	.008	**.758**
(IE10) …I realize that only by working together with other HROSC users can we get the power to change the healthcare.	.012	**.862**
(IE11) …I think that a user becomes powerful in the wider environment only through other HROSC users.	-.007	**.781**
% of variance	**43.1**	**20.9**
α	**0.87**	**0.87**

A principal axis factor analysis was conducted on the 11 items of interactional empowerment in the HROSC with oblique rotation (direct oblimin) (Table 5.9). The KMO measure verified the sampling adequacy for the analysis with KMO=.87, which is well above the acceptable limit of .5 (Hair et al., 1998). BTS was also statistically significant (p=.000), which indicates that the data are suitable for factor analysis. An initial analysis was run to obtain eigenvalues for each factor in the data, with two factors having eigenvalues greater than Kaiser's criterion of 1 and in combination explaining 64.0% of the variance (Table 5.9). The communalities of all items were greater than 0.3. We retained two factors and the items that cluster on the same factor suggest that the first factor represents *knowledge of resources* and the second factor represents *resource mobilization for collective action*. Cronbach's alphas also suggest a good internal consistency for both factors (α=0.87) and the correlation coefficient between factors is r=0.39.

The EFA solution was tested with CFA to verify the measurement model of the interactional empowerment in the HROSC. Based on the inspection of modification indices we freed the

covariance between two items of *resource mobilization for collective action* (IE7 and IE8), as the items are associated with the use of similar phrasing. CFA revealed that factor loadings for both factors are all above 0.5 (Figure 5.6). Fit indices suggested a reasonably good fit with χ^2=387.5 (df=42), CFI=.94, TLI=.92, RMSEA=0.09 and SRMR=0.04. The correlation between dimensions demonstrates a satisfactory discriminant validity (r=0.38, p<0.05).

Figure 5.6: Measurement model of interactional empowerment in HROSC (N=1044)



Although both factors of interactional empowerment are associated, they also substantively consist of visible demarcation: While the knowledge of resources factor of interactional empowerment includes individuals' ability to apply health-related knowledge and develop critical understanding of the sociopolitical environment, resource mobilization for collective action more clearly pertains to the perception of the collective power developed in relation to other individuals (users of the HROSC) and the possibilities of using this power in the process of seeking changes (in the existing healthcare system). Due to such a meaningful distinction and the importance of both factors, we measured interactional empowerment in further analyses through its dimensions. Accordingly, the knowledge of resources and resource mobilization for collective action variables were computed as the aggregated average of their items.

The operationalization and evaluation of measurement instruments of intrapersonal and interactional empowerment resulted in obtaining three (dependent) variables that will be used

in further analysis: *intrapersonal empowerment*, *knowledge of resources* and *resource mobilization for collective action.*

Operationalization of explanatory variables

Explanatory variables were derived from the following concepts: involvement in HROSC, cultural capital, social capital, economic capital, group-based belief system, opportunity role structure, leadership and support system.

Involvement in HROSC includes two dimensions: *involvement in different types of HROSC forums* and *involvement and engagement in a variety of events and activities in HROSC*.

Involvement in different types of HROSC forums was measured by two survey questions. First, we asked respondents to indicate which type of forums (online counseling forums, online support group forums or socializing forums) they visited in the last 12 months. The question had multiple choices and respondents could choose one type of forum, two types of forum or even all three types.

Table 5.10: Frequencies and valid percentages of visited different types of forums and combinations of their uses in the HROSC

Combinations of visited different types of forums in the HROSC	n	valid %
Only online counseling forums	228	21.1
Only online support group forums	18	1.7
Only online socializing forums	118	10.9
Online counseling forums AND online support group forums	83	7.7
Online counseling forums AND online socializing forums	305	28.2
Online support group forums AND online socializing forums	35	3.2
All three types of forums	295	27.3
TOTAL	**1082**	**100.0**

Respondents most frequently visit both online counseling forums and socializing forums or even all three forum types (Table 5.10). Online counseling forums are thus the most often visited type of forum in the HROSC, followed by online socializing forums, and the least frequently visited are online support group forums.

Second, respondents were asked to write down the name of the HROSC forum that they visit most often. This question had a very important role in the survey questionnaire, as the questions regarding organizational characteristics (perceived negative sanctions, positive sanctioning, participation in the formation of forum norms, moderation and a sense of virtual community) were asked in relation to the forum that the respondents visit most often in the HROSC, since

it is assumed that this specific type of forum is also the one that they have most experience with. Open-ended answers of respondents were coded using a coding book for all 140 discussion forums and their classification in a specific forum type, i.e. online counseling forum, online support group forum and socializing forum. Since the question about the most often visited HROSC forum was open-ended, the data collection led to a high number of missing values (n=594, 39.9%). This variable plays a crucial role in further analysis, since it presents the main filter variable that it is used to analyze the differences in the effects of socio-structural properties of the HROSC (independent variables) on psychological empowerment between different types of subcommunities (discussion forums) in the HROSC. In order to slightly minimize the extent of missing values, we replaced some missing values in the question about the most visited discussion forum in the HROSC with valid values from the variable *involvement in different types of HROSC forums* (in the last 12 months), but only in cases where respondents selected only one type of forum that he/she visited in the last 12 months. The rationale behind this procedure is that if the respondent visited only one type of forum in the last 12 months, this type of forum is also the one that he/she visits most often in the HROSC. With this procedure we replaced 69 missing values with valid values indicating a specific type of forum in the HROSC.

Table 5.11: Frequency table of types of forums that respondents visit most often in the HROSC Med.Over.Net

	n	%	valid %
Online counseling forums	485	32.6	50.3
Online support group forums	119	8.0	12.3
Online socializing forums	361	24.2	37.4
TOTAL	**965**	**60.1**	**100.0**
Missing values	525	35.2	
TOTAL	**1490**	**100.0**	

The types of forum visited most often in the HROSC are online counseling forums, followed by online socializing forums, whereas online support group forums are most often visited by 8.0% of the respondents (Table 5.11). Among the online counseling forums the one most often mentioned was ABC of gynecology and obstetrics. Parental chat, which is the most popular discussion forum in Med.Over.Net, was also among the online socializing forums most often mentioned as the forum they visit most frequently. Parents and children was among the online social support group forums most often referenced by respondents as the forum that they visit in the HROSC most often.

Involvement in a variety of activities in the HROSC was measured with Involvement in the HROSC scale, which had already been tested in the pilot study and included 20 items: nine items measuring discussion involvement, six items measuring involvement in online community organization and five items measuring civic involvement. Discussion involvement items include activities that pertain to engagement in online forum discussions such as posting, commenting, asking questions, opening new forum threads, encouraging discussion etc. Involvement in community organization items include engagement in activities that relate to the HROSC vision, goals and (internal) events. Civic involvement items contain activities related to initiations and actions in the HROSC that pertain to issues of public concern. In the survey questionnaire respondents were asked[27] to assess how often in the last 12 months they had been engaged in different HROSC activities on a five-point scale of (1) never to (5) very often.

It was expected that involvement in a variety of activities in HROSC items would not be normally distributed, which is clearly demonstrated by the descriptive statistics in Table 5.12. The involvement in HROSC items includes a very high level of respondents that have never been engaged in different HROSC activities and very few of those that have been involved in specific discussion, community organization or civic activities. It was expected that the involvement in HROSC items would be distributed according to the power law, which is also indicated by the very high values of skewness and kurtosis of the items (Table 5.12).

[27] Initially in the Involvement in HROSC scale we asked respondents to answer Yes or No to whether in the last 12 months they had been involved in any of the listed HROSC activities. In the online survey 2018 we wanted to introduce more variability to the collected data on involvement in the HROSC and we thus changed the scale of the measurement instrument.

Table 5.12: Descriptive statistics of involvement in HROSC items

Items – How often in the last 12 months have you in the HROSC forums…	n	μ	σ	skewness	kurtosis
(IDISC1) …posed questions to moderators?	1230	1.72	0.881	1.177	1.026
(IDISC2) …posed questions to other forum users?	1231	1.66	0.892	1.300	1.095
(IDISC3) …written answers to other users' questions?	1224	1.71	1.007	1.300	.837
(IDISC4) …written comments/opinions on other users' questions?	1229	1.67	0.972	1.395	1.177
(IDISC5) …written comments/opinions on moderators' messages?	1225	1.41	0.758	2.010	3.939
(IDISC6) …opened new forum topic(s)?	1222	1.60	0.883	1.501	1.803
(IDISC7) …encouraged other users to write their answers and opinions?	1223	1.40	0.772	1.953	3.172
(IDISC8) …tried to informally or formally moderate discussion in forum(s)?	1215	1.30	0.712	2.672	7.092
(IDISC9) …helped other users to participate in forum discussion(s)?	1212	1.23	0.594	2.979	9.804
(ICO1) …urged moderators or administrators to intervene in forum discussions?	1213	1.16	0.535	3.858	15.942
(ICO2) …made a request, a proposal or a complaint to the managers of Med.Over.Net?	1219	1.16	0.522	3.876	16.158
(ICO3) …participated in organized activities of Med.Over.Net (e.g. meetings and events) outside of online forums?	1216	1.14	0.505	4.298	20.161
(ICO4) …given an initiative on further development of the forum(s)?	1218	1.16	0.533	3.848	15.952
(ICO5) …participated in reflections on the vision, objectives and content of the forum(s)?	1214	1.18	0.566	3.458	12.410
(ICO6) …participated in the realization and implementation of initiatives proposed by other forum users?	1200	1.18	0.546	3.565	13.510
(ICIV1) …actively participated in discussion about important social problems?	1228	1.39	0.741	2.042	3.859
(ICIV2) …organized and mobilized with other users in a certain action (e.g. protests)?	1210	1.13	0.488	4.295	19.599
(ICIV3) …participated in an awareness campaign in Med.Over.Net?	1210	1.20	0.586	3.395	12.597
(ICIV4) …participated in the formation of an initiative of users that was sent to a politician or representative of a state/municipal authority?	1211	1.13	0.481	4.560	23.651
(ICIV5) …proposed a petition or signed a petition that was proposed by HROSC users?	1192	1.28	0.697	2.698	7.165

In order to assess the relations between the involvement items, we performed a preliminary analysis using principal component analysis and correlation matrix. The results[28] showed that very high positive correlations exist between involvement in community organization and civic involvement items. Moreover, principal component analysis revealed the solution of two components, one including items of discussion involvement and one consisting of involvement in community organization and civic involvement items. In order to avoid a possible collinearity problem in further analysis and to reduce the complexity of the analysis of

[28] The results of the preliminary analysis can be obtained on request from the author of the thesis.

proposed models, we joined items of involvement in community organization and civic involvement, since it is very likely that users who are engaged in activities that pertain to more external actions to the online community such as mobilization and formation of initiations of public concern are also more actively engaged in activities of community organization, which also present an important foundation for such actions and initiations. Since involvement in the HROSC scale measured the frequency of specific engagement in HROSC activities, we computed two new variables for further analysis. First, *discussion involvement* was computed as an aggregated average of items IDISC1–IDISC9. Second, *involvement in community organization and action* was computed as an aggregated average of items ICO1–ICO6 and ICIV1–ICIV5. A higher value for the two new variables means that users are more frequently involved in a certain type of HROSC activity, i.e. discussions or community organization and activities addressing issues of public concern.

Cultural capital in relation to Bourdieu's (2002[1986]) theory comprises (1) embodied cultural capital, (2) institutionalized cultural capital, and (3) objectified cultural capital. As we have demonstrated in the theoretical framework chapter, embodied cultural capital relates to the forms of enduring dispositions of the mind and body, whereas the institutionalized state of cultural capital represents formal education and qualifications. Objectified cultural capital, on the other hand, more particularly refers to the material cultural form and goods. As argued by Kamin et al. (2013), cultural capital is often operationalized in studies only in its institutionalized form, which means that it is very often measured as achieved formal education. Such operationalization has an important limitation, as formal education is not the only relevant resource crucial for achieving better health outcomes (Kamin et al., 2013). Individuals also obtain and learn new skills and competences relevant for health through other (informal) channels, such as the HROSC, and, as emphasized by Bourdieu, each form of capital always depends on the social field where it is produced and reproduced. In HROSCs, formal education[29] does not present the only form of (cultural) capital that HROSC responds to. One of the key types of cultural capital is its embodied form, which, in the field of e-health, is related to the concept of e-health literacy (Kamin & Anker, 2014). *E-health literacy* refers to the ability to search, understand, recognize meaning, and evaluate the quality and value of the obtained health information from electronic resources, usually from the Web (Norman & Skinner,

[29] The measure of formal education was also included in the survey questionnaire and data analyses as one of the demographic and control variables (see the next sub-section on operationalization of control variables).

2006a; Petrič et al., 2017a). According to Petrič et al. (2017a), e-health literacy includes six dimensions: (1) awareness of health information sources; (2) recognizing the meaning and quality of health-related information; (3) understanding online health-related information; (4) perceived efficiency of performing a search process of online health-related information; (5) validation of obtained online health-related information; and (6) being smart on the Net, which relates to using the Web smartly and recognizing biases of Internet-based health information. E-health literacy and its dimensions were measured and pretested in the pilot study with the eHEALS-E scale (Petrič et al., 2017a), which consists of 20 items: three items measuring awareness of sources (EHL1–3), three items measuring the recognizing quality and meaning dimension (EHL4–6), four items measuring understanding information (EHL7–10), which are all reverse-worded, four items measuring perceived efficiency (EHL11–14), three items measuring validating information (EHL15–17) and three reverse-worded items measuring the dimension being smart on the Net (EHL18–20) (see Table 5.13). In the Web survey respondents were asked to read the statements regarding their experiences with searching online health-related information and assess the extent of their agreement with them on a scale of (1) completely disagree to (5) completely agree.

The descriptive statistics of e-health literacy items demonstrate that with slight deviations all items are likely to be normally distributed (Table 5.13). We proceeded with EFA, more particularly principal axis factor analysis with oblique (direct oblimin) rotation. The KMO measure verified the sampling adequacy (KMO=.85) and BTS was also statistically significant ($p<.001$), which suggests a sufficient correlation among the variables. The factor analysis showed that six factors had eigenvalues greater than 1 and in combination explained 63.3% of the variance (see Table 5.14). All e-health literacy items had communalities greater than 0.2.

Table 5.13: Descriptive statistics of e-health literacy items

Items	n	μ	σ	skewness	kurtosis
(EHL1) I know what health resources are available on the Internet.	1450	3.90	.749	-.767	1.427
(EHL2) I know where to find helpful health resources on the Internet.	1418	4.01	.704	-.877	2.294
(EHL3) I know how to use the Internet to answer my health questions.	1411	4.18	.715	-.940	2.017
(EHL4) I have the skills I need to evaluate the health resources I find on the Internet.	1410	3.77	.847	-.491	.284
(EHL5) I can tell high-quality from low-quality health resources on the Internet.	1406	3.92	.799	-.642	.786
(EHL6) I can easily extract the essential meaning of some health information on the Internet.	1400	3.90	.742	-.630	.996
(EHL7) I sometimes find it difficult to select the most relevant health information on the Internet for my health. (R)	1449	2.80	.995	.004	-.734
(EHL8) The huge quantity of health information available on the Internet usually confuses me. (R)	1422	2.94	1.067	-.014	-.793
(EHL9) I often have difficulties understanding the terminology used by some online health resources. (R)	1419	2.75	1.028	.166	-.642
(EHL10) Sometimes, when I am confronted with a health issue, I am not sure where to start searching for information on the Internet. (R)	1421	2.45	1.070	.528	-.463
(EHL11) I feel confident using information from the Internet to make successful health decisions.	1418	3.63	.878	-.604	.373
(EHL12) Usually, I do not find helpful health information on the Internet. (R)	1413	2.32	.939	.529	-.116
(EHL13) The Internet helps me to make decisions about my health more easily.	1413	3.56	.910	-.505	.122
(EHL14) It is important for me to be able to access health-related online information.	1408	4.16	.765	-1.057	2.083
(EHL15) If I do not fully understand health information on the Internet, I try to make sense of it. (R)	1447	2.37	.985	.459	-.374
(EHL16) If I do not understand health information on the Internet, I would rather ask somebody for an explanation than form my own conclusions.	1430	3.93	.891	-1.071	1.310
(EHL17) It is important to me to check health information that I find on the Internet with other resources (such as doctors, books, friends or relatives).	1428	4.10	.796	-.969	1.437
(EHL18) I think that most of the health information we find on the Internet can be trusted (R).	1425	2.76	.992	.007	-.504
(EHL19) I am satisfied with the first health resource on the Internet that can deliver answers to my questions (R).	1423	1.94	1.006	1.024	.497
(EHL20) On the Internet, I prefer reading short and simple health explanations instead of complicated expert clarifications. (R)	1425	3.14	1.181	-.291	-.839

As demonstrated in Table 5.14, the factor loading of the perceived efficiency item EHL12 is cross-loading to the understanding information factor, which could be mainly explained by the "method factor" effect of reverse-worded items loading onto the same factor (Woods, 2006). The same effect is also evident for the validating information item EHL15, which is similar to the EHL12 cross-loading for the understanding information factor. Since the cross-loading of

the EHL12 item onto the understanding information factor is quite high compared to the factor loading for the perceived efficiency factor and the meaning of the item also indicates a relation to how respondents understand online health-related information, we moved this item in further CFA analysis to the understanding information factor. What is also alarming in the EFA results (see Table 5.14) is the low Cronbach's alphas for the validating information and being smart on the Net factors, which indicate poor internal consistency. Nevertheless, we proceeded with the CFA analysis to verify the measurement model of the obtained solution for e-health literacy.

Table 5.14: Rotated factor loading for e-health literacy items (N=1307)

Items	Awareness of sources	Recognizing quality and meaning	Understanding information	Perceived efficiency	Validating information	Being smart on the Net
(EHL1) I know what health resources are available on the Internet.	**-.711**	.039	-.019	-.008	.006	.001
(EHL2) I know where to find helpful health resources on the Internet.	**-.916**	-.015	-.011	.058	-.011	.040
(EHL3) I know how to use the Internet to answer my health questions.	**-.483**	.201	.054	-.127	.010	-.052
(EHL4) I have the skills I need to evaluate the health resources I find on the Internet.	-.039	**.858**	-.034	-.019	.001	-.012
(EHL5) I can tell high-quality from low-quality health resources on the Internet.	-.062	**.786**	-.011	-.005	.072	-.021
(EHL6) I can easily extract the essential meaning of some health information on the Internet.	-.144	**.438**	.189	-.093	-.014	.143
(EHL7) I sometimes find it difficult to select the most relevant health information on the Internet for my health. (R)	-.061	-.079	**-.682**	-.009	.041	.001
(EHL8) The huge quantity of health information available on the Internet usually confuses me. (R)	-.022	-.104	**-.718**	-.029	.006	-.095
(EHL9) I often have difficulties understanding the terminology used by some online health resources. (R)	-.010	-.054	**-.701**	-.005	.074	.045
(EHL10) Sometimes, when I am confronted with a health issue, I am not sure where to start searching for information on the Internet. (R)	.228	.060	**-.611**	.007	.008	.073

Items	Awareness of sources	Recognizing quality and meaning	Understanding information	Perceived efficiency	Validating information	Being smart on the Net
(EHL11) I feel confident using information from the Internet to make successful health decisions.	-.108	.179	.119	**-.376**	.026	.097
(EHL12) Usually, I do not find helpful health information on the Internet. (R)	.080	.064	**-.480**	.221	-.059	.025
(EHL13) The Internet helps me to make decisions about my health more easily.	.063	.019	.055	**-.702**	-.048	.073
(EHL14) It is important for me to be able to access health-related online information.	-.072	-.010	-.102	**-.740**	.080	-.112
(EHL15) If I do not fully understand health information on the Internet, I try to make sense of it. (R)	.017	-.008	**-.385**	-.126	**-.335**	.182
(EHL16) If I do not understand health information on the Internet, I would rather ask somebody for an explanation than form my own conclusions.	.006	-.024	.053	-.025	**.771**	.110
(EHL17) It is important to me to check health information that I find on the Internet with other resources (such as doctors, books, friends or relatives).	-.012	.069	-.139	-.023	**.601**	-.066
(EHL18) I think that most of the health information we find on the Internet can be trusted (R).	-.021	.012	.099	-.098	.040	**.667**
(EHL19) I am satisfied with the first health resource on the Internet that can deliver answers to my questions (R).	.010	.059	-.068	.117	-.069	**.701**
(EHL20) On the Internet, I prefer reading short and simple health explanations instead of complicated expert clarifications. (R)	-.018	-.178	-.197	-.019	.036	**.309**
% of variance	**5.0**	**26.1**	**5.7**	**6.9**	**9.0**	**11.5**
α	**.79**	**.81**	**.81**	**.67**	**.56**	**.57**

Although the CFA analysis revealed that factor loadings for all six factors are around or above 0.4, the model fit indices suggested a poor fit (χ^2=1256 (df=155), CFI=.85, TLI=.82, RMSEA=0.08, SRMR=0.08) and covariances between e-health literacy dimensions indicated

unsatisfactory discriminant validity. Covariances between dimensions of e-health literacy demonstrate that Validating information and Being smart on the Net are not closely related to other e-health literacy dimensions (see Table 5.15).

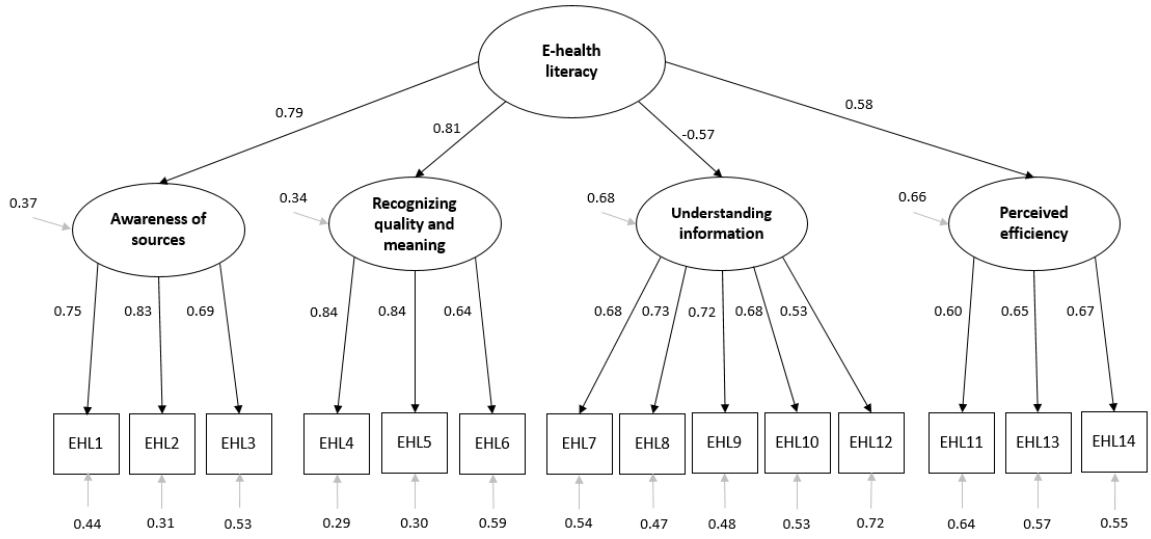
Table 5.15: Covariances between e-health literacy dimensions

	Awareness of sources	Recognizing quality and meaning	Understanding information	Perceived efficiency	Validating information	Being smart on the Net
Awareness of sources	1	0.640**	-0.399**	0.518**	-0.258**	-0.026
Recognizing quality and meaning	0.640**	1	-0.511**	0.426**	-0.200**	-0.056
Understanding information	-0.399**	-0.511**	1	-0.298**	0.130**	0.276**
Perceived efficiency	0.518**	0.426**	-0.298**	1	-0.216**	0.077
Validating information	-0.258**	-0.200**	0.130**	-0.216**	1	0.301**
Being smart on the Net	-0.026	-0.056	0.276**	0.077	0.301**	1

** Correlation is significant at .001 level.
* Correlation is significant at .05 level.

These results are not really surprising, since being able to validate health-related information on the Internet and having the skills to recognize biases in Internet-based information rely on different sets of competences than the ones related to knowing where to find information on the Internet, recognizing its quality, understanding health-related information and being able to conduct (efficient) search processes that result in receiving requested health-related information. Validating information and being smart on the Net refer to basic digital literacy that besides technical skills comprises critical awareness of how online search engines in particular work and produce results, which can quite often provide us with skewed, customized and thus selective (health-related) information. The first four dimensions of awareness of sources, recognizing quality and meaning, understanding information and perceived efficiency thus present the core of the e-health literacy concept as defined by Norman and Skinner (2006a). Accordingly, we eliminated the items of the validating information and being smart on the Net dimensions and conducted second-order CFA on the remaining 14 items of the four e-health literacy dimensions.

Figure 5.7: Measurement model of e-health literacy (N=1332)



The second-order CFA revealed that the measurement model fit indices suggest a reasonably good fit (χ^2=617 (df=73), CFI=.92, TLI=.90, RMSEA=0.07, SRMR=0.06) and all factor loadings of all four factors are above 0.4 (Figure 5.7). Correlations between the dimensions and e-health literacy also demonstrate a satisfactory discriminant validity (Figure 5.7), indicating that all four factors of e-health literacy are closely associated. In order to reduce the complexity of the proposed models used in further analysis, each factor of e-health literacy was computed as a new variable as the aggregated average of its items. The new *e-health literacy variable*, which is used in further analyses, was thus computed as the aggregated average of the variables awareness of sources, recognizing quality and meaning, understanding information and perceived efficiency.

Economic capital directly relates to and converts into money and can, in its institutionalized form, also be understood as property rights (Bourdieu, 2002[1986]). This form of capital can be measured with both objective indicators, such as income, and subjective indicators like respondents' feeling regarding their household financial situation. To measure economic capital, we used a question on the respondents' perception of how their household gets through the month, if they take into account all the monthly expenses and incomes of all household members. This question captures the extent to which respondents felt that they had sufficient financial resources to meet their monthly needs and it is an important indicator of economic capital. The question was measured on a six-point scale of (1) very difficult to (6) very easy.

On average, the respondents manage financially in their households through the month quite easily (μ=3.64, σ=1.144).

In the questionnaire, the respondents were also asked to indicate their average monthly net income for the last three months. However, we decided not to use this variable because of the high percentage of missing values (37.9%), consisting mainly of item breakoffs (23.1%) and refusals (14.2%). Additional analysis revealed that a strong association exists between actual and subjective income indicators of economic capital (r=.411, p=.000), which means that a subjective measure of the household financial situation can be an adequate indicator of respondents' economic capital.

Social capital refers to the ability of individuals to access and use resources embedded in their social network and is created through social interactions and the expectations of future social resources they engender (Putnam, 2000; Williams, 2006). Social capital is embedded in different types of relationship that provide a basis for distinguishing between *bridging and bonding social capital*.

Bridging social capital captures the relationship aspects of outward looking, contact with a broader range of people, a view of oneself as part of a broader community and having a diffuse reciprocity with a broader community (Williams, 2006). According to the definition, bridging social capital consists of many different subdimensions, but it was shown that personal network heterogeneity, which corresponds to contact with a broader range of people subdimensions, captures at least the basic aspect of bridging social capital (Kobayashi, 2010). This type of social capital was thus measured with the Personal network heterogeneity scale (Kobayashi, 2010), which we adapted so that instead of measuring users' potential network heterogeneity in an online community, it measures users' assessment of their actual network heterogeneity, i.e. the extent to which users interact and form relationships with different types of people in the HROSC, which we refer to as *online bridging social capital.*[30]

[30] In the Web survey we also included the measure of *offline bridging social capital*, which was measured similarly to online bridging social capital with a difference in the question diction, in which we asked respondents to assess how often they connect in their everyday life with other people that have, compared to them, different characteristics. We included offline bridging social capital as a control variable in the initial analyses of the studied models, but the preliminary results demonstrated that offline bridging social capital does not have any significant impact on the studied phenomenon of psychological empowerment in HROSCs. In order to reduce the complexity of the models, this variable was excluded from the main data analyses and also the presentation of the measurement instruments.

For *online bridging social capital* we asked respondents to assess on a five-point scale of (1) never to (5) very often how often they connect in the Med.Over.Net HROSC forums with other users who have, compared to them, different: opinions, experiences, values, education, regional background, gender and age.

Table 5.16: Descriptive statistics of online bridging social capital items

How often do you connect in HROSC forums with other users who have, compared to you…	n	μ	σ	skewness	kurtosis
…different opinions?	1290	2.64	1.182	.110	-.891
…different experiences?	1260	2.76	1.210	-.043	-.962
…different values?	1255	2.76	1.200	-.065	-.956
…a different education?	1257	2.98	1.263	-.286	-.967
…a different regional background?	1252	3.01	1.310	-.270	-1.078
…a different gender?	1255	2.92	1.262	-.173	-.993
…a different age?	1246	3.07	1.288	-.372	-.957

Descriptive statistics of online bridging social capital items show that items are likely, with slight deviations, to be normally distributed (Table 5.16). Online bridging social capital items have mean values of around 3.0, which means that users occasionally connect with individuals that have different characteristics than their own and thus have a middle-range heterogeneous network in the HROSC. This is not surprising since it has often been shown that online communities associate like-minded people with similar interests and experiences. According to Kobayashi (2010), perceived heterogeneity of users' online social networks should be used as an index of online bridging social capital. For the purpose of further analysis, we computed one new variable, *online bridging social capital*, as the aggregated average of its items.

Bonding social capital refers to the different types of social support, access to scarce or limited resources and the ability to mobilize solidarity, and relates to the creation of a homogeneous social network (Williams, 2006). Because of its close conceptual resemblance we will measure bonding social capital with the social support concept. However, social support is not only a resource that is accumulated in the HROSC (online) context, but can also be importantly retrieved from offline contexts. Accordingly, we will measure both *online and offline social support*.

Online social support is defined as the cognitive and transactional process in which users of HROSCs initiate, participate in and develop online social interactions or means of online social interactions for the purpose of seeking beneficial outcomes in different aspects of life – in the HROSC context it is most often related to the outcomes in the healthcare status, perceived

health or psychosocial processing ability (LaCoursiere, 2001). We can distinguish between three[31] different types of online social support: (1) *informational social support*, which relates to the exchange of information, advice, guidance and suggestions for coping with health issues or management of health conditions; (2) *emotional social support*, which comprises expressions of empathy, affection, understanding, care and encouragement when dealing with difficult health situations; and (3) companionship or *network social support*, which refers to connecting with others, broadening social networks and accessing new individual, developing relationships by engaging with them in similar activities (Bambina, 2007).

Based on these conceptualizations we measured in this study received online social support on the level of their three types: informational, emotional and network. In the HROSC, users can receive social support from different types of participants, more specifically from both users and moderators. To summarize, we measured: (1) *received informational support from users*; (2) *received informational support from moderators*; (3) *received emotional support from users*; (4) *received emotional support from moderators*; (5) *received network support from users*; and (6) *received network support from moderators*. All these enactments of online social support were measured for the same type of support with similar items, the only difference being indicated by changing diction in the level of receiving different types of online social support and in the level of who was the source of received different types of online social support (user or moderator). Each type of social support was measured with three items, except for the network support, which was measured with one item. In the survey questionnaire, the respondents were asked to assess on a five-point scale of (1) never to (5) very often how often it occurs in the Med.Over.Net HROSC that they receive different types of online social support.

[31] Scholars usually include also a fourth type of social support, i.e. instrumental or tangible support, which refers to the provision of material and/or financial goods and services. This type of social support is rarely present in HROSC settings in its form of concrete and direct assistance, which is why it will not be included in the empirical study of this thesis.

Table 5.17: Descriptive statistics of the online social support items

Items – How often does it happen to you in HROSC forums that you…	n	μ	σ	skewness	kurtosis
Received informational support from users					
…receive health-related information from other users?	1230	2.80	1.074	-.195	-.754
…receive health-related advice from other users?	1203	2.77	1.077	-.138	-.786
…receive answers to your health-related questions from other users?	1205	2.61	1.110	.053	-.871
Received informational support from moderators					
…receive health-related information from moderators?	1185	2.36	1.247	.432	-.981
…receive health-related advice from moderators?	1166	2.41	1.261	.346	-1.061
…receive answers to your health-related questions from moderators?	1160	2.47	1.292	.287	-1.151
Received emotional support from users					
…receive emotional support from other users?	1201	1.97	1.066	.840	-.224
…are consoled by other users' messages?	1203	2.57	1.090	.117	-.715
…receive help from other users and their encouragement to share your feelings?	1198	1.88	1.022	.914	-.047
Received emotional support from moderators					
…receive emotional support from moderators?	1159	1.96	1.112	.902	-.181
…are consoled by moderators' messages?	1164	2.37	1.217	.360	-.971
…receive help from moderators and their encouragement to share your feelings?	1148	1.83	1.058	1.085	.255
Received network support from users					
…have been contacted by another user?	1202	1.50	.901	1.948	3.308
Received network support from moderators					
…have been contacted by a moderator(s) through private messages (or email)?	1195	1.31	.732	2.658	7.145

As received online social support is related to specific activities in the HROSC, it is not expected that the items of online social support would be normally distributed, which is clearly evident from the descriptive statistics in Table 5.17. On average, users of the HROCS most often received informational social support from both other users and moderators, while network online social support on average was obtained from users least often in HROSC forums than in other types of social support (Table 5.17). These results are not surprising, since the main motives for users to participate in the HROSC, according to our qualitative findings, are health-related information seeking and gathering and being a part of opinion exchange in the HROSC forums, which are mainly related to the exchange of informational online social support. For the purpose of further analysis, we computed two new variables that pertain to *received social support from users* and *received social support from moderators*. According to the online social support theory, all three types (informational, emotional and network) of social support have equal importance for the empowerment outcomes (Coulson, 2005; Coulson et al., 2007), although the extent of the effect of each type of social support on empowerment may vary. In order to reduce the number of variables included in the final models, we focus in

this study on distinguishing only between online social support that users received from different actors in HROSCs, i.e. users and moderators. This decision is also based on finding that so far studies have extensively investigated and documented the effects of different types of social support on empowerment processes and outcomes (Coulson et al., 2007; Mo & Coulson, 2010), but little research has been focused on studying the impact of online social support received either from other users in HROSCs or (health professional) moderators. The new variables were computed as aggregated averages of informational, emotional and network social support, which were also obtained by computing an aggregated average of its items.[32] The higher value of the new variables *received online social support from users* and *received online social support from moderators* means that users experience a certain amount of received online social support more often in the HROSC forums.

Received social support is important for users' empowerment outcomes, however it cannot be only limited to the HROSC context. HROSC users can also obtain social support in their offline everyday life and from their personal social networks, which is why we also measured **offline social support**. In the Web survey questionnaire we asked respondents to assess on a five-point scale of (1) never to (5) very often how often they receive from people in their everyday life different types of social support: informational (3 items), emotional (3 items) and network (3 items) social support. The wording of the items measuring these types of social support was composed in a similar way to the items for the received online social support.

Table 5.18: Descriptive statistics of offline social support items

Items – How often do you receive from people that you know in your everyday life…?	n	μ	σ	skewness	kurtosis
Received informational social support					
…health-related information?	1477	3.18	0.786	.136	.089
…health-related advice?	1452	3.00	0.824	.133	-.009
…answers to your health-related questions?	1452	3.46	0.997	-.246	-.636
Received emotional social support					
…emotional support, when you need it?	1444	3.42	1.024	-.174	-.718
…consolation, when you need it?	1442	3.49	0.984	-.230	-.581
…help and encouragement to share your feelings?	1442	3.68	0.920	-.321	-.485
Received network social support					
…companionship, when you want it?	1430	3.58	0.936	-.225	-.450
…conversation, when you need it?	1477	3.18	0.786	.136	.089
…an opportunity to spend free time together?	1452	3.00	0.824	.133	-.009

[32] Since received network social support from users or moderators consists of only one item the average value was not computed and thus the item presented one third of the computed average for the aggregated variables received social support from users and received social support from moderators.

The descriptive statistics of the offline social support items demonstrate that compared to the online social support users on average receive informational, emotional and network social support more often from people in their everyday life (Table 5.18). The items of offline social support types are also, according to their descriptive statistics, likely to be normally distributed, which might also be related to the (lower) quality of this survey question. In the question it was not clearly specified who exactly the people in respondents' everyday life that they should think about are when answering subquestions (items) for specific types of social support. The respondents were perhaps not sure in the survey questionnaire whether they should answer the questions in relation to their loved ones or their acquaintances. This might have led respondents to choose the "neutral" midpoint of the anticipated answer options, which was "3 – sometimes" for these questions measured on the scale of 1 to 5. When respondents in a survey do not have strong feelings about the topic in question or are not completely sure how to answer a question, they are more likely to evade the issue by using midpoints rather than choosing the "Don't know" option (Dolnicar, 2013). For further analyses, we created one new variable, *offline social support*, which was computed as aggregated averages of informational, emotional and network offline social support, which were also obtained by computing an aggregated average of its (three) items. This variable was used in further analyses to control the effect of the social support received from the offline context.

A group-based belief system refers to the degree of order in an organization and to the (minimal) set of rules and (informal and formal) norms (Maton, 1988). It includes an organization's values and culture that specify desired behaviors and outcomes (Maton, 2008). The set of rules specified by a group-based belief system in an organization or community directs members how to achieve individual and organizational/community goals (Peterson & Speer, 2000). In the HROSC context, a group-based belief system relates to the design and enforcement of rules and norms, which include the means to detect, reverse and sanction different forms of misconduct. Norms in an online community can be explicit or implicit. Explicit or formal norms refer to the rules that are "codified in formal documents (FAQs), which lay out the purpose and rules of the online community" (Petrič & Petrovčič, 2014a, p. 439). Implicit or informal norms, on the other hand, are unwritten expectations regarding appropriate behavior in an online community and emerge through interactions between community members (Burnett & Bonnici, 2003). Norms are always accompanied and enacted by sanctions, which have the function of giving an example of which actions are (un)acceptable

in an online community and are the means to punish (or reward) specific behavior. In line with informal and formal norms, informal and formal sanctions also exist. In this study, a group-based belief system, as defined by empowering community setting scholars (Maton, 1988, 2008; Maton & Salem, 1995) and the theory of managing common resources in online communities (Kollock & Smith, 1996), will be related and measured in the HROSC context through users' *perception of informal and formal sanctions* in a specific HROSC forum that they visit most often. Since the HROSC Med.Over.Net includes three different types of forums and around 140 different discussion forum topics, it is the easiest for the respondents to evaluate different organizational characteristics of the HROSC (besides a group-based belief system, opportunity roles structure, leadership and support system) for the forum that they visit the most often in the HROSC.[33]

Formal sanctions refer to various activities usually performed in an online community by moderators and include giving warnings to users, placing special tags on members' profiles, and also more rigorous sanctions such as temporary or permanent disabling of access (banning) to the online community (Burnett & Bonnici, 2003; Petrič & Petrovčič, 2014a). *Informal sanctions* refer to spontaneous reactions to (non)conformity in an online community and they are usually performed by other community users. Petrič and Petrovčič's (2008) scale of perceived formal and informal sanctions in an online community was used to measure these types of sanctions in the studied HROSC. Items of the perceived formal sanctions measure were informed by the qualitative study insights and adapted in a way that they were in line with Med.Over.Net's formal rules and guidelines published in the HROSC. Respondents were asked to evaluate five items (PFS1–PFS5) related to the formal sanctions and five items (PIS1–PIS5) related to the informal sanctions (Table 5.19) in the forum that they visit most often on a five-point scale of (1) strongly disagree to (5) strongly agree, and the "Don't know" option was also a possible answer for the respondents.

In the Web survey the questions related to the formal and informal sanctions, together with other organizational characteristics' measurement instruments, were included in the last part of the questionnaire and were related to the forum that users in the HROSC visit most often.

[33] Before the questions about organizational characteristics in the online survey questionnaire, we asked respondents to write down the name of the forum in Med.Over.Net that they visit in the HROSC most often. More details are also provided in the involvement in the HROSC measurement instrument part at the beginning of this section.

Accordingly, these questions consist of a high number of missing values. On average, questions (items) measuring formal and informal sanctions consist of around 53% of missing values per item, among which on average 19% per item (ranging from around 11% to 32% among items) were related to the "Don't' know" type of missing value. As demonstrated by Dolnicar (2013), when respondents in a survey do not have strong feelings about the topic in question or are not completely sure how to answer a question, they are more likely to choose the "Don't know" option or, when this option is not provided, evade the issue by using midpoints instead of the "Don't know" option. We carefully examined the distribution of "Don't know" answers and compared them with the midpoint "3 – Neither disagree nor agree" answers in relation to the (highly) correlated questions/variables *("How often does it happen to you in HROSC forums that you receive health-related information from other users?"* and *"How often does it happen to you in HROSC forums that you receive health-related information from moderators?"*), demographic variables (gender, age and education) and participation variables (membership length, posting messages). The analysis revealed that the answers of respondents who for formal and informal sanctions items/questions chose the "Don't know" answer and the "3 – Neither disagree nor agree" answer in relation to other variables (correlated questions/variables, demographic and participation variables) are similarly distributed. In order to make sure that no differences exist between respondents who chose the "Don't know" answer and the "3 – Neither disagree nor agree" answer for formal and informal items/questions we conducted a series of independent sample t-tests and compared the means for correlated questions/variables. The t-tests revealed that in most cases there were no differences between the two compared answers. It is very likely that the respondents used the midpoint answer to indicate that they were not completely sure whether specific formal or informal sanctions are present in the forum that they visit most often in the HROSC. In order to slightly minimize the amount of missing values in all formal and informal sanctions items, we recoded "Don't know" answers into a valid value of "3 – Neither disagree nor agree." The recoded items were used in further data analyses.

The descriptive statistics demonstrate that the perceived formal and informal sanction items are likely, with slight deviations, to be normally distributed and are thus appropriate for further analysis. After initial factor analysis we found that the items PFS1 and PIS3 have a low level of communality value (around 0.2). The initial factor analysis also indicated a solution of two factors, where the second factor consisted of these two items (PFS1 and PIS3), which does not

have substantive meaning according to the theory. These results also indicate that the measuring instrument does not include a clear distinction between formal and informal sanctions. The reason behind this might be related to the nature of the online community sanctions that can also be formally conducted in the online community by proficient users and not only moderators. Moreover, interactions in the online community are complex and often include many individuals, with some types of sanctions perhaps not being experienced or perceived by all users in the same way. Both scales together thus do not measure the distinction between formal and informal sanctions in an online community, but more generally perceived negative sanctions in the HROSC forums. Based on this rationale and the results, we omitted items PFS1 and PIS3 from further analysis.

Table 5.19: Descriptive statistics of perceived formal and informal sanctions items

Items	n	μ	σ	skewness	kurtosis
(PFS1) Certain users have the right in the forum to correct or delete messages from other users.	981	2.99	.814	.013	1.123
(PFS2) Moderators in the forum punish or exclude users who do not adhere to the forum rules.	976	3.41	.747	.129	.597
(PFS3) In the forum moderators can change, lock and/or delete a user's message that was not in line with forum rules.	975	3.79	.767	-.081	-.169
(PFS4) In the forum moderators can restrict access or ban users who violate the forum rules.	980	3.70	.762	.055	-.251
(PFS5) In the forum moderators can close the forum topic and prevent users from posting messages.	978	3.73	.779	-.036	-.136
(PIS1) Forum users warn other users about their inappropriate behavior or communication.	984	3.73	.772	-.490	.793
(PIS2) There are certain unwritten rules in the forum.	975	3.85	.821	-.439	.267
(PIS3) Forum users ignore messages that deviate from "forum netiquette."	980	3.08	.820	-.018	.693
(PIS4) A user can embarrass him/herself if he/she behaves or communicates in an inappropriate way in the forum.	984	3.70	.822	-.359	.222
(PIS5) Forum users publicly point out inappropriate behavior by others in the forum, so that it is clear in the future what is and what is not allowed in the forum.	982	3.45	.789	-.122	.418

We conducted principal axis factor analysis with oblique (direct oblimin) rotation on the eight items of perceived formal and informal sanctions. The KMO measure was .87 and verified the sampling adequacy for the analysis, which is well above the acceptable limit of .5 (Hair et al., 1998). BTS was also statistically significant (p=.000) and indicated that the data are suitable for factor analysis. The obtained one factor had eigenvalues greater than Kaiser's criterion of 1 and explained 45.1% of the variance (Table 5.20). The communalities of all items were around or above 0.25. We thus retained one factor that based on the meaning represents

perceived negative sanctions. The Cronbach's alpha also suggests a good internal consistency (α=0.82).

Table 5.20: Factor loadings of perceived negative sanctions items (N=927)

Items	Perceived negative sanctions
(PFS2) Moderators in the forum punish or exclude users who do not adhere to the forum rules.	**.506**
(PFS3) In the forum moderators can change, lock and/or delete a user's message that is not in line with forum rules.	**.734**
(PFS4) In the forum moderators can restrict access or ban users who violate the forum rules.	**.659**
(PFS5) In the forum moderators can close the forum topic and prevent users from posting messages.	**.691**
(PIS1) Forum users warn other users about their inappropriate behavior or communication.	**.614**
(PIS2) There are certain unwritten rules in the forum.	**.606**
(PIS4) A user can embarrass him/herself if he/she behaves or communicates in an inappropriate way in the forum.	**.530**
(PIS5) Forum users publicly point out inappropriate behavior by others in the forum, so that it is clear in the future what is and what is not allowed in the forum.	**.527**
% of variance	**45.1**
α	**0.82**

The new variable *perceived negative sanctions* was computed as an aggregated average of its items that will be used in further analysis. A higher value of the variable means that users perceive negative sanctions to be more extensively experienced in the forum that they visit most often in the HROSC.

An opportunity role structure refers to the presence of multiple rotating roles and encouragement of members to fill a variety of those roles. This gives members an opportunity to take charge of various aspects of group functioning (Maton, 2008; Maton & Salem, 1995; Wilke & Speer, 2011). According to Peterson and Speer (2000), an opportunity role structure more specifically includes the amount, accessibility and arrangement of (formal) positions and roles. In the HROSC context, the opportunity role structure refers to the opportunities of online community (ordinary) members to influence the nature of the community, which can be identified on the level of rule creation and the presence of specific types of monitoring and sanctioning among members. First, the members' rule creation more specifically refers to the concept of *participation in the formation of norms* in an online community. By having an opportunity to co-create norms of an online community that members are a part of, it provides them with a feeling that they can contribute and help design to the online community environment (Kollock & Smith, 1996; Petrič & Petrovčič, 2014a). Second, peer reviewing,

monitoring and sanctioning among members refers to the opportunities for members to provide informal sanctioning of deviant behavior and reward those users who conform to the norms. Here *positive sanctioning* mechanisms play an important role in an online community, which gives members an opportunity to increase their reputation, status and visibility in the online community and thus an opportunity to modify (advance) their role in online community forums (Petrič & Petrovčič, 2014a). Positive sanctioning occurs in social interactions between members and functions as an ability of members to assess other users' messages, report inappropriate behavior, and give feedback in the form of appraisal, gratitude, recognition and appreciation. (Kollock & Smith, 1996; Petrič & Petrovčič, 2008, 2014a).

Both users' *participation in the formation of norms* and *positive sanctioning* were measured on the level of users' perceptions of these online community management mechanisms in the HROSC. The *perceived members' participation in the formation of norms* was measured using the scale developed by Petrič and Petrovčič (2014a), where two items (FN4, FN5), with the help of the qualitative findings in this study, were newly developed and added to the scale. In the survey questionnaire we explicitly noted for the respondents that online community rules refer to unwritten and/or written guidelines for uses, behaviors and communication between users in HROSC forums. Two items were reverse-worded (FN2 and FN5). The respondents were asked to evaluate statements about rules in the HROSC forum that they visit most often on a five-point scale of (1) strongly disagree to (5) strongly agree, and the "Don't' know" option was also available to the respondents.

Similarly to formal and informal sanctions items (measuring a group-based belief system), participation in the formation of norms and perceived positive sanctioning items also included a high number of missing values.[34] We used the same procedure in order to evaluate and compare the respondents' "Don't know" (missing value) answers and midpoint "3 – Neither disagree nor agree" answers. Similarly to the formal and informal sanction items, we also found that in the case of participation in the formation of norms and perceived positive sanctioning there were no extensive differences between the distribution and compared means of the "Don't know" and "3 – Neither disagree nor agree" answers in relation to correlated variables,

[34] On average, participation in the formation of norm items consisted of 58.7% of missing values per item (ranging from 54.0% to 62.1% among items), among which there were on average 26.5% of "Don't know" missing values per item (ranging from 20.9% to 28.7% among items). The positive sanctioning items included on average 46.8% of missing values per item (ranging from 40.5% to 56.0% among items), which consisted of on average 15.8% of missing values of "Don't know" answers (ranging from 9.4% to 18.9% among items).

demographic and participation variables. Accordingly, for the purpose of reducing the number of missing values for all participation in the formation of norms and perceived positive sanctioning items, we recoded "Don't know" answers into a valid value of "3 – Neither disagree nor agree." The recoded items were used in further data analyses.

Table 5.21: Descriptive statistics of participation in formation of norms items

Items	n	μ	σ	skewness	kurtosis
(FN1) The rules of the community are updated on the basis of members' recommendations.	1027	3.42	.738	-.139	.962
(FN2) Forum members do not have a say in decisions about forum rules. (R)	1020	3.02	.675	.244	2.014
(FN3) Forum rules are created and updated on the basis of observing members' activities in the forum.	1016	3.28	.658	.063	1.475
(FN4) As a member of the forum I have an opportunity to participate in the formation of the forum rules.	1017	3.09	.669	-.032	2.024
(FN5) Without considering forum members, moderators decide about the forum rules. (R)	998	2.99	.648	.136	1.993

Based on the inspection of descriptive statistics of participation in the formation of norms items (Table 5.21) we can say that they are likely to be normally distributed and are thus appropriate for further analysis. We proceeded with the EFA. In the initial factor analysis we found that reverse-worded items load on a separate "method factor" (Woods, 2006) and have lower communalities values than other items. Correlation coefficients also showed that the reverse-worded items statistically significantly correlate only between themselves and not with other participation in the formation of norms items. By carefully reviewing the meaning of the reverse-worded items we concluded that they are likely to measure how forum members cooperate with moderators in the creation of norms and whether they are a part of the decision-making process concerning the forum rules. The items' meaning does not include the actual practices and participation in the creation of forum rules, which is why we omitted these two items from further analysis.

Table 5.22: Factor loadings of participation in formation of norms items (N=1009)

Items	Participation in formation of norms
(FN1) The rules of the community are updated on the basis of members' recommendations.	**.673**
(FN3) Forum rules are created and updated on the basis of observing members' activities in the forum.	**.781**
(FN4) As a member of the forum I have an opportunity to participate in the formation of the forum rules.	**.618**
% of variance	**65.0**
α	**0.73**

A principal axis factoring procedure with oblique (direct oblimin) rotation was conducted on three items of participation in the formation of norms. The KMO measure (.67) indicated the required sampling adequacy and BTS was statistically significant (p=.000). The factor analysis revealed that the three items represent one factor that has an eigenvalue greater than 1.0 and explains 65.0% of the variance (Table 5.22). The communalities of the items were around or higher than 0.4 and the Cronbach's alpha (α=.73) indicates acceptable internal consistency. For the purpose of further analysis and tests we computed the new variable *participation in formation of norms* as an aggregated average of its items.

Positive sanctioning was measured using Petrič and Petrovčič's (2008) perceived positive sanctioning scale and two newly developed and added items (PS4 and PS5) that were also informed by the qualitative study findings. Respondents were asked to evaluate statements about positive sanctioning in an HROSC forum that they visit most often on a five-point scale of (1) strongly disagree to (5) strongly agree.

Table 5.23: Descriptive statistics of positive sanctioning items

Items	n	μ	σ	skewness	kurtosis
(PS1) With the appropriate behavior a user can achieve the status of an important member.	1042	3.38	.857	-.210	.579
(PS2) Forum members encourage writing messages that are useful for the entire forum.	1031	3.48	.836	-.444	.644
(PS3) If in the forum someone writes prudently, other members respect him/her.	1026	3.52	.818	-.531	.700
(PS4) If I contribute positively with my messages to the forum, other members give me compliments.	1027	3.22	.811	-.314	1.015
(PS5) Moderators of the forum publicly expose and compliment members if they have acted in a good way in the forum.	1013	3.06	.812	-.262	1.200

By inspecting the descriptive statistics of all items of positive sanctioning (Table 5.23) we demonstrate that they are likely to be normally distributed, which means that we can proceed to further analysis. We proceeded with principal axis factor analysis using oblique (direct oblimin) rotation. The KMO measure was .79 and BTS was statistically significant (p=.000). The items of positive sanctioning based on the factor analysis results represent one factor that has an eigenvalue higher than 1.0 and explains 54.6% of the variance (Table 5.24). All positive sanctioning items have communalities values higher than 0.3. The Cronbach's alpha (α=.78) also indicates an acceptable internal consistency (Table 5.24). The new variable *positive sanctioning* was computed as an aggregated average of its items that will be used in further analysis.

Table 5.24: Factor loadings of the positive sanctioning items (N=927)

Items	Positive sanctioning
(PS1) With the appropriate behavior a user can achieve the status of an important member.	**.615**
(PS2) Forum members encourage writing messages that are useful for the entire forum.	**.759**
(PS3) If in the forum someone writes prudently, other members respect him/her.	**.635**
(PS4) If I contribute positively with my messages to the forum, other members give me compliments.	**.695**
(PS5) Moderators of the forum publicly expose and compliment members if they have acted in a good way in the forum.	**.581**
% of variance	**54.6**
α	**0.79**

Leadership refers to the organization of practices and activities of members by conducting direct and/or indirect influence on a group's functioning (Maton, 1988, 2008). In the HROSC context, leadership relates to the types and styles of moderation, which refers to the management of social interactions among members of the HROSC (Petrič & Petrovčič, 2014a). Two types of moderation can be identified in the HROSC: *content* and *interactive moderation*. *Content moderation* refers to the silent and so-called "background" moderation, which does not include explicit explanations, references or justifications of the moderator's actions, norms or sanctions (Petrič & Petrovčič, 2014a). On the other hand, *interactive moderation* refers to the management of social interaction, in which a moderator has the role of an active discussion catalyzer. Interactive moderation includes explanations, justification of moderators' actions or enactment of sanctions, where two-way communication between members and moderators is encouraged (Petrič & Petrovčič, 2014a).

Interactive and content moderation was measured on the level of HROSC users' perceptions of moderation mechanisms in relation to the discussion forum that they visit in the HROSC most often. Petrič and Petrovčič's (2014a) interactive and content moderation scale was used and supplemented with three additional items that are based on online community moderation literature (Matzat & Rooks, 2014; Wright, 2009) and insights from the qualitative study findings. Respondents were asked to assess on a five-point scale of (1) never to (5) very often how often moderators conduct specific actions related to moderation in the HROSC forum that they visit most often. The same set of eight items (M1–M8) were used for interactive and content moderation, where the lower values of a scale represented perceived content moderation and higher values represented perceived interactive moderation. Four items (M1,

M3, M4 and M8) were reverse-worded. Since the answers "1 – Never" and "Don't know" have almost the same meaning in the case of interactive and content moderation items – meaning that if respondents, for instance, do not know how often in the forum that they visit most often in the HROSC a moderator deletes a forum theme without explanation, it is almost the same as if respondents never perceived such moderation activity from a moderator in a forum – we have, for the purpose of reducing the missing values, recoded the "Don't know" answers into "1 – Never" answers for all interactive and content moderation items. The recoded items were used in further analyses.

Table 5.25: Descriptive statistics of interactive and content moderation items

Items – How often does it happen in the HROSC forum that a moderator…	**n**	**μ**	**σ**	**skewness**	**kurtosis**
(M1) …without explanation deletes a forum theme? (R)	959	1.68	1.036	1.407	0.994
(M2) …publicly warns users about their inappropriate behavior?	964	2.08	1.200	0.623	-0.901
(M3) …without explanation deletes users' messages? (R)	958	1.66	1.022	1.404	0.939
(M4) …without explanation does not publish and confirm users' message in the forum? (R)	963	1.59	0.979	1.592	1.718
(M5) …with messages encourages users to discuss?	956	2.11	1.234	0.625	-0.927
(M6) …publicly warns users that a discussion is not in line with the forum topic?	957	2.08	1.176	0.612	-0.856
(M7) …gives users an opportunity to change their (inappropriate) behavior in the forum?	956	1.76	1.127	1.165	0.062
(M8) …without explanation moves users' messages to another forum theme? (R)	962	1.81	1.133	1.219	0.437

According to the descriptive statistics of the interactive and content moderation items we can conclude that with slight differences the items are likely to be normally distributed (Table 5.25). Since the interactive and content moderation instrument measured the frequency of specific moderation activities in the forum that users most often visit in the HROSC, we have computed, for the purpose of further analysis, a new variable, *interactivity of moderation*, which was calculated as an aggregated average of all eight items (M1–M8). Reverse-worded items were appropriately recoded before the calculation.

A support system refers to the degree of socializing and support exchange opportunities and the development of a sense of community (Maton & Salem, 1995). Based on this definition the support system in HROSCs incorporates the following concepts: *online social support* and *sense of virtual community*.

Online social support conceptually relates to bonding social capital and will thus be empirically examined in this study on the level of users' social resources in the HROSC. A *sense of virtual community*, on the other hand, is defined as "members' feelings of membership, identity, belonging, and attachment to a group that interacts primarily through electronic communication" (Blanchard, 2007, p. 827). The concept has thus far received a lot of attention, especially on the level of developing and validating its measure. Blanchard (2007) was one of the first to adopt the Sense of Community Index (Chavis, Hogge, McMillan, & Wandersman, 1986; McMillan & Chavis, 1986) and developed a measurement instrument for the context of online communities. Because the sense of virtual community dimensions membership, influence, integration and fulfillment of needs and the shared emotional connection conceptually overlap, it has thus far been very hard to verify the different proposed measures for a sense of virtual community (Abfalter et al., 2012; Blanchard, 2007; Koh et al., 2003; Tonteri, Kosonen, Ellonen, & Tarkiainen, 2011). Accordingly, the sense of virtual community was measured in this study by adapting 12 items from the Sense of Community Index (Chavis et al., 1986; McMillan & Chavis, 1986) to the online community context. Four items were reverse-worded (SOVC3, SOVC6, SOVC8 and SOVC11). Respondents were asked to evaluate statements about the HROSC forum that they most often visit on a scale of (1) mostly agree and (0) mostly disagree.

Because the sense of virtual community measure includes nominal types of items, we conducted a principal axis factor analysis using polychoric correlation matrix and oblique (direct oblimin) rotation. The initial analysis showed that reverse-worded items load on the same "method factor" (Woods, 2006) that, based on the inspection of the results, does not have any substantial meaning. The reverse-worded items also have low correlations with other sense of virtual community items. These items also have, together with item SOVC4 "When I see a nickname of a forum member I immediately know who he/she is," low values of KMO measure (<.6) and low communality values (<0.3). Based on these results we omitted all reverse-worded items and item SOVC4 from further analysis.

Table 5.26: Factor loading of sense of virtual community items (N=884)

Items	Sense of virtual community
(SOVC1) I think this group is a good place for me.	**0.85**
(SOVC2) Members of this forum share similar values and opinions.	**0.70**
(SOVC5) I feel at home in this forum.	**0.79**
(SOVC7) I care about what other members of the forum think of me.	**0.44**
(SOVC9) If there is a problem in this forum, all members try to solve it.	**0.66**
(SOVC10) Being a member of this forum means a lot to me.	**0.76**
(SOVC12) I expect to stay in this forum for a long time.	**0.83**
% of variance	**53.0**
α	**0.75**

The KMO measure (KMO=.88) indicated the required sampling adequacy. The factor analysis results showed that the items of the sense of virtual community represent one factor that has an eigenvalue higher than 1.0 and explains 53.0% of the variance (Table 5.26). The Cronbach's alpha of the factor (α=.75) demonstrates acceptable internal consistency. For the purpose of further analysis a new variable, *sense of virtual community*, was computed as an aggregated average of its items.

According to the operationalization and measurement instruments we obtained the following explanatory or independent variables that are used in further analyses: *discussion involvement*, *involvement in community organization and action*, *e-health literacy*, *economic capital*, *online bridging social capital, received online social support from users, received online social support from moderators, perceived negative sanctions, participation in the formation of norms, perceived positive sanctioning*, *interactivity of moderation* and *sense of virtual community*.

Control variables

It is important that the tested models are structured in a way that they include all the relevant variables, which might create "noncausal" relations between explanatory (independent) and dependent variables. We are aware that different forms of resources as well as attitudes may also come from outside of HROSC contexts. Such resources are included on the empirical level as control variables. Based on the findings of previous studies on intrapersonal and

interactional empowerment (in HROSCs), we incorporated the following relevant health-related, participation and demographic variables[35] that were controlled in the tested models:

Health status was measured by one item asking respondents about the current status of their health in general on a five-point scale of (1) very bad to (5) very good This question was adapted from the Generations and Gender Programme (GGP) Survey (Fraboni et al., 2009). On average, respondents have a fair or good health status (μ=3.48, σ=0.901). According to the descriptive statistics, the health status variable is likely to be normally distributed (Table 5.27).

Table 5.27: Descriptive statistics of health and demographic control variables

	n	μ	σ	x̃	min	max	skewness	kurtosis
Health controls								
Health status	1139	3.48	0.901	3.0	1	5	.080	-.413
Participation controls								
Membership length	1490	1.43	0.711	1.0	1	4	1.610	1.865
Posting messages	1368	.616	0.487	1.0	0	1	-.475	-1.777
Demographic controls								
Gender	1137	0.83	0.38	1.0	0	1	-1.713	.935
Age	1130	40.9	12.1	39.0	12	90	.547	.156
Education	1138	3.6	0.88	4.0	1	5	-.727	.660

Membership length was measured by asking respondents to indicate how long they had been users of the Med.Over.Net HROSC on the scale of (1) more than 3 years, (2) 1 to 3 years, (3) less than a year and (4) less than 1 month. On average, users have been members of the HROSC for more than three years (μ=1.43, σ=0.711). **Posting messages** was measured by asking respondents to answer the question as to whether they had ever posted a message in the HROSC forums with (0) No and (1) Yes, where more than half of the respondents had posted at least one message in the HROSC forums (μ=0.616, σ=0.487).

Demographic variables were also controlled in the tested models. Items asked respondents to report their gender (μ=0.83, σ=0.38) and their age (μ=40.9, σ=12.1).[36] Education was measured on a five-point scale that ranged from (1) elementary school or less to (5) MA, MSc, PhD (μ=3.6 [*college, higher or university education*], σ=0.88).

[35] Several other control variables, such as marital status, employment status, chronic condition, income, satisfaction with the healthcare system (in Slovenia) and satisfaction with the HROSC Med.Over.Net, were included at the beginning in the main data analysis. None of these variables have been identified as having an important and statistically significant effect on dependent variables. In order to reduce the complexity of the models, we did not include these variables in the final models and data analysis.

[36] More details about demographic variables and their distribution and frequencies can be found in this chapter in the subsection "Basic demographics of the final sample."

With the operationalization of theoretical concepts we have obtained three dependent variables, 12 independent (explanatory) variables, and seven control variables, which were used in further data analyses (see Table 5.28).

Table 5.28: Dependent, independent and control variables obtained with the operationalization of theoretical concepts

Type of variable	Name of the variable
Dependent variables	Intrapersonal empowerment
	Knowledge of resources
	Resource mobilization for collective action
Independent variables	Discussion involvement
	Involvement in community organization and action
	E-health literacy
	Economic capital
	Online bridging social capital
	Received online social support from users
	Received online social support from moderators
	Perceived positive sanctioning
	Perceived negative sanctions
	Participation in the formation of norms
	Interactivity of moderation
	Sense of virtual community
Control variables	Gender
	Age
	Education
	Health status
	Membership length
	Posting messages
	Offline social support

6. Research results

In this chapter we first present the findings of the qualitative study that explored the main differences and/or similarities of organizational characteristics among HROSC's subcommunities. In the second section of this chapter, we focus on the results of the quantitative study and thus present the main findings of the impact of socio-structural properties in HROSC on users' intrapersonal and interactional empowerment. With the presented results we directly address the research questions and hypotheses of the study that provide us answers to the main aim and objectives of this doctoral dissertation.

6.1 Qualitative study: Differences and/or similarities in organizational characteristics among HROSC subcommunities

The main aim of the qualitative study of the thesis was to explore the main differences and/or similarities in organizational characteristics among HROSC subcommunities, which is directly related to research question RQ2 of the thesis. Based on in-depth semi-structured interviews with users and health professional moderators of the Slovenian HROSC Med.Over.Net and deductive-inductive thematic analysis, we explored how organizational characteristics are perceived by the main actors of the HROSC and which are the main differences and/or similarities in these characteristics among online counseling forums, online support group forums and online socializing forums. These results will provide us with additional insights into the structural properties of the HROSC, which will importantly complement and enrich the results of the quantitative study on the impacts of socio-structural properties on intrapersonal and interactional empowerment. Moreover, the qualitative findings will help us provide explanations, interpretations and contextualization of the quantitative results and thus help us deepen the understanding of how the differences and similarities in organizational characteristics among different HROSC subcommunities in relation to users' different forms of capital and involvement in HROSCs affect users' intrapersonal and interactional empowerment.

Based on the deductive-inductive thematic analysis and our coding procedure that was led by research question RQ2, we identified five themes and their subthemes (see Table 6.1). The

presented results are structured around these main themes and their subthemes. Each of the themes and subthemes is first presented with a basic description, which is followed by presentation of the deeper meanings, as well as associations and relationships of the (sub)themes with other social processes in the HROSC (modes and approaches of participation and involvement in the HROSC, attitudes and exchanges of social support) reported by participants of the study. The results are presented with the emphasis on showing the differences and similarities among different HROSC subcommunities, namely online counseling forums, online support group forums and online socializing forums. Each (sub)theme is presented with representative quotas from the interviews in the following subsections.

Table 6.1: The identified main themes and their subthemes of organizational characteristics of the HROSC

The main themes:	Moderation	Sanctions	Participation in the formation of norms	Positive sanctioning	Sense of virtual community
Subthemes	Content moderation	Formal sanctions		Gratitude	Influence
	Interactive moderation	Informal sanctions		Recognition	Membership
	Expert moderation				
	Absence of moderation				

6.1.1 Moderation

The study participants described their experiences and practices in the HROSC that were related to the different types of moderation, which refers to the different techniques of managing social interactions among online community members. We observed that the study participants identified four types of moderation (subthemes), i.e. *content moderation*, *interactive moderation*, *expert moderation* and *absence of moderation*, in relation to their participation in the HROSC, different types of HROSC forums and perception of the HROSC. Each of the different types of moderation is presented in the following subsections.

Content moderation

Content moderation refers to the practice of applying a set of rules regarding the online community and the management of social interactions among users, which is conducted by formally assigned moderators in HROSCs as well as health professional moderators. This type of moderation does not include any moderators' explanations and justifications of the actions and it is often invisible to the HROSC's ordinary users. Content moderation was most often

mentioned in the interviews by health professional moderators as one of their techniques for managing users' messages. This type of moderation was most often mentioned by the participants of the study in relation to online counseling forums, where users' messages need to be approved by health professional moderators before they are publicly published in the forums of the HROSC. As reported in the interviews, users are aware of this procedure and thus know in advance that inappropriate messages will not get published in the HROSC forums. As described by the study participants, content moderation is closely related to two formal sanctions in the HROSC: *unapproved messages* and *deleted messages*. As reported by health professional moderators, users' messages that include unconstructive criticism, off-topic themes, insults or (everyday) chitchat are inappropriate for online counseling forums and in some cases online support group forums too. With content moderation, health professional moderators prevent conflicts and negative relations among users and keep the culture of the conversation on the appropriate level:

> "Women [users] can be very critical and approach other women with a problem saying "why are you doing this, why are you so stupid, you have a baby and you are so unhappy, but I won't be able to ever have children" and so on. They can be really insulting and such messages just can't be approved to be published publicly." (HPM2, female, aged 55 years)

In many cases content moderation was reported by participants in relation to the provided patients' expertise in online counseling forums and online support group forums. More specifically, when users write messages that do not include the intention to ask questions or directly address the health professional moderators, but are meant as advice, a suggestion or a comment on users' messages, usually in the form of presenting their own experiences of, and solutions for, the health issue, content moderation enacted by health professional moderators can also present a mechanism that prevents the spread of misleading or invalid medical information in the forums: *"If other users' advice is at least a little bit supported by medical knowledge then I approve it, but if there is nonsense written that promises users some magical healing, such messages just can't be approved and publicly published in the forum." (HPM7, male, aged 44 years)*

In the online socializing forums, content moderation is rarely perceived by HROSC users. As described by user participants of the study, the acts of content moderation become visible when users urge moderators to provide an explanation of why their message was deleted or not approved in the forum. Very often such appeals from users in online socializing forums are not

answered by moderators and can present a source of disagreement between users and (discussion) moderators in the HROSC. As user U8 (female, aged 27 years) explained:

> "I think it is quite unfair when moderators move or delete messages, but when you ask them about it, they don't answer. There are messages from other users that are really insulting and are still published in the forums, but when I ask why my forum thread and message have not been published, there is no answer. Is it really that hard to write a short explanation?" (U8, female, aged 27 years)

Interactive moderation

Interactive moderation in comparison to content moderation refers to the explanations and justifications of the moderators' actions and practices of managing social interaction among online community users and applying a set of norms in the HROSC. Most often interactive moderation was mentioned by the participants of the study in relation to the online counseling forums and in the online socializing forums. In the online counseling forums interactive moderation was most extensively discussed by health professional moderators, who explained that interactive moderation is one of the practices they often undertake when they are confronted with users' complex and serious health-related questions, which involves asking for more detail, sometimes clinical investigations, or inquiries using various sources (e.g. books, scientific papers, the Internet). As health professional moderator HPM6 (female, aged 43 years) explained: *"When it comes to more challenging questions that are professionally oriented and perhaps even appear in medicine's gray area, I need more time to gather all the correct information and forward them a response."*

Health professional moderators often use interactive moderation techniques to gain the opportunity to ask users for any additional clarification necessary in preparing informed and helpful replies. The main goal is to address users' needs and possibly solve their health-related issues. HPM4 (female, aged 44 years) explained: *"I often ask them some additional questions, as I feel there is something missing, and in this way I can decrease the number of hypotheses."*

In online socializing forums, interactive moderation has, according to participants of the study, a slightly different function in comparison to online counseling forums. We observed that in these types of forums, as user participants reported, (discussion) moderators explain their actions, and provide argumentation and justification, which also has the function of giving an example of the rules and showing what the consequences of their violation are:

> "In the Parental chat forum a lot of unregistered users also participate and you never know who is who. Some of these users you can recognize according to their writing style, but there are a lot of users. Sometimes it happens that users get into an argument and after the conflict a moderator discloses that there were one or two users who were hiding behind several unregistered nicknames, which were banned because of their behavior." (U8, female, aged 27 years)

As mentioned by users, interactive moderation in online socializing forums is also often started by users themselves when they urge a moderator to intervene in discussions and implement the rules that might solve the conflicts and inappropriate content in the forums. As reported by user U2 (female, aged 41 years): *"Sometimes users think that a specific forum thread should get deleted, because it is offensive. So they open a new forum thread titled 'Attention to the moderator' to get noticed by the moderator."*

While interactive moderation was most often present in online counseling and online socializing forums, health professional moderators of the online support group forums stated that interactive moderation also has the function of encouraging discussions among users and sharing their experiences and patient expertise with other members in the forum:

> "There is an open communication in the discussions and users can share their views and experiences that are very useful for other users as well as me personally. As the moderator of this forum I make sure that the discussions' culture of conversations stays on the appropriate level, where I also try to encourage discussions and share my own personal experiences." (HPM6, female, aged 43 years)

Expert moderation

Expert moderation pertains to the different response strategy practices enacted by health professional moderators in relation to HROSC users' questions. This type of moderation was reported by users and health professional moderators only in relation to online counseling forums and online support group forums, where health professional moderators are actually present in the HROSC. Based on the associations between the approaches and modes of participation of the health professional moderators in the HROSC, as reported by both types of study participants, we identified two expert moderation response strategies for managing relations and interactions in the HROSC: (a) reaction strategy and (b) redirection strategy.

An expert moderation *reaction strategy* is undertaken by health professional moderators in online counseling forums and online support group forums when users ask complex and serious health-related questions, which involves the implementation of expert moderation techniques,

such as providing users with clinical expertise and thus health-related information and knowledge gained from medical training, education and practice. Clinical expertise, as reported by health professional moderators, includes giving advice, (factual) information, explanations, possible solutions and additional resources in regard to symptoms, remedies, therapies, medical procedures, mental states or other health-related concerns. Health professional moderator HPM3 (male, aged 94 years), a cardiologist, commented: *"I always get questions about heart pains and irregular heartbeats. These are the main questions. Then they [users] ask about high and low blood pressure and about unconsciousness, anything that is related to heart conditions."*

The provision of clinical expertise, which is a part of the expert moderation response strategy, is highly valued by the HROSC users and presents one of the most important benefits of the HROSC. With the provided clinical expertise users receive not only informational social support but also often consolation, which increases users' feeling at ease. As user U1 (female, aged 29 years) explained: *"The health professional moderator really calmed me down and gave me all the information I needed. I felt very good and I think that the presence of health professional moderators in the forums is great, as they can give you an accurate answer."*

Within the reaction strategy, health professional moderators often seek cooperation from other health professionals. That cooperation consists of looking for additional advice, comments and ideas, especially in the case of difficult or complex situations that health professional moderators have rarely or never dealt with before (even in their clinical practice). However, such cooperation is usually sought among the moderators' professional colleagues with whom they already collaborate in their daily practice. As HPM3 (male, aged 94 years) explained: *"…the day comes when you have to think 'how can I answer this question?' You can't just say 'it's too hard for me.' Then, of course, I have to call my colleagues, who are therapists, surgeons and specialists in the field."*

The second type of expert moderation response strategy reported by health professional moderators is a *redirection strategy*, which is usually used when health professional moderators receive off-topic questions that are not relevant to their forum topics or even their expertise. The common characteristic of this type of expert moderation strategy is that they redirect the question to more relevant forums. As HPM1 (female, aged 62 years) described: *"If the question*

is from a field that another specialist would be better at, I forward the question to an appropriate forum."

Health professional moderators also often redirect users to visit their assigned personal doctors, especially when they come across ethically questionable situations. Because of insufficient user information in particular, health professional moderators expressed uneasiness at providing a specific answer to users. Instead, they advise them to make appointments with their personal doctors. However, as perceived by health professional moderators, users are keen to receive straight answers and are usually not satisfied with vague advice or redirections to their doctors:

> "Sometimes users are not prepared to discuss personal things on this type of forum. In these circumstances, it makes sense to tell them to see their doctors and discuss it with them. This response might look like laziness – like you don't want to answer them – but it's not. Sometimes answers on specific questions are just too complicated …" (HPM1, female, aged 62 years)

However, health professional moderators are at the same time aware of the importance of providing users with emotional support, especially after clinical visits with their assigned personal doctors or during waiting periods in between encounters with their doctors. As HPM7 (male, aged 44 years)commented: *"I think that most users are just worried and looking for some kind of consolation, and especially when in face-to-face situations with their doctors, they forget or are afraid to ask questions."*

When using the redirection strategy to manage interactions with users, health professional moderators do not seek cooperation from other health professional moderators involved in the HROSC. Indeed, cooperation among health professional moderators engaged in the HROSC is, as they explained, very rare. Within the HROSC, the expert moderators usually only indirectly interact with each other when they redirect users' questions to other health professional moderators' forums or by reading each other's posts and answers. As HPM2 (female, aged 55 years) explained: *"...sometimes I check forums in the field of mental health, to see who is a moderator and how he/she answers users, what kind of communication they have, as I come from a similar field and I want to see how they reply to users…"*

Absence of moderation

The absence of moderation was mentioned most often by the participants of the study in relation to the online support group forums, when they perceived that no moderation practices

were enacted in the forums either by discussion moderators or health professional moderators. The feeling that there is no moderation present in a specific HROSC forum was most often perceived by users as very negative, since especially in the online support group forums where users exchange very sensitive and intimate information and experiences, guidance and steering of discussions was desirable: *"Some of the messages were very negative and insulting, even aggressive, but nothing happened. This was strange for me, because on the forum it is written 'this forum is moderated by this and that person,' but still nothing happened." (U4, female, aged 46 years)*

In the online support group forums the absence of moderation was also related to the proliferation of unrelated information, off-topic discussions and overload of health-related information, which were perceived by users as one of the disadvantages of the HROSC: *"This forum is just too extensive. In my opinion moderators should carefully watch over the content that is published in the forum. There are just too many messages, just too many unrelated debates and too much information." (U5, female, aged 35 years)*

While the absence of moderation was most often mentioned by participants in relation to the online support group forums, the nonattendance of moderators was also perceived by some users and health professional moderators in online socializing forums, where it was most often related to an increase in conflicts, insults and unkindness among HROSC users. As one health professional moderator and one user commented:

> "There are just too many unmoderated forum topics that consist of insulting and unnecessary messages." (HPM7, male, aged 44 years)

> "In the Parental chat there are some comments by users that sometimes you really don't know if it would be better to just close the computer and go away or to read further. It is very clear that these massages are not moderated and just consist of insults, fights and rivalry between users." (U8, female, aged 27 years)

6.1.2 Sanctions

Participants of the study described various consequences of noncompliance with the HROSC norms. These consequences in the form of sanctions were related to the violation of explicit and implicit norms in the HROSC and were perceived, as reported by users and health professionals, as different forms of disapproval of users' behavior in the HROSC and its

subcommunities. Two subthemes were identified, i.e. *formal sanctions* and *informal sanctions*. A detailed description of both these subthemes is presented in the following subsections.

Formal sanctions

Formal sanctions refer to means to enact formal norms and rules in the HROSC and are usually applied by health professional moderators, discussion moderators, administrators or online community managers. We found that both users and health professional moderators described three different formal sanctions, i.e. *blocking users*, *unapproved messages* and *deleted messages*, which were enacted by moderators when users disregarded or violated formal norms of the HROSC.

The formal sanction of *blocking users* was most often related by study participants to the online socializing forums, where users that provoke and seek inappropriate attention by trolling, and posting inflammatory and aggressive messages, get blocked from the HROSC's forums. As user U2 (female, aged 41 years) explained: *"In the Parental chat one of the users was really problematic. I think she was one of the provocateurs. She logged in and then logged off and wrote as anonymous users, they often do that. But we know and she got blocked from the forums."*

One of the formal sanctions also pertains to the *unapproved messages* that were most often reported by users and health professional moderators in relation to the online counseling forums and online support group forums. As we have already described in the section on the moderation theme, the formal sanction of *unapproved messages* is the most common sanction enacted with content moderation practices by health professional moderators and presents one of the mechanisms for controlling the quality and validity of information and advice provided in users' messages that are intended for other users in online counseling forums or online support group forums. Users' messages that include inappropriate content, such as disrespectful and offensive communication, do not get approved and publicly published in the forums either, as reported by health professional moderators:

> "As moderators we have the right to intervene and to unapprove messages that contain insults and hurtful content. It is our duty and responsibility to do that, because there is no point in additionally troubling a person in distress. This person came in the forum to seek help and not to be reminded about what a mistake he/she made." (HPM5, female, aged 56 years)

Half of the participants also described deleted messages as one of the formal sanctions enacted by (health professional) moderators and this was most often mentioned in relation to the online socializing forums and online counseling forums. In the HROSC forum, according to participants, users' messages were most commonly deleted if they included insulting and unkind content that disturbed the communication in the forums. Deleting messages was also one of the content moderation practices of health professional moderators, where they had to decide where the line is between constructive and unconstructive user comments:

> "Some comments were simply deleted. Of course we don't want to have users' messages that are only positive. When a person has a problem there is usually not only one way to solve it and it is good that through other users' messages a person in need can see that there are also other options and possibilities. Some users who write about their problems often want to hear that they are victims and that other people are to blame for their problems. Other users' comments can be very helpful in this process, as with slightly more critical messages they can show this person that they are not the victims or they shouldn't treat themselves as such. In this sense, other users' comments are good, but there is a point when as a moderator I have to decide if a comment is insulting, which is often when users write about a person and not about their behavior and attitude. For instance, they write "you are stupid" or you are this and that. In thiese cases we just delete the messages." (HPM2, female, aged 55 years)

The deletion of inappropriate user messages was also reported by many user participants as a practice that they expect from health professional moderators and other moderators and thus a sanction that needs to be implemented to provide an optimal communication dynamic in the HROSC: *"Some users are just awfully bored and they can't wait to provoke someone and to get the attention they want. I expect the moderators to delete messages that are not only stupid but also dangerous. We just can't have messages with hateful content." (U3, male, aged 50 years)*

Informal sanctions

In comparison to the formal sanctions, based on the participants' descriptions, informal sanctions refer to the disapproval of users' behavior and actions in the HROSC that is expressed by other online community users. Some of the disapprovals were related to the violation of the formal norms in the HROSC, but in most cases users talked about noncompliance with the informal norms in the forums, such as using inappropriate language, the extensiveness of complaining included in the messages and unnecessary attention seeking. Although informal

sanctions can also be positive, in this theme user participants in particular most often described negative informal sanctions, including: *ignorance*, *insults*, *unkindness* and *warnings*.

Ignorance as a form of informal sanction was most often reported by user participants in relation to the online socializing forums and online support group forums, where it is also more likely that users will post unserious and deceptive messages that only seek attention from other users, which is perceived by users of the HROSC as inappropriate. In particular, messages related to health issues that were perceived as insincere were often sanctioned by ignorance:

> "Often I could answer a question in another user's message, but I don't. If the message is strangely written, if it seems irrelevant, I won't waste my time providing answers to someone who didn't bother to write it properly and the message seems unserious or the writer wants to provoke with it. If a user doesn't make an effort to write the message properly then he/she can only dream about my answer." (U3, male, aged 50 years)

Although *insults and unkindness* are one of the practices in the HROSC that often get formally sanctioned by moderators in the forums, they also represent one of the mechanisms of the informal sanctions among the HROSC's users. The informal sanction of insults and unkindness was mostly mentioned in relation to the online socializing forums. With insults and unkindness users express to other online community members that they do not approve of their actions and behavior and thus show them that practices such as inappropriate use of language skills and culture are not welcome in the forums:

> "If users want to receive an answer to their question there is a norm to write the message in a way that it has a proper beginning and an end. Their messages have to be at least a little bit grammatically correct. Otherwise they will receive very negative comments, but no answer." (U6, female, aged 47 years)

Some of the user participants also commented that informal norms and sanctions vary among different forums in the HROSC. For instance, in the online support group forums, users' seriousness of health issues could be one of the reasons for informal sanctioning that often include insults and unkindness in users' messages that can often be a source of conflict among the forum members, especiallyamong the newcomers and regular members:

> "When someone [new user] comes to the [infertility] forum and explains that they have been trying with their partner [to conceive] for three months and nothing has happened yet, they will probably receive a response such as "look, we have been trying for ten years and we are still working on it, so please don't be all smart by selling me your sad story, because three months is nothing compared to ten years." (U1, female, aged 29 years)

Giving *warnings* to users, especially in the online socializing forums, has also been mentioned by user participants as one of the methods of informal sanctioning that is often used for preventing further inappropriate behavior in the forum or even to end conflicts among members of the forum. Warnings have been reported as an especially effective mechanism for informally sanctioning other users if they are enacted by influential users in the HROSC forum: *"Often I write something to users that are fighting about some issue and after my intervention the fighting stops, because they don't want me to hold a grudge against them." (U3, male, aged 50 years)*

6.1.3 Participation in the formation of norms

The theme participation in the formation of norms emerged around mainly users' descriptions of users' participation in proposing rules and actions in the HROSC forums, in most cases pertaining to the online socializing forums and online support group forums. In these types of forums users felt that they can have more influence than in online counseling forums, where the organization and dynamic of the forums is left to health professional moderators' decisions. Participation in the formation of norms was described as writing proposals to online community moderators and managers, when they noticed that a specific function or group dynamic in the forums could be mended and improved communication among the members could be provided in the forum. As user U8 (female, aged 27 years) explained:

> "There was this moderator [name of the moderator] who used to approve the messages in the forum. She was absent for a while and although we [users] wrote messages, none of them got published. There were no user messages for two or three months and we all knew that we had written them. They changed this after I wrote to the community managers about the problem and they fixed it. Now you can post messages without the moderator's approval."

However, the practice of participating in the formation of norms was not extensively reported by user participants of the study. It is a specific task only undertaken by very active users that often, besides health-related motives, also have an interest in obtaining a specific role in the HROSC forums and in becoming recognized by other forum members as an influential member that other users can turn to when in need. In the online socializing forums and online support group forums in particular, the thought of becoming somebody that other users can rely on in the forum was perceived by user participants as also being very beneficial for themselves personally: *"They [other users] also wrote me in private messages and asked about specific*

topics and I must say I feel very good about it, because this means that they trust me when they have a problem." (U1, female, aged 29 years)

6.1.4 Positive sanctioning

Based on the participants' descriptions, positive sanctioning refers to the informal expression of *gratitude* and *recognition* among HROSC users and health professional moderators that is disclosed in their social interactions and communication in the HROSC forums. The subthemes *gratitude* and *recognition* are described in the following subsections.

Gratitude

Gratitude was described by the participants of the study as expressed thankfulness and gratefulness for the provided social support and was mentioned in relation to all types of forums in the HROSC, predominantly the online counseling forums and online support group forums. Health professional moderators reported having received gratitude from HROSC users for their work and the informational social support and clinical expertise they provided in the online counseling forums or online support group forums: *"For me, it is also a pleasure, many times I have received such positive feedback, people thanked me and that meant everything to me..." (HPM1, female, aged 62 years)*

On the other hand, users that have participated in the HROSC for a longer period of time noted that the help they received for health problems from the health professional moderators encouraged them to provide similar help to other users, thereby giving back to the HROSC. In some cases, the users also reported that helping other users was part of their obligation of being an HROSC member:

> "This became a habit of mine and it feels appropriate for me to help others that I can in counseling forums, because, one day, when I needed help, the health professional moderators helped me, and back then I couldn't give them anything in return. This means that I received something from someone; now, others receive something from me." (U3, male, aged 50 years)

The provision of social support, mostly in the form of sharing patient expertise in the online support group forums and everyday expertise in online socializing forums, was very often rewarded and appreciated by other users that had health-related or other issues. As user U4 (female, aged 46 years) explained in relation to her participation and helping other users in the cancer online support group forum in the HROSC: *"They [users] were so grateful, very*

grateful. I saw how it worked when I was in their situation [just diagnosed] and other users that had the experience helped me. Now I help others and we exchange experiences and it feels good."

Recognition

We saw that an important part of the positive sanctioning theme was the recognition that users and health professional moderators received for their help and contribution to the HROSC. As reported by participants of the study, they perceived received recognition as an acknowledgement of their validity and worth, as expressed admiration and respect for their work, participation and help provided to users of the HROSC. Perceived recognition was experienced by both users and health professional moderators, with users mostly expressing it in relation to their participation in the online socializing forums and health professional moderators in relation to their participation in the online counseling forums.

Users participating in the online socializing forums reported that through active participation, writing answers to other users' questions, helping them and expressing their own opinions and interests under one registered nickname, users can gain recognition, improve their status in the forums and receive positive feedback from other users. As user U3 (male, aged 50 years) explained: *"Through writing and commenting in the forums I build, mmm, some sort of, what can I call it, mmm, some sort of virtual personality and recognition that other members get the feeling that what I wrote has some sort of value."* User U6 (female, aged 47 years) also commented: *"If you write good comments, other users recognize that and I was told that they like what I write in the forums."*

Several health professional moderators reported increased feelings of professional recognition and respect: *"You can meet a lot of people, and I don't only mean the users, but also others who are present, you know someone who invites you to write an article, which means that in some way we gain recognition." (HPM7, male, aged 44 years)*

Such professional recognition also serves as confirmation of their professional credibility, which in their opinion contributes to building trust with the HROSC users:

> "Um, many people have a feeling that if something is on the Internet then it is more credible and if someone writes on the Internet then it means that he/she is serious about it. We can't afford to write just anything to

someone publicly online, so if someone is as publicly exposed as we are, he/she must be trustworthy." (HPM4, female, aged 44 years)

6.1.5 Sense of virtual community

A sense of virtual community refers to the expressed feelings of belonging to the community, attachment to the HROSC, and based on participants' descriptions included two subthemes: *influence* and *membership*. Both subthemes are presented in the following subsections.

Influence

The majority of users and health professional moderators reported experiencing feelings of mattering, an increased sense of personal relevance in the HROSC, as well as the importance and meaning that the HROSC and its members have for them. This feeling has developed for the health professional moderators in relation to their participation in the online counseling forums and online support group forums. The health professional moderators noted that their moderating role brought them increased feelings of mattering and self-worth. Due to the opportunity to help users in the HROSC and "give back to society," they experienced an improved sense of their own value as a person, as well as increased self-respect, self-esteem, self-development and self-realization:

"I gained confidence, confidence in my writing, in my public appearance, and of course in my practices, therapies. I see now that I am maybe more relaxed, a little bit more soft, and also social… I feel fine about it. I feel good about it. I truly think that I'm doing something I couldn't say no to. It doesn't have a financial worth, but I gain so much from it. This is my contribution to society." (HPM5, female, aged 56 years)

On the other hand, users mostly reported experiencing a sense of influence in relation to their participation in the online support group forums. This feeling has not been expressed by users in relation to their participation in the online counseling forums or online socializing forums. For users who have chronic health conditions in particular, the HROSC, online support group forums and received social support have, as reported by the majority of users, an important impact on them personally and their understanding of health issues: *"The forums are very important for me. I found so much useful information for my health condition and I will probably find even more information in the future. I would say that the forums are really important, because I could find answers to my [health-related] questions." (U5, female, aged 35 years)*

Membership

Membership was described by users and health professional moderators as a developed feeling of belonging and personal relatedness to the HROSC. Health professional moderators, because of their involvement in the online counseling forums and online support group forums, have discussed the feeling of belonging in relation to these types of forums. Several health professional moderators also noted that through their participation in the HROSC they have developed a feeling of belonging and a sense of connectedness with others in the HROSC:

> "I'm a family member there (laughter), it is a little bit different, but I'm a part of it and it is a part of me… I need to say that I feel a part of a team… I must say that it would be difficult for me to give up Med.Over.Net, I'm almost emotionally attached (laughter)." (U4, female, aged 44 years)

Users, on the other hand, reported that their participation in the online counseling forums, online support group forums and online socializing forums, and interacting with users and health professional moderators over time, have led to the development of feelings of belonging, a shared sense of personal relatedness, emotional connection and commitment to the HROSC: *"Med.Over.Net is a part of my life. I'm there every day, I read posts and I respect certain health professional moderators very highly. Some of them I have also met personally. I feel part of a big family." (U1, female, aged 29 years)*

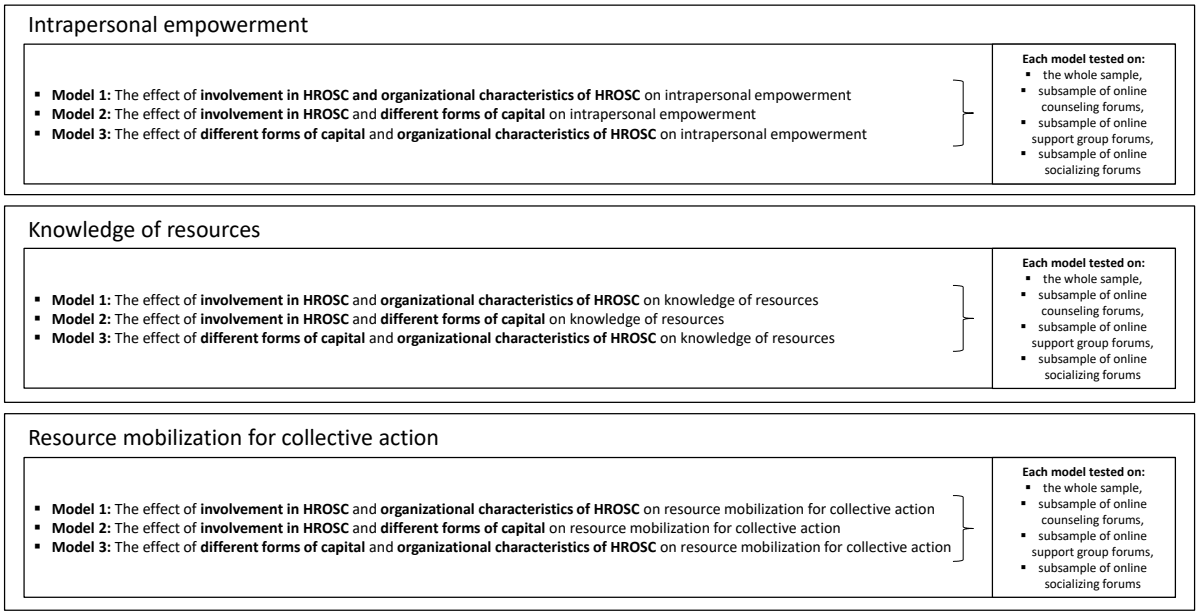
6.2 Quantitative study: The impacts of socio-structural properties of HROSCs on users' psychological empowerment

The results of the quantitative study, which is based on Web survey data collected among Med.Over.Net users and hierarchical ordinary least squares multiple regression analysis, will give us answers to research questions (RQ1, its subquestions, and RQ3) and hypotheses (H1.1–H1.3 and H2.1–H2.3) that overall pertain to the investigation of the impact of socio-structural properties of HROSCs on intrapersonal and interactional empowerment.

One of the important research objectives of this thesis was to investigate the differences among HROSC subcommunities (RQ3), namely online counseling forums, online support groups forums and socializing forums, and how these differences are related to intrapersonal and interactional empowerment. Accordingly, the analyses were conducted not only on the whole sample but also separately on subsamples of different types of HROSC forums.

To investigate the association between socio-structural properties and intrapersonal and dimensions of interactional empowerment, i.e. knowledge of resources and resource mobilization for collective action, we tested three different groups of models for each dependent variable (see Figure 6.1).

Figure 6.1: Visual presentation of the three groups of tested models for each dependent variable



For each dependent variable (intrapersonal empowerment, knowledge of resources and resource mobilization for collection action) we tested first the model that analyzed the effect of involvement in HROSC and organizational characteristics of HROSC. In the second model we analyzed the effect on involvement in HROSC and users' different forms of capital for each dependent variable. Finally, in the third model we analyzed the effect of users' different forms of capital and organizational characteristics of the HROSC on each dependent variable. Each of the models analyzed for three different dependent variables was tested first on the whole sample and then three regression analyses were also conducted on the subsamples of different HROSC forum types (online counseling forums, online support group forums and online socializing forums). Accordingly, 12 hierarchical regression analyses were conducted for each dependent variable (see Figure 6.1). This quite extensive set of models and regression analyses were used and tested because analyzing only one model for each dependent variable would result in the inclusion of a large number of predictors and their interaction effects, which might lead to a problem of overfitting the model and issues of multicollinearity among the predictors.

Before each regression analysis we examined the multicollinearity among predictors. As we demonstrate in the next section, independent variables are to some extent correlated among each other; however, based on the collinearity tests, we determined that in every regression analysis for predictors almost every tolerance statistic was above 0.4 and the VIF was under 2.0. In order to reduce the complexity of the tested models we present only the statistically significant interaction effects of independent variables on dependent variables. In the further presentation of the findings of regression analyses, in order to minimize the complexity of the presented results we have included only the standardized regression coefficients and the level of statistical significance from step three of the hierarchical regression analyses.[37]

In the following sections, we first present the descriptive statistics and correlations of variables included in the models. Next, we present the results of data analyses of models examining the effects of socio-structural properties of HROSCs – i.e. organizational characteristics, and different forms of capital and involvement in an online community – on intrapersonal empowerment, which is followed by the results of the models for interactional empowerment dimensions, knowledge of resources and resource mobilization for collective action. In the last section, we address model uncertainty, which is known as Bayesian Model Averaging (BMA), on the case of one tested regression model and compare the subset selection of predictor variables between the results of the full model (including all proposed predictor variables) and the reduced and parsimonious model (including only the significant predictor variables). With this analysis, we test the strength of models and show that although the tested regression models are complex and include a large set of predictor variables, the results are stable and yield similar findings as the parsimonious models.

Since the presentation of the results includes quite a lot of analyses and models, the following Table 6.2 can serve as an overview of all models in relation to the research questions and hypotheses with the intention of providing an easier orientation for the reader:

[37] Other coefficients and reports of the analyses can be upon request obtained from the author of this dissertation.

Table 6.2: A list of research questions and hypotheses with corresponding subsection numbers and tables that present the results of the particular analysis

Research question/ Hypothesis	Predictors	Dependent variable	Subsection	Table
RQ1.1	Involvement in HROSC; Organizational characteristics of HROSC	Intrapersonal empowerment	6.2.2 Socio-structural properties and intrapersonal empowerment	**Table 6.5**
RQ1.2	Involvement in HROSC; Organizational characteristics of HROSC	Interactional empowerment	6.2.3 Socio-structural properties and knowledge of resources; 6.2.4 Socio-structural properties and resource mobilization for collective action	**Table 6.8; Table 6.11**
RQ1.3	Involvement in HROSC; Different forms of capital	Intrapersonal empowerment	6.2.2 Socio-structural properties and intrapersonal empowerment	**Table 6.6**
RQ1.4	Involvement in HROSC; Different forms of capital	Interactional empowerment	6.2.3 Socio-structural properties and knowledge of resources; 6.2.4 Socio-structural properties and resource mobilization for collective action	**Table 6.9; Table 6.12**
RQ1.5	Different forms of capital; Organizational characteristics of HROSC	Intrapersonal empowerment	6.2.2 Socio-structural properties and intrapersonal empowerment	**Table 6.7**
RQ1.6	Different forms of capital; Organizational characteristics of HROSC	Interactional empowerment	6.2.3 Socio-structural properties and knowledge of resources; 6.2.4 Socio-structural properties and resource mobilization for collective action	**Table 6.10; Table 6.13**
H1.2	Involvement in HROSC	Intrapersonal empowerment	6.2.2 Socio-structural properties and intrapersonal empowerment	**Table 6.5; Table 6.6**
H1.2	Different forms of capital	Intrapersonal empowerment	6.2.2 Socio-structural properties and intrapersonal empowerment	**Table 6.7**
H1.3	Organizational characteristics of HROSC	Intrapersonal empowerment	6.2.2 Socio-structural properties and intrapersonal empowerment	**Table 6.5; Table 6.7**
H2.1	Involvement in HROSC	Interactional empowerment	6.2.3 Socio-structural properties and knowledge of resources; 6.2.4 Socio-structural properties and resource mobilization for collective action	**Table 6.8; Table 6.9; Table 6.11; Table 6.12**
H2.2	Different forms of capital	Interactional empowerment	6.2.3 Socio-structural properties and knowledge of resources; 6.2.4 Socio-structural properties and resource mobilization for collective action	**Table 6.10; Table 6.13**
H2.3	Organizational characteristics of HROSC	Interactional empowerment	6.2.3 Socio-structural properties and knowledge of resources; 6.2.4 Socio-structural properties and resource mobilization for collective action	**Table 6.8; Table 6.10; Table 6.11; Table 6.13**
RQ3	Differences among the socio-structural properties among subsamples of different types of HROSC forums	Intrapersonal and interactional empowerment	6.2.2 Socio-structural properties and intrapersonal empowerment; 6.2.3 Socio-structural properties and knowledge of resources; 6.2.4 Socio-structural properties and resource mobilization for collective action	**All tables in subsections 6.2.2–6.2.4**

6.2.1 Descriptive statistics and correlations of variables in the models

Based on the descriptive statistics of variables in the models for the whole sample (see Table 6.3) we can see that among the psychological empowerment dimensions, intrapersonal empowerment is on average most developed among the respondents (μ=3.51, σ=0.548). There is also above-average presence of knowledge of resources (μ=3.47, σ=0.691), while resource mobilization for collective action has been at least perceived by HROSC users (μ=2.82, σ=0.894). Among the independent variables, both discussion involvement (μ=1.50, σ=0.622) and involvement in community organization and action (μ=1.17, σ=0.410) follow the power law distribution, meaning that on average users have seldom been involved in different HROSC activities. This is not surprising since in online communities highly active users are often in the minority, while users that participate and are involved in online community activities less often or even never represent the majority of users. Among different forms of capital and mean values, the ones predominantly perceived by the respondents are e-health literacy (μ=3.77, σ=0.495) and economic capital (μ=3.64, σ=1.144), followed by online bridging social capital (μ=2.87, σ=1.148). Received online social support from users (μ=2.12, σ=0.734) and online social support from moderators (μ=1.93, σ=0.768) are on average present to a lesser extent. Descriptive statistics of organizational characteristics variables demonstrate that perceived negative sanctions is on average according to the respondents most perceived in the HROSC (μ=3.68, σ=0.524) and is followed by perceived positive sanctioning (μ=3.33, σ=0.612). Participation in the formation of norms (μ=3.27, σ=0.554) and interactivity of moderation (μ=3.17, σ=0.416) are also perceived as being above average by HROSC users. HROSC users that participated in the study also have on average a highly developed sense of virtual community (μ=0.72, σ=0.274). Among the respondents, 83% were females (μ=0.83, σ=0.380) and on average users were 41 years old (μ=40.9, σ=12.11). On average, the study participants had at least a college degree (μ=3.55, σ=0.880) and good health status (μ=3.48, σ=0.901) and had been members of the HROSC for more than three years (μ=1.43, σ=0.711). More than half of the respondents had posted at least one message in the HROSC forums (μ=0.62, σ=0.487). The respondents of the study also had an above-average presence of received offline social support (μ=3.42, σ=0.674).

Table 6.3: Descriptive statistics of variables in the models for the whole sample and for each HROSC's forum type subsamples

Type	Variable	Whole sample		Online counseling forums		Online support group forums		Online socializing forums		Scale
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Dependent	Intrapersonal empowerment	3.51	0.548	3.5	0.567	3.54	0.478	3.56	0.515	1–5
	Knowledge of resources	3.47	0.691	3.50	0.696	3.60	0.585	3.45	0.688	1–5
	Resource mobilization for collective action	2.82	0.894	2.84	0.907	2.89	0.818	2.78	0.901	1–5
Independent	Discussion involvement	1.50	0.622	**1.44**[a,b]	0.577	**1.63**[a]	0.674	**1.61**[b]	0.651	1–5
	Involvement in community organization and action	1.17	0.410	1.15	0.378	1.25	0.519	1.19	0.399	1–5
	E-health literacy	3.77	0.495	3.83	0.487	3.84	0.419	3.78	0.465	1–5
	Economic capital	3.64	1.144	3.66	1.125	3.54	1.106	3.76	1.147	1–6
	Online bridging social capital	2.87	1.148	2.85	1.114	2.79	1.045	3.04	1.220	1–5
	Online social support – users	2.12	0.734	**2.09**[a]	0.722	**2.32**[a,b]	0.781	**2.12**[b]	0.691	1–5
	Online social support – moderators	1.93	0.768	**2.03**[a]	0.807	**2.11**[b]	0.868	**1.80**[a,b]	0.721	1–5
	Perceived positive sanctioning	3.33	0.612	3.34	0.597	3.32	0.576	3.32	0.622	1–5
	Perceived negative sanctions	3.68	0.524	**3.62**[a]	0.493	**3.62**[b]	0.499	**3.80**[a,b]	0.529	1–5
	Participation in formation in norms	3.27	0.554	3.31	0.490	3.29	0.479	3.22	0.623	1–5
	Interactivity of moderation	3.17	0.416	**3.22**[a]	0.367	**3.24**[b]	0.407	**3.16**[a,b]	0.472	1–5
	Sense of virtual community	0.72	0.274	**0.74**[a]	0.269	**0.77**[b]	0.242	**0.68**[a,b]	0.280	0–1
Control	Gender (0=male, 1=female)	0.83	0.380	**0.86**[a]	0.351	**0.91**[b]	0.288	**0.80**[a,b]	0.405	0–1
	Age	40.9	12.11	**39.8**[a]	12.72	**37.6**[b]	9.718	**42.0**[a,b]	10.99	12–90
	Education	3.55	0.880	3.66	0.820	3.55	0.817	3.55	0.868	1–5
	Health status	3.48	0.901	3.46	0.898	3.54	0.899	3.53	0.883	1–5
	Membership length	1.43	0.711	1.38	0.650	1.43	0.684	1.32	0.624	1–4
	Posting messages (0=No, 1=Yes)	0.62	0.487	0.62	0.485	0.71	0.458	0.68	0.466	0–1
	Offline social support	3.42	0.674	3.45	0.678	3.47	0.694	3.41	0.635	1–5

[a] Type of HROSC forum has statistically different mean value ($p<.05$) of the corresponding variable in comparison to the mean value of the other types of forum with the same superscript.
[b] Type of HROSC forum has statistically different mean value ($p<.05$) of the corresponding variable in comparison to the mean value of the other types of forum with the same superscript.

Based on descriptive analysis of variables on separate subsamples of different types of HROSC forums (see Table 6.3), there are not many differences in mean values in the subsamples in comparison to the whole sample. In order to examine whether there are statistically significant differences in mean values between the groups, we conducted a series of one-way ANOVA tests with Tukey's post hoc multiple comparisons test.[38] Among the dependent variables no

[38] In the cases of nominal variables (gender and posting messages) we conducted a series of independent sample t-tests and in the case of ordinal variables (education and health status) we conducted the Kruskal-Wallis H test. In ANOVA with interval variables when Levene's test of homogeneity of variances was violated (discussion involvement, involvement in community organization and action, online bridging social capital, participation in

statistically significant differences were found among the different types of HROSC forum subsamples, although knowledge of resources is slightly higher among respondents that are most frequently involved in online support group forums (μ=3.60, σ=0.585). Among the three different types of forum subsamples, the average discussion involvement of users involved most often in online counseling forums, compared to respondents involved in online support group forums and online socializing forums, is statistically significantly the lowest (μ=1.44, σ=0.577). Received online social support from users, compared to online counseling forums and online socializing forums, is statistically significantly the highest in online support group forums (μ=2.32, σ=0.781). Received online social support from moderators is, however, compared to online counseling forums and online support group forums, statistically significantly the lowest in online socializing forums (μ=1.80, σ=0.721). Respondents who are most often involved in the HROSC in online socializing forums, compared to respondents that are more frequently involved in online counseling forums and online support group forums, have on average a statistically significantly higher level of perceived negative sanctions (μ=3.80, σ=0.529), a lower level of perceived interactivity of moderation (μ=3.16, σ=0.472) and a lower level of a sense of virtual community (μ=0.68, σ=0.780). Compared to the subsamples of online counseling forums and online support group forums, the subsample of respondents involved most often in online socializing forums consists of users that are on average older (μ=42.0, σ=10.99) and has a lower percentage of female users (μ=0.80, σ=0.405), although women still present the majority of participants in all three subsamples.

the formation of norms, age and membership length), Tukey's post hoc test was substituted by the Games-Howell test, which does not assume equal variances among groups.

Table 6.4: Correlations between dependent and independent variables in the models (whole sample data)

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Intrapersonal empowerment															
2	Knowledge of resources	.289**														
3	Resource mobilization for collective action	.042	.347**													
4	Discussion involvement	–.022	.091**	.276**												
5	Involvement in com. org. and action	–.001	.042	.219**	.585**											
6	E-health literacy	.451**	.312**	.084**	.067*	–.058										
7	Economic capital	.175**	.067*	–.080*	–.007	–.024	.119**									
8	Online bridging social capital	.000	.128**	.162**	.228**	.161**	.157**	.015								
9	Online social support – users	–.011	.289**	.395**	.425**	.415**	.080**	–.043	.283**							
10	Online social support – moderators	.019	.335**	.291**	.302**	.298**	.115**	.037	.190**	.497**						
11	Positive sanctioning	.110**	.308**	.427**	.161**	.125**	.110**	–.013	.126**	.368**	.283**					
12	Negative sanctions	.037	.241**	.263**	.117**	.041	.120**	.012	.219**	.228**	.129**	.367**				
13	Participation in the formation of norms	.044	.304**	.295**	.110**	.126**	.115**	–.021	.057	.309**	.292**	.466**	.230**			
14	Interactivity of moderation	–.010	.197**	.145**	–.112**	–.173**	.059	–.045	.053	.122**	.172**	.218**	.181**	.356**		
15	Sense of virtual community	–.018	.267**	.383**	.129**	.076*	–.022	–.053	.080*	.309**	.262**	.357**	.168**	.283**	.209**	

* Correlation is significant at the .05 level (2-tailed).
** Correlation is significant at the .01 level (2-tailed).

The correlation matrix of dependent and independent variables of the models (see Table 6.4) analyzed on the whole sample data demonstrates that intrapersonal empowerment is statistically significantly, positively and weakly[39] correlated with knowledge of resources (r=.289) and moderately with e-health literacy (r=.451). Knowledge of resources, along with intrapersonal empowerment, is positively and weakly associated with resource mobilization for collective action (r=.347), e-health literacy (r=.312), received online social support from

[39] The strength of Pearson's correlation coefficient in this study is determined based on Evans (1996) guidelines for the absolute value of r: .00–.19 – very weak, .20–.39 – weak, .40–.59 – moderate, .60–.79 – strong, .80–1.0 – very strong. Accordingly, correlations equal to or higher than .20 are reported. Only statistically significant results are interpreted ($p \leq .05$).

users (r=.289), received online social support from moderators (r=.335), perceived positive sanctioning (r=.308), perceived negative sanctions (r=.241), participation in the formation of norms (r=.304) and a sense of virtual community (r=.267). Resource mobilization for collective action, similarly to knowledge of resources, is associated with the same independent variable, except there is no statistically significant association with e-health literacy and this second dimension of interactional empowerment is positively but weakly associated with discussion involvement (r=.276) and involvement in community organization and action (r=.219). In Table 6.4 it is also evident that there is a moderate correlation between both types of involvement in an online community (r=.585). Besides with each other, discussion involvement is also positively and weakly associated with online bridging social capital and received online social support from moderators, while there is a moderate and positive relationship with received online social support from users (r=.425). Similarly, involvement in community organization and action is also positively and moderately associated with received online social support from users (r=.415) and weakly with received online social support from moderators (r=.298). Online bridging social capital, as well as with discussion involvement, is positively but weakly associated with received online social support from users (r=.283) and perceived negative sanctions (r=.219). Received online social support from users is positively and weakly correlated with almost all organizational characteristics variables, except with interactivity of moderation (r=.122), the correlation with which is statistically significant but very weak. It is not surprising that there is a moderate relationship between both types of received online social support (r=.497). Received online social support form moderators, as well as with both dimensions of interactional empowerment and both types of involvement in an online community, is positively and weakly associated with perceived positive sanctioning (r=.283), participation in the formation of norms (r=.292) and a sense of virtual community (r=.262). Organizational characteristics variables are in general associated with each other, but most of these correlations are weak (see Table 6.4). Perceived negative sanctions is the only variable in this set that is very weakly associated with interactivity of moderation (r=.181) and a sense of virtual community (r=.168).

6.2.2 Socio-structural properties and intrapersonal empowerment

In this section we provide a detailed analysis of the impact of socio-structural properties on intrapersonal empowerment. The results provide us with answers to research questions RQ1,

RQ1.1, RQ1.2 and RQ1.3 and hypotheses H1.1, H1.2 and H1.3. We also provide partial answers to research question RQ3. In the first part of this section we present the findings of the model investigating the effect of involvement in HROSCs and organizational characteristics of HROSCs on intrapersonal empowerment. Next, we present the results of the model that examined the effect of users' involvement in HROSCs and different forms of capital on their intrapersonal empowering outcomes. The last model investigated the impact of users' different forms of capital and organizational characteristics of HROSCs on intrapersonal empowerment, the results of which are presented in the last part of this section.

The effect of involvement in HROSC and organizational characteristics of HROSC on intrapersonal empowerment

The first model focused on investigating the effect of involvement in HROSCs and organizational characteristics of HROSC on intrapersonal empowerment, where the main emphasis was on examining the interaction effects between the two socio-structural properties on intrapersonal empowerment. In the hierarchical regression analysis of this model, in the first step we entered the control variables. Based on the results for the whole sample (see Table 6.5), this model did fit the data (R^2_{adj}=.189, p<.001). In the second step, discussion involvement and involvement in community organization and action were entered and this model also significantly fit the data (R^2_{adj}=.189, p<.001). However, the change in R^2 between the model from the first step and the model from the second step was not statistically significant (ΔR^2=.002, p=.383), which suggests that the model from step two is not more valid for interpretation. In step three we entered five moderating variables of organizational characteristics of HROSCs and their interactions with predictors from step two. Although the adjusted R^2 was statistically significant, the increase in R^2 was not, meaning that the model from the third step is not the most valid for interpretation. Similar results were also obtained with the regression analyses of each subsample of involvement in different types of HROSC forums, except for the subsample of respondents who visit online socializing forums most often (see Table 6.5). The regression analysis for this subsample revealed that the model of step three is statistically significant and most valid for interpretation (R^2_{adj}=.248, p<.001; ΔR^2=.097, p<.001). Although other models in the third step of regression analyses were not statistically significant, we considered regression coefficients for interpretation.

Table 6.5: Standardized regression coefficients of control, involvement in HROSC and organizational characteristics of HROSC independent variables, and interactions in relation to intrapersonal empowerment for the whole sample and for each HROSC's forum type subsample

		Whole sample (N=653)		Online counseling forums (N=289)		Online support group forums (N=73)		Online socializing forums (N=243)	
	Predictor	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**
Step 1	Gender	.066	.071	.086	.139	-.054	.727	.022	.708
	Age	**.088**	**.024**	.107	.079	.014	.923	.062	.329
	Education	-.007	.861	.017	.768	.120	.372	-.039	.528
	Health status	**.433**	**.000**	**.428**	**.000**	**.393**	**.005**	**.449**	**.000**
	Membership length	**-.088**	**.019**	**-.145**	**.011**	-.044	.751	.001	.992
	Posting messages	-.054	.188	-.057	.368	-.168	.228	-.009	.898
Step 2	Discussion involvement	-.050	.325	-.033	.730	-.009	.973	-.111	.238
	Involvement in com. org. and action	.050	.350	.030	.806	.240	.393	-.003	.973
Step 3	Positive sanctioning	.077	.090	.065	.335	.044	.785	.145	.059
	Negative sanctions	.021	.605	-.071	.262	-.131	.463	.070	.296
	Participation in the formation of norms	.008	.853	.105	.109	.009	.944	-.025	.761
	Interactivity of moderation	-.041	.342	.066	.292	**.316**	**.023**	**-.225**	**.003**
	Sense of virtual community	-.038	.355	-.088	.230	-.140	.383	.045	.518
	Discussion involvement X[a] Participation in the formation of norms[b]	**-.186**	**.004**	-.128	.303	-.154	.534	**-.311**	**.008**
	Discussion involvement X Interactivity of moderation	**.140**	**.009**	.101	.177	.018	.932	.138	.219
R^2adj (step 1)		.189	<.001	.189	<.001	.226	.001	.201	<.001
R^2adj (step 2)		.189	<.001	.186	<.001	.271	<.001	.196	<.001
ΔR^2		.002	.383	.003	.543	.062	.055	.002	.763
R^2 adj (step 3)		**.197**	**<.001**	**.193**	**<.001**	.246	.019	**.248**	**<.001**
ΔR^2		.026	.144	.049	.308	.134	.614	**.097**	**.012**

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤.05).

Before we look into the results for specific research questions and hypotheses of the study related to the tested model, let us briefly investigate the effects of control variables included in the model. According to the results (Table 6.5), age, health status and membership length statistically significantly influence intrapersonal empowerment. While the effect of users' age (beta=.088, p=.024) and membership length (beta=-.088, p=.019) is very weak, health status has a positive and moderate impact on intrapersonal empowerment (beta=.433, p<.001). More specifically, respondents with a better health status experience a higher level of intrapersonal empowerment. This result was also consistent in all other subsamples of different types of HROSC forums.

For the analysis of hypothesis H1.1, proposing that involvement in HROSCs is associated with intrapersonal empowerment, the regression coefficients of the predictors in step two in the model(s) need to be examined. The results for the whole sample (as well as for separate subsample analyses) demonstrated that neither discussion involvement nor involvement in community organization and action present statistically significant predictors of intrapersonal empowerment (Table 6.5). Hypothesis H1.1 was thus not confirmed.

For a detailed analysis of RQ1.1 that refers to examining the effect of involvement in HROSCs in interaction with organizational characteristics of HROSC on intrapersonal empowerment the regression coefficients of the predictors that were entered in the third step of the regression analyses needed to be carefully investigated (Table 6.5). The results for the whole sample demonstrate that under the condition of participation in the formation of norms (beta=-.186, p=.004), discussion involvement is associated with intrapersonal empowerment. More specifically, when respondents perceive that they can have a role in the formation of norms in an online community, their discussion involvement in HROSC lowers their intrapersonal empowerment. However, the results have also shown that under the condition of interactivity of moderation (beta=.140, p=.009), discussion involvement is associated with intrapersonal empowerment. In other words, when users perceive that moderation in HROSC is conducted interactively, their discussion involvement in HROSC increases their intrapersonal empowerment. Based on the levels of beta coefficients, these effects can be characterized as very weak.

These results are also different among different types of HROSC forums (Table 6.5). For the online counseling forums subsample none of the results for steps two and three of the regression

analysis are statistically significant. In the online support group forums subsample, the results demonstrate that interactivity of moderation has a positive and weak effect on intrapersonal empowerment (beta=.316, p=.023), meaning that the respondents who are most frequently involved in online support group forums experience interactive moderation as an important facilitator of their intrapersonal empowerment. In comparison, in the online socializing subsample, interactivity of moderation has a negative and weak influence on intrapersonal empowerment (beta=-.225, p=.003). Similarly to the whole sample, respondents who are most often involved in online socializing forums are less likely to experience intrapersonal empowerment outcomes when they are involved in discussions in the forums and perceived a possibility of participating in the formation of norms in the HROSC.

To summarize, in comparing different types of HROSC forums, interactivity of moderation has a positive effect on users' intrapersonal empowerment in online support group forums, while in online socializing forums perceived interactivity of moderation lowers the level of users' intrapersonal empowerment. In online socializing forums, discussion involvement is associated with intrapersonal empowerment, but only under the condition of users' perception of the possibility of participating in the formation of norms in the HROSC and this interaction effect negatively influences users' intrapersonal empowerment.

The effect of involvement in HROSC and different forms of capital on intrapersonal empowerment

In the next model on intrapersonal empowerment we investigated the effects of involvement in HROSC and different forms of capital. The hierarchical regression analysis was conducted similarly to the previous model, except in the first step we entered an additional control variable, i.e. offline social support,[40] and in the third step of the analyses we entered five moderating variables of different forms of capital and their interactions with predictors from step two, namely discussion involvement and involvement in community organization and action.

[40] Offline social support was entered as a control variable only in the models that also included variables of online social support in order to control for the effect of social support that HROSC users receive externally from an online community and thus in their everyday environment, which might have an important impact on different dimensions of psychological empowerment.

Table 6.6: Standardized regression coefficients of control, involvement in HROSC and different forms of capital independent variables, and interactions in relation to intrapersonal empowerment for the whole sample and for each HROSC's forum type subsample

		Whole sample (N=651)		Online counseling forums (N=296)		Online support group forums (N=74)		Online socializing forums (N=225)	
	Predictor	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**
Step 1	Gender	-.007	.823	.047	.369	-.094	.455	-.053	.378
	Age	**.102**	**.004**	**.163**	**.004**	.172	.142	.000	.996
	Education	**-.077**	**.021**	-.001	.986	.117	.290	**-.155**	**.012**
	Health status	**.351**	**.000**	**.356**	**.000**	.189	.169	**.339**	**.000**
	Membership length	**-.067**	**.046**	-.091	.069	.032	.767	-.074	.244
	Posting messages	**-.072**	**.050**	-.050	.359	-.045	.751	-.054	.442
	Offline social support	**.093**	**.007**	.070	.176	.178	.175	**.120**	**.050**
Step 2	Discussion involvement	.025	.611	.021	.784	-.273	.289	-.032	.729
	Involvement in com. org. and action	.064	.253	.135	.292	.207	.412	.117	.248
Step 3	E-health literacy	**.396**	**.000**	**.420**	**.000**	**.501**	**.000**	**.412**	**.000**
	Economic capital	.000	.996	-.029	.580	.085	.569	.031	.621
	Online bridging social capital	-.043	.221	-.092	.152	-.010	.932	-.054	.402
	Online social support – users	-.055	.192	.022	.730	-.078	.605	-.125	.125
	Online social support – moderators	.000	.991	.023	.701	-.112	.457	-.030	.696
	Discussion involvement X[a] Economic capital[b]	**.206**	**.000**	.093	.226	.305	.138	**.211**	**.004**
	Discussion involvement X E-health literacy	**-.102**	**.015**	-.047	.484	-.110	.561	**-.163**	**.024**
	Discussion involvement X Online bridging social capital	-.026	.554	**-.144**	**.034**	.273	.138	.027	.742
	Involvement in com. org. and action X Economic capital	**-.136**	**.003**	-.027	.728	-.284	.189	**-.235**	**.003**
R^2adj (step 1)		.214	<.001	.198	<.001	.268	<.001	.205	<.001
R^2adj (step 2)		.212	<.001	.195	<.001	.290	<.001	.200	<.001
ΔR^2		.000	.995	.002	.637	.040	.136	.002	.788
R^2 adj (step 3)		**.392**	**<.001**	**.353**	**<.001**	**.430**	**<.001**	**.332**	**<.001**
ΔR^2		**.170**	**<.001**	**.186**	**<.001**	**.240**	**.030**	**.172**	**<.001**

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤.05).

The results of the analyses (see Table 6.6) showed that for the whole sample as well as for subsamples of different types of HROSC forums, the model of the first and third steps did fit the data. The third model in the regression analyses proved to be the most valid for interpretation, since both adjusted R^2 and the increase in R^2 were statistically significant (whole sample results: R^2_{adj}=.392, p<.001; ΔR^2=.170, p<.001).

Similarly to the first model on intrapersonal empowerment, the control variables age, health status and membership length have, in the analysis on the whole sample, a statistically significant effect on intrapersonal empowerment (Table 6.6). In addition, the regression analysis on the whole sample also revealed that education, posting messages and offline social support have a statistically significant but very weak (absolute values of standardized regression coefficients for these control variables are all below .100) impact on intrapersonal empowerment.[41] Although health status is not statistically significantly associated with intrapersonal empowerment in the subsample of respondents who visit online support group forums most often in the HROSC, this variable among the control variables is the only one consistently positively related to intrapersonal empowerment (results for the whole sample: beta=.351, p<.001).

In order to investigate RQ1.3, which addresses the interaction effects of involvement in HROSCs and different forms of capital on intrapersonal empowerment, the regression coefficients entered in step three in the analyses need to be examined. Among the different forms of capital variables, which are also in this model the moderating variables, only e-health literacy has a positive and moderate significant effect on intrapersonal empowerment (beta=.396, p<.001). This is also consistent among all three subsamples of different HROSC forums (see Table 6.6), meaning that respondents with a higher level of (self-reported) e-health literacy also experience a higher level of intrapersonal empowerment. While the direct effects of discussion involvement and involvement in community organization and action are not significant, these two variables have a statistically significant effect on intrapersonal empowerment under the condition of e–health literacy and under the condition of economic capital (Table 6.6). More specifically, the results for the whole sample have demonstrated that

[41] These differences between the results of the previous and this model on intrapersonal empowerment might be related to the possible indirect effects among some of the control variables and variables of different forms of capital. However, the levels of standardized regression coefficients among the control variables are not so different between the models, which means that the results are relatively stable and based on the results we can conclude that among the control variables, health status has the most important influence on intrapersonal empowerment.

respondents who in their opinion have sufficient financial resources to meet their monthly needs and are involved in discussions in the HROSC forums have a higher level of intrapersonal empowerment (beta=.206, p<.000). This is not the case when the predictor is involvement in community organization and action. When respondents in their opinion have sufficient financial resources to meet their monthly needs and are also involved in activities that pertain to community organization and action, this significantly lowers the level of their intrapersonal empowerment (beta=-.136, p=.003). Interestingly, a higher level of users' e-health literacy and discussion involvement in the HROSC does not provide users with a higher level of intrapersonal empowerment, but a lower one (beta=-.102, p=.015). These results are similar to those for the respondents that visit online socializing forums most often in the HROSC (see Table 6.6).

While this results are significant for online socializing forums, they are not for the online counseling forum and online support group forum subsamples. For the respondents that visit online support group forums most often, none of the variables, except the positive and moderate effect of e-health literacy (beta=.501, p<.001), are statistically significantly associated with intrapersonal empowerment. The results that are obtained on the whole sample and online socializing forum subsample are also not applicable for the respondents that visit online counseling forums most often in the HROSC. For the respondents of online counseling forums besides e-health literacy, the interaction between discussion involvement and online bridging social capital has an important but very weak and negative effect on intrapersonal empowerment(beta=–.144, p=.034). More specifically, the more respondents there are that visit online counseling forums and interact with the heterogeneous group of people in the HROSCs involved in discussions in the online community, the less they are perceived to be intrapersonally empowered.

The effect of different forms of capital and organizational characteristics of HROSC on intrapersonal empowerment

The last model including intrapersonal empowerment as a dependent variable tested the effects of variables of different forms of capital, organizational characteristics of HROSC and their interactions. As in the previous models, we entered the control variables in the regression analysis for this model in the first step (Table 6.7). The results for the whole sample (R^2_{adj}=.193, p<.001), as well as subsamples, show that this model did fit the data. In the second step of the

regression analysis, different forms of capital variables were entered and this model also significantly fit the data of the whole sample (R^2_{adj}=.322, p<.001), as well as the subsamples (see Table 6.7). The increase in R^2 between the model from the first step and the model from the second step was also statistically significant (ΔR^2=.132, p<.001). This suggests that the model for step two is more valid for interpretation. In the third step of the regression analysis, five moderating variables of organizational characteristics of HROSCs were entered in the model as well as their interactions with predictors from step two of the analysis, i.e. different forms of capital. For the whole sample both the adjusted R^2 and the increase in R^2 compared to the model in step two were statistically significant (R^2_{adj}=.340, p<.001; ΔR^2=.051, p=.035), which suggests that this model is most valid for interpretation. However, the results of the model fit in the third step were different for different types of HROSC forum subsamples. The adjusted R^2 in the online counseling forum (R^2_{adj}=.334, p<.001) and online socializing forum (R^2_{adj}=.362, p<.001) subsamples was statistically significant, but the increase in R^2 was not (see Table 6.7). According to the results for the online support group forum subsample, the model of step three is not statistically significant (R^2_{adj}=.299, p=.074; ΔR^2=.264, p=.650). Nonetheless, we considered regression coefficients for interpretation.

Table 6.7: Standardized regression coefficients of control, different forms of capital and organizational characteristics of HROSC independent variables, and interactions in relation to intrapersonal empowerment for the whole sample and for each HROSC's forum type subsample

		Whole sample (N=600)		Online counseling forums (N=278)		Online support group forums (N=70)		Online socializing forums (N=211)	
	Predictor	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**
Step 1	Gender	.039	.276	.043	.442	-.074	.739	-.002	.975
	Age	.045	.242	.086	.155	.023	.898	.003	.968
	Education	-.026	.486	-.004	.941	-.011	.951	-.083	.216
	Health status	**.314**	**.000**	**.334**	**.000**	.148	.488	**.252**	**.000**
	Membership length	**-.078**	**.036**	**-.132**	**.021**	-.181	.301	-.001	.988
	Posting messages	-.043	.237	-.022	.694	-.204	.264	.000	.997
	Offline social support	**.081**	**.033**	.037	.531	.299	.155	**.186**	**.006**
Step 2	E-health literacy	**.359**	**.000**	**.358**	**.000**	.369	.058	**.276**	**.000**
	Economic capital	.009	.804	-.017	.784	.216	.258	.057	.429
	Online bridging social capital	-.060	.121	-.051	.387	-.043	.824	-.064	.395
	Online social support – users	-.059	.175	-.011	.883	.048	.865	-.104	.215
	Online social support – moderators	-.038	.363	-.039	.562	-.040	.881	-.111	.175

		Whole sample (N=600)		Online counseling forums (N=278)		Online support group forums (N=70)		Online socializing forums (N=211)	
Step 3	Positive sanctioning	**.103**	**.027**	.069	.335	.007	.976	.182	.063
	Negative sanctions	.009	.815	-.022	.734	-.333	.156	.025	.725
	Participation in the formation of norms	-.009	.831	.049	.462	.064	.764	-.059	.494
	Interactivity of moderation	-.007	.865	-.027	.695	.553	.079	-.073	.361
	Sense of virtual community	-.017	.697	-.063	.349	-.221	.350	.142	.079
	E-health literacy X[a] Positive sanctioning[b]	**-.111**	**.012**	-.118	.071	-.003	.992	**-.203**	**.026**
	E-health literacy X Negative sanctions	**.090**	**.018**	.010	.872	.163	.465	**.191**	**.017**
	Online social support – users X Positive sanctioning	**-.115**	**.046**	-.069	.452	.078	.819	**-.217**	**.052**
	Online social support – users X Negative sanctions	-.006	.907	**-.169**	**.043**	**.698**	**.036**	.049	.603
	Online social support – moderators X Positive sanctioning	**.227**	**.000**	**.227**	**.007**	-.179	.648	**.241**	**.028**
	Online social support – moderators X Negative sanctions	**-.123**	**.011**	-.061	.445	-.065	.843	-.059	.522
R^2adj (step 1)		.193	<.001	.196	<.001	.221	.002	.198	<.001
R^2adj (step 2)		.322	<.001	.340	<.001	.348	<.001	.318	<.001
ΔR^2		.132	<.001	.153	<.001	.161	.009	.132	<.001
R^2 adj (step 3)		**.340**	**<.001**	**.334**	**<.001**	.299	.074	**.362**	**<.001**
ΔR^2		**.051**	**.035**	.066	.589	.264	.650	.132	.074

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤.05).

Similarly to the previous models in the analysis of the whole sample, the control variables health status (beta=.314, p<.001), membership length (beta=-.078, p=.036) and offline social support (beta=.081, p=.033) have a significant effect on intrapersonal empowerment. The effects of membership length and offline social support, based on the levels of the standardized regression coefficient, are very weak (Table 6.7), which indicates that among all control variables only health status plays a significant role in users' intrapersonal empowerment, with

a better perceived health status giving users' a feeling of a higher level of intrapersonal empowerment. The influence of health status is also significant between subsamples of different types of HROSC forums (Table 6.7), except for the online social support subsample, for which the model in any case does not fit the data.

In this study we have anticipated with H1.3 that organizational characteristics of HROSC will be associated with intrapersonal empowerment. The direct effect of organizational characteristics of HROSCs were included in the models only in step three of the hierarchical regression analysis, as this set of variables were included in the analysis as the moderating variables. Nevertheless, the direct effects of this set of independent variables on intrapersonal empowerment can be investigated.[42] The results demonstrated (Table 6.7) that only positive sanctioning has a positive and very weak significant effect on intrapersonal empowerment (beta=.103, p=.027). More specifically, users' perception of the existence of positive sanctions among users in discussion forums, such as appraisal, gratitude and compliments, increases the level of users' intrapersonal empowerment. These results are not significant for different types of HROSC forum subsamples, but based on the marginal p value these results fit the most closely to the respondents that visit online socializing forums most often in the HROSC (beta=.182, p=.063). Similar results were also obtained in the model where we tested the effect of involvement in HROSCs and organizational characteristics in HROSCs on intrapersonal empowerment (see Table 6.5).

Further, in hypothesis H1.2 we predicted that different forms of capital are associated with intrapersonal empowerment. As we have also seen from the results of the previous model of intrapersonal empowerment, only e-health literacy[43] has a positive and significant direct effect on intrapersonal empowerment (results for the whole sample: beta=.359, p<.001), while other

[42] The direct effect of organizational characteristics of HROSC variables on intrapersonal empowerment was also investigated in data analysis with a separate model using regression analysis only with control variables (step one) and five predictors of organizational characteristics of HROSC (step two). The effects of organizational characteristics of HROSC variables on intrapersonal empowerment were similar, as depicted in the reporting of the results of the analysis where the organizational characteristics variables are included in the models as moderating variables. A report of these results can be obtained on request from the author of this study.

[43] In the analysis conducted on the respondents that visit online support group forums in the HROSC most often, e-health literacy is not statistically significantly associated with intrapersonal empowerment (beta=.360, p=.058). The results are marginal considering the level of p value, and this model did not fit the data. However, based on the results obtained from the regression analysis conducted on the model, including the effects on involvement in HROSC and different forms of capital (previous subsection), where the direct effect of e-health literacy was significantly related to intrapersonal empowerment (beta=.501, p<.001) and the model did fit the data, we can conclude that e-health literacy also has an important direct effect on intrapersonal empowerment for the respondents who visit online support groups in the HROSC most often.

different forms of capital variables have only a moderating effect on intrapersonal empowerment (see Table 6.7). This means that the level of perceived e-health literacy plays an important role in users' feeling of self-efficacy, competence, motivation and control over their health-related issues and possible positive health outcomes.

The presented results (Table 6.7) also provide us with the answers to research question RQ1.5 and thus the investigation of the effect of different forms of capital in interaction with organizational characteristics of HROSC on intrapersonal empowerment. The results for the whole sample demonstrated that positive sanctioning and negative sanctions in the interaction with e-health literacy have an effect on intrapersonal empowerment (see Table 6.7). Interestingly, under the condition of perceived positive sanctioning in the HROSC e-health literacy decreases intrapersonal empowerment (beta=-.111, p=.012). In contrast, under the condition of perceived presence of negative sanctions in HROSC's forums e-health literacy increases users' intrapersonal empowerment (beta=.090, p=.018). However, both of these interaction effects on intrapersonal empowerment are very weak. Positive sanctioning also has a significant role in relation to the received online social support from users. When respondents perceive the presence of positive sanctioning in the HROSC, the received online social support from other users is likely to decrease their intrapersonal empowering outcomes (beta=-.115, p=.046). Once again this interaction effect on intrapersonal empowerment is very weak. The results have also shown that positive sanctioning has a significant role in affecting users' intrapersonal empowerment in relation to received online social support from moderators. Under the condition of positive sanctioning in HROSC the received online social support from moderators improves the level of users' intrapersonal empowerment (beta=.227, p<.001). In contrast, when users perceive the presence of negative sanctions in online discussion forums of HROSC, received online social support from moderators negatively impacts respondents' intrapersonal empowerment (beta=-.123, p=.011).

The results obtained with the analysis on the whole sample are very similar to those that pertain to the online socializing subsample (see Table 6.7), except that the interaction effect between received online social support from moderators and negative sanctions is not statistically significantly related to intrapersonal empowerment. However, the results are different for the model analyzed on the online counseling forum and online support group forum subsamples (Table 6.7). The analysis on the subsample of respondents that visit online counseling forums most often in HROSC has revealed that under the condition of perceived presence of negative

sanctions, online social support received from users has a negative and very weak effect on intrapersonal empowerment (beta=-.169, p=.043). The interaction between received online social support from users and negative sanctions was the only statistically significant effect on intrapersonal empowerment in the subsample of respondents that visit online support group forums most often (Table 6.7). Online social support received from users has under condition of perceived negative sanctions a positive and strong effect on intrapersonal empowerment (beta=.698, p=.036). The results for the subsample of respondents that visit online counseling forums most frequently in the HROSC have also revealed that when users perceive the presence of negative sanctions in the HROSC, online social support received from moderators increases users' intrapersonal empowering outcomes (beta=.227, p=.007).

6.2.3 Socio-structural properties and knowledge of resources

In this section we focus on detailed analyses of the impact of socio-structural properties on knowledge of resources as the first dimension of interactional empowerment. Since the analyses presented in this section are conducted only on the one dimension of interactional empowerment, the presented results provide partial answers to research questions RQ1.2, RQ1.4 and RQ1.6 and hypotheses H2.1–H2.3. With the analyses of the regression models on subsamples of respondents that visit different types of HROSC forums, we partially also provide answers to research question RQ3. In the first part of this section we present the findings of the model in which we investigate the effect of involvement in HROSCs and organizational characteristics of HROSC on knowledge of resources. In the second subsection, we present the results of the model investigating the effect of involvement in HROSC and users' different forms of capital on their knowledge of resources. In the final subsection, we present the results of the model, which examines the effect of users' different forms of capital and organizational characteristics of HROSC on users' knowledge of resources.

The effect of involvement in HROSC and organizational characteristics of HROSC on knowledge of resources

The first model included knowledge of resources as the dependent variable and involvement in HROSC and organizational characteristics of HROSC as independent variables. The main emphasis in this model was on the investigation of interaction effects among the independent variables on knowledge of resources. In the first step of the regression analysis for this model we entered the control variables and, based on the results for the whole sample (see Table 6.8),

this model did fit the data (R^2_{adj}=.044, p<.001). In the second step of the analysis of the model we added the discussion involvement and involvement in community organization and action variables and this model also significantly fit the data (R^2_{adj}=.048, p<.001), but the increase in R^2 between the model from the first step and the model from the second step was not statistically significant (ΔR^2=.007, p=.094), which suggests that the model from step two is not more valid for interpretation. In the third step of the analysis we entered five organizational characteristics variables that are also moderating variables in this model. Interactions between organizational characteristics of HROSC and involvement in HROSC variables were thus also added in step three of the analysis. Both the adjusted R^2 (R^2_{adj}=.182, p<.001) and the increase in R^2 were statistically significant (ΔR^2=.150, p<.001). This means that the model of the third step of the regression analysis is the most valid for interpretation. Similar results were also obtained with the regression analyses for the subsamples of respondents who visit online counseling forums and online socializing forums most often (see Table 6.8). The regression analysis on the subsample of online support group forums revealed that the model does not fit the data (R^2_{adj}=.178, p=.065; ΔR^2=.284, p=.092); however, we still considered the regression coefficient for interpretation.

According to the results for the whole sample (Table 6.8), the control variables gender and health status have a significant and very weak effect on knowledge of resources. More specifically, women (beta=.119, p=.001) and respondents with a better health status (beta=.124, p=.001) are more likely to experience a higher level of knowledge of resources. These results for the whole sample are similar to the results for the subsample of respondents of online socializing forums, while for the subsamples of online counseling forums and online support group forums these control variables do not have a significant effect on knowledge of resources. Membership length (beta=-.177, p=.002) has a negative and very weak significant effect on knowledge of resources among the respondents who visit online counseling forums most frequently in the HROSC.

Table 6.8: Standardized regression coefficients of control, involvement in HROSC and organizational characteristics of HROSC independent variables, and interactions in relation to knowledge of resources for the whole sample and for each HROSC's forum type subsample

		Whole sample (N=667)		Online counseling forums (N=293)		Online support group forums (N=73)		Online socializing forums (N=252)	
	Predictor	**Beta**	**P value**	**Beta**	**P value**	**Beta**	**P value**	**Beta**	**P value**
Step 1	Gender	**.119**	**.001**	.074	.211	-.113	.488	**.179**	**.003**
	Age	.031	.433	.020	.754	-.016	.917	.044	.502
	Education	.009	.819	.010	.857	.178	.217	-.006	.923
	Health status	**.124**	**.001**	.104	.081	.018	.901	**.164**	**.009**
	Membership length	-.061	.104	**-.177**	**.002**	.243	.099	-.002	.976
	Posting messages	.019	.639	.004	.955	.213	.148	.021	.779
Step 2	Discussion involvement	.021	.685	.034	.731	-.068	.787	.057	.572
	Involvement in com. org. and action	.041	.448	-.101	.425	**.553**	**.026**	-.004	.969
Step 3	Positive sanctioning	.083	.070	.077	.268	.111	.510	.148	.066
	Negative sanctions	**.127**	**.002**	.060	.350	.101	.571	.121	.084
	Participation in the formation of norms	**.139**	**.002**	.110	.101	.232	.117	**.164**	**.050**
	Interactivity of moderation	.053	.219	.107	.094	-.161	.259	-.009	.903
	Sense of virtual community	**.158**	**.000**	**.194**	**.010**	.157	.327	.116	.105
	Involvement in com. org. and action X[a] Negative sanctions[b]	**.127**	**.036**	.004	.962	**.471**	**.026**	.148	.121
R^2adj (step 1)		.044	<.001	.046	.004	.003	.413	.053	.003
R^2adj (step 2)		.048	<.001	.050	.004	.051	.182	.048	.010
ΔR^2		.007	.094	.010	.204	.070	.077	.003	.710
R^2 adj (step 3)		**.182**	**<.001**	**.150**	**<.001**	.178	.065	**.156**	**<.001**
ΔR^2		**.150**	**<.001**	**.141**	**<.001**	.284	.092	**.155**	**<.001**

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤.05).

In order to investigate hypothesis H2.1, in which we predicted that involvement in HROSC is associated with interactional empowerment, the regression coefficients of the predictors in the second step of the analysis need to be examined. The findings for the whole sample showed that none of the involvement variables present a statistically significant predictor of knowledge of resources (Table 6.8). These results were consistent for the analysis on the subsamples of

different types of HROSC forums, except that the analysis on the subsample of online support group forums revealed that involvement in community organization and action (beta=.553, P=.026) has a positive and moderate significant impact on knowledge of resources.

The results of the analyses of this model also partially provide us with answers to H2.3. With this theoretical hypothesis we anticipated that organizational characteristics of HROSC are associated with interactional empowerment. The findings for the knowledge of resources dimension of interactional empowerment in the whole sample demonstrate that perceived negative sanctions (beta=.127, p=.002), participation in the formation of norms (beta=.139, p=.002) and a sense of virtual community (beta=.158, p<.001) have positive and very weak significant impacts on users' knowledge of resources. However, these organizational characteristics of HROSC variables do not have a similar impact on knowledge of resource for the subsamples of different types of HROSC forums (Table 6.8). The analysis on the subsample of online counseling forums revealed that only respondents' higher level of a sense of virtual community (beta=.194, p=.010) impacts (weakly) the perception of their knowledge of resources, while the analysis on the subsample of online socializing forums showed that only participation in the formation of norms (beta=.164, p=.050) has a positive and very weak significant effect on users' knowledge of resources. However, none of the organizational characteristics of HROSC variables have a significant impact on knowledge of resources for the subsample of online support group forums (see Table 6.8).

The results of the analyses for this model also provide us (partially) with answers to research question RQ1.2, which refers to the investigation of the interaction effects between involvement in HROSCs and organizational characteristics of HROSC on knowledge of resources. Step three of the regression analysis for this model needs to be examined in order to answer this research question. As demonstrated in Table 6.8, the results for the whole sample show that under the condition of perceived negative sanction in the HROSC, users' involvement in community organization and action has a positive and very weak significant effect on knowledge of resources (beta=.127, p=.036). This result is also similar for the analysis on the subsample of online support group forums, where users' involvement in community organization and action has under the condition of perceived negative sanctions a positive and moderate significant effect on knowledge of resources (beta=.471, p=.026). However, this interaction effect on knowledge of resources is not statistically significant for the model

analyzed on the subsamples of respondents who visit online counseling and online socializing forums most often in the HROSC (see Table 6.8).

The effect of involvement in HROSC and different forms of capital on knowledge of resources

The second model of knowledge of resources investigated the effects of involvement in HROSC and users' different forms of capital. In the analyses of this model we have also included in the first, besides the previously used control variables, the offline social support variable. In the second step of the analyses we entered involvement in the HROSC variables and in step three we added five moderating variables of different forms of capital and their interactions with predictors from step two, namely discussion involvement and involvement in community organization and action. As demonstrated in Table 6.9, the regression model of the third step analyzed on the whole sample as well as on the subsamples of different types of HROSC forums fits the data, since both adjusted R^2 and increase in R^2 were statistically significant (whole sample results: R^2_{adj}=.199, p<.001; ΔR^2=.134, p<.001). This model is thus most valid for interpretation.

The effect of control variables on knowledge of resources is different compared to the previous model that includes the same dependent variable. The analysis of this model on the whole sample has demonstrated that age (beta=.087, p=.027) and education (beta=-.075, p=.042) have a significant impact on users' knowledge of resources (Table 6.9), while in the previous model gender and health status were statistically significantly related to knowledge of resources. The effects of age and education are very weak (the absolute standardized regression coefficients are both under .100) and these differences between the results of the two models could be explained by possible unaccounted indirect effects between the control variables and independent variables in the model, where apparently the control variable of education might be one of the sources for these inconsistent results.

Table 6.9: Standardized regression coefficients of control, involvement in HROSC and different forms of capital independent variables, and interactions in relation to knowledge of resources for the whole sample and for each HROSC's forum type

		Whole sample (N=664)		Online counseling forums (N=303)		Online support group forums (N=72)		Online socializing forums (N=234)	
	Predictor	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**
Step 1	Gender	.018	.621	-.006	.920	-.158	.270	.078	.226
	Age	**.087**	**.027**	.115	.066	.034	.793	**.144**	**.036**
	Education	**-.075**	**.042**	-.027	.638	-.084	.488	-.086	.196
	Health status	.061	.127	.033	.577	.017	.907	.060	.399
	Membership length	-.070	.059	**-.182**	**.001**	.160	.179	.007	.923
	Posting messages	-.074	.072	-.073	.230	.194	.217	-.007	.930
	Offline social support	**.122**	**.001**	**.141**	**.015**	**.353**	**.026**	.106	.116
Step 2	Discussion involvement	.058	.287	.003	.971	-.377	.152	-.026	.800
	Involvement in com. org. and action	-.105	.097	-.040	.775	-.062	.838	.006	.961
Step 3	E-health literacy	**.195**	**.000**	**.163**	**.005**	**.325**	**.007**	**.147**	**.040**
	Economic capital	.017	.650	.082	.160	-.218	.162	.057	.413
	Online bridging social capital	.002	.965	-.090	.206	-.074	.596	.006	.929
	Online social support – users	**.098**	**.037**	.123	.085	.056	.726	.057	.535
	Online social support – moderators	**.273**	**.000**	**.256**	**.000**	.325	.065	**.326**	**.000**
	Discussion involvement X[a] Online social support –users[b]	.030	.602	**-.223**	**.026**	.278	.132	.205	.099
	Discussion involvement X Online social support – moderators	.026	.657	**.259**	**.021**	.219	.243	-.096	.468
R^2adj (step 1)		.068	<.001	.090	<.001	.087	.073	.036	.031
R^2adj (step 2)		.081	<.001	.096	<.001	.089	.092	.036	.043
ΔR^2		.016	.004	.012	.144	.027	.351	.008	.371
R^2 adj (step 3)		**.199**	**<.001**	**.177**	**<.001**	**.341**	**.003**	**.166**	**<.001**
ΔR^2		**.134**	**<.001**	**.119**	**<.001**	**.359**	**.007**	**.178**	**<.001**

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤.05).

However, as was demonstrated in the results of the previous model on knowledge of resources in the sample of online counseling forums (see Table 6.8), membership length has a negative and very weak significant effect on knowledge of resources (beta=-.183, p=.001), meaning that respondents that visit online counseling forums most often and have been a member for a longer

period of time are more likely to perceive a lower level of knowledge of resources. In this model we also added a control variable of offline social support, the results of which have shown in the whole sample that users' offline social support is positively and significantly associated with knowledge of resources. This finding is also consistent for the respondents that visit online counseling forums (beta=.141, p=.015) and online support group forums (beta=.353, p=.026) most often in HROSC, whereas for the respondents that visit online socializing forums most frequently this effect is not statistically significant (Table 6.9).

The results from step two of the regression analysis can help us evaluate hypothesis H2.1, in which we predicted that involvement in an HROSC is associated with interactional empowerment. As demonstrated in a previous model investigating the effect of involvement in HROSC and organizational characteristics of HROSC on knowledge of resources (Table 6.8), the results of this model also indicate that involvement in HROSC variables is not statistically significantly associated with knowledge of resources (Table 6.9). Since knowledge of resources is just one dimension of interactional empowerment, this result gives us a partial answer to our assumption regarding the association between involvement in HROSC and interactional empowerment.

The results in Table 6.9 also demonstrate the direct effect of the moderating variables of users' different forms of capital on knowledge of resources. E-health literacy is positively and significantly associated with knowledge of resources and this is valid for the respondents of the whole sample (beta=.195, p<.001) as well as for the subsamples of respondents who visit different types of forums most often in HROSC (Table 6.9). According to the results for the whole sample, online social support received from users (beta=.098, p=.037) is very weakly and positively significantly related to knowledge of resources. In addition, online social support received from moderators (beta=.279, p<.001) is also weakly and positively associated with knowledge of resources. More specifically, respondents who receive online social support from users or online social support from moderators are more likely to perceive a higher level of knowledge of resources and thus they perceive that they have the ability to apply the knowledge gained in the HROSC to address or solve their health problem in the healthcare system. Received online social support from moderators is also significantly associated with knowledge of resources for the respondents of the subsamples of online counseling forums (beta=.256, P<.001) and online socializing forums (beta=.326, p<.001). The results for the subsample of respondents who visit online support group forums demonstrate that both online

social support received from users and that received from moderators are not statistically significantly related to knowledge of resources (see Table 6.9).

The analyses of this model can also give us answers to research question RQ1.4, namely what is the influence of users' involvement in HROSC on interactional empowerment under the condition of users' different forms of capital? Since this model includes only one dimension of interactional empowerment as dependent variable, i.e. knowledge of resources, the provided results will give us only a partial answer to this research question. Nonetheless, the results for the whole sample have demonstrated that none of the interaction effects are statistically significant (Table 6.9). Only for the subsample of online counseling forums does the interaction between online social support received from users and discussion involvement and interaction between online social support received from moderators and discussion involvement have a statistically significant effect on knowledge of resources. To be more specific, in online counseling forums under the condition of online social support received from other users, respondents' discussion involvement decreases their perceived knowledge of resources (beta=-.223, p=.026). However, when users in online counseling forums receive online social support from moderators their discussion involvement increases their perceived knowledge of resources (beta=.250, p=.021).

The effect of different forms of capital and organizational characteristics of HROSC on knowledge of resources

The last model examines the interaction effect of users' different forms of capital and organizational characteristics of HROSC on knowledge of resources. As in the previous analyses, in the first step of the regression analysis we entered the control variables (Table 6.10), where the results for the whole sample did fit the data (R^2_{adj}=.058, p<.001). In step two of the regression analysis, we added five different forms of capital variables, where the model for the whole sample did fit the data (R^2_{adj}=.175, p<.001). This model also statistically significantly fit the data for all three subsamples of different types of HROSC forums (see Table 6.10). The increase in R^2 between the model from the first step and the model from the second step was also statistically significant for the data analyzed on the whole sample (ΔR^2=.122, p<.001), as well as for the data of the three subsamples. In step three of the regression analysis five moderating variables of organizational characteristics of HROSCs were added into the model and their interactions with predictors from step two of the analysis.

For the whole sample both the adjusted R^2 and the increase in R^2 compared to the model in step two were statistically significant (R^2_{adj}=.247, p<.001; ΔR^2=.108, p<.001), which suggests that this model is most valid for interpretation. The results of the model fit in the third step were also statistically significant for all three subsamples of different types of HROSC forums (Table 6.10).

Table 6.10: Standardized regression coefficients of control, different forms of capital and organizational characteristics of HROSC independent variables, and interactions in relation to knowledge of resources for the whole sample and for each HROSC's forum type subsample

		Whole sample (N=613)		Online counseling forums (N=281)		Online support group forums (N=71)		Online socializing forums (N=219)	
	Predictor	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**
Step 1	Gender	.050	.182	.032	.598	-.034	.809	.054	.413
	Age	.047	.247	.022	.746	.068	.577	**.136**	**.051**
	Education	-.028	.487	-.002	.971	-.040	.758	-.070	.317
	Health status	.027	.521	-.028	.661	**-.348**	**.033**	.112	.127
	Membership length	-.037	.344	**-.181**	**.004**	.142	.245	-.003	.963
	Posting messages	.000	.997	.002	.970	.217	.102	.022	.767
	Offline social support	.066	.103	.094	.143	**.410**	**.011**	.010	.889
Step 2	E-health literacy	**.158**	**.000**	.097	.117	**.451**	**.002**	**.199**	**.014**
	Economic capital	.062	.118	.129	.055	.138	.281	.078	.296
	Online bridging social capital	-.033	.413	-.030	.647	**-.337**	**.019**	-.006	.936
	Online social support – users	-.016	.728	-.031	.706	.167	.365	-.039	.657
	Online social support – moderators	**.208**	**.000**	.137	.062	-.013	.943	**.184**	**.035**
Step 3	Positive sanctioning	.038	.443	-.011	.883	**.505**	**.004**	-.001	.995
	Negative sanctions	**.084**	**.051**	.080	.257	-.200	.245	.060	.419
	Participation in the formation of norms	**.119**	**.011**	.087	.236	.280	.071	.071	.429
	Interactivity of moderation	.072	.112	.044	.557	-.359	.070	.030	.722
	Sense of virtual community	**.116**	**.009**	**.150**	**.042**	-.001	.994	.022	.795
	E-health literacy X[a] Sense of virtual community[b]	**.130**	**.001**	.056	.410	-.113	.351	.146	.059
	Economic capital X Positive sanctioning	.025	.617	**.149.**	**.049**	.011	.949	-.043	.650
	Online bridging social capital X	**.132**	**.010**	.093	.221	**.355**	**.041**	.191	.092

		Whole sample (N=613)		Online counseling forums (N=281)		Online support group forums (N=71)		Online socializing forums (N=219)	
	Positive sanctioning								
	Online social support – users X Negative sanctions	.062	.225	-.001	.993	**.590**	**.013**	.143	.160
	Online social support – users X Interactivity of moderation	-.039	.488	.156	.085	**-.448**	**.028**	-.176	.085
	Online social support – moderators X Positive sanctioning	.062	.311	.112	.226	**-.604**	**.039**	.108	.375
	Online social support – moderators X Negative sanctions	-.070	.176	**-.203**	**.021**	.184	.412	.080	.418
	Online social support – moderators X Interactivity of moderation	.080	.138	-.018	.850	**.642**	**.024**	**.195**	**.045**
	Online social support – moderators X Sense of virtual community	**-.110**	**.019**	.022	.769	**.414**	**.038**	**-.403**	**.000**
R^2adj (step 1)		.058	<.001	.049	.004	.094	.065	.038	.034
R^2adj (step 2)		.175	<.001	.139.	<.001	.432	<.001	.130	<.001
ΔR^2		.122	<.001	.103	<.001	.345	<.001	.109	<.001
R^2 adj (step 3)		**.247**	**<.001**	**.200**	**<.001**	**.646**	**<.001**	**.283**	**<.001**
ΔR^2		**.108**	**<.001**	**.144**	**.019**	**.329**	**.021**	**.244**	**<.001**

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤.05).

The results for the whole data demonstrate that none of the control variables are statistically significantly associated with knowledge of resources. These results are different from the two previous models investigating knowledge of resources. By comparing the results from all three models on knowledge of resources, we found that the level of standardized regression coefficients of the control variables do not vary between the model – most of the effects are very weak (see Table 6.8, Table 6.9 and Table 6.10). The most consistent results of the effect of control variables on knowledge of resources are the negative effect of membership length for the online counseling forums subsample (beta=-.181, p=.004), the positive effect of offline

social support for the online support group forums subsample (beta=410, p=.011) and the positive effect of age for the online socializing forums subsample (beta=.136, p=.031).

One of the hypotheses of this study was H2.2, which anticipated the association between users' different forms of capital and interactional empowerment. Step two of the analyses can give us answer to this assumption. According to the results for the whole sample (Table 6.10), e-health literacy (beta=158, p<.001) and online social support received from moderators (beta=.208, p<.001) have a positive and significant effect on knowledge of resources. These results correspond to the one obtained in the previous model, where different forms of capital were moderating variables (see Table 6.9). The effect of e-health literacy on knowledge of resources is not significant for the respondents who visit online counseling forums most often in the HROSC. Online social support received from moderators is based on the results of this model, which are not significant for the subsamples of online counseling forums and online support group forums. However, based on the obtained results and evaluation of the values of standardized regression coefficients and the level of significance, we can conclude that e-health literacy and online social support received from moderators have an important impact on knowledge of resources.

The results of the regression analysis of step three (Table 6.10) can also be used to answer hypothesis H2.3, which predicted the association between organizational characteristics of HROSC and interactional empowerment.[44] Since in this model we analyzed only one dimension of interactional empowerment, i.e. knowledge of resources, these results can provide us with a partial answer. Nonetheless, as indicated in Table 6.10, the results for the whole sample show that negative sanctions (beta=.084, p=.051), participation in the formation of

[44] The direct effect of organizational characteristics of HROSC were included in the models only in step three of the hierarchical regression analysis, as this set of models were included in the analysis as moderating variables. Nevertheless, the direct effects of this set of independent variables on intrapersonal empowerment can be investigated. To confirm the obtained results we also ran a separate analysis of the direct effect of organizational characteristics of HROSC variables on knowledge of resources. This regression analysis included the control variables (step one) and the five predictors of organizational characteristics of HROSC variables (step two) and knowledge of resources as the dependent variable. The direct effects of organizational characteristics of HROSC variables on knowledge of resources were very similar to the ones presented in the reporting results, where organizational characteristics of HROSC variables present the moderating variables in the models. A report of these results can be obtained on request from the author of this study.

norms (beta=.119, p=.011) and a sense of virtual community (beta=.116, p=.009) have a positive and significant effect on knowledge of resources.

With the analysis of this model we also obtained results for answering research question RQ1.6, which refers to the investigation of the interaction effect of different forms of capital and organizational characteristics of HROSC on interactional empowerment. The presented results can only partially provide us with the answer to this research question, because only one dimension of interactional empowerment was investigated in this model. The results for the whole sample demonstrate that under the condition of a sense of virtual community e–health literacy has a positive and very weak significant effect on knowledge of resources (beta=.130, p=.001). This result is however not statistically significant for the other three subsamples of different types of HROSC forums. Further, when users perceive the presence of positive sanctioning in the HROSC forums, online bridging social capital has a positive and very weak significant effect on knowledge of resources (beta=.132, p=.010). The results for the whole sample also showed that under the condition of a sense of virtual community, online social support received from moderators has a negative and very weak significant impact on users' knowledge of resources (beta=-.110, p=.019). This means that when users have a sense of belonging to the online community and have received social support from moderators in the HROSC, this lowers their perception of their ability to apply knowledge gained in the HROSC for solving or addressing their health problems in the healthcare system.

The results on interaction effects among different forms of capital variables and organizational characteristics variables on knowledge of resources are different for the subsamples of different types of HROSC forums. In online counseling forums the interaction effect between economic capital and perceived positive sanctioning has a positive and very weak significant effect on knowledge of resources (beta=.149, p=.049). The respondents who visit online counseling forums in the HROSC most frequently increase their knowledge of resources when they perceived positive sanctioning in the forums and they have sufficient financial resources to meet their monthly needs. Further, under the condition of perceived negative sanctions in the online counseling forums, users' received online social support from moderators decreases their knowledge of resources (beta=-.203, p=.021). None of these results are significant for the respondents who visit online support group forums and online socializing forums most often in the HROSC.

In the online support group forums, the results demonstrate that when users perceive positive sanctioning, online bridging social capital has a positive and weak significant effect on knowledge of resources (beta=.355, p=.041), while received online social support from moderators under the same condition of positive sanctioning decreases their knowledge of resources (beta=-.590, p=.013). More precisely, the heterogeneity of users' social network in HROSC is beneficial for their knowledge of resources if positive sanctioning is perceived in the forums, whereas under the same condition of perceiving forums as places for receiving recognition, appraisal and gratitude, received advice, suggestions, information, clinical expertise and other forms of social support from moderators it significantly impacts and lowers the level of users' knowledge of resources. When users perceive online support group forums as places with interactive moderation (beta=-.642, p=.024), online social support from moderators lowers their perception of the knowledge of resources. However, if users have developed a sense of virtual community (beta=.414, p=.038), online social support received from moderators positively and significantly affects users' knowledge of resources. In online support group forums, received online social support from other users also has a significant role in their knowledge of resources, but only under the condition of perceived negative sanctions (beta=.590, p=.013) and interactivity of moderation (beta=-.448, p=.028). More specifically, when users perceive negative sanctions in the online support group forums, received online social support from users positively and moderately impacts users' knowledge of resources. However, when users' perceive that interactivity of moderation is present in forums, online social support received from users decreases their knowledge of resources.

The results for the online socializing subsample, on the other hand, showed that only the interaction between online social support received from moderators and interactivity of moderation (beta=.195, p=.045) and interaction between online social support received from moderators and a sense of virtual community (beta=-.403, p<.001) affect users' knowledge of resources. This means that under the condition of interactive moderation in online socializing forums, online social support received from moderators has a positive effect on users' knowledge of resources, while under the condition of users' perceived sense of belonging to the online community, online social support received from moderators decreases the level of their perceived ability to apply knowledge gained in the HROSC to solve or address their health issues in the healthcare system.

6.2.4 Socio-structural properties and resource mobilization for collective action

One of the important dimensions of interactional empowerment is resource mobilization for collective action. In this section we focus on the analyses of the effect of socio-structural properties on resource mobilization for collective action. The presented results provide us with additional answers to research questions RQ1.2, RQ1.4 and RQ1.6 and hypotheses H2.1–H2.3, which have already been partially addressed in the previous section on knowledge of resources. The differences in socio-structural properties and their effect on resource mobilization for collective action between different types of HROSC forums will also be addressed in this section and thus provide the final part of the answers for research question RQ3. In the first subsection we present the findings of the model in which we investigate the effect of involvement in HROSC and organizational characteristics of HROSCs on resource mobilization for collective action. In the second part of this section, we present the results of the effect of involvement of HROSC and users' different forms of capital on their perception of possible resource mobilization for collective action among HROSC users. In the final part of this section, the results of the model that examines the effect of users' different forms of capital and organizational characteristics of HROSC on users' resource mobilization for collective action are presented.

The effect of involvement in HROSC and organizational characteristics of HROSC on resource mobilization for collective action

In the first model on resource mobilization for collective action we focus on investigating the effect of involvement in HROSC and organizational characteristics of HROSC. In step one of the regression analysis we included control variables in the model, and according to the results for the whole sample presented in Table 6.11 this model did fit the data (R^2_{adj}=.032, p<.001). The second step of the regression analysis also included discussion involvement and involvement in community organization and action variables and this model also significantly fit the data (R^2_{adj}=.108, p<.001), where the increase in R^2 between the model from the first step and the model from the second step was also significant (ΔR^2=.078, p<.001). Similar results were also obtained with the analyses of this model on the subsamples of different types of HROSC forums. Next, in step three, five organizational characteristics of HROSC variables were entered that also present the moderating variables in this model. We also added interactions between organizational characteristics of HROSC variables and involvement in

HROSC variables. The results for the whole sample showed that the adjusted R^2 (R^2_{adj}=.321, p<.001) and the increase in R^2 were statistically significant (ΔR^2=.226, p<.001). This means that the model of the third step of the regression analysis is the most valid for interpretation. Similar results were also obtained with the regression analysis for the subsamples of respondents who visit online counseling forums and online socializing forums most often (see Table 6.11). Although the adjusted R^2 was statistically significant (R^2_{adj}=.381, p=.001) for the subsample of online support group forums, the change in R^2 was not (ΔR^2=.174, p=.201). Nevertheless, we still considered regression coefficients for interpretation.

The results for the whole sample demonstrate that the control variables age and health status have an effect on resource mobilization for collective action. The effects of both control variables, according to the values of the standardized regression coefficient, are very weak (see Table 6.11). Older respondents have a higher level of resource mobilization for collective action perception (beta=.088, p=.014), while respondents with a better health status perceive the possibility of mobilizing resources and collectively engaging in HROSC at the lower level (beta=-.086, p=.012). None of the control variables are statistically significant for the subsamples of online counseling forums and online support group forums, while the control variables in the model tested on the subsample of online socializing forums, age (beta=.202, p=.001) and health status (beta=-.125, p=.028), have a similar effect as those on the whole sample (see Table 6.11).

The results presented in Table 6.11 can help us evaluate hypothesis H2.1, which predicts the association between involvement in HROSC and interactional empowerment. With the findings provided in this section we can supplement the results obtained in the previous section in the first dimension of interaction empowerment, i.e. knowledge of resources. The findings for the whole sample demonstrated that both discussion involvement (beta=.108, p=.020) and involvement in community organization and action (beta=.188, p<.001) have a positive and very weak significant effect on users' perception of resource mobilization for collective action. These results are however not consistent for the analyses on the subsamples of different types of HROSC forums. In the online counseling forums only discussion involvement has a positive and weak significant effect on resource mobilization for collective action (beta=.233, p=007), while none of the involvement in HROSC variables is statistically significant in the subsample of online support group forums (see Table 6.11). The results for the subsample of online socializing forums show that only involvement in community organization and action is

positively and very weakly significantly associated with resource mobilization for collective action (beta=.180, p=.051).

Table 6.11: Standardized regression coefficients of control, involvement in HROSC and organizational characteristics of HROSC independent variables, and interactions in relation to resource mobilization for collective action for the whole sample and for each HROSC's forum type subsample

		Whole sample (N=667)		Online counseling forums (N=292)		Online support group forums (N=74)		Online socializing forums (N=250)	
	Predictor	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**
Step 1	Gender	.007	.827	.039	.461	-.009	.952	.032	.555
	Age	**.088**	**.014**	.029	.603	.119	.371	**.202**	**.001**
	Education	.006	.857	-.042	.416	.051	.686	.035	.555
	Health status	**-.086**	**.012**	-.091	.083	-.092	.446	**-.125**	**.028**
	Membership length	.043	.210	.018	.728	.041	.743	.062	.312
	Posting messages	.019	.605	-.054	.352	.004	.975	.074	.267
Step 2	Discussion involvement	**.108**	**.020**	**.233**	**.007**	.066	.766	-.004	.964
	Involvement in com. org. and action	**.188**	**.000**	.105	.321	.258	.220	**.180**	**.051**
Step 3	Positive sanctioning	**.233**	**.000**	**.200**	**.001**	**.288**	**.048**	**.258**	**.000**
	Negative sanctions	**.106**	**.004**	**.135**	**.019**	-.192	.221	**.151**	**.017**
	Participation in the formation of norms	.043	.305	.028	.633	.203	.116	.064	.402
	Interactivity of moderation	.031	.435	.074	.184	.095	.435	-.052	.462
	Sense of virtual community	**.232**	**.000**	**.221**	**.001**	.148	.290	**.206**	**.002**
	Discussion involvement X[a] Sense of virtual community[b]	**.097**	**.036**	**.147**	**.056**	**.333**	**.052**	-.068	.359
	Discussion involvement X Interactivity of moderation	.020	.657	.048	.478	-.161	.370	**.227**	**.042**
R^2adj (step 1)		.032	<.001	.024	.046	.089	.055	.022	.074
R^2adj (step 2)		.108	<.001	.158	<.001	.328	<.001	.071	.001
ΔR^2		.078	<.001	.138	<.001	.238	<.001	.055	.001
R^2 adj (step 3)		**.321**	**<.001**	**.327**	**<.001**	**.381**	**.001**	**.312**	**<.001**
ΔR^2		**.226**	**<.001**	**.199**	**<.001**	.174	.201	**.275**	**<.001**

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤.05).

The results of the analyses can also partially provide us with answers to hypothesis H2.3, in which we anticipated that organizational characteristics of HROSC are associated with interactional empowerment. The analysis for the second dimension of interactional empowerment, i.e. resource mobilization for collective action, in the whole sample demonstrates that positive sanctioning (beta=.233, p<.001), negative sanctions (beta=.106, p=.004) and a sense of virtual community (beta=.232, p<.001) have a positive and significant effect on resource mobilization for collective action. These results are also similar to the analyses on the subsamples of online counseling forums and online socializing forums (see Table 6.11). However, negative sanctions and a sense of virtual community are not statistically significantly associated with resource mobilization for collective action for the respondents who visit online support group forums most often in the HROSC (Table 6.11).

The main part of the analyses of this model is the interaction effects between involvement in HROSC variables and organizational characteristics of HROSC variables on resource mobilization for collective action. These results provide us with answers to research question RQ1.2. This research question has already been partially answered in the previous section and analyses of models on knowledge of resources that present the first dimension of interaction empowerment. The results related to the resource mobilization for collective action have demonstrated that under the condition of a sense of virtual community, discussion involvement has a positive, although very weak, and significant effect on resource mobilization for collective action (whole sample results: beta=.097, p=.036). More specifically, when users develop a feeling of belonging to the online community and are involved in discussions in the forums their perception of the possibility that they could collectively engage with other users in collective action(s), which could influence wider social structures, increases. These results were also statistically significant for the respondents of the subsamples of online counseling forums and online support group forums (see Table 6.11), but not for respondents that visit online socializing forums most often in the HROSC. Online socializing forums users' perception of the resource mobilization for collective engagement within the HROSC is triggered when they are involved in discussions in forums and perceive that they are moderated interactively (beta=.227, p=.042).

The effect of involvement in HROSC and different forms of capital on resource mobilization for collective action

In the second model we investigated the effect of involvement in HROSC and different forms of capital on resource mobilization for collective action. Similarly to previous models, in step one of the regression analyses we included control variables, where in comparison to the previous model (with involvement in HROSC and organizational characteristic of HROSC predictors) we also included offline social support as a control variable. In step two of the analyses we entered involvement in HROSC variables, i.e. discussion involvement and involvement in community organization and action. In step three we added five different forms of capital moderating variables and their interactions with predictors from the second step of the analyses. As demonstrated in Table 6.12, the regression model of the third step analyzed on the whole sample as well as on the subsamples of different types of HROSC forums fits the data, since both adjusted R^2 and increase in R^2 are statistically significant (whole sample results: R^2_{adj}=.215, p<.001; ΔR^2=.116, p<.001). However, the change in R^2 is not statistically significant for the subsample of online support group forums (ΔR^2=.162, p=.381). Nevertheless, the model of the third step is most valid for interpretation.

Table 6.12: Standardized regression coefficients of control, involvement in HROSC and different forms of capital independent variables, and interactions in relation to resource mobilization for collective action for the whole sample and for each HROSC's forum type

		Whole sample (N=666)		Online counseling forums (N=301)		Online support group forums (N=74)		Online socializing forums (N=234)	
	Predictor	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**
Step 1	Gender	**-.074**	**.040**	-.052	.349	-.087	.542	-.008	.907
	Age	**.117**	**.003**	.103	.083	-.003	.979	.121	.084
	Education	**-.087**	**.017**	-.059	.281	.028	.820	-.099	.145
	Health status	-.062	.112	**-.126**	**.027**	.008	.959	-.052	.470
	Membership length	.038	.300	-.001	.992	-.012	.922	.005	.944
	Posting messages	-.040	.323	-.043	.458	.109	.489	-.036	.646
	Offline social support	.051	.175	.073	.185	-.171	.251	.020	.770
Step 2	Discussion involvement	.099	.067	**.203**	**.013**	-.037	.888	-.021	.837
	Involvement in com. org. and action	**.166**	**.007**	**.276**	**.038**	**.655**	**.019**	**.329**	**.008**
Step 3	E-health literacy	**.079**	**.035**	.080	.139	-.128	.287	.098	.179
	Economic capital	-.069	.069	.005	.931	-.209	.186	-.126	.075
	Online bridging social capital	.042	.279	**.191**	**.005**	.047	.718	-.028	.694

		Whole sample (N=666)		Online counseling forums (N=301)		Online support group forums (N=74)		Online socializing forums (N=234)	
	Online social support – users	**.206**	**.000**	**.193**	**.005**	.033	.836	.169	.068
	Online social support – moderators	**.133**	**.002**	.054	.405	.073	.661	.139	.106
	Discussion involvement X[a] Online bridging social capital[b]	**-.104**	**.030**	**.150**	**.038**	.025	.880	**-.187**	**.046**
	Discussion involvement X Online social support – users	.078	.173	.031	.739	**.407**	**.029**	.121	.335
	Involvement in com. org. and action X Online bridging social capital	**.113**	**.047**	.082	.959	-.113	.502	.082	.386
	Involvement in com. org. and action X Online social support – users	**-.269**	**.005**	**-.583**	**.001**	-.135	.471	-.223	.204
	Involvement in com. org. and action X Online social support – moderators	.068	.424	**.337**	**.019**	-.300	.230	-.066	.704
R^2adj (step 1)		.039	<.001	.043	.006	.053	.157	.004	.340
R^2adj (step 2)		.115	<.001	.154	<.001	.268	<.001	.062	.005
ΔR^2		.078	<.001	.114	<.001	.215	<.001	.064	<.001
R^2 adj (step 3)		**.215**	**<.001**	**.264**	**<.001**	**.285**	**.009**	**.138**	**<.001**
ΔR^2		**.116**	**<.001**	**.144**	**<.001**	.162	.381	**.129**	**.004**

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤0.05).

First, let's look at the effect of control variables on resource mobilization for collective action. If we compare the results from the previous model (Table 6.11), we can see that results are not based on the same significance level. While in the previous model age and health status had a statistically significant effect, the results of this model indicate that gender (beta=-.074, p=.040), age (beta=.117, p=.003) and education (beta=-.087, p=.017) have a statistically significant effect on resource mobilization and collective action (Table 6.12). However, if we compare the values of the standardized regression coefficients of the control variables of this and the previous model, we find that these values of control variables do not vary much. As we have also noticed this difference within the models on intrapersonal empowerment and knowledge of resources, we can conclude that the differences in the effects of control variables

are likely related to the unaccounted for indirect effects between the control and independent variables included in the models. Based on the results obtained with the analysis of the first and this model on resource mobilization for collective action, we may conclude that only age and health status have a significant effect on the dependent variable, meaning that older users and users with a worse health status are more likely to perceive the possibility for members of HROSC to collectively engage for the common cause in the HROSC.

As we have already described in the analyses of the previous model of resource mobilization for collective action, step two of the regression analysis in this model can help us provide (partial) answers to hypothesis H2.1, which predicted the association between involvement in HROSC and interactional empowerment. As also demonstrated in the previous model, discussion involvement in this model is positively and statistically significantly associated with resource mobilization for collective action and this association is significant only for the subsample of respondents who visit online counseling forums most often in the HROSC (beta=.203, p=.013). Involvement in community organization and action, on the other hand, is positively and significantly associated with resource mobilization for collective action for the whole sample (beta=.166, p=.007) as well as the three subsamples of different types of HROSC forums (Table 6.12).

Direct effects of different forms of capital (in the model as moderating variables) on resource mobilization for collective action are also demonstrated in Table 6.12. The results for the whole sample show that e-health literacy (beta=.079, p=.035), online social support received from users (beta=.206, p<.001) and online social support received from moderators (beta=.133, p=.002) have a positive and significant effect on resource mobilization for collective action. According to the results, users' higher level of e-health literacy and received social support from users or moderators are beneficial for the development of users' perception of the possibility of collectively engaging in the HROSC. However, these results are different for the subsample of respondents that visit different types of forums in the HROSC. While in the subsamples of online support group forums and online socializing forums none of the different forms of capital have a significant impact on resource mobilization for collective action (see Table 6.12), in the online counseling forums, online bridging social capital (beta=.191, p=.005) and online social support received from users (beta=.193, p=.005) are significant predictors of users' perception on resource mobilization for collective action.

The main part of the analyses (Table 6.12) presents the interaction effects between involvement in HROSC and different forms of capital on resource mobilization for collective action. These analyses can give us answers to research question RQ1.4. Since the model includes only one dimension of interactional empowerment as dependent variable, i.e. resource mobilization for collective action, the presented results will give us partial answers to this research question (this research question has already been addressed with the analyses in the previous subsection on the knowledge of resources dimension of interactional empowerment). The results for the whole sample in Table 6.12 show that under the condition of online bridging social capital, discussion involvement has a negative and significant effect on resource mobilization for collective action (beta=-.103, p=.030). These results are also similar in the subsample of online socializing forums (beta=-.187, p=.046), while in the subsample of online counseling forums this interaction effect (beta=.150, p=.038) has a positive impact on resource mobilization for collective action. The heterogeneity of users' social interaction and network in online socializing forums presents a barrier to discussion involvement to motivate users for the perception that they can collectively engage in the HROSC, while in the online counseling forums this is one of the facilitators for the development of perception for collective action. This interaction effect is not significant for the subsample of online support group forums (see Table 6.12). However, in the online support group forums under the condition of online social support received from users, discussion involvement has a positive and moderate significant effect on resource mobilization for collective action (beta=.407, p=.029). The results for the whole sample have also shown that users' online bridging social capital importantly contributes to the involvement in community organization and action to have a positive and significant effect on resource mobilization for collective action (beta=.113, p=.047). However, under the condition of online social support received from users, involvement in community organization and action has a negative and significant effect on users' perception of the possibility of community members collectively engaging in the HROSC (beta=-.269, p=.005). These results are also similar for the subsample of respondents who visit online counseling forums most often in the HROSC (beta=-.583, p=.001). On the other hand, in the online counseling forums received social support from moderators can stimulate users' involvement in community organization and action to have a positive and significant effect (beta=.337, p=.019) on their perception that HROSC can be a place for collective engagement about health-related issues that are also of public concern.

The effect of different forms of capital and organizational characteristics of HROSC on resource mobilization for collective action

In the last model on resource mobilization for collective action we examined the effects of different forms of capital and organizational characteristics of HROSC. As we did in the previous model, in the first step of the analyses we entered control variables in the model, in the second step we added five variables of different forms of capital, and in the third step we entered five moderation variables of organizational characteristics of HROSC and their interaction with predictor variables from step two. As demonstrated in Table 6.13, the model (in step three) analyzed on the whole sample as well as models analyzed on the three subsamples fit the data (whole sample result: R^2_{adj}=.323, p<.001). The increase in R^2 between the model from the second step and the model from the third step was also statistically significant for the data analyzed on the whole sample (ΔR^2=.148, p<.001) as well as for the subsamples, except that for the subsample of online support group forums the R^2 was not statistically significant (Table 6.13). Nonetheless, the model of the third step is most valid for interpretation.

As we have already confirmed in the previous model on resource mobilization for collective action, only the control variables age (beta=.100, p=.009) and health status (beta=-.081, p=.038) have a statistically significant effect on users' perception of the possibility of collectively engaging in the HROSC and address health-related issues of public concern (Table 6.13). Older users of HROSC and users with a worse health status are more likely to develop the perception that HROSCs are places to mobilize resources among community members and collectively engage for a common purpose.

Table 6.13: Standardized regression coefficients of control, different forms of capital and organizational characteristics of HROSC independent variables, and interactions in relation to resource mobilization for collective action for the whole sample and for each HROSC's forum type subsample

		Whole sample (N=618)		Online counseling forums (N=283)		Online support group forums (N=72)		Online socializing forums (N=220)	
	Predictor	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**	**Beta**	**p value**
Step 1	Gender	-.047	.190	-.028	.609	-.174	.366	.004	.949
	Age	**.100**	**.009**	.077	.196	.096	.561	**.199**	**.004**
	Education	-.009	.818	-.019	.731	.261	.152	.011	.868
	Health status	**-.081**	**.038**	**-.131**	**.023**	-.043	.842	-.056	.445
	Membership length	.047	.206	.007	.896	.035	.835	.079	.264
	Posting messages	.046	.204	.087	.103	.188	.291	.044	.547
	Offline social support	-.022	.559	.039	.500	-.157	.449	**-.146**	**.036**
Step 2	E-health literacy	.039	.282	.024	.662	-.338	.069	.140	.078
	Economic capital	-.064	.088	-.007	.909	-.061	.737	-.117	.110
	Online bridging social capital	.004	.918	.041	.476	-.067	.737	-.076	.333
	Online social support – users	**.189**	**.000**	**.199**	**.007**	.228	.380	.163	.061
	Online social support – moderators	.057	.170	.011	.864	-.078	.759	.126	.145
Step 3	Positive sanctioning	**.209**	**.000**	**.157**	**.024**	.121	.591	**.232**	**.024**
	Negative sanctions	**.099**	**.014**	.106	.096	.210	.374	.130	.074
	Participation in the formation of norms	.036	.417	.028	.663	.108	.605	-.011	.905
	Interactivity of moderation	.009	.825	.105	.114	-.010	.972	-.102	.219
	Sense of virtual community	**.215**	**.000**	**.256**	**.000**	.328	.127	.133	.107
	E-health literacy X[a] Negative sanctions[b]	-.038	.313	-.038	.541	**-.497**	**.026**	-.003	.974
	Economic capital X Positive sanctioning	.062	.191	.066	.326	.013	.956	**.191**	**.041**
	Online social support – moderators X Interactivity of moderation	.064	.206	.058	.502	**-.609**	**.029**	.043	.647
R^2adj (step 1)		.039	<.001	.056	.002	.082	.082	.000	.431
R^2adj (step 2)		.206	<.001	.219	<.001	.201	.010	.158	<.001
ΔR^2		.172	<.001	.172	<.001	.163	.021	.172	<.001
R^2 adj (step 3)		**.323**	**<.001**	**.350**	**<.001**	**.323**	**.048**	**.296**	**<.001**
ΔR^2		**.148**	**<.001**	**.195**	**<.001**	.388	.207	**.227**	**<.001**

[a] X denotes interaction between two variables.

[b] Only statistically significant interactions are reported (p≤.05).

In the previous model on resource mobilization for collective action (see Table 6.12) we demonstrated that different forms of capital variables can have an impact on resource mobilization for collective action. In the results presented in Table 6.13 we can see the direct effect of these variables on the dependent variable (in the previous model different forms of capital variables were moderating variables) and thus provide the second part of the answer for hypothesis H2.2, which anticipates the association between users' different forms of capital and interactional empowerment. The results have demonstrated that only online social support received from users has a consistent positive and significant effect on users' perception of the possibility tof collectively engaging in the HROSC (whole sample results: beta=.189, p<.001). These results are significant only for the subsample of respondents who visit online counseling forums most often in the HROSC (beta=.199, p=.007).

The results of the regression analyses in step three presented in Table 6.13 can also be used to provide an answer to hypothesis H2.3, with which we anticipated that organizational characteristics of HROSC are related to interactional empowerment.[45] The results for the resource mobilization for collective action as the second dimension of interactional empowerment can provide an additional answer to the one presented in the previous subsection on knowledge of resources. As we have already demonstrated in the model investigating the effect of involvement in HROSCs and organizational characteristics of HROSC on resource mobilization for collective action (see Table 6.11), the results of this section's analyses show that positive sanctioning (beta=.209, p<.001), negative sanctions (beta=.099, p=.014) and a sense of virtual community (beta=.215, p<.001) have a positive and significant effect on resource mobilization for collective action. In comparing results among the subsamples of different types of HROSC forums, positive sanctioning also has a significant effect for the subsamples of online counseling forums and online socializing forums, while a sense of virtual community is significant only in the subsample of online counseling forums (see Table 6.13). None of the organizational characteristics of the HROSC effect on resource mobilization for collective action are significant for the subsample of online support group forums (Table 6.13).

[45] The organizational characteristics of HROSC variables in the models were included only in step three as the moderating variables in the regression analyses. The direct effect of this set of predictor variables can also be investigated, although these variables were never included in the second step of the regression analyses. To confirm the obtained results we also ran a separate analysis of the direct effect of organizational characteristics of HROSC variables on knowledge of resources, which confirmed the presented results. A report of these results can be obtained on request from the author of this study.

With the presented results of the analyses we can also address research question RQ1.6, which refers to the investigation of the interaction effects between users' different forms of capital and organizational characteristics of HROSC on interactional empowerment. Once again in this model we analyzed the effect on only one dimension of interactional empowerment, which means that these findings can provide us with a partial answer to this research question. Interestingly, the results of the whole sample and the subsample of online counseling forums show that none of the interaction effects are statistically significant (see Table 6.13). However, the results are different for the analyses on subsamples of online support group forums and online socializing forums (Table 6.13). In the online support group forums, under the condition of perceived presence of negative sanctions, e-health literacy has a negative and moderate significant effect on resource mobilization for collective action (beta=-.497, p=.026). In addition, under condition of presence of interactive moderation, online social support received from moderators also has a negative and strong significant effect on users' perception of the possibility of collectively engaging in the HROSC (beta=-.609, p=.029). However, in the online socializing forums, when users perceive the presence of positive sanctioning, their higher level of sufficient financial resources to meet monthly needs positively and significantly (beta=.191, p=.041) impacts users' perception of possible engagement with other community members in the HROSC.

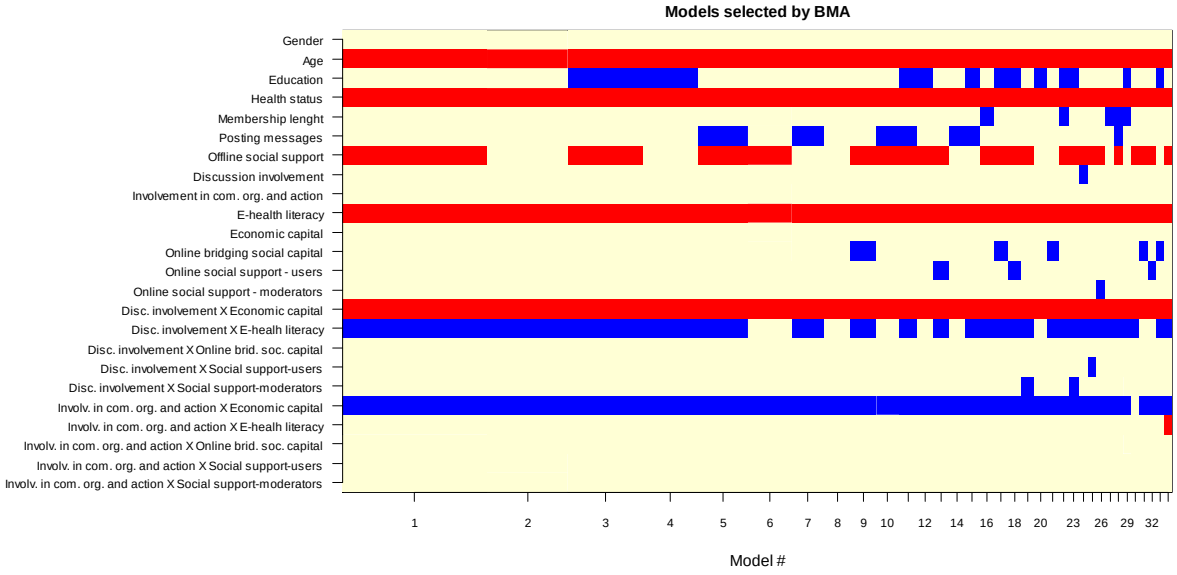
6.2.5 Robustness of regression models

The set of predictor variables tested in presented regression models was in the quantitative study proposed based on the theoretical considerations and hypotheses. Because of the complex theoretical framework, the tested regression models included quite a large set of predictor variables and interactions among them. However, it is very common in practice that multiple models can provide adequate fit to the observed data, where standard statistical practice is to select the model that better fits to the observed dataset (Fragoso, Bertoli, & Louzada, 2018). The selection of the particular model can have also some disadvantages, such as overconfident inferences, and "it ignores the existent model uncertainty in favor of very particular distributions and assumptions on the model of choice" (Fragoso et al., 2018, p. 2). One solution can be modeling the source of uncertainty, which can be performed by using Bayesian inference or more specifically with Bayesian Model Averaging (BMA).

> "Bayesian Model Averaging (BMA) is an extension of the usual Bayesian inference methods in which one does not only models parameter uncertainty through the prior distribution, but also model uncertainty obtaining posterior parameter and model posteriors using Bayes' theorem and therefore allowing for allow for direct model selection, combined estimation and prediction." (Fragoso et al., 2018, p. 2)

In order to provide evidence on the stability and strength of the proposed and tested models we have on the case of one regression model, i.e. the effect of involvement in HROSC and different forms of capital on intrapersonal empowerment,[46] carried out BMA for linear regression. The analysis included all predictor variables that were included in the model and the analysis was conducted on the whole sample, as well as on the subsample of respondents that visit online socializing forums most often in the HROSC. The R package BMA (Raftery, Painter, & Volinsky, 2005) was used for the analysis. BMA accounted for the model uncertainty inherent in the variable selection problem, using the simple Bayesian Information Criterion approximation to the posterior model probabilities (Raftery et al., 2005).

Figure 6.2: A visual summary of the BMA output for the set of predictor variables of the model "the effect of involvement in HROSC and different forms of capital on intrapersonal empowerment" (whole sample)

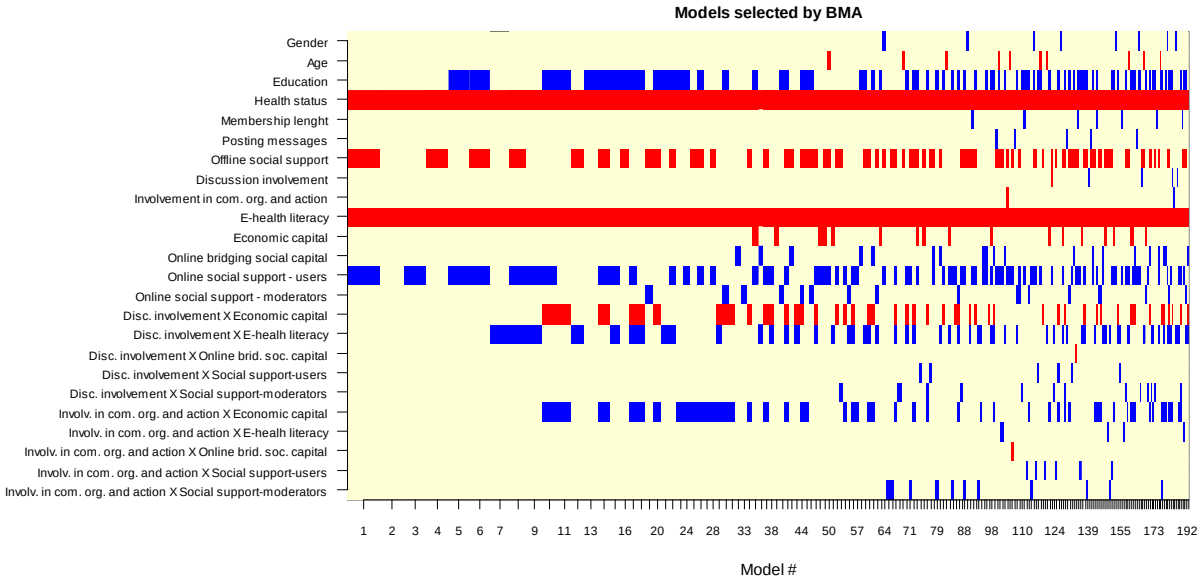


The Figure 6.2 provides us with a visual summary of the BMA output, where each row corresponds to a predictor variable and each column corresponds to a model. Red or blue rectangle indicate that the variable would be selected in the model and it has a positive (red) or

[46] For this additional test we chosen from the main quantitative study the first model that had a statistically significant fit to the data. The subsample of respondents that visit online socializing forums most often in the HROSC was selected because the regression analysis results were similar to the ones of the analysis on the whole sample and the comparison is thus much more apparent. For more details on the full models, see section 6.2.2.

negative (blue) coefficient, whereas yellow rectangle indicates that the variable is omitted from the model. The width of the column indicate the models' posterior probabilities. The results obtained from the analysis conducted on the whole sample show that 32 different models were selected. The predictor variables age, health status, offline social support, e-health literacy, the interaction effects of discussion involvement and economic capital, discussion involvement and e-health literacy, and involvement in community organization and action and economic capital, have high posterior probabilities of being in the best model, while other variables have lower posterior probabilities.

Figure 6.3: A visual summary of the BMA output for the set of predictor variables of the model "the effect of involvement in HROSC and different forms of capital on intrapersonal empowerment" (subsample of online socializing forums)



The BMA analysis for the same set of predictor variables was conducted also on the subsample of respondents that visit online socializing forums most often in the HROSC. The results (Figure 6.3) demonstrate that 193 different models were selected and health status and e-health literacy have the highest posterior probabilities of being in the best model. The variables education, offline social support, online social support received from users, and interaction effects of discussion involvement and economic capital, discussion involvement and e-health literacy, and involvement in community organization and action and economic capital do appear in the best model, but there is still a great amount of uncertainty about whether they should be included in the model.

On the basis of the obtained results of the BMA analysis and in combination with theoretical considerations we have with multiple regression analysis tested the models including only the most relevant predictor variables (reduced models) and compared the results to the ones obtained with the regression analysis on the full models that were presented in the results of the main quantitative study.[47] The reduced models included all control variables (Step 1), discussion involvement, involvement in community organization and action (Step 2), e-health literacy, economic capital, and interaction effects of discussion involvement and economic capital, discussion involvement and e-health literacy, and involvement in community organization and action and economic capital (Step 3). These analyses were conducted on the data for the whole sample, as well as on the subsample of the respondents that visit online socializing forums most often in the HROSC.

The comparison of the results (Table 6.14) between the full and reduced models demonstrate that reduced models on both the whole sample and the subsample of online socializing forums yield similar results as the full models that included all predictor variables. It is clear that health status, e-health literacy, interaction effect of discussion involvement and economic capital, and interaction effect of involvement in community organization and action and economic capital play an important role in shaping users' intrapersonal empowerment. We have provided little evidence, but nevertheless these results indicate that (full) regression models tested in the main quantitative study can be considered to be relatively stable and robust.

[47] For more details on the full models, see section 6.2.2.

Table 6.14: Comparison of the results (standardized regression coefficients) between full and reduced models of "the effect of involvement in HROSC and different forms of capital on intrapersonal empowerment" analyzed on the whole sample and on the subsample of online socializing forums

		Whole sample				Subsample of online socializing forums			
	Model	Full (N=651)		Reduced (N=712)		Full (N=225)		Reduced (N=245)	
	Variable								
Step 1									
	Gender	-.007		.009		-.053		-.035	
	Age	.102	**	.124	***	.000		.056	
	Education	-.077	*	-.069	*	-.155	*	-123	*
	Health status	-.351	***	.314	***	.339	***	-.332	***
	Membership length	-.067	*	-.062	.	-.074		-.036	
	Posting messages	-.072	*	-.076	*	-.054		-.026	
	Offline social support	.093	**	.084	**	.120	*	.086	
Step 2									
	Discussion involvement	.025		-.020		-.032		-.166	
	Involvement in com. org. and action	.064		.008		.117		.066	
Step 3									
	E-health literacy	.396	***	.372	***	.412	***	.308	***
	Economic capital	.000		.026		.031		.085	
	Online bridging social capital	-.043				-.054			
	Online social support – users	-.055				-.125			
	Online social support – moderators	.000				-.030			
	Discussion involvement X[a] Economic capital[b]	.206	***	.214	***	.211	**	.235	***
	Discussion involvement X E-health literacy	-.102	*	-.101	**	-.163	*	-.116	*
	Involvement in com. org. and action X Economic capital	-.136	**	-.137	***	-.235	**	-.221	***
	R^2 adj (step 3)	0.392	***	0.362	***	0.332	***	0.331	***
	ΔR^2	0.170	***	0.161	***	0.172	***	0.141	***

Note: *** p < .001; ** p < .01; * p < .05; . p< .10

[a] X denotes interaction between two variables.

[b] For the full models only statistically significant interactions are reported (p≤.05).

7. Discussion

The main aim of this doctoral dissertation was to investigate comprehensively the impact of the socio-structural properties of HROSCs on the intrapersonal and interactional dimensions of psychological empowerment. Based on theoretical foundations derived from the fields of social informatics, sociology, community psychology, online community research, and health communication, this dissertation presents a comprehensive theoretical framework for investigating the socio-structural properties of HROSCs and their effects on psychological empowerment. To be more specific, employing Giddens' (1979, 1984) and Bourdieu's (2002 [1986]) theories, and their understanding of the mutual intertwining of rules, resources, and social practices, the study builds a foundation for the conceptualization of the socio-structural properties of HROSCs. The concept of socio-structural properties makes it possible to situate the mutual interaction and intertwining of social practices and structural properties within one analytical framework, which in the context of HROSCs consists of the interconnection between their organizational characteristics, users' different forms of capital, and users' involvement in HROSCs. The conceptualization of socio-structural properties in HROSCs proposed by drawing on the theories of empowering community settings (Maton & Salem, 1995), managing common resources in online communities (Kollock & Smith, 1996), implicit and explicit norms (Burnett & Bonnici, 2003), Bourdieu's (2002 [1986]) capital theory, and previous studies on participation and involvement in HROSCs (Carron-Arthur et al., 2015; Lutz et al., 2014; Minkler et al., 2001; Petrovčič & Petrič, 2014b) offers the basis for the development of a theoretical framework for understanding individual- and community-level factors in HROSCs, which can through mutual interrelation significantly affect users' psychological empowerment. The development of the theoretical framework of socio-structural properties in HROSCs was one of the main research objectives of this thesis, and comprised the (theoretical) foundation for the empirical study.

With the complementary mixed-methods research design using (data and method) triangulation of qualitative and quantitative research methods, the study presents a methodological framework for empirically investigating socio-structural properties, and intrapersonal and interactional empowerment in the context of HROSCs. The development of this methodological framework was also one of the important research objectives of this doctoral

dissertation. The findings of the qualitative study, comprising in-depth, semi-structured interviews with users and health profession moderators of the studied HROSC, Med.Over.Net, provided important insights that informed the development of the measurement instruments used in the quantitative study. The main purpose of the qualitative study, in addition to facilitating the development of quantitative measurement instruments, was to explore the differences and/or similarities in organizational characteristics among different types of HROSC subcommunities, which was also one of the research objectives of this doctoral dissertation. The quantitative study, conducted through a cross-sectional Web-based survey with a combined nonprobability and probability samples of Med.Over.Net users, addressed the last research objective of this thesis, namely the empirical examination of the impact of socio-structural properties on intrapersonal and interactional empowerment in the HROSC. After qualitative and quantitative data were collected and analysed separately, the last phase of this study comprised the triangulation and integration of qualitative and quantitative results to interpret the research findings and provide a more nuanced understanding of the role played by the socio-structural properties of HROSCs as factors in users' intrapersonal and interactional empowerment.

This chapter provides a discussion and interpretation of the qualitative and quantitative findings, generating the final answers to the research questions and hypotheses proposed. The first part of this chapter focuses on explaining the differences and/or similarities related to the organizational characteristics of HROSC. Next, it discusses and interprets the results of the impact of socio-structural properties on intrapersonal empowerment, followed by the interpretation of the findings related to the impacts of socio-structural properties on interactional empowerment. In these two parts, the chapter also addresses and discusses how the differences in organizational characteristics of HROSC in relation to the users' involvement in HROSC and different forms of capital influence the dimensions of psychological empowerment. The last part of this chapter is dedicated to the presentation of the original contributions and significance of this doctoral dissertation and the limitations of the study.

7.1 Organizational characteristics of HROSC subcommunities

One of the main research objectives of this doctoral dissertation was to explore and explain the differences and/or similarities in organizational characteristics of HROSC subcommunities.

More specifically, this research objective was addressed in RQ2: *"What are the differences and/or similarities in organizational characteristics among different HROSC subcommunities?"* This was studied through a qualitative deductive-inductive thematic analysis of interview data derived from users and health professional moderators of Med.Over.Net. Moreover, the differences among the HROSC subcommunities were also addressed through the quantitative data analysis of descriptive statistics of the dependent, independent, and control variables included in the quantitative study. To examine if there were statistically significant differences in the mean values between the respondents visiting different subcommunities (i.e., online counseling forums, online support group forums, and online socializing forums) most often in the HROSC, the study conducted a series of one-way ANOVA tests, including Tukey's post hoc multiple comparisons test. Both qualitative and quantitative results were used to interpret, contextualize, and explain the differences and similarities concerning the organizational characteristics of HROSC subcommunities.

Through theory- and data-driven thematic analysis, the study found that HROSC users' and health professional moderators' views and experiences shed new light on the differences and similarities in the organizational characteristics among different HROSC subcommunities. More precisely, the analysis revealed that users' and health professional moderators' experienced specific organizational characteristics quite differently with regard to particular HROSC subcommunities, greatly affecting their type of participation, involvement, expectations, and the ways in which (health-related) needs can be addressed in a specific type of HROSC forum.

The study found that both users and health professional moderators perceived **online counseling forums** to be very structured spaces, in which ground rules and norms, types of moderation, and the participation and involvement of both users and health professional moderators were established and known in advance. Both users and health professional moderators were aware that the primary purpose of online counseling forums was the provision of clinical expertise by health professional moderators, as well as information and occasionally also emotional social support for HROSC users. As this study revealed, the main task for health professional moderators in the online counseling forums was to address users' health-related needs, which inherently involved managing relations and interactions with users. To accomplish this task, health professional moderators used different expert moderation and response strategies, with the reaction strategy being the most common. This finding is

consistent with other studies (e.g., Huh & Pratt, 2014; Huh et al., 2013), suggesting that an important part of the health professional moderators' role is to present clinical practices, such as triage, clinical questioning, partnering with users, and deciding what to tell users. In addition to the reaction strategy, the redirection response strategy is a crucial part of health professional moderation practice, urging users to visit their assigned personal doctors or redirecting them to relevant forums. This finding is mirrored in other studies (Huh, 2015; Huh et al., 2013), which suggest that such strategic practices are generally used by health professional moderators to avoid liability issues and ethical dilemmas that emerge from providing clinical help online.

In online counseling forums, content moderation by health professional moderators is one of the techniques most commonly used for managing social interactions with users, together with expert moderation. Content moderation is closely related to the enforcement of formal sanctions and more specifically relates to reviewing users' messages, approving or rejecting messages before they are publicly published in a forum, and deleting inappropriate user posts. The function of content moderation is very important in online counseling forums, as it prevents conflicts and negative communication between users in the forum. Users are highly aware of the dynamics, and the functioning of social interactions and communication in online counseling forums, and know that they are not sites in which they can participate in the formation of the norms of the online community, or seek personal recognition and build social status. As demonstrated in the quantitative study, it is thus not surprising that users who visit online counseling forums most often in the HROSC present on average the lowest level of discussion involvement compared to users visiting the other two types of forums most frequently in the HROSC.

Although the organization characteristics of online counseling forums do not support very dynamic or diverse social interactions and communication among users and health professional moderators, users view them as very positive, reliable, and trustworthy places in the HROSC that they value very highly. Moreover, the strict structure of the online counseling forums, the predictability of social interactions and communication between users and health professional moderators, and the visible and clear norms make them safe and predictable sites, in which users' expectations and health-related needs are addressed and often also satisfied. The well-defined role differentiation between health professional moderators and users in online counseling forums provides a clear division of tasks, frames social interactions and communication, and gives them order and predictability. As emphasized by previous studies

(Brown, 1988; Maloney-Krichmar & Preece, 2002), the clearly defined roles help users to form expectations of their own behavior, as well as the behavior of others.

Users and health professional moderators in the study often emphasized the importance of online counseling forums in addressing users' most pressing health-related needs and offering positive health outcomes. This finding is also supported by previous research (Atanasova et al., 2017, 2018; Huh & Pratt, 2014), and according to our results, the fact that users' health-related needs are addressed well might to some extent be related to the structure and predictability of roles and social practices in online counseling forums. As research has demonstrated (Koelen & Lindström, 2005; Purtilo, Haddad, & Doherty, 2014), the predictable, enduring, and stable social and health-related environment is an important factor in health outcomes, since it reduces stress, increases the sense of coherence and confidence, and enhances the feeling that one is capable of dealing with challenging health-related situations. The online professional–patient interactions embedded in the specific organizational characteristics of online counseling forums in the HROSC might thus through the predictable course of social interactions between users and health professional moderators present an important source of users' positive health outcomes.

While the exchange of patient expertise among users is not encouraged in online counseling forums, the exchange of experience and advice, and provision of social support among patients or users is one of the primary purposes of **online support group forums**. The results of the quantitative study also revealed that on average the online social support received from users isthe highest among users who visit online support group forums most often in the HROSC compared to those who participate most frequently in online counseling and online socializing forums in the HROSC. These results are not surprising, as it has been demonstrated in previous studies (Coulson, 2005; Hartzler & Pratt, 2011; Reifegerste et al., 2017; van Uden-Kraan et al., 2010) that sharing health-related experiences, comparing information on health issues, and exchanging patient-generated guidance and advice with peer patients are among the main motives for users' participation in online support groups.

In comparison to online counseling forums, the content moderation enacted by health professional moderators in online support group forums not only prevents negative communication and conflicts among users, but also has an important function in preventing the spread of misleading information included in users' messages exchanging patient expertise.

Health professional moderators have an important role in online support group forums as providers of clinical expertise, but they also function as discussion catalysts. In particular, interactive moderation techniques present an important means of steering and encouraging discussion among users, fostering the sharing of experiences, views, and advice with other peer patients in the online support group forums. As also other work on online support groups has suggested (Lindsay et al., 2009), health professional moderators have an important function in stimulating discussion among users by opening new forum threads, posing questions to users, and drawing attention to topics of interest to the group.

As reported by the users in our study, in the HROSC some of the online support group forums lacked health professional moderators or any type of moderation at all. The absence of moderation in online support group forums was perceived negatively by the HROSC's users, as it was associated with the proliferation of inappropriate content, unrelated and off-topic discussions, and the spread of misleading information. Especially in the unmoderated online support group forums, users were more likely to sanction inappropriate behaviors by group members. Through informal sanctions, such as ignoring messages with insincerely presented and poorly described health issues, or expressing insults and unkindness, users expressed and showed others which behavior was acceptable in the forums and which was not. As revealed by users in the study, informal sanctions were often directed toward the behavior and messages of newcomers, who commonly violated the informal rules established among the regular members of the forum due to lack of knowledge about the forums' implicit norms. This finding mirrors that of the study by Stommel and Meijman (2011), who demonstrated that newcomers' acceptance in an online support group is often conditioned by disclosing their diagnosis and duration of disease, symptoms or health issues to regular members, such that adequate self-presentation presents a norm that legitimizes their membership and participation.

In comparison to online counseling forums, online support group forums can be considered less stable and predictable sites in the HROSC, especially regarding the quality, reliability, and validity of the health-related information exchanged among the users. This might be especially problematic in unmoderated online support group forums, in which sanctioning and moderating is left to users themselves. While informal sanctioning enacted by users might present one of the important mechanisms for managing social interactions and communication, it can in some situations also be perceived as a barrier to the participation and involvement of new users, and those with different views and experiences. Cliques, like-minded individuals and interest

groups might prevail and take over the forums, which become dedicated to specific (health-related) topics. As emphasized by Stommel and Meijman (2011), just sharing similar health issues is not enough for (new) users to become members of online support groups; rather, they must show the seriousness of their health problems, express them in recognizable terms, and recognize and obey the implicit norms established among regular members.

Although users participating in online support group forums might be exposed to greater risk of unreliable and misleading health-related information than in online counseling forums, this type of forum in the HROSC presents an important site in which patients, especially those with chronic conditions, can exchange patient expertise, receive understanding, and mitigate feelings of loneliness and distress when coping with a (new) diagnosis. As reported by users in the study, participation in an online support group greatly influenced their personal health-related state and their understanding of health issues. Moreover, helping other users in an online support group forum also indirectly affected users' personal feelings of relevance and meaning. Providing help to other users gave them a sense of gratification and constituted the "helper-therapy principle" (Coulson & Shaw, 2013; Riessman, 1965), according to which offering help to others serves as an important therapeutic process that can lead to increased feelings of self-esteem and self-efficacy in managing their own health conditions. Through the opportunity to participate in the formation of norms in the online support group forums, users can also develop the perception of exerting an influence on the functions and dynamics of communication in the forums, which also contributes significantly to experiencing a sense of belonging, a shared sense of personal relatedness, and emotional attachment and commitment to the HROSC.

In the **online socializing forums**, social interactions and communication evolve mainly around users. Health professionals do not participate as moderators in this type of forum in the HROSC. Our quantitative study also showed that users participating in online socializing forums most often perceive on average the lowest level of online social support from moderators in comparison to those most often visiting the other two types of forums in the HROSC. Online socializing forums are usually moderated by discussion moderators or online community managers, and the most prominent type of moderation in this type of forum is interactive, which has a function of displaying and sharing examples of norms and (in)appropriate behavior in the forum. Often the users themselves urge moderators to intervene in discussions and the absence of moderation is perceived very negatively by the users, since it increases the possibility of conflict, unkindness, and destructive communication. This is why

users often expect moderators to intervene in online socializing forums, employing formal sanctions, such as deleting unacceptable messages and in the most severe cases blocking users who provoke, troll, and post inflammatory and aggressive messages.

Besides the formal sanctions usually enacted by discussion moderators, users and their informal sanctions also play an important role in this type of forum. By ignoring posts and giving warnings about insults and unkindness, users often inform others about their inappropriate behavior, expose their violations of the implicit and explicit norms, and condemn unacceptable conflicts that disturb the dynamic of discussions and communication in the group. The quantitative study also revealed that on average users in the online socializing forums more often perceived the presence of negative sanctions in the forums compared to those participating in the online counseling or online support group forums in the HROSC. As demonstrated by Kiesler et al. (2012), in many online communities, the sanctioning of inappropriate behavior presents a major part of social interactions and communication among users, and many of the sanctions are very often implemented by online community members. Especially in groups with a higher level of community cohesion, voluntary sanctioning of other users is considered desirable, and thus increases users' willingness to carry out sanctions (Kim, 2000; Petrič & Petrovčič, 2014a). However, informal sanctioning by users can also have some negative effects, especially for the users imposing sanctions: They can be harassed, receive negative feedback, and find themselves facing retaliation or conflict with other members (Kiesler et al., 2012). Particularly in non-moderated online socializing forums, the imposition of sanctions by members on each other can often lead to conflicts about the legitimacy of the sanctions, ineffective sanctioning practices, and higher numbers of users leaving the online community (Kiesler et al., 2012). The prevalence of negative sanctions, together with the diversity of users and their interests, might also explain why users of online socializing forums most often experience on average a lower level of sense of belonging to the online community in comparison to those participating in the online counseling and online support group forums in the HROSC.

The structure of the online socializing forums is less strict than that of the online counseling and support group forums; it includes more unpredictable communication and social interactions among the users. This is clearly in line with the diverse topics and discussions in this type of forum, ranging from everyday chit-chat, vacations, and beauty, to politics, and to some extent also health. Although online socializing forums, with their diverse sets of interests

and users, often present more inappropriate behaviors, and formal and informal sanctioning among users, they nonetheless represent important sites for users to build their social status and recognition within the community. Moreover, users in online socializing forums also most often participate in the formation of online community norms, as they believe that they have more options and opportunities to voice suggestions, ideas, and proposals that might improve the functioning of the forums and the HROSC as a whole. As demonstrated by Shen and Khalifa (2013), the opportunity for users to have access to meaningful roles and responsibilities in an online community significantly affects the development of skills and self-confidence, as well as influencing the quality and nature of relations between members. Moreover, the possibility for members of the online community to develop their roles within groups greatly contributes to the reducing the threshold for (new) members to navigate their way in forum discussions (Ren, Kraut, & Kiesler, 2007; Shen & Khalifa, 2013), and thus to understand the explicit and implicit group norms in specific subcommunities of the HROSC.

Users' participation in the organization of the community, and contribution to the development or transformation of norms also have important implications for users' recognition and symbolic capital, attained in the form of respect, reputation, and admiration among users. Immaterial rewards, such as reputation and recognition, as shown by Malinen (2015), are important facilitators of users' continuous participation and contribution to the online community. Users participating in online socializing forums might not experience health issues, but if they do, rewards in the form of appreciation, admiration, and gratitude expressed by other forum members can also be seen as important factors for the development of users' sense of personal relevance and meaning, self-esteem, confidence, and satisfaction. These outcomes are crucial for users in coping with disease and the development of strategies for their own health care management (Jerusalem & Schwarzer, 1992; Mann, Hosman, Schaalma, & de Vries, 2004).

7.2 The impact of socio-structural properties on intrapersonal empowerment

One of the main research objectives of this doctoral dissertation was to investigate the impacts of socio-structural properties, i.e., involvement in the HROSC, different forms of capital, and

the organizational characteristics of the HROSC, on users' intrapersonal empowerment. Based on the results of the quantitative study, which were also integrated and contextualized in relation to the qualitative results, it is possible to discern several important findings pertaining to the influence of specific socio-structural properties on users' intrapersonal empowerment, and thus the identification of important individual- and community-level factors that facilitate or hinder users' intrapersonal empowerment outcomes in the HROSC.

7.2.1 Effect of involvement in the HROSC on intrapersonal empowerment outcomes

Thus far, research on intrapersonal empowerment in relation to HROSCs has consistently demonstrated that users' participation is positively associated with the development of intrapersonal or patient empowerment (Mo & Coulson, 2010; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2008b). Participation in HROSCs and also involvement in community organization have been recognized as important factors enabling users to improve their competences, obtain necessary resources, and develop self-efficacy and control over their health-related issues. Based on the results of previous studies, we also anticipated that involvement in the HROSC, i.e., discussion involvement and involvement in community organization and action, would play an important role in users' intrapersonal empowerment outcomes. However, the results of the quantitative study demonstrate that involvement in the HROSC does not have a direct impact on users' intrapersonal empowerment. To be more precise, discussion involvement was associated with users' intrapersonal empowerment, but only under the condition of the specific organizational characteristics of the HROSC.

The results revealed that in the case of users perceiving the possibility of participating in the formation of norms in the HROSC, involvement in discussions in the HROSC reduced users' intrapersonal empowerment outcomes. This finding was predominantly represented among the users who visited the online socializing forums most often in the HROSC, indicating that users' greater possibility of contributing to the structuring of explicit and implicit norms in the forums, and how these frame users' social interactions, along with involvement in discussions with other users, hindered the development intrapersonal empowerment. Participation in the formation of norms was also most often reported by user participants in relation to the online socializing forums in our qualitative study; they considered that they could have greater influence on the organization and dynamics of this type of forum than the other forums in the

HROSC. However, when users perceive that they have an opportunity to participate in decisions pertaining to the online community together with discussion involvement with other users, it might be a distraction in their focus, such that their attention is mainly on internal online community activities. While the opportunity for users to play a role in the functioning of the HROSC might, as highlighted by Aakhus and Rumsey (2010), have a positive effect on the development of a sense of meaning in the online community and connecting with other users, it could also have the opposite effect on users' development of a sense of self-efficacy, motivation, health-related competence, and control over the management of health-related issues and conditions.

Besides participation in the formation of norms in the HROSC, the interactivity of moderation also presented an important condition for users' discussion involvement having a (positive) impact on intrapersonal empowerment. According to our results, the interactivity of moderation had a direct effect on users' intrapersonal empowerment, and this effect was present among the users who visited the online support group and online socializing forums most often in the HROSC. However, the direction of the impact of the interactivity of moderation on users' intrapersonal empowerment was not the same in both forum types. In the online support group forums, users' perception of the interactivity of moderation had a positive impact on intrapersonal empowerment, while in the online socializing forums perceived interactive moderation had a negative impact on users' intrapersonal empowerment outcomes.

These results might be explained by the qualitative study findings, which showed that an interactive type of moderation is predominantly used in online support group forums to encourage discussion among users and draw users' attention to topics of interest for the group. Ye, Wang, and Willis (2018) also showed that social support in online support groups is often generated through interactive discussions and conversations among users. In contrast, in online socializing forums interactive moderation has more of a strategic function (Lindsay et al., 2009), or as reported by participants in our qualitative study, moderators engaging in interactive moderation publicly display inappropriate behavior in the forums, and provide an example of what is allowed and what is not. This strategic or even sanctioning function of interactive moderation in online socializing forums might not be a supportive factor for users' development of self-efficacy, motivation, competence, and control over health-related issues. Based on these results, it can be concluded that when interactive moderation has the function

of promoting and encouraging discussion and participation in the forums, users' discussion involvement facilitates the development of intrapersonal empowerment outcomes.

Extensive research has been dedicated to investigating the differences between active and passive participation in HROSCs, and how this affects users' intrapersonal empowerment (Mo & Coulson, 2010; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2008b). Similar to the findings of such research, our study confirms that there are no differences between posters and lurkers in terms of the effect on users' intrapersonal empowerment. Thus, both lurking and posting might be related to users' intrapersonal empowerment outcomes in HROSCs (Mo & Coulson, 2010).

7.2.2 The role of e-health literacy and economic capital in users' intrapersonal empowerment

According to the results of this study, the influence of users' discussion involvement and involvement in community organization and action on intrapersonal empowerment was conditioned by users' different forms of capital, as well as the specific organizational characteristics of the HROSC. Our results reveal that e-health literacy and economic capital can be considered important factors and conditions for involvement in the HROSC having an impact on users' intrapersonal empowerment.

In particular, the results reveal that e-health literacy has a direct effect on users' intrapersonal empowerment, and thus plays an important role in users' development of capabilities for confronting health-related issues competently and making appropriate choices to achieve desired health-related outcomes. The association between e-health literacy and intrapersonal empowerment is evident for users most often involved in all three different types of HROSC forums. As suggested in previous studies (Norman & Skinner, 2006a; Petrič et al., 2017b; Seçkin et al., 2016), e-health literacy can be considered one of the most important factors for intrapersonal empowerment. E-health literacy can enable individuals to make meaningful and informed decisions, undertake effective strategies for coping with and managing health issues, and achieve positive health outcomes. As pointed out by Schulz and Nakamoto (2011), e-health literacy can be considered the foundation of intrapersonal empowerment. HROSCs can present an important source for the development of both e-health literacy and empowerment. Users' ability to attain health-related information, to evaluate its reliability, and to understand, process,

and interpret such information, can greatly influence their confidence, and sense of control and self-efficacy, which, as demonstrated by Seçkin (2011), have a key impact on an individual's self-care, management of disease, and good health outcomes.

However, as the results of our study demonstrate, the interaction between e-health literacy and users' discussion involvement does not have a positive impact on intrapersonal empowerment outcomes. More specifically, under the condition of perceived e-health literacy, users' involvement in discussions in the HROSC reduces their feelings of competence, self-efficacy, motivation, and control over management of health-related issues. This result is more particularly evident for users visiting the online socializing forums most often in the HROSC. One possible explanation for this result might to some extent be related to the fact that users most often involved in the online socializing forums in the HROSC are not necessarily interested in becoming empowered. This type of user might perceive that they have adequate e-health literacy, skills, and competences, and thus be unwilling to attain greater self-efficacy, motivation, and control over their health-issues. As previously noted by scholars (Palumbo, 2017; Schulz & Nakamoto, 2011, 2013a), such relations between e-health literacy and intrapersonal empowerment often hold for patients with acute health conditions, who do not feel the need to become empowered, and consider that relying on health professionals' clinical treatments and services is a sufficient means of managing health issues.

The results of the study have also demonstrated that under the condition of economic capital discussion involvement in the HROSC positively influences their intrapersonal empowerment. This result was especially evident for the users' who participate in online socializing forums most often in the HROSC. When users' participating mostly in the online socializing forums in the HROSC assess that they have sufficient financial resources on a monthly basis—and also perhaps to afford (additional) health care services, treatments, and remedies—their discussion involvement in the HROSC positively influences their intrapersonal empowerment outcomes. Users' perception that they can afford health professionals and health care services together with active involvement in the HROSC that might not exclusively be related to health-related topics and interests contributes to their sense of intrapersonal empowerment.

However, based on our results, economic capital also presents a condition under which involvement in community organization and action negatively influences users' intrapersonal empowerment. To be more precise, users' perception that they have sufficient financial

resources to get through the month and involvement in online community events, organizational activities, the vision and goals of the community, and various activities that pertain to issues of public concern hinder users' intrapersonal empowerment outcomes. This result, as previously, was most prominently evident for users most often participating in the online socializing forums of the HROSC. Users' sense of financial security and the focus on activities that are primarily motivated by identification with the online community might present a barrier to users' attainment of the ability to develop competence, self-efficacy, and control over health-related issues. As we have to some extent noted before, since this result is most evident for users predominantly involved in the online socializing forums of the HROSC, it is possible that they have different motives and reasons for participation in the HROSC compared to those most often involved in the online counseling and online support group forums. As reported by the participants in our qualitative study, the purpose of participating in the online socializing forums was most commonly related to seeking entertainment, and discussing everyday topics and interests. Accordingly, this type of user might take part in the HROSC not necessarily based on interest in addressing their health-related needs. In particular, when they are involved in the organization and activities of the online community and do not experience financial problems, this might present an important constraint on achieving intrapersonal empowerment outcomes.

7.2.3 Positive and negative sanctions as important conditions for users' intrapersonal empowerment outcomes

Our study also revealed that users' perception of the presence of positive and negative sanctions in the HROSC forums presented one of the most crucial conditions for their different forms of capital to have a positive or negative effect on their intrapersonal empowerment.

In the online socializing forum, when there was positive sanctioning, the online social support received from users had a negative influence on users' development of intrapersonal empowerment outcomes. The opportunity for users' to receive appraisal, gratitude, recognition, and appreciation from other users and moderators in the online socializing forums, together with the receipt of advice, suggestions, consolation, and company from other users, constrains their achievement of competence, self-efficacy, motivation, and control over health-related issues. This result is somewhat surprising, since positive sanctioning and especially online social support received from other HROSC members have in previous studies (Aardoom et al.,

2014; Johnston et al., 2013; Mo & Coulson, 2012; van Uden-Kraan et al., 2009) been considered factors that facilitate users' intrapersonal empowerment. One of the reasons for this result might be drawn from the findings of our qualitative study, which suggest that in online socializing forums positive sanctioning is mostly perceived as affording the possibility to build social status and receive recognition by writing answers to other users' questions, providing help, and expressing personal opinions and interests. Accordingly, receiving recognition, and building status and reputation in online socializing forums is related to the provision of different kinds of social support to other members of the forums. If users perceive that they have a possibility of gaining recognition in the forum, but also that they have received online social support from other users, this might lower their perceptions of personal value and meaning, and the sense of playing a special role for other members, which might consequently lead to a decreased perception of the ability to overcome or manage competently and efficiently personal health issues.

The results have also demonstrated that when positive sanctioning is present in online socializing forums, e-health literacy lowers users' intrapersonal empowerment. Although the empirical link was demonstrated to be weak, we can say that when users perceive that they have the possibility of building their social status in the socializing forums and gaining recognition among members, the ability to search for, understand, and have an awareness of health-related sources, and to extract meaning from such sources constrains the development of their self-efficacy, competence, motivation, and control over managing their health issues. This result might be explained by drawing on Bourdieu's (2002 [1986]) capital theory. Since online socializing forums are not primarily dedicated to health-related topics, e-health literacy might not be considered the most crucial resource in this type of forum in terms of conferring value, respect, acknowledgement, and acceptance among members. Under such conditions, e-health literacy might not be convertible into the symbolic capital that can bring users the legitimization to participate, and thus the possibility to access particular roles in the online community, and to increase visibility and reputation among the members. When experiencing health problems, this constraint might affect users' self-esteem, confidence, and motivation to cope with and manage their health issues in an effective manner.

However, the results also show that in online socializing forums when there is a perceived presence of negative sanctions, e-health literacy has a positive effect on users' development of intrapersonal empowerment outcomes. The presence of informal and formal sanctions

discouraging misbehavior among users in the online socializing forums in relation to skills in searching for, understanding, recognizing quality, and extracting meaning from online health information significantly contributes to increasing users' feelings of self-efficacy, competence, and control over health-related problems. In comparison to the positive sanctioning mechanisms in online socializing forums, negative sanctions in the form of implicit or explicit demonstrations of what is allowed and what not might present an important means of establishing structure and guidance for online community behavior that is focused on maintaining valuable resources, such as e-health literacy, which have in previous studies (Maton, 2008; Schulz & Nakamoto, 2013a) been demonstrated to play an essential role in achieving empowerment outcomes. Especially in the online socializing forums, in which discussions among users can often be conducted without any proper moderation, activities such as monitoring and screening the appropriateness of messages, and the information exchanged might be an important factor in terms of users' e-health literacy having a positive effect on their intrapersonal empowerment. As also suggested in previous studies (Klemm, 2012; Lindsay et al., 2009; Merolli et al., 2013), proper facilitation and guidance with regard to social interactions among users improve the ways in which users participate and exchange information, which resources are perceived by users as valuable, and how they should be used in discussions. This is especially important in online health-related discussions (Mitsutake, Shibata, Ishii, & Oka, 2016; Schulz & Nakamoto, 2011), in which users' ability to seek, find, understand, and appraise health-related information might, in the case of possible punishment for misbehavior, send members the message that inappropriate information and suggestions are sanctioned, and that the advice and information provided can be used to achieve health-related goals, such as overcoming or efficiently managing health-related problems.

In the online counseling forums, positive and negative sanctions have also been demonstrated to present important conditions for users' different forms of capital to have an effect on intrapersonal empowerment. The results revealed that under the condition of positive sanctioning, online social support received from moderators is associated with achieving intrapersonal empowerment outcomes. As our qualitative study findings have shown, positive sanctioning is mainly perceived in online counseling forums as a means of expressing gratitude and appreciation for the health-related information, advice, suggestions, and consolation received, especially from health professional moderators. If users perceive that appreciation and gratefulness is present and displayed in the online counseling forums, the online social

support received from health professional moderators will have an important effect on users' feelings of motivation, self-efficacy, competence, and control over their health issues. This result is to some extent not surprising, as health professional moderators, and the clinical expertise and other forms of social support they provide to users in the online counseling forums have already in previous research (Petrič et al., 2017b) been demonstrated to be important factors driving users' intrapersonal empowerment. What is interesting is that online social support received from health professional moderators does not have a direct influence on users' development of empowerment outcomes, but is moderated by users' perceptions of the "rewards" and appreciation expressed by users to the health professional moderators. As suggested in previous work (Hajli, Sims, Featherman, & Love, 2015), positive sanctioning mechanisms might thus function as an evaluation or rating system established among users, telling them what is credible information and which health professional moderator services are well valued, thus making the social support received from health professional moderators even more likely to affect users' sense of empowerment.

In contrast, when users' perceive the presence of negative sanctions in online counseling forums, the online social support received from users reduces their sense of intrapersonal empowerment. Contrarily, the results reveal that the impact of perceived negative sanctions and online social support received from users in online support group forums is positively associated with intrapersonal empowerment outcomes. The findings of our qualitative study might provide us with additional explanations for these results. As reported by our study participants, formal and informal negative sanctions are quite differently perceived in online counseling forums and online support group forums. In the latter, negative sanctioning is mostly enacted by the users themselves, and these informal sanctions most often include ignoring inappropriate messages, and even insults and unkindness, to show users that misbehavior will not be tolerated in this type of forum. Health professional moderators also play an important role in online support group forums' sanctioning mechanisms, especially with the function of approving or disapproving users' messages before they are publicly published. In the online counseling forums, negative sanctions are usually enacted only by health professional moderators, and often pertain to not approving messages before they are published visibly in the forums or to deleting users' messages that are not in line with the forums' norms. Online social support from users is usually not obtained in the online counseling forums of the HROSC, as their primary purpose is for users to consult with health

professional moderators. Advice, suggestions, and the exchange of experiences with users might be influenced by the impression of the potential for negative sanctions in the online counseling forums, in which users' messages intending to exchange social support are more often sanctioned and perceived as unreliable sources, resulting in confusion among users and an additional burden when confronting health-related decisions. Atanasova et al. (2018) showed that users participating in online counseling forums are often confronted with contradictory health-related information received from health professional moderators and other sources, who might also be HROSC users. Such confusion and the inability to rely on health-related information is associated, as highlighted in previous studies (Palumbo, 2017; Schulz & Nakamoto, 2013b), with hindering the health decision-making process, and diminished motivation and control over management of health issues. In contrast, in the online support group forums, the primary sites in the HROSC for the exchange of online social support among users, the presence of negative sanctions might act as a sign of control and management of the forums' content, with inappropriate users' messages being deleted or demonstrated to be unsuitable sources of information. The managed and controlled exchange of social support in online support group forums might greatly contribute to users' development of feelings of self-efficacy and motivation to deal competently with health-related issues.

7.3 The impact of socio-structural properties on users' interactional empowerment

In this study, one of the main research objectives was to examine the influences of socio-structural properties, i.e., involvement in the HROSC, different forms of capital, and the organizational characteristics of the HROSC, on users' interactional empowerment, examined in the quantitative study through two dimensions: knowledge of resources and resource mobilization for collective action. Although the dimensions of interactional empowerment were examined separately in the quantitative study, the results provide important insights into interactional empowerment phenomena in the HROSC. Accordingly, based on the results of the quantitative study, integrated and contextualized with the qualitative study results, we can discern several findings that provide answers to how specific socio-structural properties of the HROSC affect users' knowledge of resources, resource mobilization for collective action, and consequently users' interactional empowerment. These findings also help identify important

factors that might facilitate or constrain the development of users' interactional empowerment outcomes in the HROSC.

7.3.1 The role of involvement in the HROSC regarding users' knowledge of resources

The results of the quantitative study demonstrate that users' involvement in online community organization and action has a direct effect on their knowledge of resources, and this result was significant for those visiting online support group forums most often in the HROSC. The results also show that the effect of involvement in community organization and action is moderated by negative sanctions for users participating in the online support group forums. More precisely, under the condition of negative sanctions in the online support group forums, users' involvement in community organization and action has a positive impact on their ability to use and apply health-related knowledge gained in the HROSC, enabling them to resolve and address health issues in the health care system. Users' involvement in HROSC activities related to organization, events, the vision, and specific goals apparently plays an important role in their knowledge of resources, and the perceived presence of formal and informal sanctions in online support group forums strengthens this association yet further. This result is not particularly surprising, since involvement in community organization has been recognized in empowerment theory and studies as an important factor in interactional empowerment (Hur, 2006; Speer, 2000; Zimmerman, 1995).

In the context of HROSCs, Petrič and Petrovčič's (2014a, 2014b) studies have also demonstrated that users' involvement in an online community's organizational activities, such as events, developing the vision and strategy, and participation in the wider sociopolitical environment addressing their health-related needs and goals, and related to users' health condition and status greatly affect users' interactional empowerment. In addition, this study's findings show that involvement in online community organization and action importantlysignificantly affects the interactional empowerment dimension of knowledge of resources, and thus users' ability to use and apply health-related knowledge obtained in the HROSC to resolve or address health issues in the health care system. This association is evident especially in the HROSC online support group forums and under the condition of the perceived presence of negative sanctions. Online support groups have also in previous studies (Coulson & Shaw, 2013; van Uden-Kraan et al., 2010) been suggested to present sites in which users

often engage in the organization and activities of the online community pertaining to the strategy and vision, since members are often closely connected with a clear common interest that is usually concerned with the topics related to the specific (chronic) health condition. Strongly developed common interests and the fact that online support groups are often also associated with (offline) patients' associations and organizations (Barak et al., 2008; White & Dorman, 2001), which might provide structure and organizational activities also in the online setting, may be among the reasons why involvement in online community organization and action presents an important predictor of users' knowledge of resources. In the case of informal and formal sanctions in online support group forums, users' involvement in community organization and action might evolve around clearly established goals, vision, and strategy that greatly affect their abilities to use the knowledge gained in the HROSC to address or resolve specific health issues in the health care system.

While none of the relations between involvement in the HROSC and users' knowledge of resources are confirmed for those who visit online socializing forums most often in the HROSC, the results of the quantitative study reveal that in the case of online social support received from the online counseling forums in the HROSC, discussion involvement has an impact on users' knowledge of resources. However, the direction of the relation between discussion involvement and knowledge of resources depends on the source of the online social support. If users in the online counseling forums receive online social support from users, involvement in discussion reduces their knowledge of resources. In contrast, if users receive online social support form moderators in the online counseling forums, discussion involvement positively impacts users' knowledge of resources. More specifically, this means that the receipt of online social support from other users in the online counseling forums together with their involvement in discussion presents a barrier in terms of the effect on their ability to use and apply health-related knowledge gained in the HROSC to resolve or address health issues in the health care system. In contrast, online social support from health professional moderators in the online counseling forums is a facilitator of users' involvement in discussion affecting their knowledge of resources. As has been shown in previous studies (Peng et al., 2015; Vennik et al., 2014), in online counseling forums health professional moderators play an important role in providing users' with reliable and credible health-related information, preliminary diagnosis, guidance to access additional (informational) resources, and the use of health services

presenting the basis for users' knowledge of resources, and how they can use them to resolve or address health issues.

7.3.2 The impact of online social support from users or moderators on users' knowledge of resources

Social support has been investigated in empowerment studies and research on HROSCs mainly in relation to intrapersonal empowerment. However, some studies have shown that the exchange of social support can also play an important role in users' interactional empowerment. For instance, Petrič and Petrovčič (2014b) demonstrated that under the condition of communicative interaction in online communities, the exchange of social support was associated with interactional empowerment. They explained that in online communities with developed reciprocity and reflexivity, the use of argumentation and sincerity in discussions among members exchanging social support could lead to their interactional empowerment. Since social support from users and moderators in the HROSC comprises obtaining health-related information, advice, suggestions, consolation, empathy, and companionship, it could present an important predictor of users' ability to employ health-related resources for addressing and resolving health-related issues in the healthcare system. The results of our quantitative study reveal that this is true to some extent, as the receipt of online social support from moderators has a direct effect on users' knowledge of resources, with this effect being significant for those participating in the online counseling and online socializing forums in the HROSC. However, the results of our study also point to the fact that the effect of online social support from users or moderators on knowledge of resources is moderated by the specific organizational characteristics of particular HROSC subcommunities.

For the online counseling forums, the results demonstrated that under the condition of the presence of negative sanctions, online social support received from moderators reduces users' knowledge of resources. More specifically, when users perceive the presence of informal and formal sanctions, the receipt of clinical expertise, emotional support, and even companionship negatively affects users' ability to employ the knowledge gained in the HROSC to address or resolve health issues in the health care system. As revealed through the qualitative study, negative sanctions in online counseling forums mostly pertain to formal sanctions enacted by health professional moderators, usually in the form of not approving or deleting users' messages. In cases in which users perceive or experience negative sanctions in online

counseling forums, online social support from health professional moderators might not effectively address their health-related needs and their knowledge of health-related resources. This finding to some extent mirrors that of the study by Visser et al. (2016), which suggested that perceived implicit norms existing in the interaction between users and health professional moderators, and users' constant adaptation to these norms, such as not asking too many questions and being cautious about making knowledge claims concerning their disease, hindered users' knowledge exchange in HROSCs.

In the online support group forums, the receipt of online social support from users or moderators played the most prominent role in developing users' knowledge of resources. However, as noted before, the effect of online social support from other users or moderators, on knowledge of resources is mediated by different organizational characteristics. The results demonstrate that under the condition of the perceived presence of negative sanctions in the online support group forums, online social support received from users increases users' knowledge of resources. This means that in online support group forums characterized by the presence of formal (non-approval and deletion of users' messages) and informal (users ignoring other users' messages, expressing disapproval of unkindness or misbehavior) sanctions, receipt of online social support from other users might lead to an increase in knowledge of resources. As the study of Aakhus and Rumsey (2010) suggested, negative sanctions in online support groups should not only be understood as potential sources of conflict, but also as important communication acts that can lead to better management of supportive communication, which greatly affects the development of knowledge among the members. Moreover, as the findings of the qualitative study revealed, negative sanctions in online support group forums are also closely related to the prevention of misleading and unreliable health-related information, which might, together with the receipt of patient expertise, contribute significantly to users' ability to use the knowledge gained in the HROSC for resolving or addressing health problems in the health care system.

Our (quantitative study) results also show that under the condition of perceived positive sanctioning in the online support group forums, online social support received from moderators has a negative impact on users' knowledge of resources. This result is somewhat surprising, since it would be expected that users' appreciation and gratitude for online social support from other users and health profession moderators would, together with social support actually received from health professional moderators, increase users' knowledge of resources. Our

quantitative and qualitative findings did not give direct explanations for these results, but one of the reasons might be related to the fact that in online support group forums, positive sanctioning in the form of gratitude and appreciation is often expressed in relation to the emotional support received (Campbell et al., 2013; Flickinger et al., 2017), with users undergoing chronic conditions especially potentially searching for "nurturing" social support (Cutrona & Suhr, 1992), and thus ways of coping with negative emotions (Petrič et al., 2017b). As suggested in previous studies (Atanasova et al., 2018; Huh et al., 2013), online social support received from health profession moderators in the HROSC is more often focused on the provision of clinical expertise, which does not necessarily always address users' emotional needs when dealing with health issues. The discrepancy between users' perceptions of the appreciation and gratitude expressed for the (emotional) social support received and the clinical expertise provided by health professional moderators does not help to increase users' ability to resolve and address health issues in the health care system, but actually hinders users' acquisition of knowledge concerning health-related resources.

The results also reveal another interesting finding related to users most often participating in the online support group forums. It has been demonstrated that under the condition of interactive moderation, online social support received from users inhibits knowledge of resources. However, under the same condition of perceived interactivity of moderation, online social support from moderators increases users' ability to employ the necessary health-related resources to address or resolve health issues in the health care system. As has been demonstrated in the qualitative findings, interactivity of moderation is in online support group forums most often related to encouraging discussions among the forum members and usually involves the stimulation of discussions related to topics of group interest. The presence of health professional moderators contributing social support, often in the form of clinical expertise (Hartzler & Pratt, 2011), and the provision of pointers to important outside resources (Huh et al., 2013) contribute significantly to users' acquisition of knowledge of resources. The positive effect of the interactivity of moderation and online social support received from moderators has also been identified in the subsample of users visiting online socializing forums most often in the HROSC. Although in the online socializing forums, as demonstrated in the qualitative study, interactive moderation has a function of managing social interactions among users by giving examples of the established norms and visibly sanctioning misbehaviors, the presence of moderators and their provision of social support to the users greatly contributes to

users' knowledge of resources. While online social support received from users might in some situations, for instance with the perceived presence of negative sanctions, act as important facilitators of knowledge acquisition related to resources in online support group forums, this is not the case under the condition of interactive moderation. One of the reasons for this result might be related to the users' perceptions of interactive moderation, namely that health professional moderators might predominantly be viewed as taking on the role of discussion catalysts, who do not necessarily supervise or manage inappropriate behavior or the content of messages. Users might thus feel that there is a lack of verification of the information and social support exchanged among users in the forums, which might then inhibit users' development of knowledge of resources.

The results of the quantitative study also reveal that in the online support group forums, under the condition of a sense of virtual community, online social support received from moderators increases users' knowledge of resources. In contrast, the results for the online socializing forums show that online social support from moderators has a negative impact on users' knowledge of resources under the condition of a perceived sense of virtual community. One of the explanations for these results might be drawn from the qualitative findings, which demonstrate that in online support group forums users perceive a sense of virtual community not only related to feelings of membership and belonging, a shared sense of relatedness, emotional connection to other users, and commitment to the HROSC, but also the influence that the HROSC has on users' personal lives and their understanding of health issues. The users' perception of the influence and the impact the HROSC has on their lives and the management of their health issues often develops, as shown in previous studies (Welbourne et al., 2009; Welbourne, Blanchard, & Wadsworth, 2013), on the basis of social support and help received. Our results demonstrate that online social support from moderators does not have a direct effect on knowledge of resources for those participating most often in online support group forums in the HROSC. A sense of virtual community is thus an important facilitator that might increase the users' derivation of meaning from the social support provided by health professional moderators, which leads users to develop the ability to locate health-related resources and apply them in addressing or resolving health issues in the health care system.

In contrast, in the online socializing forums, a sense of virtual community does not foster a positive effect of online social support received from moderators on users' knowledge of resources. Interestingly, in our results, online social support from moderators in online

socializing forums has a direct and positive effect on users' knowledge of resources, but a sense of virtual community hinders this relation. Why would users' sense of virtual community inhibit the relation between received online social support from moderators and users' knowledge of resources? We do not have an answer to this question, but we could speculate that users' shared connection, sense of relatedness, and membership of the HROSC, which according to Blanchard and Markus (2004) arise from established community boundaries and identification with the group, might change the users' perspectives concerning internal activities, and the search for social support and resources needed to be exemplary members of the HROSC rather than addressing health-related issues in the wider social environment or health care system. The answer to the question might be obtained by investigating the effect of different types of social support moderators provide to users. Informational support from moderators might in comparison to emotional social support play a much more important role in the development of users' knowledge of resources. Welbourne et al.'s (2009) study showed that the exchange of emotional support is positively related to a sense of virtual community, and the exchange of informational social support is negatively associated with users' sense of belonging. This could mean that users' feelings of membership, connectedness, and relatedness might hinder the exchange of informational social support between users and moderators in the forums, which might consequently negatively affect users' development of knowledge of resources. Future research could focus more attention on examining these relations, especially concerning the impact of different types of social support users receive from moderators in the HROSC socializing forums.

It should also be noted that for users participating most often in the online counseling and online support group forums in the HROSC, offline social support plays an important role in the acquisition of knowledge of resources. As we have noted in the theoretical discussion, HROSC users might obtain resources also outside the HROSC, which might contribute greatly to the development of users' knowledge of resources. Previous research has also demonstrated that social support received from family members, relatives, and friends in particular plays a major role in patients' ability to resolve and address health issues in the healthcare system, and to achieve positive health outcomes (Trepte, Dienlin, & Reinecke, 2015). In contrast, several studies have shown that dissatisfaction with offline social support often leads patients to join HROSCs and seek additional social support (Chung, 2013). Further research could dedicate more attention to the different types of resources that might be accumulated and distributed

online and offline, and how they complement each other and affect users' (intrapersonal and interactional) empowerment.

7.3.3 Involvement in the HROSC and social capital as important predictors of users' resource mobilization for collective action

The interactional empowerment dimension of resource mobilization for collective action refers to individuals' awareness of the possibility of engaging collectively with other individuals to influence arrangements in the specific social setting, and has very often been associated in previous empowerment studies with community participation and involvement (Speer, 2000; Speer & Peterson, 2000). The results of our study confirm this association, as users' involvement in both discussion, and community organization and action are positively associated with users' resource mobilization for collective action. These findings suggest that users' involvement in activities such as posting, commenting, asking questions, and opening new forum threads, and engagement in activities that relate to the HROSC vision, goals, events, initiations, and actions pertaining to issues of public concern greatly contribute to the development of users' resource mobilization for collective action.

These results are in line with previous studies on HROSCs (Petrovčič & Petrič, 2014a, 2014b), which suggest that the users' active role in discussions and online community organization provides opportunities to learn new skills, and through interaction with other users to develop critical awareness of the (sociopolitical) environment that might present a source of health inequalities and other health-related disadvantages. Moreover, involvement in an HROSC also encourages users to cooperate, and to recognize the importance of collective engagement and collaboration in addressing common interests and goals.

Previous studies have also demonstrated that there are differences between posters and lurkers and their interactional empowerment (Li, 2016; Petrovčič & Petrič, 2014b). More specifically, in these studies posters have been confirmed as presenting a relatively higher level of interactional empowerment in HROSCs. In our study, we included posting messages as a control variable, and the results showed that there were no differences in terms of resource mobilization or collective action between posters and lurkers in the HROSC. These results might be related to the fact that resource mobilization for the collective action dimension of interactional empowerment was measured as a perception of the possibility that users could

collectively engage in and influence wider sociopolitical arrangements and structures in the HROSC. This perception could to some extent also be developed by observing and reading messages in the HROSC, especially if the content of the messages addresses topics and interests of collective engagement and collaboration among HROSC users. However, both discussion, involvement and involvement in community organization and action anticipate active user engagement, and since activities such as posting, commenting, or participating in reflections on the HROSC's vision are not the actions of a lurker, the results of our study indicate that posters and active participants of the HROSC exhibit a higher level of resource mobilization for collective action.

Our results also reveal that a sense of virtual community and the interactivity of moderation play an important role as moderating variables strengthening the relation between users' involvement in discussion and resource mobilization for collective action. The moderating role of a sense of virtual community is evidenced in our results for those participating most often in online counseling and online support group forums in the HROSC. A sense of virtual community might in these types of HROSC forums have the function of encouraging the development of shared understanding of users' positions in the wider social environment, thus stimulating the collective efforts of challenging existing health care determinants that negatively influence users' health status and conditions. In contrast, the interactivity of moderation in online socializing forums is an important factor that strengthens the relations between users' involvement in discussion and resource mobilization for collective action. As discovered in our qualitative study, interactive moderation has the function in online socializing forums of publicly displaying users' normative obligations and rule-breaking behavior to show users how to avoid unacceptable behavior in the future. The clear structure of the norms in the forums might, as emphasized by Friess and Eilders (2015), work as a mechanism of stimulation for engaging user engagement and discussion. This might lead to users' perception that HROSC forums could be places in which users can collectively engage and cooperate, addressing issues pertaining to public concern.

Our results also reveal the important role of social capital (variables) in users' resource mobilization and collective action. All three social capital dimensions, i.e., online social support received from users, online social support received from moderators, and online bridging social capital have a positive effect on users' resource mobilization for collective action. In addition, all these variables present important moderators in facilitating or hindering

the effect of involvement in the HROSC on users' perception of the possibility of collectively engaging in and influencing social arrangements that affect their lives and health-related situations. Interestingly, the results demonstrate that in online counseling forums, online bridging social capital strengthens the effect of users' involvement in discussion concerning resource mobilization for collective action, whereas in online socializing forums with online bridging social capital, involvement in discussion reduces users' perception of the possibility of collectively engaging in the HROSC. In online counseling forums, there is a tendency for users sharing common interests and experiences related to their health issues and conditions to participate, such that contact with a heterogeneous range of people might broaden their horizons, experiences, and possibilities of accumulating and distributing new resources. As suggested by previous studies (Abel, 2007; Williams, 2006), this may encourage users to mobilize, and develop a broader community identity and diffuse reciprocity with an extensive part of the HROSC. These weak ties established with broader range of people in online counseling forums might thus strengthen the impact of their involvement in discussion on the need to mobilize resources to engage collectively and address the health-related issues that pertain to the wider social structure. However, these associations have an opposite effect in online socializing forums. One of the reasons for this result might be the fact that such forums often include the participation of users who already have a much broader range of interests, goals, experiences, and backgrounds, and thus the presence of online bridging social capital might disconnect and weaken users' already weak ties. As Ostrom and Ahn (2009) note, strong common interests and trust among community members present a linkage between bridging social capital and collective action. Online bridging social capital in online socializing forums thus does not present a facilitating mechanism for users' involvement in discussion increasing resource mobilization for collective action.

The quantitative study provides another interesting finding, namely that in online support group forums under the condition of online social support received from users, discussion involvement positively affects users' resource mobilization for collective action. The received health-related information, advice, suggestions, similar experiences, and companionship might, as noted by Ansari et al. (2012), help produce intense relationships, bonded by common interests. Strong relations among users connected by common interests and purposes in online support group forums might, as suggested by Loane and Webster (2017), play an important role in creating social cohesion and tendencies to pursue collective goals. Groups of users with

well developed common interests and goals are highly cohesive and motivated, and have been demonstrated to have great potential to pursue collective engagement and initiatives in order to influence social arrangements that affect their lives and health-related situations (Ostrom & Ahn, 2009). Ostrom and Ahn (2009) do not argue that bonding social capital is more important or efficient than bridging social capital in collective engagement and actions; rather, they emphasize that both types of social capital might play an important role in such initiatives, but which is more effective will depend on the specific context and characteristics of the groups. In online support group forums, social support plays an important role in stimulating users' involvement in discussion, resulting in users' perception that an HROSC can be a place for collective engagement and action.

The receipt of online social support not only has an impact on online support group forums, but also online counseling forums. The results of our study reveal that under the condition of received online social support from users' involvement in community organization and action reduces users' resource mobilization and action, while under the condition of received online social support from moderators the relationship between involvement in community organization and action and resource mobilization for collective action is positive. In other words, social support received from users in online counseling forums presents a barrier to involvement in community organization and action to have an effect on users' resource mobilization for collective action, while online social support received from moderators facilitates this relation. One explanation for this result might be related to the role of health professional moderators in the online counseling forums, which besides offering clinical expertise to users often, as shown in Atanasova et al. (2017), also raise awareness and promote activities related to relevant health-related problems, as well as steering users toward relevant health-related initiatives and actions, whether in the context of the HROSC or other offline settings. It has been suggested in previous studies that health professionals can play a crucial role in encouraging patients' engagement and involvement in health-related issues that pertain to the wider sociopolitical environment and social structures (Graffigna, 2016; Palumbo, 2017). In comparison to the online social support received from other users, health professional moderators' social support can present, as demonstrated in previous studies (Forbat, Cayless, Knighting, Cornwell, & Kearney, 2009), an important motivator for users' involvement in community organization and action to result in an increase of users' awareness of their power

as patients. Thus, through cooperation and collective engagement, they can influence and change the conditions that place them in a position of disadvantage in the field of health.

7.3.4 The important relation between users' e-health literacy and dimensions of interactional empowerment

Besides involvement in the HROSC and social capital, e-health literacy has in our results been demonstrated as presenting an important factor related to users' knowledge of resources and resource mobilization for collective action. Users' ability to search for and be aware of the sources of health-related information, understand, and recognize the meaning of information, and determine its quality is important for users to develop knowledge of health-related resources and apply them in resolving health issues in a wider sociopolitical environment. Moreover, users' e-health literacy has an important effect on their development of the perception that their power lies in interactions with other individuals and in collective engagements, which can be used to influence arrangements in the health care system.

The health-related information obtained in the online setting, including HROSCs, not only pertain to suggestions and advice on health symptoms, coping strategies, and medical treatments, but also the availability of healthcare services, healthcare facilities, and providers, health insurance options, waiting periods for treatments, and so on, all of which present vital components of addressing and resolving health issues. As noted by Palumbo (2017), when patients are confronted with health issues today, a significant number of choices and decision-making opportunities are left to the patients themselves, and these decisions do not only pertain to minimizing symptoms and treating health issues. Patients also need to navigate the healthcare environment effectively, namely an environment in which they might be confronted with difficulty in accessing care, as well as facing other risks that might affect their health conditions. Having adequate knowledge of health resources is thus not only important for addressing personal health issues, but is also crucial for identifying the critical aspects of healthcare services, treatment options, and the health care system in general. Knowledge of resources importantly comprises critical assessment of the sociopolitical sources of health-related problems and the development of strategies concerning how (collectively) to overcome obstacles to achieve health-related goals (Speer, 2000; Zimmerman, 1995). Accordingly, e-health literacy as an important predictor of knowledge of resources not only plays a crucial role in users' recognition of potential discrepancies, risks, and limitations in terms of specific

aspects of the health care system, but also in the formation of discourses that can critically and more innovatively assess their situation in the healthcare setting, and evaluate the potential for change.

This is especially important for addressing and resolving problems that not only affect one individual, but are related to a broader sociopolitical environment and its structures, which (dis)enable a wider group of individuals, e.g., a group of patients. Based on the results of this study and as demonstrated in previous research (Ammari & Schoenebeck, 2015; Orr et al., 2016), HROSCs can act as an important platform for users to develop knowledge of resources and address issues such as access to and provision of health care services, health inequality, disease prevention, and illness advocacy, health care reform, patients' rights, power relations in the healthcare arena, etc. Moreover, as our results show, e-health literacy plays a crucial role in building users' recognition of the need for collaboration among wider groups of individuals to have an impact on wider social circumstances that affect their lives and their health-related circumstances. Such results are not surprising, as previous studies in the fields of health communication, health education, and health promotion have emphasized that health literacy is a fundamental factor in improving health and reducing health inequalities, and in the engagement of patients in health-related issues of public concern (Coulter, 2011; Palumbo, 2017). Not only do health literacy skills improve patients' awareness of health-related resources and their application in resolving health issues, but they also made a tremendous contribution to patient enablement, engagement, and involvement (Palumbo, 2017). Research on HROSCs has also demonstrated that online communities are important platforms for users' collective engagement, uniting them in the belief that personal health-related issues can be addressed through collaboration with other users, and by enacting influence in wider social structures (Petrovčič & Petrič, 2014a, 2014b).

Although e-health literacy is directly related to the dimensions of interactional empowerment, the specific organizational characteristics of different HROSC subcommunities can also facilitate or even inhibit this association. As demonstrated in the results of the quantitative study, e-health literacy in the case of users' sense of virtual community has a positive impact on knowledge of resources. More specifically, users' feelings of belonging, membership, personal relatedness, and connection with the online community present an important facilitator of the effect of e-health literacy on users' greater knowledge of health determinants and the health-related resources necessary for addressing or resolving health issues in the health

care system. Previous studies on the sense of virtual community (Chen, Yang, & Tang, 2013; Tonteri et al., 2011) have suggested that users' feeling of belonging to an online community is related to cognitive benefits, such as gaining valuable knowledge and resources, and even increasing learning opportunities. With the relation to e-health literacy, this might thus present an important contribution to users' knowledge of resources.

The results of our study also reveal that in the online support group forums, with the presence of negative sanctions, e-health literacy reduces users' resource mobilization for collective action. Formal and informal sanctions in online support group forums, as shown in the qualitative study, mostly pertain to moderators' non-approval and deletion of inappropriate users' messages, and ignoring messages (especially insults and unkindness) with regard to behavior that is not in line with explicit or implicit norms in the forum. Such sanctions greatly influence the effect of e-health literacy on users' perceptions of the possibility of collectively engaging in the HROSC and influencing arrangements that affect their health-related situation. In particular, users' informal sanctions directed toward other users' presentations, disclosures, and reflections on their health issues, which can often in online support group forums be addressed to newcomers' messages and behaviors, might disrupt the possibility of e-health literacy skills being used to transform an impulse into specific collective interests that could address the need for collective engagement. As suggested by Matzat and Rooks (2014), negative sanctions in HROSCs can be effective means of avoiding unacceptable user behavior; however, in terms of stimulating user participation and engagement, negative sanctions tend to be less effective than positive sanctions.

To the best of our knowledge, studies of HROSCs have not yet examined the effect of e-health literacy on users' interactional empowerment. The results of our study demonstrate that e-health literacy should be considered one of the fundamental factors (and facilitators) of HROSC users' interactional empowerment. Our study also demonstrates the need to examine the effect of the specific organizational characteristics of HROSCs and their subcommunities, as they might be important facilitators or barriers for the development of users' interactional empowerment. Accordingly, there is a strong need for further empirical research focused on examining the effect of e-health literacy on interactional empowerment in HROSCs.

7.3.5 The role of a sense of virtual community in relation to users' knowledge of resources and resource mobilization for collective action

One of the factors most recognized in terms of interactional empowerment described in prior empowerment research is the sense of (virtual) community (Speer et al., 2001; Zimmerman, 1990). As demonstrated in previous studies on interactional empowerment in HROSCs (Petrovčič & Petrič, 2014a, 2014b), a sense of virtual community is one of the crucial mechanisms in building interactional empowerment. The results of our study reveal that a sense of virtual community is associated with both dimensions of interactional empowerment, i.e., knowledge of resources and resource mobilization for collective action. More specifically, a sense of virtual community can be considered one of the fundamental facilitators of users' development of knowledge of resources, since it helps users to develop responsibility for the HROSC, and willingness to participate in supportive tasks and activities in the online community (Petrič & Petrovčič, 2014a, 2014b), which might encourage users to attain awareness of health-related resources, and how they can be used for resolving and addressing health issues in a wider sociopolitical environment. Moreover, a sense of virtual community is also crucial for users' resource mobilization in terms of collective action, since it helps users to develop a feeling of social cohesion, finding common interests and goals, and developing the willingness to organize and engage collectively in efforts to influence sociopolitical arrangements that affect their lives and health status.

Besides being a direct predictor of users' knowledge of resources and resource mobilization for collective action, a sense of virtual community also plays an important role as a moderator that can amplify or weaken the association of other predictors in relation to interactional empowerment dimensions. As we have demonstrated and discussed in previous subsections, a sense of virtual community presents an important condition for the online social support received from moderators to have an impact on users' knowledge of resources in online support group forums. Furthermore, a sense of virtual community moderates the effect of e-health literacy on users' knowledge of resources, and presents the condition for involvement in discussion having a positive impact on resource mobilization for collective action. These results indicate that to gain a better understanding of interactional empowerment in HROSCs, it is crucial to acknowledge that both individual-level and community-level factors should be

considered to identify opportunities and constraints in the HROSCs and their subcommunities with regard to users' interactional empowerment.

7.4 Significance and original contributions of the thesis

This doctoral dissertation provides several original contributions to the field of social informatics, and specifically to research on HROSCs and empowerment. Incorporating social informatics principles, such as theoretical and methodological pluralism and contextual dependence, and using problem-driven and interdisciplinary research approaches (Kling, 1999), this doctoral dissertation addresses and overcomes two major shortcomings of previous studies on HROSCs and empowerment.

First, by understanding HROSCs as socio-technical systems and introducing the concept of the socio-structural properties of HROSCs, we provide a theoretical framework for understanding both individual- and community-level factors that have an impact on psychological empowerment in HROSCs. Based on the theoretical framework developed, we demonstrate how crucial it is to understand that HROSC users' social practices and the specific structural properties of HROSCs exist in mutual interrelation, and how such processes might present opportunities and constraints in terms of the development of users' psychological empowerment. By introducing the concept of socio-structural properties, this doctoral dissertation offers a strong theoretical and methodological tool for transcending the limitations of existing perspectives. By conceptualizing the socio-structural properties of HROSCs as interrelations between the organizational characteristics of HROSCs, the different forms of capital, and involvement in HROSCs, we not only provide a comprehensive framework for studying individual- and community-level processes in HROSCs, but also present a theoretical approach that could be applied to other types of online communities. Moreover, this doctoral dissertation extend previous research by examining the theoretically deduced interactional effects of organizational characteristics, different forms of capital, and involvement in HROSCs on users' psychological empowerment, which have thus far predominantly been studied only through unidirectional associations. With the proposed theoretical model, we reveal the socio-structural properties that contribute to the development of health-related (dis)empowering outcomes, and thus extend knowledge concerning the role of counseling, support, and socializing forums/subcommunities of HROSCs for users and patients.

Furthermore, the thesis extends on research concerning the association between different types of capital and psychological empowerment, thus far predominantly focused only on one type of capital (Kabeer, 1999). This doctoral dissertation demonstrates that by including different forms of capital in the investigation of psychological empowerment in HROSCs, more comprehensive knowledge of the different resources needed for users' psychological empowerment can be built. These insights can greatly enrich the debate on (health-related) resources produced in HROSCs, and how they can be used by users and patients to address health-related needs, and to achieve empowering outcomes in HROSCs as well as other social and health care settings.

Second, this doctoral dissertation provides a comprehensive overview of the concept of psychological empowerment, and thus shows the importance of considering the two dimensions of psychological empowerment in theorizations and also empirical investigations. As we have shown with the controversial characteristics of empowerment, it is necessary both advance to the conceptualization of empowerment and demonstrate its analytical power in investigating the mechanisms that link HROSCs and health care. Transcending the dominant individualistic understandings of empowerment is necessary as stronger analytical power resides in the distinction between the levels and dimensions of empowerment, and the interrelations between them. By including both intrapersonal and interactional empowerment, this thesis has demonstrated that the concept of empowerment is not only related to the individual management of health-related issues and coping with disease, but is also very much linked to individuals' potential to gain critical awareness of the resources needed to mobilize, and collectively engage and cooperate in actions that can influence social arrangements and decision-making processes in the wider social structures, and pursue change in the domains that affect their well-being, health, and lives. This doctoral dissertation also shows that in the field of health, HROSCs can present an important platform for both intrapersonal and interactional empowerment. By investigating various individual- and community-level factors that might influence the dimensions of psychological empowerment, the findings of the thesis contribute significantly to the knowledge of the psychological empowerment processes present in HROSCs, and how they can lead to users' intrapersonal and interactional outcomes. In particular, the research on interactional empowerment in this thesis advances and complements the existing limited and scarce studies on this dimension of psychological empowerment in the HROSC context.

Besides addressing and overcoming the shortcomings of previous studies on HROSCs and empowerment, the findings of this doctoral dissertation have several methodological and practical implications. The development of a methodology for the empirical investigation of HROSCs, their socio-structural properties, and empowerment outcomes represents an important advancement that transcends the limitations of existing, fragmented approaches. This doctoral dissertation has presented an innovative complementary mixed methods research design to research the differences and similarities in the organizational characteristics of HROSC subcommunities, and the impact of their socio-structural properties on users' psychological empowerment. The use of both qualitative and quantitative methods integrated in a single study provides a more complete picture of the social processes entailed in HROSCs that affect users' intrapersonal and interactional empowerment. The qualitative phase of the research provided important insights not only in terms of contextualizing and explaining the quantitative study results, but also informing on the development of quantitative measurement instruments. This doctoral thesis also makes several advancements in presenting, testing, and using (newly) developed measurement instruments that have been adapted to the context of HROSCs. In particular, the development of a scale measuring interactional empowerment in HROSCs provides a much needed instrument that can determine the presence of interactional empowerment outcomes among HROSC users. This measurement instrument was especially needed for the study of the HROSC, as empowerment is a contextually dependent concept and must be studied in relation to the target population (Zimmerman, 1995). Although these instruments need to be tested and further validated, they represent an important contribution to research on HROSCs and empowerment.

The findings of this doctoral dissertation also have several practical implications for managers, designers, and developer of OHCs, as well as for health care policymakers. The thesis can inform managers of HROSCs on how the practices of users, health professional moderators, and discussion moderators can be improved and managed to provide positive health-related outcomes for their members. The relations between the different socio-structural properties of HROSCs, and intrapersonal and interactional empowerment demonstrated and identified in the study could be used to address specific facilitators for and barriers to users' psychological empowerment in HROSCs. The findings of this doctoral dissertation could also providing information pertaining to basic managerial functions in HROSCs regarding how different types of moderation, informal and formal sanctions, positive sanctions, and users' participation in

the formation of norms could be managed such that they could bring about higher levels of involvement and engagement in various activities in HROSCs, as well as the generation of positive outcomes for HROSC members. Moreover, the findings of the thesis address the effects of the socio-structural properties of HROSC subcommunities at the intrapersonal and interactional levels, which also have important implications for managerial solutions, not only directed to uniform effects (Petrovčič & Petrič, 2014b). Furthermore, this research recognizes the intersection between individual HROSC practices and the resources in terms of the qualities of the HROSC setting, which could provide a basis for the further development and design of online community intervention studies. Finally, this doctoral thesis demonstrates that HROSCs have significantly transformed the ways in which Internet users, patients, caregivers, and health professionals experience and perceive the provision of medical care for individuals and communities (Johnston et al., 2013). As such, investigating the effects of HROSCs on health care is both warranted and urgent. This doctoral dissertation makes an important contribution for health professionals and public health policymakers by assessing the role of HROSCs in developing patient-oriented medical care, the co-creation of health care services, the e-health system, and the general health care system in Slovenia.

7.5 Limitations

Although this doctoral dissertation and its findings are highly relevant and promising, several limitations also need to be noted. First, this study focuses on a single case of an HROSC in the specific context of Slovenia. The HROSC, Med.Over.Net, used as the research setting for the study has a history of more than 18 years; it is recognized by the public in Slovenia, and has an active set of participating (health) professionals, as well as sound trust developed among the users, which could affect the results related to the users' sense of virtual community, social capital, involvement, and participation in the HROSC. However, this HROSC is quite large, and includes a similar set of subcommunities that are usually part of HROSCs, and thus its structure resembles that of HROSCs well known internationally, such as PatientsLikeMe, MedHelp, and HealthUnlocked.

Second, there are various limitations pertaining to the qualitative study conducted with the users and health professional moderators of the HROSC Med.Over.Net:

- In the interviews, users and health professional moderators were asked to reflect on their past and present experiences in the HROSC; this introduced a bias, as they likely reported their more prominent experiences.
- The qualitative study was conducted with a small sample, limiting the generalization of the findings. Although the data allowed us to reach saturation, more conclusive findings could be drawn by utilizing a bigger sample, various national contexts, and comparisons across nations.
- The users included were self-selected, and were thus active participants in the HROSC, suggesting that they had a greater interest in health and health management. However, users with adverse experiences of the health care system might have been more vocal about their health needs and more willing to participate in the study.
- The qualitative study explored the perceived differences and similarities in organizational characteristics of different HROSC subcommunities, but the study only included users and health professional moderators, rather than discussion moderators and community managers, who might have different views and experiences concerning the HROSC's organizational characteristics. Although the primary purpose of the study was not to compare the views pf different type of HROSC users, future research could also extend the various members important in participating and contributing to the HROSC.
- Another important limitation of the qualitative study was that one user participant did not have experience of the online counseling forums and another did not have experience of online support group forums. Similarly, the health professional moderators were not active participants of the online socializing forums. However, they reported on various characteristics of this type of HROSC forum, but only as observers or lurkers. Although it would have been very difficult to recruit participants with experiences of all three types of HROSC forums, this limitation might have affected the results of the study and future research should be more careful in recruiting participants.
- While this study included a broad range of health-related topics covered by the health professional moderators (from cardiology to psychotherapy) and users (various acute and chronic conditions), a relative bias still exists in terms of health conditions. Differences in users' and health professional moderators' views with regard to health conditions and medical fields were not evident in the data; however, future work may seek to extend the types of health professional moderators and users participating in the study.

Third, there are several limitations in this doctoral dissertation in terms of the quantitative study, measurement instruments, and methodology:

- One of the main limitations of the thesis is the sampling procedure used for recruit the participants for the Web-based survey. Merging nonprobability and probability samples of HROSC users clearly introduced possible bias(es) in the study results, as well as not permitting generalizations. Although in each data analysis procedure we consistently tested for differences between the respondents in the nonprobability and probability samples, and none were evident, we also noted that there were some differences in respondents' participation and demographic characteristics. However, this limitation was unavoidable considering the low response rate for the nonprobability sample, and the length and sensitive nature of topics included in the online questionnaire. Future research could employ a greater variety of sampling procedures and data collection techniques, as well as tailoring survey deployment strategies especially to online community settings that could inform on various paths and optimal options for researchers to take when experiencing low response rates and other issues related to the online recruitment process.
- Another important limitation pertains to the high percentage of missing values included in the data. We have to emphasize that beside listwise deletion other procedures for handling missing data were also considered for the main quantitative data analysis. One of such procedures is imputing missing data that can include maximum likelihood procedures, full-information maximum likelihood methods, multiple imputation analysis, which have been often characterized to provide the best options for data analysis with missing data (Meyers et al., 2016). However, based on the structure of our dataset and the pattern of missing values at least two dilemmas about the implementation of imputations on our dataset have been considered. First, one of the potential issues that might be holding up the decision to use imputation procedure relates to the type of missing data mechanisms or in other words to the reason why there are missing data in the dataset in the first place. Because of the specific structure of our online survey questionnaire and inclusion of filter questions in the survey, some of the missing values in our dataset are missing at random, but some are also not missing at random. Accordingly, specific model for why the data are missing and what the likely values are to be included should be an important consideration when deciding of which statistical treatments and imputation techniques of the missing data can be effectively used. Second, the amount of missing data is another important consideration

that determines the most optimal treatment of missing data. In our dataset, some of the organizational characteristics items had in some cases up to 60% of missing values. The items of the organizational characteristics measurement instruments were included in the last part of the long online survey questionnaire. The questions related to the specific organizational characteristics of the forum that respondents visit most often in the HROSC could have been for the respondents quite exhausting, as they demanded from them to recall the use of specific forum and answer detail questions about the perceived presence of sanctioning, monitoring and other mechanisms in this forum. As emphasized by Lodder (2013), if more than 25% of the data is missing, imputation procedures for treating missing data should be implemented with caution, since the results might differ to the ones obtained with analysis on complete cases. Based on the presented dilemmas in relation to the handling missing data with imputation procedures, we decided that for the data analyses conducted in the quantitative study, the most optimal solution was the listwise deletion procedure. It should be noted that imputation of missing values does not necessarily always give better and less biased results. However, in order to minimize the possible biases produced with listwise deletion procedure, several procedures were used to lower the number of the missing values for specific items and variables[48] and to reduce the potential biased parameters and estimates. Future research could focus more attention to the development, design, structure and ordering of questions in online survey questionnaire in a way that minimizes the potential of obtaining missing data. The length of the survey questionnaires, the structure and the complexity of survey questions could be one of the first steps in the improvement of data collection strategies and a reduction of the amount of missing data.

- The quantitative research phase comprised a cross-sectional study, based on which we were unable to predict long-term effects. In future research, longitudinal or experimental research designs could be used to study the long-term effects of socio-structural properties in different HROSC subcommunities on users' psychological empowerment. Future research could also incorporate the assumption that users' participation in different types of HROSC subcommunities might be associated with their health condition and stage of disease, as well as how their role in the HROSC changes over time.

[48] For more details, see section 5.5.6 on operationalization of theoretical concepts and measurement instruments.

- The HROSC analyzed, Med.Over.Net, includes discussions on various health topics and conditions, but differences between health conditions were not considered in the study; these might have had an effect on the level of users' intrapersonal or interactional empowerment. However, such differences might to some extent be covered by examining different HROSC subcommunities and their organizational characteristics, which incorporate different content and the structure of users' participation in the HROSC.
- Several limitations can be also noted in relation to the specific measurement instruments. The intrapersonal empowerment scale did not go through sufficient testing beforehand, which might have resulted in less than optimally reliable measurement. Although interactional empowerment in the HROSC scale and the extended e-health literacy scale (Petrič et al., 2017a) were included in the pilot study, the scales are novel and still need further reliability and validity testing.
- In the theoretical discussion of this doctoral thesis, we presented very complex relations between e-health literacy and psychological empowerment, but in the empirical study this relationship was addressed and investigated only through linear associations. We also demonstrated that e-health literacy is a construct consisting of several dimensions that might have different effects on intrapersonal and interactional empowerment. Future research should dedicate more attention to the relationship between e-health literacy dimensions and intrapersonal and interactional empowerment, as this might provide more insights into the development of these phenomena in HROSCs.
- Another important limitation that needs to be noted concerns the measurement of online social support. In this study, to reduce the complexity of the models included, we only considered online social support received from users and online social support received from moderators. The concept of social support is much more complex, and includes various types and directions in terms of the exchange among users and moderators. Although extensive research has already investigated the effects of different types of online social support on psychological empowerment, these studies have not included the interconnection with organizational characteristics and users' involvement in HROSCs. Future research could investigate in greater detail the effects of different types of online social support on users' psychological empowerment under the condition of different organizational characteristics.

- The models used to test the effects of socio-structural properties on intrapersonal and interactional empowerment were analyzed with multiple regression analysis, and thus the differences between the different subcommunities of the HROSC could not also be tested for between-group variation. Future studies could include less complex models, and use a multigroup structural equation approach to analyze measurement invariance and in-group comparisons.
- Finally, the organizational characteristics of HROSCs were measured in the quantitative study only through users' perceptions and experiences, and thus the actual characteristics of the HROSC were not examined. Although the impact of organizational characteristics of HROSCs on psychological empowerment is most meaningfully examined through users' perceptions and experiences, further studies could undertake also other research approaches. The future studies could employ a multi-level approach, and incorporate different research methods, such as text mining, social network analysis, and Web-based surveys to measure both individual- and community-level properties of HROSCs, and explain individual and interactional phenomena.

8. Conclusions

This doctoral dissertation offers novel insights into individual- and community-level factors that affect users' intrapersonal and interactional empowerment in HROSCs. Through the comprehensive theoretical framework and conceptualization of socio-structural properties presented, bringing together the mutual interaction and intertwining of social practices and structural properties within one analytical framework, we have shown that HROSCs are not static social systems. Indeed, HROSCs and their subcommunities evolve and vary according to the different organizational characteristics and users' different forms of capital, which can only exist in association with one another, and through the reconstitution of different users' social practices, such as involvement in an HROSC. To the best of our knowledge, this study is the first to employ both qualitative and quantitative approaches in an investigation of users' perceived differences concerning the organizational characteristics of HROSC subcommunities, and how these differences in relation to users' different forms of capital and involvement in the HROSC affect intrapersonal and interactional empowerment.

This doctoral dissertation has also demonstrated the importance of investigating the two dimensions of psychological empowerment, and has highlighted that the concept of empowerment in the HROSC context is not limited to intrapersonal processes and outcomes, but also entails interactions between individuals and groups, and transcends to mezzo and macro levels. Thus far the conceptualization of psychological empowerment in the HROSC settings has been often observed without consideration that empowerment is a context depended concept and that it varies in different populations, time and space. The thesis shows that the concept of empowerment should be conceptualized and examined based on the consideration of specific (controversial) characteristics. By examining the concept of empowerment in the context of HROSCs, we have demonstrated that it is crucial to define and operationalize empowerment in relation to the context of its observation, to understand its occurrence as a process or an outcome, and to consider carefully its goals and the multiple levels that it encompasses

Based on the theoretical and empirical findings of this doctoral thesis, at least four aspects of the concept of empowerment need to be importantly highlighted. First, empowerment is a relational concept that emerges in interaction between individuals and their specific social

environment. Thus, empowerment emerges in interaction among individuals' resources, their social practices and behaviors, and rules and norms that are (re)produced by the structures of specific social setting. As we have demonstrated in the thesis, this complex relationship plays out at multiple levels, from the individual level that we have examined in the setting of HROSCs, to the organizational and community levels. Second, individuals' resources present a critical capabilities and (symbolic) power that can help them break through constraints of the disadvantaged position and form a voice that challenges existing social circumstances. Third, empowerment in the field of health (and also in other fields) needs both bottom-up as well as top-down changes in order to achieve lasting social transformations that bring change not only to individuals, but also for wider social and community betterment. As we have demonstrated on the case of HROSC, users have the capacity to gain skills, knowledge, critical awareness and specific abilities that can bring them positive health-related outcomes. However, as we have pointed out in several instances, health professional moderators that are usually healthcare providers or doctors have a key role in users' empowerment. Their role is not only related to the provision of medically related advice, but also includes the prevention of health risks among HROSC's users, improving users' illness management, users' relationships with their doctors, and users' confidence in accessing health services. Accordingly, health professionals and wider healthcare institutions and organizations play a crucial role in enabling users' and patients' resources and encouraging them to be actively involved in management of health and co-creation of healthcare delivery services. Fourth, empowerment of individuals, groups, communities and organizations varies according to the nature of the facilitators and barriers that are present in a specific population, context and time. Especially the component of time presents one of the crucial determinants of empowerment, not only because it frames specific social circumstances that define individuals' need for empowerment, but also because accumulation of resources that present important factors in empowerment, as emphasizes also by Bourdieu (2002[1986]), usually takes time. Empowerment is a process with a dynamic nature and the recognition of the components of time and space and with them related constraints or possibilities should be inherently embedded in its theoretical as well as empirical examination. Based on this identified important aspects of the empowerment concept, the thesis has contributed to the (further) development of empowerment theory by identifying specific characteristics of the concept of empowerment that can guide future research on empowerment in offline and online context or even contexts that simultaneously include both aspects of social reality and individuals' everyday life.

Although intrapersonal and interactional empowerment have been in this thesis studied in the online context of HROSCs, both dimensions of psychological empowerment transcend online and offline contexts. In the thesis, we have proposed a theoretical framework in which socio-structural properties of HROSCs have an impact on both dimensions of psychological empowerment. It should be noted that these phenomena are probably in recursive relationship. On the one hand, socio-structural properties of HROSCs influence users' psychological empowerment and, on the other hand, users' empowerment and experiences in a wider social environment, healthcare system, doctor-patient relationship, and perceptions of the healthcare services, can importantly affect how they use and participate in HROSCs and other (health-related) online tools. To address such recursive relationships future research could undertake different research designs and approaches, such as longitudinal research designs, intervention studies or clinical trial type research designs.

In this thesis, we have focused on the individual level and examined the psychological empowerment of HROSC users. Although we have theoretically and empirically addressed and examined both dimensions of psychological empowerment, i.e. intrapersonal and interactional empowerment, the relation between the dimensions has not been closely investigated. The relation between intrapersonal and interactional empowerment has been one of the important research topics of empowerment theory in the field of community psychology (Peterson et al., 2005; Riger, 1993; Speer et al., 2001), as well as in the studies on online communities (Petrič & Petrovčič, 2014b). The relationship between dimension has been of research interest because it has been suggested that the two dimensions may be in conflicting relationship, i.e. that the individuals' need to develop self-efficacy, competence and control in personal (health-related) situation may undermine the initiations of individuals to cooperatively engage in collective action. Factors of intrapersonal empowerment have been thus often demonstrated to hinder interactional empowerment and vice versa, determinants of interactional empowerment have been characterized as to constrain intrapersonal empowering outcomes (Speer, 2000; Speer et al. 2001, Peterson et al., 2005). Based on the findings of this doctoral dissertation, future research could more closely investigate this relevant research topic and examine how various socio-structural properties of HROSCs or online communities in general are associated with the development of both dimension of psychological empowerment and what the relationship is between the dimensions. Such research could provide more insights into the research questions like: Can intrapersonal and interactional empowerment develop at the same time in

HROSCs? How do factors that affect intrapersonal empowerment simultaneously influence the development of interactional empowerment in HROSCs? What are the characteristics of HROSC's users who have developed only one dimension of psychological empowerment and what are the characteristics of those users who have developed both intrapersonal and interactional empowerment?

This doctoral dissertation has also provided important findings to the research on HROSCs and online communities in general. The qualitative results of the doctoral dissertation allowed us to discern very important finding that relates to the functions of moderation, norms and sanctions in HROSCs. Namely, moderation and sanctioning mechanisms incorporate much more complex and distinctive functions that have an important effect on users' social interactions, group dynamics, perceptions on organizational characteristics, structure of specific subcommunity, and users' psychological empowerment in HROSCs. We found out that interactive moderation does not only have a function of moderators' initiation of meaningful discussions in forums and promotion of the specific online community's norms. In online support group forums, health professional moderators also enact interactive moderation to warn and discuss with users about misleading health-related information that have been posted in forums and provide additional reliable and credible sources for specific health-related issues and topics. In online counseling forums, interactive moderation presents one of the response strategies. As part of the reaction strategy, health professional moderators often use interactive discussion moderation techniques with which they gain the possibility to ask users for any additional clarification necessary in preparing informed and helpful replies. The main goal is to address users' needs and possibly solve their health-related issues. Health professional moderators and their moderation techniques have one of the most important roles in HROSCs. They can help users to distinguish between valuable and misleading medical information, provide them with clinical expertise, facilitate group interactions, help to integrate new or less involved members, and encourage users who only read messages (i.e. lurkers) to start actively participating in the HROSC. Health professional moderators present an important factor of the quality of HROSCs and they are an important contribution to the success and sustainability of HROSCs.

This finding indicates that health professional moderators have a crucial role in HROSCs and that moderation is one of the important factors that facilitate users' discussion, the quality of communication and most importantly can prevent severe consequences of the spread of

misleading, unreliable, and incredible health-related information among users. It is thus not surprising that research has expressed concern about the fact that very low percentage of HROSCs incorporate health professional moderators and several approaches and suggestions have been proposed on how to implement semi-automated provision of clinical expertise in HROSCs (Huh, Patel, & Pratt, 2012; Huh & Pratt, 2014; Yang, Lee, & Kuo, 2016). However, the findings of our qualitative study have also importantly reveal that users themselves in the HROSC seek regulation, clear rules and norms, guidance, and consistency in application of moderation criteria. Important part of HROSC's monitoring and sanctioning mechanisms is played by users themselves, where self-regulation can be considered as one of the key motivational aspects and factors in control of users' behavior. This finding could be also applied to the role of moderation and self-regulation in different type of online communities. For instance, the role of moderation and users' self-regulating behavior present an important part of knowledge-sharing behavior and collaborative production of knowledge in platforms such as Wikipedia (Niederer & Van Dijck, 2010). Self-regulating behavior and moderation have been recognized as substantial aspects in accomplishing successful collaboration and engagement in tasks that lead to achievement of project goals (Black, Welser, Cosley, & DeGroot, 2011; Yang & Lai, 2011). Moreover, moderation and regulation of discussions have been related to the improved quality of online discussions in online political forums and to the possibilities of deliberation in political online communities as well as in non-political online spaces with political talk (Wright, 2009, 2012). The (qualitative) findings of doctoral dissertation thus provide insight on the functions, possibilities and constrains of specific online community management aspects that is not limited only to the setting of HROSCs, but can be applied to broader online community research.

This doctoral dissertation's findings have also revealed that organizational characteristics of HROSCs have an important impact on intrapersonal empowerment. In online counseling forums, the primary sources of information and social support are health professional moderators, who also, as demonstrated, play an important role in users' intrapersonal empowerment. As emphasized in previous studies (Atanasova et al., 2017; Huh & Pratt, 2014; Huh et al., 2013), health professional moderators present in the HROSC are an important source of validated and credible health-related information, clinical expertise, and social support for users' health-related needs. However, according to our results, the social support provided by health professional moderators to users is not directly linked to intrapersonal empowerment

outcomes. The association between online social support from health professional moderators and users' intrapersonal empowerment is achieved only under the condition of the presence of positive sanctions, and thus the possibility for users to give feedback on health professional moderators usually in the form of appreciation and gratitude. Positive feedback from users might in the HROSC work as a reference that gives users a feeling of security and assurance, which together with social support from health professional moderators, increases users' sense of confidence, self-efficacy, and control over health-related decisions, and the management of health issues.

the contribution of online support group forums to users' intrapersonal empowerment lies in peer patient interactions and the exchange of patient expertise. However, the development of users' intrapersonal empowerment in online support group forums does not directly derive from the social support received from other users; it is only the specific characteristics of this type of forum that are related to an increase in users' self-efficacy, competence, motivation, and control when confronting health issues. One major factor is the interactivity of moderation, focused on encouraging and facilitating discussion on matters of interest to the groups among forum members. As demonstrated in previous studies (Friess & Eilders, 2015; Lampe & Resnick, 2004), the management of social interactions among users can be a crucial factor in users' development of intrapersonal empowerment, since it enables and fosters productive discussions, and maintains the quality of the communication process among users. Another important organizational characteristic of online support group forums that can positively affect users' intrapersonal empowerment is the presence of negative sanctions. Visible formal and informal sanctions bring to online support group forums control and structure in terms of users' online discussions; together with social support from users, this presents an important facilitator for intrapersonal empowerment.

The organizational characteristics of online socializing forums and the social processes therein have mostly been presented as barriers to the development of users' intrapersonal empowerment. The reason for this might be related to the fact that online socializing forums are not primarily dedicated to health-related topics or discussions. Although health-related topics and discussions are also inevitably present in this type of forum, online socializing forums are mainly sites in which users can discuss everyday topics, chat, socialize, and have fun. However, the role played by this type of forum in users' intrapersonal empowerment and for the HROSC should not be underestimated. As previous research (Huh et al., 2016; Malinen,

2015) has demonstrated, users of HROSCs do not have constant and stable social roles or "personas"; rather their roles are transitional and change together with users' health issues, illness stage, health-related needs, and overall interests. This more particularly means that at one point a user might be actively involved in online counseling forums or online support group forums, but at another point in time the same user might migrate to online socializing forums because of a reduction in the severity of health issues or change in personal interests. Such forums in the HROSC present important intermediate stopping places, where users can let off steam, explore other (non-health-related) interests, and engage in enjoyable, relaxing conversations and discussions with other users. Since non-health-related issues might be perceived as off-topic discussions in many online counseling forums or online support group forums, disrupting the focus and dynamic of the groups, after resolving or addressing health-related issues many users could reduce their participation or even leave HROSCs (Fiedler & Sarstedt, 2014). As emphasized by Ren et al. (2007), the discouragement of off-topic discussions and lack of opportunity for users to engage in conversations and discussions with others with different interests often leads to a reduction in users' participation in online communities. Online socializing forums might thus present sites in HROSCs in which users can address additional personal interests and prolong their participation, also perhaps as regular and active members who might start to participate in the organization of online communities or help other members in need. Online socializing forums might thus present a crucial factor related to the sustainability and success of HROSCs (Kim, 2000; Preece, 2001).

The doctoral dissertation brought important findings also about the role of involvement and active participation in HROSCs in users' intrapersonal empowerment. The findings revealed that users' form and intensity of involvement in HROSCs does not have a direct effect on their intrapersonal empowerment and that there are no differences between posters and lurkers and their degree of intrapersonal empowerment. This finding has been supported already in previous studies that have examined the differences in psychological empowerment between posters and lurkers in HROSCs (Mo & Coulson, 2010; Petrovčič & Petrič, 2014b; van Uden-Kraan et al., 2008b). However, in the thesis we have with examination of involvement in HROSCs in relations to other relevant socio-structural properties of HROSCs revealed that the effect of involvement in HROSCs on intrapersonal empowerment is conditioned by specific organizational characteristics of the HROSC. Especially, type of moderation in HROSCs subcommunities plays an important role in facilitating the impact of involvement in HROSCs

on intrapersonal empowerment. In online support group forums, interactive of moderation that is related to the moderators' encouragements of discussions among users, facilitates users' discussion involvement to increase their intrapersonal empowerment.

The study also shows that among different forms of capital, e-health literacy and economic capital play an important role in users' intrapersonal empowerment outcomes. Users' ability to search for, find, understand, and be aware of relevant sources, and recognize the meaning and quality of online health-related information is a crucial factor in users' development of self-efficacy, competence, motivation, and control over health-related issues, and the management of and coping with disease. E-health literacy and health literacy in general have been already in previous studies (Palumbo, 2017; Schulz & Nakamoto, 2013a) recognized as one of the most important resources for patient empowerment. Adequate level of e-health literacy and health literacy in general have been related to the increase of awareness of health-related issues, improved knowledge of health determinants, greater willingness to participate in the delivery of care, stronger self-efficacy when dealing with health problems and enhanced desire to be engaged in health-related decision making (Palumbo, 2017). In this thesis we have empirically investigated the linear relation between e-health literacy and intrapersonal empowerment, but further studies are needed to investigate this relationship, with greater scrutiny and attention on examining the relations between different e-health literacy and intrapersonal empowerment dimensions. As demonstrated in previous studies, highly engaged users of an HROSC might also develop "bad literacy," which might on the one hand lead to greater but falsely perceived empowerment, or on the other hand disempowerment (Petrič et al., 2017b; Schulz & Nakamoto, 2011). The relation between e-health literacy and empowerment dimensions could further be examined in relation to the organizational characteristics of HROSCs, different HROSC subcommunities, and the social roles of users in different communicative spaces of HROSCs.

Economic capital also plays an important role in users' intrapersonal empowerment, although the results have demonstrated that it is not directly linked to intrapersonal empowering outcomes. This form of capital presents an important condition that facilitates the relationship between users' involvement in the HROSC and their intrapersonal empowerment. In the studies of HROSCs and empowerment thus far economic capital has not been yet investigated as a factor that might have an influence on users' psychological empowerment. The research of doctoral dissertation has extended the knowledge on important resources needed for users'

psychological empowerment in HROSCs. The individuals' feeling that they have a sufficient financial resources, which have been many times showed as crucial factor in achieving positive health-related outcomes (Peterson & Hughey, 2002), gives them a sense of security and a feeling that they can efficiently solve their health problems. This result also demonstrates that involvement in HROSCs does not automatically bring users intrapersonal empowering outcomes, but the attainment of self-efficacy, competence and control over health-related issues importantly depends on specific resources accumulated and distributed in both online and offline contexts.

HROSCs can develop the interactional empowerment dimensions "knowledge of resources" and "resource mobilization for collective action," as demonstrated in the thesis. We have also shown that the dimensions of interactional empowerment are closely related and are affected by similar factors, such as e-health literacy and a sense of virtual community. However, some differences between the dimensions can also be noted. For instance, involvement in an HROSC does not have a direct effect on users' knowledge of resources, but in the case of negative sanctions in the online support group forums or online social support received in online counseling forums, users' knowledge of resources is much more easily obtained. This suggests that users posting questions in forums, starting discussions, or being a part of initiatives organized in the HROSC does not guarantee the attainment of an adequate level of knowledge of resources; rather, specific conditions have to be fulfilled that can stimulate the development of users' ability to address or resolve health issues within wider social structures, such as the health care system. For an HROSC to enable resource mobilization for collective action, users' active participation and involvement in various activities are required, and an especially important role is played by users' different forms of social capital.

Social capital has already been recognized in the empowerment literature in the field of community psychology (Perkins, Hughey, & Speer, 2002) as an important factor in interactional empowerment, and our study also demonstrates that social capital can present an important facilitator that has the capacity to connect, mobilize, and engage individuals in addressing issues that (negatively) influence various domains in their lives. Moreover, both bonding and bridging social capital have been shown to have an important role in enabling users' involvement in HROSCs to initiate users' collective engagement and action. The type of social capital that has a more prominent role in a specific situation is, however, highly dependent on the context and characteristics and dynamic of the groups in HROSCs. For

instance, in online counseling forums online bridging social capital facilitates the relationship between discussion involvement and users' resource mobilization and collective action. In online support group forums, on the other hand, online social support received from moderators presents an important condition that strengthens the effect of users' discussion involvement on their perception to mobilize needed resources and to collective engage in the HROSC.

In the thesis we have also demonstrated that in specific HROSC's settings social capital can also present a barrier in users' resource mobilization for collective action. For instance, bridging social capital in online socializing forums inhibits involvement in discussion in terms of a positive effect on users' resource mobilization and collective action. These results show importantly that different forms of capital are not always positive factors for users' empowerment, but as Bourdieu's (2002 [1986]) theory recognizes, different resources can potentially also have negative effects and consequences for users' (health-related) outcomes. As we have shown, the potential for negative effects is inherently present also in other forms of capital; for instance, e-health literacy in the form of "bad literacy" can have tremendous consequences resulting in disempowering outcomes.

According to the results of our study, health professional moderators have a crucial role in provision of social capital, especially in the online counseling forums and online support group forums. The provision of social support in a form of clinical expertise, medical advice, reliable and trustworthy health-related information has an important role in raising awareness among users and patients, encouraging their involvement and engagement in delivery of care, health-related decision-making, and co-creation and design of healthcare services. Health professionals' participation in HROSCs has also an important part in creation of perception of HROSCs and their impact on doctor-patient interaction, "Internet-empowered" patients, changing nature of in-person medical encounters, traditional medical authority and healthcare system in general. In this thesis, the relation between psychological empowerment in HROSCs and doctor-patient relationship was not directly addressed. This topic, however, presents one of the very relevant research themes of (further) studies that can provide important insight on the impact of HROSCs on various levels of healthcare, such as achievement of patients' positive health-related outcomes, cooperative communication and relationship between doctors and patients, and effective access to healthcare services.

Our study has also shown that different HROSC subcommunities and their organizational characteristics can play different roles in the development of users' knowledge of resources and resource mobilization for collective action. The results reveal that online counseling forums and online support group forums as HROSC settings and their characteristics have the greatest potential for users' interactional empowerment. As we have demonstrated, the specific organizational characteristics of particular types of HROSC forums and online social support received from health professional moderators or users greatly affect how users obtain relevant information and knowledge, and develop critical awareness and understanding that collective engagement in the sociopolitical environment can be an important way of influencing the structure of the (health care) system, generating opportunities and constraints that determine how users address their health-related needs. Perhaps the (well-developed) common interests, experiences, and goals of users in online counseling forums and online support group forums focused on specific health topics are important factors that afford them a more suitable environment for developing interactional empowerment than in online socializing forums. In this study we have importantly demonstrated that the issue of how a specific type of HROSC forum facilitates and constrains users' interactional empowerment is a very complex matter in which examining the specific organizational characteristics, different forms of capital, and types of involvement in HROSCs and their mutual interconnections can provide new insights into this relevant research topic.

This doctoral dissertation confirms that HROSCs play an important role in users' and patients' management of health issues, coping with disease, and addressing health-related needs. In addition, HROSCs are important online settings in which users can not only exchange personal stories and experiences, and associate with other users, but can also mobilize with others in collective action and influence representative groups to challenge situations that affect their lives. However, not all these possibilities and opportunities are equally feasible in all HROSC subcommunities; specific organizational characteristics, users' different forms of capital, and users' practices in terms of involvement should be considered important facilitators or barriers to intrapersonal and interactional empowerment. The findings of this doctoral dissertation thus suggest that a uniform effort to enhance specific organizational characteristics in all HROSC subcommunities may have negative effect on users in a specific HROSC subcommunity. This argues the need to acknowledge a "paradox in empowerment processes" (Wilke & Speer, 2011), in line with the notion of ecological specificity that focuses on the identification of

factors applied uniquely to empowerment within one type of setting (Maton & Salem, 1995). This doctoral dissertation has comprehensively examined one HROSC's ecological specificity. As such, further research along similar lines could provide further implications concerning the ecological commonality of HROSCs and the identification of unique factors that might facilitate and/or hinder users' meaningful use of HROSCs, and foster their psychological empowerment.

9. References

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10. Subject and author index

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11. Družbeno strukturne lastnosti in psihološko opolnomočenje v spletnih zdravstvenih skupnostih (razširjeni povzetek)

Spletne zdravstvene skupnosti (SZS) so med pomembnejšimi viri za izmenjavo z zdravjem povezanih informacij, hkrati pa so tovrstne skupnosti mnogo več kot zgolj vir. SZS so podvrsta spletnih skupnosti, ki omogočajo komunikacijske prostore mnogi-z-mnogimi in temeljijo na specifični spletni programski opremi (kot so diskusijski forumi, družbena omrežja) ali na kombinaciji dveh ali več spletnih aplikacij. SZS so lahko majhne skupine ali pa skupine z več sto tisoč uporabniki in pokrivajo raznolike, z zdravjem povezane teme: od splošnih in akutnih zdravstvenih težav do specifičnih (kroničnih) zdravstvenih stanj, kot so bolezni srca in ožilja, sladkorna bolezen, rakava obolenja, težave z duševnih zdravjem itd. V SZS uporabniki – običajno pacienti, skrbniki pacientov ali drugi posamezniki, ki jih zanimajo teme, povezane z zdravjem – participirajo tako, da iščejo ali si izmenjujejo z zdravjem povezane informacije, izkušnje, nasvete, socialno oporo, in/ali vplivajo na javno mnenje, stopajo v interakcijo z drugimi uporabniki in moderatorji-zdravniki ali pa le opazujejo interakcije drugih uporabnikov.

Javno in raziskovalno zanimanje za SZS je v zadnjem desetletju izjemno naraslo. Rastoče zanimanje za SZS se ni pojavilo le zaradi oblikovanja zelo priljubljenih in mednarodno priznanih SZS, kot so PatientsLikeMe, MedHelp, HealthUnlocked, ali zaradi pojava tovrstnih spletnih skupnosti, temelječih na družbenih omrežjih, kot sta Facebook in Twitter, pač pa zlasti zaradi številnih dokazov, da udeležba v SZS pogosto pozitivno učinkuje na uporabnike in paciente. Uporaba in udeležba v SZS je povezana z občutki povečane samozavesti, samoučinkovitosti in nadzora nad upravljanjem z zdravstvenimi težavami, povečanim zadovoljstvom in samozavestjo v odnosu z zdravnikom, bolj kompetentno rabo zdravstvenih storitev in celo z boljšo kvaliteto življenja. Sodelovanje v SZS je bilo prepoznano kot spodbujevalec opolnomočenja uporabnikov SZS, pri čemer je koncept psihološkega opolnomočenja postal eden osrednjih proučevanih pojavov v študijah o SZS.

Na področju zdravstva se psihološko opolnomočenje nanaša na posameznikove zmožnosti, da razvije občutek nadzora nad osebnim zdravjem, samoučinkovitost in kompetence, pomembne za upravljanje z zdravstvenimi težavami, hkrati pa tudi analitično razumevanje in znanje o individualnih in kolektivnih virih, pomembnih za (potencialne) spremembe družbenih

okoliščin, ki vplivajo na posameznikovo zdravstveno stanje, dostopnost in kvaliteto zdravstvenih storitev ali zdravstvenega sistema na splošno. Psihološko opolnomočenje vključuje dve dimenziji, in sicer intrapersonalno in interakcijsko opolnomočenje. Obstoječe študije s področja SZS so v veliki meri raziskale vlogo SZS za uporabnike in kako uporaba in udeležba v SZS vplivata na razvoj njihovega psihološkega opolnomočenja. V teh študijah pa je mogoče identificirati vsaj tri pomembne pomanjkljivosti, ki zahtevajo nadaljnje teoretično in metodološko proučevanje.

Prvič, raziskave o SZS so se do sedaj pretežno osredotočale na konceptualizacijo psihološkega opolnomočenja zgolj preko intrapersonalne dimenzije, ki je opredelitev psihološkega opolnomočenja omejila le na razumevanje, ki se nanaša na sposobnosti posameznikov, da izboljšajo svojo samoučinkovitost, kompetence in nadzor nad dogodki, ki vplivajo na njihova življenja in zdravje. Psihološko opolnomočenje pa se ne nanaša le na intrapersonalno dimenzijo, ampak je pomembno povezano tudi z interakcijsko razsežnostjo; nanaša se še na povezave in interakcije med posamezniki in na razvoj kritičnega zavedanja in razumevanja specifičnih družbenih odnosov, sodelovanja in kolektivnih praks, ki so potrebne za morebitne spremembe, ki bi vodile v izboljšanje posameznikove družbeno-politične situacije. Drugič, konceptualizacija psihološkega opolnomočenja v SZS v večjem delu raziskav ni bila celostno obravnavana in ni vključevala obeh dimenzij, kar med drugim pomeni, da merski inštrumenti zlasti za interakcijsko dimenzijo psihološkega opolnomočenja niso bili konsistentno razviti. Tretja omejitev trenutnih raziskav o SZS se nanaša na dejstvo, da so se do sedaj študije pretežno posvečale identifikaciji socio-psiholoških dejavnikov, pri čemer so izhajale iz teorij socialne opore, družbene identitete in proučevanj participativnih vzorcev, ki pomembno vplivajo na psihološko opolnomočenje v SZS. Tovrstne študije so pogosto zanemarjale dejstvo, da so SZS kompleksni socio-tehnični sistemi, ki vključujejo medsebojne povezave med posamezniki in njihovimi družbenimi praksami, tehnologijo in strukturo. Kot nam je znano, do sedaj nobena študija ni raziskala, kako so družbene prakse, ki so povezane z opolnomočenjem, odvisne in povezane z določenimi družbeno-strukturnimi lastnostmi, ki spremljajo te oblike spletnih skupnosti, in kako te lastnosti vplivajo na psihološko opolnomočenje uporabnikov SZS.

Glavni cilj doktorske disertacije je bil premostiti predstavljene pomanjkljivosti predhodnih študij o psihološkem opolnomočenju v SZS in celovito raziskati vpliv družbeno-strukturnih lastnosti SZS na intrapersonalno in interakcijsko dimenzijo psihološkega opolnomočenja. Za dosego glavnega cilja doktorske naloge smo najprej s komparativnim in kritičnim pregledom

literature konceptualizirali družbeno-strukturne lastnosti SZS in razvili teoretični okvir za razumevanje individualnih in skupnostnih dejavnikov, ki vplivajo na psihološko opolnomočenje, tj. intrapersonalno in interakcijsko opolnomočenje v SZS. Natančneje, z integracijo Giddensove strukturakcijske teorije in Bourdieujeve teorije kapitala smo družbeno-strukturne lastnosti opredelili kot povezave med pravili, sredstvi in družbenimi praksami. Na podlagi tega teoretičnega okvira in s pomočjo teorije opolnomočenih skupnosti, teorije upravljanja s spletnimi skupnostmi in teorije implicitnih in eksplicitnih norm, smo sociološke koncepte aplicirali na kontekst SZS in družbeno-strukturne lastnosti SZS opredelili kot povezavo med organizacijskimi karakteristikami SZS, distribucijo različnih oblik kapitalov in vključenostjo v SZS.

Z raziskovalnim načrtom komplementarnih mešanih metod, ki je vključeval triangulacijo kvalitativnih in kvantitativnih raziskovalnih metod in podatkov smo najprej s kvalitativnimi poglobljenimi semi-strukturiranimi intervjuji, izvedenimi med uporabniki in moderatorji-zdravniki največje SZS v Sloveniji, Med.Over.Net, proučili zaznane razlike in/ali podobnosti med organizacijskimi značilnostmi različnih tipov SZS podskupnosti (forumi spletnih zdravstvenih posvetovalnic, forumi spletnih podpornih skupin in spletnimi družabnimi forumi). Podatke, ki smo jih zbrali z intervjuji, smo analizirali z uporabo deduktivno-induktivne tematske analize. Z analizo je bilo identificiranih pet glavnih tem: (1) moderiranje, (2) sankcije, (3) participacija pri oblikovanju norm, (4) pozitivno sankcioniranje in (5) občutek pripadnosti spletni skupnosti. Rezultati kvalitativne analize so zagotovili pomembne vpoglede v organizacijske značilnosti posameznih tipov forumov, ki so bili uporabljeni za kontekstualizacijo kvantitativnih rezultatov, prav tako pa so predstavljali pomemben del oblikovanja in razvoja kvantitativnih merskih inštrumentov za merjenje (nekaterih) družbeno-strukturnih lastnosti SZS. V drugi fazi raziskave smo izvedli presečno spletno anketo na integriranem neverjetnostnem in verjetnostnem vzorcu uporabnikov Med.Over.Net. Zbrane kvantitativne podatke smo analizirali z multiplo regresijsko analizo, s pomočjo katere smo pridobili pomembne rezultate o vplivih družbeno-strukturnih lastnosti na intrapersonalno in interakcijsko opolnomočenje v SZS. Kvalitativni in kvantitativni podatki so bili zbrani in analizirani ločeno, vendar smo v zadnji fazi raziskave s triangulacijo in integracijo kvalitativnih in kvantitativnih rezultatov pridobili bolj poglobljeno razumevanje vloge družbeno-strukturnih lastnosti SZS kot dejavnikov intrapersonalnega in interakcijskega opolnomočenja uporabnikov SZS.

Rezultati študije doktorske naloge so pokazali, da diskusijska vključenost uporabnikov v SZS nima neposrednega učinka na intrapersonalno opolnomočenje uporabnikov, ampak je vpliv diskusijske vključenosti v SZS pogojen s specifičnimi organizacijskimi značilnostmi SZS. Na eni strani, participacija uporabnikov pri oblikovanju norm v spletnih družabnih forumih predstavlja omejitev za pozitiven učinek diskusijske vključenosti na intrapersonalno opolnomočenje uporabnikov. Na drugi strani, pa ob prisotnosti interaktivnega moderiranja, ki je v forumih spletnih podpornih skupin povezano z moderatorjevimi spodbudami uporabnikov, da sodelujejo v razpravah, vključenost uporabnikov v diskusije pozitivno vpliva na razvoj njihovega intrapersonalnega opolnomočenja.

Z raziskavo iz doktorske disertacije smo pokazali, da med različnimi oblikami kapitalov e-zdravstvena pismenost in ekonomski kapital igrata pomembno vlogo pri razvoju uporabnikovega intrapersonalnega opolnomočenja. Zmožnost uporabnikov, da iščejo, najdejo, razumejo, se zavedajo relevantnih virov in prepoznajo pomen in kakovost z zdravjem povezanih spletnih informacij, predstavlja pomemben dejavnik pri razvoju uporabnikove samoučinkovitosti, kompetenc, motivacije in nadzora nad težavami, povezanimi z zdravjem, upravljanjem in obvladovanjem zdravstvenih problemov. Po drugi strani pa e-zdravstvena pismenost ni nujno v vseh SZS podskupnosti prepoznana kot pomembno sredstvo, ki vodi uporabnike v intrapersonalno opolnomočenje. V spletnih družabnih forumih e-zdravstvena pismenost lahko predstavlja oviro za pozitiven vpliv diskusijske vključenosti na intrapersonalno opolnomočenje, medtem ko je ekonomski kapital spodbuden dejavnik pri vplivu diskusijske vključenosti na intrapersonalno opolnomočenje. Uporabniki, ki najpogosteje participirajo v spletnih družabnih forumih, so lahko manj motivirani, da postanejo opolnomočeni, in raje ostanejo odvisni od zdravstvenih strokovnjakov in zdravstvenih storitev, ko pride do naslavljanja in reševanja zdravstvenih težav. Uporabniki, ki so ocenili, da imajo zadostno količino finančnih sredstev, jim lahko le-ta sredstva dajejo občutek varnosti in občutek, da lahko učinkovito rešijo svoje zdravstvene težave. V doktorski disertaciji smo se osredotočili na proučevanje linearne relacije med e-zdravstveno pismenostjo in intrapersonalnim opolnomočenjem, nadaljnje študije pa bi se lahko bolj podrobno osredotočile na proučevanje odnosa med različnim dimenzijami e-zdravstvene pismenosti in intrapersonalnega opolnomočenja. S tem bi lahko nadaljnje raziskave natančneje proučile, na kakšen način lahko uporabniki, ki so intenzivno vključeni v SZS, razvijejo t. i. »slabo

pismenost«, ki jih po eni strani lahko pripelje do večjega, vendar napačno zaznanega opolnomočenja, po drugi stani pa do dejanske nižje ravni opolnomočenja.

Rezultati doktorske disertacije kažejo, da uporabniki različnih podskupnosti SZS (forumi spletnih zdravstvenih posvetovalnic, forumi spletnih podpornih skupin in spletni družabni forumi) organizacijske značilnosti podskupnosti zaznavajo na različne načine, to pa pomembno vpliva na razvoj njihovega intrapersonalnega opolnomočenja. V forumih spletnih zdravstvenih posvetovalnic so glavni vir informacij in socialne opore prav moderatorji-zdravniki, ki imajo pomembno vlogo tudi pri razvoju intrapersonalnega opolnomočenja uporabnikov. Moderatorji-zdravniki v SZS predstavljajo pomemben vir verodostojnih in kredibilnih informacij, povezanih z zdravjem, kliničnega strokovnega znanja in socialne opore za uporabnike, še posebno za tiste, ki se spopadajo z zdravstvenimi težavami. Kot so pokazali rezultati doktorske naloge, pa socialna opora moderatorjev-zdravnikov uporabnikom SZS ni neposredno povezana z intrapersonalnim opolnomočenjem uporabnikov. Povezava med spletno socialno oporo, ki jo uporabniki prejmejo od moderatorjev-zdravnikov, in intrapersonalnim opolnomočenjem je dosežena le pod pogojem, da so v forumih spletnih zdravstvenih posvetovalnic prisotne pozitivne sankcije, kot je možnost, da uporabniki podajo povratno informacijo o delovanju moderatorjev-zdravnikov, ki je običajno izražena v obliki zahvale in hvaležnosti. Pozitivne povratne informacije s strani uporabnikov v forumih spletnih zdravstvenih posvetovalnic lahko delujejo kot referenca, ki uporabnikom daje občutek varnosti in skupaj s prejeto socialno oporo s strani moderatorjev-zdravnikov poveča občutek zaupanja, samoučinkovitosti in nadzora nad z zdravjem povezanimi odločitvami in upravljanjem zdravstvenih težav.

Če so forumi spletnih zdravstvenih posvetovalnic pomembni zaradi prisotnosti moderatorjev-zdravnikov, pa imajo v forumih spletnih podpornih skupin pomembno vlogo pri intrapersonalnem opolnomočenju uporabnikov prav socialne interakcije med uporabniki in njihova izmenjava izkušenj in znanj, ki izhajajo iz doživljanja zdravstvenih težav in bolezni. Podobno kot v forumih spletnih zdravstvenih posvetovalnic pa intrapersonalno opolnomočenje ni, kot so pokazali rezultati, neposredno povezano s prejeto socialno oporo s strani drugih uporabnikov v forumu. Le specifične značilnosti teh oblik forumov so pri uporabnikih SZS povezane z razvojem samoučinkovitosti, kompetenc, motivacijo in nadzorom nad zdravstvenimi težavami. Eden glavnih dejavnikov je interaktivnost moderacije, ki je v forumih spletnih podpornih skupin, kot so pokazali kvalitativni rezultati raziskave, povezana z

moderatorjevimi spodbujanjem razprav o temah, ki so za skupine uporabnikov relevantne. Upravljanje socialnih interakcij med uporabniki forumov spletnih podpornih skupin lahko tako predstavlja pomemben dejavnik pri razvoju intrapersonalnega opolnomočenja med uporabniki, saj omogoča in spodbuja produktivne razprave ter ohranja kakovost komunikacijskega procesa med uporabniki. Rezultati so tudi pokazali, da je prisotnost negativnih sankcij pomembna organizacijska značilnost forumov spletnih podpornih skupin, ki lahko pozitivno vpliva na intrapersonalno opolnomočenje uporabnikov. Vidne formalne in neformalne sankcije v tem tipu forumov prinašajo v diskusije uporabnikov nadzor in strukturo ter skupaj s prejeto socialno oporo predstavljajo pomembnejši dejavnik intrapersonalnega opolnomočenja uporabnikov.

Primerjava forumov spletnih zdravstvenih posvetovalnic in forumov spletnih podpornih skupin je pokazala, da organizacijske značilnosti in socialni procesi v spletnih družabnih forumih predstavljajo oviro za razvoj intrapersonalnega opolnomočenja uporabnikov. Razlog za takšne rezultate je lahko povezan z dejstvom, da spletni družabni forumi niso primarno namenjeni temam in razpravam, ki so povezane z zdravjem. Čeprav so teme, povezane z zdravjem, do neke mere tudi prisotne v tovrstnih forumih, so spletni družabni forumi v večji meri namenjeni razpravam o vsakdanjih temah, druženju in zabavi. Vendar vloge spletnih družabnih forumov za intrapersonalno opolnomočenje uporabnikov in za SZS ne smemo zanemariti. Uporabniki v SZS namreč nimajo stalnih in vedno enakih družbenih vlog. Vloge uporabnikov so prehodne in se spreminjajo skupaj z zdravstvenimi težavami uporabnikov, stopnjo bolezni, z zdravjem povezanimi potrebami in drugimi interesi. To natančneje pomeni, da je lahko uporabnik v eni časovni točki aktivno vključen v forume spletnih zdravstvenih posvetovalnic ali forume spletnih podpornih skupin, v naslednji časovni točki pa zaradi zmanjšanja resnosti zdravstvenih težav ali drugih interesov migrira v spletne družabne forume. Ta tip spletnih forumov v SZS predstavlja pomemben vmesni prostor ali postajališče, kjer se uporabniki lahko sprostijo, se posvetijo drugim (z zdravjem nepovezanim) temam in druženju z ostalimi uporabniki. Ker so z zdravjem nepovezane teme v forumih zdravstvenih posvetovalnic in forumih spletnih podpornih skupin pogosto označene kot neprimerne teme, ki motijo osredotočenost, zanimanje in dinamiko skupin, se pogosto zgodi, da uporabniki, ko rešijo svoje zdravstvene težave, zmanjšajo intenzivnost sodelovanja ali celo zapustijo SZS. Neodobravanje diskusij, ki so izven teme, in možnost, da se uporabniki v razpravah pogovarjajo z uporabniki, ki imajo različne interese, pogosto vodi k upadu participacije uporabnikov v SZS. Spletni družabni forumi lahko v SZS predstavljajo pomemben prostor, kjer imajo uporabniki možnost nasloviti še druge

interese in morda podaljšati svojo pridruženost kot aktivni in redni člani, ki se vključijo v organizacijo spletne skupnosti in pomagajo drugim uporabnikom. Spletni družabni forumi imajo pomembno vlogo pri ohranjanju in vzdrževanju trajnosti in uspeha SZS.

V raziskavi smo tudi pokazali, da se interakcijsko opolnomočenje lahko razvije v SZS. Dimenziji interakcijskega opolnomočenja, in sicer znanje o razpoložljivih sredstvih in mobilizacija sredstev za kolektivno akcijo, sta medsebojno tesno povezani, nanju pa vplivajo dejavniki, kot sta e-zdravstvena pismenost in občutek pripadnosti spletni skupnosti. Iz rezultatov doktorske naloge lahko razberemo tudi nekatere razlike med dimenzijama interakcijskega opolnomočenja. Na primer, vključenost v SZS nima neposrednega učinka na znanje uporabnikov o razpoložljivih virih, vendar pa je pod pogojem prisotnosti negativnih sankcij v forumih spletnih podpornih skupin ali pod pogojem prejete spletne socialne opore v forumih zdravstvenih posvetovalnic znanje o razpoložljivih virih za uporabnike SZS lažje dosegljivo. Takšni rezultati nakazujejo, da le objavljanje sporočil, odpiranje diskusij ali sodelovanje v iniciativah, organiziranih s strani SZS, uporabnikom še ne zagotavlja zadostnega znanja o razpoložljivih sredstvih, ampak morajo biti v forumih izpolnjeni določeni pogoji, ki lahko spodbudijo razvoj sposobnosti posameznikov, da naslovijo ali rešijo zdravstvena vprašanja v širših družbenih strukturah, kot je na primer zdravstveni sistem. Za razvoj mobilizacije sredstev za kolektivno akcijo v SZS pa je nujno potrebna uporabnikova aktivna participacija in vključenost v različne aktivnosti v SZS, pri čemer ima še posebej ključno vlogo socialni kapital uporabnikov. Socialni kapital je že v literaturi o opolnomočenju s področja skupnostne psihologije prepoznan kot pomemben dejavnik interakcijskega opolnomočenja. Študija doktorske naloge je podobno pokazala, da socialni kapital lahko predstavlja ključno vlogo pri razvoju interakcijskega opolnomočenja, saj omogoča povezovanje, mobiliziranje in angažma uporabnikov SZS za naslavljanje vprašanj in težav, ki (negativno) vplivajo na njihove življenjske razmere. V doktorski nalogi smo tudi pokazali, da lahko socialni kapital v nekaterih podskupnostih SZS predstavlja oviro za mobilizacijo sredstev za kolektivno akcijo uporabnikov. Na primer, premostitveni socialni kapital v spletnih družabnih forumih onemogoča, da bi uporabnikova vključenost v diskusije pozitivno vplivala na mobilizacijo sredstev za kolektivno akcijo uporabnikov. Bistvena ugotovitev na podlagi rezultatov je, da različne oblike kapitalov niso le pozitivni dejavniki za uporabnikovo opolnomočenje, ampak imajo lahko, kot to prepoznava Bourdieujeva teorija, tudi negativne učinke in posledice na uporabnikove (z zdravjem povezane) izide. Potencial negativnih učinkov je namreč inherentno

prisoten v vseh oblikah kapitalov; na primer e-zdravstvena pismenost ima lahko v obliki »slabe pismenosti« pomembne posledice, ki lahko onemogočajo uporabnikovo opolnomočenje.

Študija doktorske naloge je tudi pokazala, da lahko različne SZS, podskupnosti in njihove organizacijske značilnosti igrajo različne vloge pri razvoju uporabnikovega znanja o razpoložljivih virih in mobilizaciji sredstev za kolektivno akcijo. Rezultati so pokazali, da imajo forumi spletnih zdravstvenih posvetovalnic in forumi spletnih podpornih skupin kot podskupnosti SZS največji potencial za interakcijsko opolnomočenje uporabnikov. Določene organizacijske značilnostih teh tipov forumov SZS in spletna socialna opora, prejeta od zdravnikov-moderatorjev ali uporabnikov, precej vplivajo na to, kako uporabniki pridobijo relevantne informacije, znanje in razvijejo kritično zavedanje in razumevanje, da je kolektivno delovanje v družbeno-političnem okolju eden izmed bistvenih načinov vplivanja na strukture sistemov (npr. zdravstvenega sistema), ki predstavljajo priložnosti in omejitve za uporabnikovo naslavljanje z zdravjem povezanih potreb. Morda so (dobro) razviti skupni interesi, izkušnje in cilji uporabnikov v forumih spletnih zdravstvenih posvetovalnic in forumih spletnih podpornih skupin, ki so osredotočeni na specifične, z zdravjem povezane teme, pomemben dejavnik, zaradi katerih sta ti dve podskupnosti SZS za razvoj interakcijskega opolnomočenja uporabnikov bolj primerni kot spletni družabni forumi. V študiji doktorske disertacije smo pokazali, da je vprašanje, kako specifični tipi SZS forumov spodbujajo ali omejujejo interakcijsko opolnomočenje uporabnikov, izredno kompleksno, pri čemer lahko proučevanje medsebojnih povezav med vključenostjo v SZS, različnimi oblikami kapitalov in organizacijskimi značilnostmi SZS poda nove vpoglede v to pomembno raziskovalno temo.

Doktorska disertacija je z razumevanjem SZS kot socio-tehničnih sistemov in vključitvijo koncepta družbeno-strukturnih lastnosti SZS predstavila inovativen teoretični okvir za razumevanje tako individualnih kot skupnostnih dejavnikov, ki vplivajo na psihološko opolnomočenje v SZS. Doktorska naloga je pokazala, kako pomembno je razumevanje medsebojnega delovanja družbenih praks uporabnikov in strukturnih lastnosti SZS in kako lahko tovrstni procesi predstavljajo priložnosti in omejitve za razvoj psihološkega opolnomočenja uporabnikov. Z vključitvijo koncepta družbeno-strukturnih lastnosti doktorska naloga ponuja močno teoretično in metodološko orodje za preseganje omejitev obstoječih perspektiv. S konceptualizacijo družbeno-strukturnih lastnosti SZS kot tudi medsebojnih odnosov med organizacijskimi značilnostmi SZS, različnimi oblikami kapitalov in vključenostjo v SZS doktorska naloga ne ponuja le celovitega okvira za proučevanje

individualnih in skupnostnih procesov v SZS, ampak predstavi tudi teoretični pristop, ki ga je možno aplicirati na druge tipe spletnih skupnosti. S predlaganim teoretičnim modelom smo razkrili, katere družbeno-strukturne lastnosti prispevajo k razvoju opolnomočenja, s čimer smo nadgradili znanje o vlogah podskupnosti, tj. forumov spletnih zdravstvenih posvetovalnic, forumov spletnih podpornih skupin in spletnih družabnih forumov v SZS, za uporabnike in paciente in njihovo psihološko opolnomočenje. V doktorski nalogi smo pokazali, da SZS lahko predstavljajo pomembne platforme tako za intrapersonalno kot za interakcijsko opolnomočenje. Rezultati in ugotovitve doktorske naloge bistveno prispevajo k znanju o procesih psihološkega opolnomočenja, ki so prisotni v SZS, in kako ti procesi lahko vodijo do intrapersonalnega in interakcijskega opolnomočenja uporabnikov, hkrati pa je proučevanje interakcijskega opolnomočenja v doktorski nalogi nadgradilo in dopolnilo obstoječe in pomanjkljive študije o tej dimenziji psihološkega opolnomočenja v kontekstu SZS.