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“Every advance in communication changes the nature of reality as we experience it. ... The Internet is yet another revolutionary method of communication. For the first time in history of the world, I can have an on-going, fast-moving conversation with people regardless of their physical location, schedule, or other such constraints. ... The world is changing, and we’re the ones that are doing it, whether we realize it or not.”

- Amanda Walker (1995), in Wellman & Gulia (1999)¹

CHAPTER 1

Introduction and Dissertation Outline

Introduction and Dissertation Outline

The current dissertation contains a collection of studies that examine online communities in the health domain. An increasing amount of patients visit online communities to share illness-related experiences and information^{2,3}. However, robust scientific evidence on how these online activities affect the psychological well-being of patients is lacking. This research aims to contribute to our understanding of the effects of participating in online peer-led support communities on patients' psychological well-being. Figure 1 presents the position of the current object of study within the communication technology landscape.

The Internet and Group Communication

The advent of the Internet changed our media landscape and society drastically. For the last centuries broadcasting facilitated one-sided mass communication providing a large audience with information, and media such as telephone and fax enabled communication between two individuals across geographical barriers. Today, for the first time in history we have social media that reward group communication.

“Computer networks, once an obscure and arcane set of technologies used by a small elite, are now widely used and the subject of political debate, public interest, and popular culture. [...]

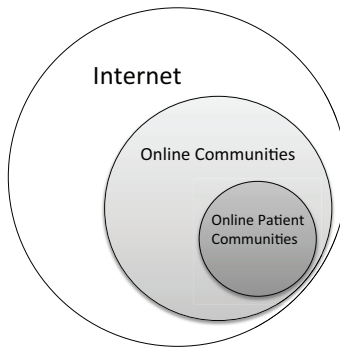
... people have formed thousands of groups to discuss a range of topics, play games, entertain one another, and even work on a range of complex collective projects. These are not only communication media – they are group media, sustaining and supporting many-to-many interactions.”

- Kollock & Smith (1999, p. 3)⁴

In recent years, this development stimulated an on-going debate on how the Internet will affect our society in terms of community. Some believe the Internet creates new opportunities for community, while others think it will demolish community altogether. For example, some say it will strengthen our bonds with a wider social world and increase the power of the public. Freely available information and opportunities to connect empower the public in several ways, e.g., these might educate individuals, stimulate democracy, enrich a wider range of social contacts, entertain, and create new jobs^{1,4,5}. Others believe that the Internet heightens social control and surveillance, which might strengthen the existing

concentrations of power⁶. In addition, some say that the Internet will disconnect us, because it lacks “meaning” or cannot be “complete” as individuals have no real, face-to-face, contact. As a result, people may lose contact with “real life” because they get caught up in virtual reality^{1,7}. Despite these concerns and hopes for the future, Kollock and Smith (1999, pp. 23-24⁴) point out that predicting the meaning and impact of new technologies poses always a big challenge, and the final path we walk is often very different from what we expected upfront. Consequently, we need to step away from opinions and predictions, and instead make an effort to describe and empirically analyze such “new” online phenomena like online communities.

Figure 1. Schematic position of the research topic within the communication technology landscape



Hence, although much has been said about potential benefits or detrimental consequences of the Internet, fact is that online communities are a rising phenomenon and scientific research on the potentially positive or negative effects is still in its infancy. To understand the impact of online communities on individuals within our society we need more empirical studies uncovering effects on well-being, that 1) assess the online community within the context of its appearance, i.e., keeping in mind the topic and purpose of the community, and 2) connect the online environment to participants’ offline world, something that is often neglected in the study of online environments¹.

The current research project focuses on online communities in the context of health and zooms in on breast cancer patients (see the next paragraphs for the rationale). Specifically, we assessed effects of online community participation on breast cancer patients’ psychological well-being, taking into account personal differences in behavior and perceptions that moderate this relationship, and offline factors to reveal if online participation adds to patients’ offline well-being modifiers.

Patients looking for similar others online

One can find thousands of different communities online on almost every topic imaginable. Within online communities individuals for example discuss technical computer issues, share cooking-recipes, discuss books, form groups to take political action, or talk about health-related topics. Although online communities exist on many different topics and for various purposes, connecting with similar others appears especially attractive to individuals who are concerned or feel stigmatized. For example, in the context of illness, research has shown that individuals dealing with AIDS, alcoholism, cancer, depression and diabetes are highly motivated to seek information and support from similar others, both in the on- and offline world^{2,8}.

In moments of insecurity individuals like to maintain a sense of normalcy, and therefore, show social behavior to obtain opinions of others on how one should think or feel⁹. Research has shown that talking about personal thoughts and emotions¹⁰ and receiving social support¹¹ helps to adjust to a stressful situation. However, patients can find themselves in situations different from the people who surround them in daily life; healthy others may not always be able to relate to how it feels to be ill and to possibly face death. Although patients might feel supported by their family and friends, one of the basic needs of human beings is to belong to a group of similar others¹². Hence, patients might be motivated to connect with other patients, because they long for peers who understand their situation, thoughts and feelings.

The Internet provides individuals with the opportunity to connect with similar others; patients form groups online. Virtual communities are described as “[...] social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace”¹³. At present, online communities are often designed as bulletin boards (i.e., forums or discussion lists). These online platforms are organized by different “threads” covering several sub-topics, under which individuals can post messages to start a discussion, ask relevant questions or share information. Bulletin boards provide a-synchronous communication; interactions are structured into turns, but individuals are not required to gather online at the same time; they can respond in their own pace. As a result, people from different time zones can easily connect. Furthermore, bulletin boards are labeled as “pull media” since people actively have to pick the threads and messages they like to read, which for example differs from e-mail groups where messages are sent to members without a request of the receiver (i.e., “push media”)⁴.

The growing amount of cancer patients online

The amount of (breast) cancer patients participating in online support communities is expected to grow. A first reason for this growth is a general increase in the number of cancer survivors. In 2012, 14.1 million individuals were diagnosed with cancer worldwide, whereof most cases were lung cancer (13%) or

breast cancer (12%)¹⁴. It is estimated that on a global scale over 508,000 women died in 2011 due to breast cancer¹⁵. In the Netherlands, breast cancer is the most prevalent form of cancer amongst women. The total number of breast cancer survivors (i.e., women who were alive and had been diagnosed with breast cancer in the last 10 years) was 99,265 in 2011¹⁶, and in 2013 14,400 women were newly diagnosed¹⁷. Breast cancer survival rates vary tremendously worldwide, ranging from 80% in North America, Sweden and Japan to around 60% in middle-income countries and below 40% in low-income countries^{18,19}. Especially in high-developed countries, the number of breast cancer survivors is expected to rise because of extended life span of the population in general, the early detection of breast cancer and the increasing effectiveness of treatment¹⁷.

A second reason for the expected rise in online support communities for cancer patients is that the Internet is increasingly becoming part of individuals' daily lives, causing a shift from offline to online connections²⁰. Before the Internet, patients gathered in offline support groups within hospitals or churches to connect with similar others. Today, online communities are gaining popularity, perhaps because online groups show some advantages compared to offline groups. For example, participating is completely anonymous. No more than a nickname and an e-mail address are required to become part of a community. As a result, online communities provide a safe communication environment for people who have feelings of anxiety, particularly in conditions where they fear humiliation and embarrassment². In addition, patients can expand their social networks without any space and time constraints; all information is available 24/7 and people can participate without geographical barriers²¹⁻²⁴. Furthermore, because online conversations are a-synchronous, individuals are not obliged to be part of the dialogue; they can simply read stored conversations from others if they do not feel like talking (so called 'lurking')²⁵.

Since the increasing demand for care¹⁷ elicits financial pressure on the current health care system, patient empowerment and self-care (i.e., helping patients help themselves) have become key areas of investigation within health care systems across the globe. Online peer-led support communities are low-cost and available to anyone with Internet access and might therefore be a promising solution to the growing amount of patients with a need for (additional) support. At present, however, it is not clear if online communities show the desirable effects on patient's psychological well-being. On the one hand, connecting with similar others online might enhance psychological well-being due to empowering processes^{26,27}, such as the support one receives from peers. On the other hand, some concerns about potential negative effects have been voiced as well, for example negative consequences due to the challenge of finding a position within the online group, or patients being confronted with sad and frightening stories from other patients^{26,28-30}. Consequently, systematic research is needed to assess online communities' impact on patients' psychological well-being. The aim of the current project is to shed light on the relationship between online support community participation and psychological well-being.

The current state of research

In the existing literature, at least three issues prevent us from obtaining clear evidence for beneficial effects of online peer support on psychological well-being. First, there is a **lack of effect studies** on peer-led online communities; most studies are descriptive in nature revealing why patients connect online, what has been discussed within the community, and if patients perceive the community as helpful. Although these studies have increased our understanding of patient motives and perceptions, they may not necessarily show cause and psychological effect of online participation. Research has shown that introspective procedures have their limits; individuals are not always aware of the relationship between a certain stimuli and their response^{31,32}. In other words, patients might not always be aware of what influenced them positively or negatively. Gaining robust, objective evidence in terms of cause and effect of online patient groups is therefore needed. Second, most studies do not take into account **moderating factors**, such as individual differences between patients. Researchers often treat the online environment as a “one-size-fits-all” solution, even though patients may have different personalities and needs, or show different behaviors. Third and final, researchers often ignore **patients’ offline world**, hereby implicitly assuming that the online world is the only relevant factor to influence health outcomes. This assumption is likely flawed, since patients’ life situations differ in terms of the course and severity of an illness, their offline social network and support system, and demographics, such age, education level, and working status. In the next section, I will further elaborate on these three issues that stand in the way of drawing clear conclusions regarding the effectiveness of online patient communities.

Lack of studies on participation effects of peer-led communities

Studies that empirically test the effects of participating within peer-led online support communities, i.e., communities set-up by (ex-)patients, on psychological health outcomes are scarce. Most conducted studies on peer-led communities are descriptive in nature; researchers interviewed participating patients, analyzed online conversations, or applied cross-sectional survey research. Studies revealed motivations to participate, for example patients report that they went online to contact others in a similar situation, to obtain information and emotional support, and to encourage others³³. Other studies showed the presence of therapeutic and empowering processes, such as group cohesiveness, finding recognition and support, emotional expression, insight, advice, and instillation of hope^{30,34,35}. However, also disempowering processes were found such as being concerned about sharing wrong information, about being confronted with negative sides of the disease, or dealing with complainers^{26,28-30}. In addition, studies suggest that empowering processes also translate into positive, empowering outcomes. For example, patients reported that they were more optimistic towards breast cancer, their mood improved²⁷, they were better informed,

their social well-being improved³⁶, their decision-making enhanced, and that they were better prepared for new illness-related experiences³⁷. The majority of these descriptive findings showed that online members appreciate the community and perceive it as helpful. This would suggest that participating within an online community would also improve psychological well-being. However, studies testing the direct causal relationship between online participation and psychological well-being and providing evidence for this assumption, are rare.

Studies assessing effects of online peer-support on patients' psychological well-being are predominantly studies testing interventions designed to promote health outcomes. In the field of e-health and clinical psychology, health professionals design online interventions to guide patients through a period of illness, and these interventions often include peer support. Most of these online interventions show positive effects, such as decreased depression, reaction to pain, distress, and cancer-related trauma^{38,39}. However, some intervention studies found no improvement to well-being or even negative effects⁴⁰⁻⁴². For literature reviews, see⁴³⁻⁴⁵. A methodological advantage of these online interventions is their controlled setting; health professionals often use randomized control trials to test effects, i.e., they compare a group of patients participating within the intervention with a control group of patients not participating, or compare outcomes with a baseline well-being measurement before participation.

Although most of such interventions show positive effects, they also have certain disadvantages. First, because these interventions often explicitly include therapeutic aspects to help patients (e.g., decision making tools, skills training), it is unclear if online intervention effects are caused by the interactions with peers or by other features of the intervention. Second, there is a risk that because of publication bias, only interventions that show significant positive effects get published⁴³. Third, it is questionable if we can compare these online interventions with more "natural settings" such as communities that are set-up by (ex-) patients. The value of communities that developed organically online is that members feel intrinsically motivated to participate; they only join when they want to be part of such a community, i.e., when they feel the need to read about experiences from other patients, ask questions, or support others. Likewise, patients can leave the community whenever they please without feeling guilty about interrupting the scientific research aspect of the intervention. This advantage of freedom might also explain the lack of effect studies on these naturally occurring peer-led communities as it is a challenge to empirically capture the relationship between participants' online behavior and psychological well-being. A few exceptions are the longitudinal studies on peer-led communities (i.e., bulletin boards) from Lieberman and colleagues. One study showed that a group of patients who start participating in an online support community experienced an increase in well-being over time⁴⁶. However, it remains unclear if patients felt better due to the online peer support, or if these improvements occurred independent of online participation (e.g., just because time passed after the moment

of diagnoses). Another study revealed that certain word use was related to a positive change in well-being (i.e., words indicating anger, sadness, anxiety⁴⁷; and words indicating insightful disclosure⁴⁸). Again, however, it remains unclear if online word use caused changes in well-being, or if word use was just a reflection of patients' intensity of online participation, as this differs among participants. For instance, some studies already demonstrated that some people lurk (i.e., only read), while others post messages actively²⁵.

Hence, even though especially peer-led support communities are common online and freely accessible to anyone with an Internet connection, outcome studies testing the effects of participating in such communities on psychological well-being are missing. The present research examines online support groups within their "natural setting", i.e., we studied patients participating in online peer-led support communities that were already established by (ex-)patients, instead of creating a new peer support intervention. Additionally, to provide reliable evidence regarding causal effects, we employed a longitudinal research design that included measures of intensity of online participation and validated measurements for patient's psychological well-being (see Chapter 3 and 6).

Moderating factors

A second issue found in earlier studies that will be addressed in the current project is the exclusion of moderating factors, such as individual differences between patients. Although descriptive studies show the presence of promising therapeutic and empowering processes within peer-led online support communities, human beings differ significantly in terms of personalities, attitudes, and behavior⁴⁹, and potentially therapeutic processes may not apply equally to all participants. In case of a life threatening disease such as breast cancer, not every patient copes with the illness in the same manner. Some patients actively search for information to gain control over the situation, while others prefer to avoid thinking about the illness^{50,51}. Some like to talk to others, while others suppress their thoughts and emotions^{10,50}.

Research on online support community participation should take into account such individual differences. Researchers might tend to overlook these variations, aiming to find a "one-size-fits-all" solution, but people differ in how they deal with their illness as well as in their online behavior. Based on previous research I address three key factors that are likely to be of influence when it comes to the relationship between online support group participation and psychological well-being: coping with illness-related emotions (Chapter 2 and 3), social comparisons (Chapter 4), and receiving support messages from an unknown anonymous person (Chapter 5).

Coping with emotions. First, we look at how patients cope with the emotional upheaval that comes along with a serious illness diagnosis, i.e., the concept of emotional approach coping. Previous research has shown that actively

processing and expressing emotions positively affects patients' well-being over time¹⁰. Since online communities are used to share illness-related experiences (i.e., patients write about their experiences and related thoughts and emotions), variations in patients' emotional coping style might influence the relationship between online support group participation and patients' psychological well-being. For example, emotional coping style might affect patients' online writing behavior, and might influence how patients deal with emotional content they read online. On the one hand, patients with a high tendency to process and express emotions might fit better in an online environment where patients disclose experiences. On the other hand, patients with a low tendency to process and express emotions may benefit from this environment by for example improving their coping skills. The relationship between online participation, emotional approach coping, and well-being is examined in Chapter 2 and 3.

Social comparison. The second factor that may moderate the relationship between online participation and health outcomes examined in the current dissertation concerns social comparison strategies. When patients turn online and read about the situation and experiences of other patients, they encounter negative and positive stories. From social comparison literature it is known that individuals have the tendency to compare themselves with others^{9,52}. Studies have shown that psychological effects of these comparisons depend on an individual's interpretation^{53,54}. For example, one can gain hope out of stories from others doing better (i.e., upward identification), but one could also experience frustration by being in a worse situation (i.e., upward contrast). Likewise, when another patient is doing worse, one might feel lucky to be in better situation (i.e., downward contrast) or one could become anxious to be in the same position one day (i.e., downward identification). In the context of online cancer communities, little is known about the occurrence and effects of such comparisons. In the present dissertation it is expected that patients with a tendency to compare themselves negatively to online peers report a lower sense of psychological well-being than patients who make optimistic comparisons. Furthermore, this relationship might be stronger for patients who are more active online, because they also encounter more stories from others to compare themselves with. In Chapter 4 we investigate the relationship between intensity of online participation, social comparison strategies, and psychological well-being.

Support messages. A third aspect that might alter the relationship between online participation and psychological outcomes is the presence of social support. A crucial aspect of online communities is their interactive nature, patients not only share stressful experiences, but other patients also reply to these stories, often showing compassion, understanding and support. Although most support messages are well intended, the question remains: How can we best support others in difficult times? Combining research from the domains of psychology and communication, this may depend on the fit between an individual's appraisal of the experience and the type of support message provided.

According to the literature in the field of psychology, individuals who experience a stressful life event go through different phases to process the experi-

ence⁵⁵, and these phases come with different regulation needs; socio-affective needs (i.e., emotional support, comforting) during the emotional episode, cognitive needs (i.e., reorganization of motives, re-creation of meaning) to overcome perseverance, and action needs in the form of creating new experiences⁵⁶. Communication science literature, on the other hand, shows various forms of supportive communication. However, studies showed mixed findings regarding the perceived helpfulness of different support messages (see Chapter 5 for an overview of studies). This might be due to the fact that communication researchers often determine characteristics of the event to assess the impact and support needs, instead of individuals' own interpretation of the impact of the event (i.e., emotional load, controllability, and consequences). In Chapter 5 we combine these two fields of research. We propose that variations in personal appraisal elicit different types of disclosure, and that a support message should match the disclosure style of the person in need.

Patients' offline situation

A third important issue when examining the effects of online support community participation on psychological well-being is patients' 'offline' situation. Researchers examining online environments often neglect offline aspects of a person's life⁴, even though there are many factors beside online peer support that might benefit or harm patients' well-being. The question that remains in spite of many published findings in the domain is: Does online peer support add to patients' well-being *on top of* other relevant 'offline' factors?

In this respect, disease characteristics are of importance. For example, some patients participating within online support communities were recently diagnosed with breast cancer, while others were diagnosed years ago and there are no residual cancer cells in the person's body. Moreover, some patients may have finished treatment, while others are currently under treatment. These factors might directly influence patient's psychological well-being, and could also affect online behavior and therefore indirectly influence psychological well-being⁵⁷.

Second, patients do not only find support online, they often also have family and friends who support them during the period of illness, or receive professional support from a social worker or psychologist in offline settings. The support one receives outside the online community probably already influences patients' well-being¹¹, and the question remains if online peer support complements offline support.

And third, patients differ in basic demographics, such as age, education level, and current working status. Such factors possibly also influence online behavior or well-being. For example, patients who do not perform a job have more time to go online and talk to their peers, and younger patients might be more familiar with use of the Internet. Hence, to reveal the bigger picture when it comes to the use and effects of online peer support, we also included important 'offline' well-being modifiers throughout our studies in this dissertation (Chapter 2, 3, 4 and 6).

Multidisciplinary background

The present thesis builds on knowledge from several domains: sociology, health communication, and clinical- and health psychology. The study object, i.e., online peer-to-peer communities, is a phenomenon that mostly fits within the sociological as well as media and communication science research domains. For example, sociology looks at the rise of online peer-to-peer communities and studies how the Internet changes our concepts of identity, community and self-governance⁵⁸, and the field of media and communication studies looks at social shaping and consequences of new media⁵⁹. In the context of illness, health communication covers the study of communicating promotional health information⁶⁰. Leading questions are for example how and why people talk about health and illness, how to influence peoples' health decisions and behaviors, and how new technologies play a role in health communication. However, the current project covers online peer-led communities that are not designed to influence decisions and behavior, but are bottom-up established platforms set-up by patients to support each other. Furthermore, I was mainly interested in how these online peer-to-peer communities affect participants' psychological well-being. The question how psychological and behavioral factors contribute to health and illness predominantly belongs to the field of health psychology⁶¹, and how to relieve psychologically-based distress and promote well-being is part of clinical psychology⁶². To reveal effects on patients' psychological well-being, I predominantly applied theories and measurements from social-, health- and clinical psychology, incorporating literature from the fields of coping with stressful life events⁵⁶ and breast cancer^{63,64}, emotion regulation⁶⁵, expressive writing⁶⁶, social comparisons⁶⁷, and social support¹¹. In the clinical domain, these constructs are predominantly tested in offline situations, but rarely in online environments. Hence, I apply these concepts to the online environments to assess how interpersonal communications with online peers affect patients' well-being.

Methodological approach

The project is multi-methodological in nature, employing cross-sectional and longitudinal surveys, and one experiment. My aim was to study online peer support in its natural setting by investigating online breast cancer support communities that are set-up by patients. In order to observe the psychological effects of being part of such a community, survey research including validated measurements for patients' psychological well-being is the most obvious procedure (Chapter 2, 3, 4 and 6). To examine causal effects of online participation, a longitudinal approach was applied in Chapter 3 with two measurement points in time, across a time span of 6 months, and in Chapter 7 with three points of measurement, across a time span of 9 months.

The expected influence of coping with emotions (Chapter 2 and 3) and social comparison strategies (Chapter 4) could be assessed with a survey design. However, since direct psychological effects of support messages are difficult to measure with survey research, we chose to conduct an experiment (Chapter 5).

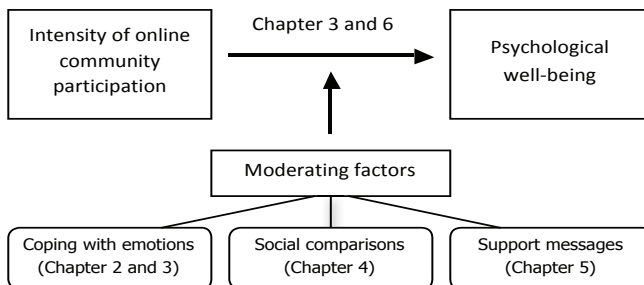
We based our hypotheses and study design on knowledge from two fields of research: communication research on support messages⁶⁸ and social psychology literature on processing and disclosing trauma^{56,69}. Within online communities patients write about their experiences, and other anonymous patients respond to these messages. To reveal effects of different support messages on emotional well-being, we conducted an experiment in which study participants wrote about a stressful life event, and were subsequently provided with a supportive response portrayed from another anonymous study participant. For ethical reasons and because we were mostly interested in the underlying mechanisms of processing trauma and support messages, this study involves no sample of cancer patients but a universal sample of individuals.

The advantage of this methodological approach is that we were able to (1) observe patients in their natural setting, (2) assess underlying psychological mechanisms that influence effects of online participation perhaps without patients being aware of these mechanisms, and (3) connect these underlying psychological processes and the offline situation to outcome measures, i.e., changes in psychological well-being. With our longitudinal approach I can go beyond previous studies that are mostly descriptive in nature, and instead move to psychological effect testing. By both assessing on- and offline well-being modifiers and by following participants over time, I aim to put the pieces of the puzzle together.

Dissertation outline

The next chapters cover five empirical studies. I divided the book in three parts; *The Personal Perspective - Coping with Illness* about coping with illness-related emotions (Part One), *The Social Perspective - Social Comparison and Support Messages* on reading stories from others and receiving support messages (Part Two), and *Causal Relationships and Added Value* to reveal the causal relationship between online participation and well-being, and to assess the added value of online peer support beyond 'offline' factors (Part Three). See Figure 2 for a schematic overview of the included chapters.

Figure 2. Schematic Overview of the Five Empirical Studies



Part One: The Personal Perspective - Coping with Illness

Chapter 2 describes our first cross-sectional study in which we focused on how online support community participants cope with emotions. Approaching emotions generally has a positive long-term effect on psychological well-being among cancer patients^{10,70,71}. Since patients' write and read about emotional experiences on the online platform, we expected that initial coping strategies would influence the relationship between online participation and well-being. To test our hypotheses, online support community participants filled out an online survey in which we assessed their intensity of online participation, how patients cope with thoughts and emotions, and their level of psychological well-being. In addition, we added other 'offline' factors to put findings in perspective. To our knowledge, this is the first study that assesses the role of emotional coping strategies within the online environment.

Chapter 3 originated from our first study. Since the results of the first study showed that coping with emotions influenced the relationship between online participation and psychological well-being, we planned to use a longitudinal approach to reveal long-term effects. We assessed emotional approach coping strategies, intensity of online participation and psychological well-being among breast cancer community members over a period of 6 months. The key contribution of this study is the consideration of participant's coping strategy and the longitudinal research design.

Part Two: The Social Perspective - Social Comparison and Support Messages

Another important aspect that might differ among patients visiting online support communities is how they compare their own situation to the situation of peers. Reading stories from others, and patients' personal interpretation, might influence effects of online participation as well. To reveal if optimistic and pessimistic social comparisons are of interest when we study effects of online peer support, a cross-sectional survey study was conducted and discussed in **Chapter 4**. We measured patients' intensity of online participation, social comparison strategies, and psychological well-being. Like the studies described in Chapter 2 and 3, we added other 'offline' factors to reveal the bigger picture.

In online support communities patients provide each other with peer support. The question however remains: what kinds of support messages produce positive psychological effects on the person disclosing a stressful experience? In **Chapter 5** we hypothesize that different types of disclosure require different types of support. To test this assumption we conducted an experimental study in which we test the effects of support messages following different disclosure styles on emotional well-being. Hypotheses were tested in a 2 (disclosure style: cognitive reappraisal disclosure *vs.* emotional disclosure) × 3 (support message: cognitive reappraisal response *vs.* socio-affective response *vs.* no response) between subjects factorial design.

Part Three: Causal Relationships and Added Value

A general assumption is that online support group participation affects patients' well-being. However, one can argue that certain levels of well-being might incite online participation. Therefore, the goal of **Chapter 6** was to test the direction of the relationship between online participation and psychological well-being: Does online participation predict well-being, or does well-being predict online participation? We aimed to solve this causality issue with a 3-wave study, measuring intensity of online participation and psychological well-being at all three points in time. Furthermore, we included 'offline' factors to examine the added value of online peer support on top of others aspects of a patients' life.

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