HOW INTERNET USE MAY AFFECT OUR RELATIONSHIPS
Chapter 6

General Discussion
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Overview of the Empirical Findings
This dissertation deals with a diverse array of topics concerning characteristics of Internet use and personal and relational wellbeing, and focuses on adult romantic relationships, in particular newlywed relationships. The most important findings of this dissertation are threefold: First, while previous research showed that compulsive Internet use has deleterious effects on a wide array of relationship quality indicators (Kerkhof, Finkenauer, & Muusses, 2011), the present dissertation added knowledge about mechanisms through which these effects might occur, and showed that when people perceive compulsive Internet use in their partner, this may affect their relationship quality. Chapter 3 showed that people use their perception of their partner’s compulsive Internet use as a cue for their partner’s level of self-control. The perceived level of their partner’s self-control in turn, predicts how much they trust their partner. Chapter 4 showed that the more people perceive their partner to exhibit signs of compulsive Internet use, the less they feel that their partner is responsive to their needs, concerns and goal strivings. In turn, this perception of their partner’s (lack of) responsiveness serves as a cue for exclusion by their partner.

Second, while previous research showed that compulsive Internet use and wellbeing are negatively related (Chou, Condron, & Belland, 2005; Widyanto & Griffith, 2006), the present dissertation investigated the directionality of these effects, and extended the literature by focusing on adults rather than adolescents (Byun et al., 2009, Chou et al., 2005; Tokunaga & Rains, 2010; Widyanto & Griffith, 2006). The results provided evidence that was more consistent with the suggestion that compulsive Internet use affects wellbeing negatively in adults, than with the suggestion that personal wellbeing affects compulsive Internet use. Compulsive Internet use predicted an increase in depression, loneliness, and stress over time. Although in the cross-sectional analyses we found a negative relationship between self-esteem and compulsive Internet use, longitudinally, no significant relationship occurred. Previous cross-sectional studies had also shown that self-esteem and compulsive Internet use were negatively related (Widyanto & Griffith, 2006; Kim & Davis, 2009). Possible explanations for the absence of long term effects could be for example that adults’ self-esteem is most stable during adulthood (Robins & Trzesniewski, 2005; Trzesniewski, Donnellan, & Robins, 2003). It is possible that because self-esteem among adults is relatively stable, it is less susceptible to the long-term effects of CIU. Compulsive Internet use and happiness were reciprocally negatively related over
time: compulsive Internet use predicted a decrease in happiness over time, and happiness predicted a decrease in compulsive Internet use over time. This result might imply that happiness functions as a buffer against developing compulsive Internet use.

Finally, the present dissertation investigated the directionality of the relationship between use of sexually explicit Internet material and relationship quality for both the person that uses the sexually explicit Internet materials, as well as for their partners, and found some robust, albeit small, effects over time: within husbands, relationship adjustment predicted a decline in sexually explicit Internet material use, and sexually explicit Internet material use predicted a decline in relationship adjustment over time. Within wives, neither relationship satisfaction nor sexual satisfaction was related to the use of sexually explicit Internet materials over time. Across partners, husbands' sexual satisfaction predicts a decrease in wives' use of sexually explicit Internet materials over time. The results are discussed in terms of men's and women's primary reason for use of sexually explicit Internet materials: men's primary reason for use of sexually explicit Internet materials is to use it as stimulating material during masturbation, while women's primary reason for use of the materials is to use it as stimulating material in the lovemaking with their partner (Bridges & Morokoff, 2011). Thus, while previous research has established a negative relation between the use of sexually explicit Internet material and relationship quality (Bridges & Morokoff, 2011; Clark & Wiederman, 2000; Yucel & Gassanov, 2010), the present dissertation showed what long term within and between partner effects might occur.

Implications of the Findings

The results from the present dissertation have implications in three main topics. First, the research has implications for the conceptualization of compulsive Internet use. Second, the research has implications for what we know about the plausibility of the directionality of the relationship between Internet use and personal and relational well-being. Third, the research has implications for what we know about between partner effects of Internet use on personal and relational well-being. Below, these implications will be discussed.

Conceptualization of compulsive Internet use

Different terms have been used for compulsive Internet use (for an overview see LaRose, Lin, & Eastin, 2003; Turel, Serenko, & Bontis, 2011), most commonly Internet addiction. This suggests that it is the Internet in itself that is addictive, rather than Internet-based applications. Meerkerk (2007) states that, while some researchers have studied subtypes of Internet addiction based on the application, other researchers study a general, multidimensional overuse of the Internet. In this dissertation, we use the term compulsive Internet use to refer to an overarching set of characteristics, behaviors, and preoccupations that can be experienced with all Internet-mediated applications. Meanwhile however, specific Internet applications can have different addiction risks. For example, Internet users who spend a lot of time on
particular Internet applications, such as gaming and erotica, are at higher risk to use the Internet compulsively (Meerkerk, 2007). It is suggested that these applications have specific features that make it harder to control their use. Use of sexually explicit Internet material for example, offers quick rewards (e.g., arousal and distraction from negative mood states). One possible explanation is that through operant conditioning, use of such materials will increase in frequency and duration. Sexual arousal may serve as positive reinforcement, and distraction from negative mood states serves as negative reinforcement (Meerkerk, 2007). Thus, the strengths of reinforcements in specific applications may increase their addictive risk.

According to Meerkerk (2007), the compulsive Internet use scale, which we adjusted for couples and used to measure compulsive Internet use in this dissertation, assesses compulsive Internet use predominantly as an inability to restrain from Internet use. Similarly, other researchers have suggested that compulsive Internet use should not be considered as an addiction or habit, but as a set of behaviors that represents a continuum of unregulated media behavior, ranging from normal media consumption patterns to problematic behavior that might be called pathological (e.g., LaRose et al., 2003). The characterization of compulsive Internet use as unregulated media behavior is in line with the findings that are presented in Chapter 3 of this dissertation. This chapter shows that low self-control predicts the development of compulsive Internet use over time. Thus the results in this dissertation imply that compulsive Internet use may be characterized as a set of characteristics caused by a loss of control over Internet use. Future research may therefore examine whether strengthening self-control is a suitable intervention in the treatment of compulsive Internet use.

In this dissertation compulsive Internet use is measured using five items taken from the Compulsive Internet Use Scale (Meerkerk, van den Eijnden, Vermulst, & Garretsen, 2009). The items are: “How often.… (1) do you find it difficult to stop using the Internet when you are online? (2) do you continue to use the Internet despite your intention to stop?, (3) do you prefer to use the Internet instead of spending time with others (e.g., partner, children, parents, friends)? (4) are you short of sleep because of the Internet?, (5) do you feel restless, frustrated, or irritated when you cannot use the Internet?. The original questionnaire consists of 14 items and contains questions about loss of control over the Internet use, withdrawal symptoms, preoccupation, and conflict with regard to the use of the Internet (Meerkerk et al., 2009).

Because of time-constraints in the longitudinal dyadic survey, we used a 5-item short version of the original 14-item CIUS scale in our studies. Our item selection was based on the factor loadings reported in three studies that Meerkerk et al. (2009) used in their scale construction. By using these items, we acquire information about the loss of control, withdrawal symptoms, preoccupation and conflict with regard to the use of the Internet. However, using the long version of the scale might have allowed a more nuanced analysis of which aspects of compulsive Internet use drive the negative effects. For example, it might also have provided the opportunity to cluster the items measuring one characteristic (for example loss of control)
and identify which aspect of compulsive Internet use has the most influence on the negative effects on personal and relational wellbeing. Future research could examine the different elements of compulsive Internet use more in depth, and disentangle its effects on personal and relational wellbeing as presented in this dissertation.

Furthermore, the effects reported in Chapter 3 and 4 of this dissertation are based on partner perceptions of compulsive Internet use. The question remains exactly which signals do partners perceive, and what element of that perception drives the negative effects on perceived self-control and perceived responsiveness. In these chapters, we describe how different elements of compulsive Internet use of one partner could theoretically affect the other partner’s perceptions. For example, preoccupation with the Internet use can be interpreted as a lack of interest and responsiveness towards the partner (see Chapter 4). However, it is also possible that there are other mediating processes that explain the link between compulsive Internet use and effects on personal and relational wellbeing. One possible example could be that compulsive Internet users express less positive emotions, and that they experience more unpleasant emotions when Internet use is impossible (van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008). These emotional reactions may partly affect how partners of compulsive Internet users evaluate their partner (e.g., as grumpy). Because global evaluations of a person can induce altered evaluations of the person’s attributes (Nisbett & Wilson, 1977), it is possible that a negative evaluation of the compulsive Internet user radiates as a negative halo onto other evaluations of the partner’s attributes, such as their responsiveness. This is just one of the possible mechanisms that might underlie the effects of compulsive Internet use on partner perceptions, but it illustrates that there might be more subtle mechanisms at the micro-level that explain why the studied characteristics of Internet use influence other partner perceptions. Future research could focus on mapping these subtle mechanisms.

**Directionality**

The present dissertation extends the literature by looking at the plausibility of the directionality of the relationship between characteristics of Internet use and personal and relational wellbeing. Chapter 2 showed that compulsive Internet use predicts increase in later depression, stress, and loneliness, and declines in later happiness, while only happiness predicts declines in later compulsive Internet use. Chapter 3 showed that perceived partner compulsive Internet use predicts declines in later perceived partner self-control, and perceived partner self-control in turn predicts a decrease in later partner trust. Chapter 4 showed that perceived partner compulsive Internet use predicts a decrease in later perceived partner responsiveness, which in turn predicts an increase in later perceived partner exclusion. Because previous studies about compulsive Internet use and personal and relational wellbeing were mostly cross-sectional, they could not make suggestions about the plausibility of either direction of the found relationships. The results from Chapters 2, 3, and 4, however, suggest
that compulsive Internet use is mostly an antecedent to declines in personal and relational wellbeing, rather than a consequence of personal and relational wellbeing.

Some of the results in this dissertation were bi-directional. Chapter 2 showed that happiness both predicted compulsive Internet use, and, at the same time, was predicted by compulsive Internet use over time. Chapter 3 showed that self-control and compulsive Internet use mutually influence each other: earlier self-control was negatively reciprocally related to compulsive Internet use over time. It is possible that these bi-directional effects are cyclical effects. For example, unhappy individuals may start to use the Internet more compulsively, which may cause more unhappiness in the long run. A possible mechanism that might explain this cycle is that low levels of happiness can lead to an increase in compulsive Internet use, because unhappy individuals may seek out contexts where they can experience stimulating experiences and feel happier. If the Internet provides the context where the individual can experience stimulating experiences, the individual may develop media habits to alter one’s mood accordingly. These habits in turn impair self-control, and thus increase compulsive Internet use. Subsequently, when Internet use becomes compulsive, it becomes less intentional and effortful. This type of behavior might get in the way of the intentional and effortful activities that are the determinants of sustainable happiness (Lyubomirsky & Layous, 2013). Thus, happiness and compulsive Internet use may affect each other cyclically. Self-control and compulsive Internet use may also affect each other cyclically. Low self-control may undermine efforts to control or cut back Internet use, and thus contribute to the development of compulsive Internet use. Once this has created compulsive Internet use behavior however, the compulsive Internet use itself may also undermine self-control, because the Internet use becomes more difficult to control. Future research could examine whether low happiness and low self-control indeed affect compulsive Internet use, by manipulating happiness or self-control in an experiment, and measuring compulsive Internet use related behaviors, such as time online (for example time online while participants still had to do another task).

Chapter 5 addressed questions regarding the plausibility of the directionality of the relationship between sexually explicit Internet material use and relationship adjustment and sexual satisfaction. In this chapter, we found less strong indications for one particular direction over time. Previous studies found a positive association between women’s sexually explicit Internet material use and their male partner’s sexual satisfaction (e.g., Bridges & Morokoff, 2011), and because these studies were not longitudinal, the results were interpreted as a positive effect of women’s sexually explicit Internet material use on men’s sexual satisfaction. The findings of Chapter 5 suggest that the association between women’s sexually explicit Internet material use and their male partner’s sexual satisfaction may have the opposite direction longitudinally: the less husbands are sexually satisfied, the more likely it is that their wives will use sexually explicit Internet material. This may suggest for example, that
women start to incorporate sexually explicit Internet material in their lovemaking when the male partner is not sexually satisfied. By shining a different light on the directionality of the relationship between use of sexually explicit Internet materials and relationship quality, the results from Chapter 5 underline the importance of investigating the effects of use of sexually explicit Internet materials on relationship quality over a longer period of time. Furthermore, the between partner effects of the directionality of the link between sexually explicit Internet material use and relationship adjustment and sexual satisfaction between partners underlined the importance of considering both partners when investigating relationships. Future research could investigate the role of motives of use and use of sexually explicit Internet materials together or alone, in the longitudinal directionalities of the relationships between relationship satisfaction and use of sexually explicit Internet materials within and between partners.

**Between partner effects**

By investigating not only actor effects (effects of Internet use on the Internet user), but also partner effects (effects of Internet use on the partner of the Internet user), this dissertation extends the literature about Internet use and personal and relational wellbeing, which mainly investigated the Internet user him/herself. The chapters in this dissertation showed that the effects of compulsive Internet use and sexually explicit Internet material are socially anchored: This dissertation showed that effects of Internet use can extend not only to the Internet user him/herself, but also to partners of the Internet users. This suggests that, when investigating effects of media use on social relationships, it is important to examine the effects both on the media user, as well as on their partners. We examined romantic relationships among adults, but examining partner effects would be important for other types of relationships as well, including parent-child relationships and friendships. Few media effects theories consider the indirect effects that the media use of one person may have on other people. One example is the two-step-flow theory (Lazarsfeld, Berelson, & Gaudet, 1944), which states that most people form their opinions under the influence of opinion leaders who are influenced by media. Opinion leaders are initially exposed to media content, and interpret the content based on their own opinion. They then spread those opinions amongst the general public. The steps in the two-step-flow theory describe a different process of media effects than those that are studied in this dissertation. Nevertheless, the resemblance between the two-step-flow theory and the partner effects studied in this dissertation is that the effects of media use take place through certain steps, and move from the media user onto others.

The dissertation shows that compulsive Internet use is perceived by the partner, and, that this perception affects the partner’s relationship quality. These results thus suggest that there is a need to extend theories about media effects on social relationships by including effects that occur, not only through own use of media, but also through perceptions of others’ media use.
Limitations of the Research
Some limitations of the present dissertation should be acknowledged. First, we will discuss limitations that are related to the Internet use behavior, and secondly we will discuss limitations that are related to the generalizability of the results.

Limitations regarding the Internet use behavior
A possible limitation of the research in this dissertation is that the studies cannot say whether and how the effects found for compulsive Internet use extend to other (compulsive or excessive) behaviors. First of all, it is unclear whether the found effects extend to other addictions, such as alcoholism and gambling addiction. From previous research we know that there is a comorbidity between compulsive Internet use and use of substances amongst adolescents (such as smoking, drinking, smoking marihuana) (Rooij, Schoenmakers, & Mheen, 2011). Other research showed comorbidities between Internet addiction and other substance abuse and impulse control disorders (Black, Belsare, & Schlosser, 1999; Shapira, Goldsmith, Keck, Khosla, & McElroy, 2000). In relationships, it is possible that these comorbid addictions and disorders have far worse effects than compulsive Internet use such as it is used in this dissertation (i.e., not as an addiction, but as a set of characteristics that ranges from less to more severe). For example, with severe addictions it can be impossible to hold a job and care for oneself and the partner, while having trouble to stop using the Internet when intended is far less likely to have such effects. Our research did not assess comorbid disorders or addictions, and cannot speak to the importance of comorbidities for relationship processes. Secondly, it remains unclear whether the effects of compulsive Internet use described in this dissertation extend to other compulsive or excessive behavior, which cannot immediately be characterized as an addiction (e.g., being devoted to a hobby such as excessively collecting model trains or being a fanatic sportsperson). This type of excessive or compulsive behavior too may take time and attention away that one person would otherwise spend on or with the partner, or it may signal a lack of self-control. In this sense, such behavior may have similar effects as compulsive Internet use does. However, the Internet offers activities and characteristics that other compulsive or excessive behavior might not always offer, and which might determine relationship effects. For example, social network sites offer the opportunity to monitor the partner’s online behavior remotely (to a certain extent). Monitoring one’s partner on social network sites may create jealousy and relationship conflict (Clayton, Nagurney, & Smith, 2013; Muise, Christofides, & Desmarais, 2009; Tokunaga, 2011; Utz & Beukeboom, 2011). Also, certain online materials might infringe on domains that are particularly important in relationships. For example, using sexually explicit Internet materials may intrude on the sexual aspects of a relationship, and has been shown to decrease relationship quality (Bridges & Morokoff, 2011; Clark & Wiederman, 2000; Yucel & Gassanov, 2010).
Finally, the question remains whether the effects described in this dissertation describe effects that are specific to compulsive Internet use, or compulsive use of technological devices.
Because we find effects of perceptions of the partner’s compulsive Internet use, it is important to consider whether partners perceive each other’s behavior as Internet use, or as general computer use. People might not always be able to distinguish between whether their partner is using a device for Internet purposes, or other non-Internet related activities. Thus, the effects of perceived partner compulsive Internet use described in this dissertation, might not be specific to compulsive Internet use, but may also extend to compulsive use of devices that can be utilized to use the Internet. Future research could try to disentangle Internet use and device use.

**Limitations regarding the generalizability of the results**

This dissertation aimed to extend the literature about effects of compulsive Internet use and sexually explicit Internet materials on personal and relational wellbeing by investigating adults and adult romantic relationships. In the introduction, we describe that most studies about Internet use and personal and relational wellbeing focused on adolescents, and emphasized the need to also study adults and adolescent relationships. In the dissertation, we find several effects of Internet use on personal and relational wellbeing for adults. However, because we did not compare adults and adolescents, we do not know if the findings are specific to adults or also occur in other age groups. Theoretically, there are reasons to believe that at least the use of certain Internet applications might have different effects on social relationships for adolescents as for adults. For example, social skills change as development proceeds (Englund, Levy, Hyson, & Sroufe, 2000), and individuals who lack social skills are especially likely to prefer online social interaction over face-to-face communication (Caplan, 2003; 2006). Because adults usually have higher self-esteem and better social skills (Englund et al., 2000), their online communication may supplement offline communication, and therefore strengthen social bonds and personal wellbeing. Adolescents, who usually have lower self-esteem and less social skills, might use online communication to replace offline communication, because online communication is perceived as a safer way to express oneself. In this case, online communication may replace offline communication. If online communication replaces offline communication, which is rich in visual, auditory, and contextual cues, social bonds and personal wellbeing might suffer. Therefore, online communication might not have the same effects for adolescents as for adults. Future research should investigate whether the effects and mechanisms through which Internet use affects relationship quality that are described in this dissertation, can be generalized to people in other age groups.

Furthermore, because the studies in this dissertation investigate mostly marital relationships, we cannot know whether some of the effects might be generalized to people in other types of close relationships, such as parent-child relationships and friendships, and single individuals. In Chapter 3 we found that both for stranger-relationships and married-relationships, compulsive Internet use was used as a cue for others’ self-control. However, because romantic relationships have distinct characteristics from other types of relationships, such as passion
and commitment (Connolly, Craig, Goldberg, & Pepler, 1999), Internet use may relate differently to the quality of romantic relationships than to the quality of other types of relationships. For example, romantic partners may expect more undivided attention from each other than friends do, and compulsive Internet use may thus be more of a departure from what is expected in romantic relationships than in other types of relationships. Furthermore, for single people, loneliness may be a more important motive to use the Internet compulsively than for married people. The increased contact with friends online might thus have a different net effect on social relationships for a single individual who increases his social contact through the Internet than for someone in a relationship who displaces time spent with the partner offline, for time spent with friends online. Future research might try to replicate some of the findings in this dissertation for other types of social relationships and singles.

Finally, we might ask the question whether there are moderators that we have not yet investigated that might mitigate or reinforce the effects described in this dissertation. In the dissertation, while analyzing the effects, we have controlled for moderation by relationship quality indicators such as commitment. There are however examples that show that personality characteristics can also be important in determining media effect. One example is that research found that only women with low or moderate degrees of hyper-femininity were more critical towards male-targeted sexually explicit material when they were attending to the characters and situational context of the material, while women with high degrees of hyper-femininity were not (van Oosten, Peter, & Boot, 2014). Thus, hyper femininity determined how media messages were processed. Because personality characteristics, such as low self-esteem and social disinhibition, are important in predicting compulsive Internet use (Cock, Vangeel, Klein, Minotte, Rosas, & Meerkerk, 2014), it is possible that personality characteristics moderate compulsive Internet use effects. For example, compulsive Internet users who are more socially disinhibited might suffer more negative relationship effects than Internet users who are less disinhibited, because their social disinhibition causes them to seek more contact online with strangers, flirt more online, engage in more sexual behavior online, or engage in online infidelity more often. Thus, personality characteristics may moderate effects of Internet use on relationship quality. Future research could investigate the role of personality characteristics in the relationship between Internet use and personal and relational wellbeing.

The Changing Internet Use Landscape
Internet use is rapidly and continuously changing. For example, in 2006, when the longitudinal dyadic survey started, 85% of the people in the Netherlands used the Internet, while in 2013, 97% of people did (Centraal Bureau voor de Statistiek, 2014). Furthermore, three important changes in Internet use occurred between 2006 and today (“Three technology revolutions”, 2013). First, speed of Internet connectivity increased when more and more people switched to broadband connections. As people adopted those higher-speed, always-on connections, they started to spend more time online, perform more online activities, watch more online video’s
and became content creators themselves. Second, mobile connectivity through cell phones, smartphones, and tablets, made it possible to be connected to the Internet at any time and at any place for the vast majority of people. While in 2006 only 12% of the people in the Netherlands had Internet connectivity on mobile devices, in 2013 72% of Dutch citizens have a smartphone ("Mobiel internet", 2013). Finally, the rise of social media and social networking has affected the way people think about their family, friends, acquaintances and strangers: While people have always had social networks of family and friends that helped them, by being able to create social networks online, they are able to have bigger and more diverse networks than in the past. The ease of availability of these networks has increased, and connections to others are often more persistent and pervasive because of the availability through social networks. In 2006 only 16% of the Internet users in the USA used social media, while in 2013 73% of the Internet users used social media. In the Netherlands, that number is even higher: 9 out of 10 people used social media ("Social media onderzoek", 2014). The traditional boundaries between private and public, home and work and being a consumer and creator of information became blurred, and this impacts social relationships ("Three technology revolutions", 2013). Thus, since our media habits, available Internet applications, and social norms concerning Internet use keep changing, it is important to keep thinking about the best ways to study Internet use. We might question for example, whether our increased consumption of multiple media sources simultaneously (SPOT, 2012), might influence how much cognitive resources we have left to pay attention to our physical and social surroundings. Because the Internet and Internet use is changing continuously, we need to continue investigating their effects. This dissertation offered suggestions for how to study the effects of Internet use on personal and relational wellbeing: The results from the dissertation stress the importance of involving characteristics of Internet use rather than frequency, of examining long-term directionalities of effects, and of taking into account not only actor effects, but also partner effects.

Closing Remarks
The research in this dissertation shows that compulsive Internet use affects the partner’s relationship quality, investigated mechanisms through which these effects occur, and showed that compulsive Internet use is an antecedent of declines in wellbeing rather than a consequence. The research from this dissertation also shows that across partners, husbands’ sexual satisfaction predicts a decrease in wives’ use of sexually explicit Internet materials over time. This dissertation extends existing research by focusing on adult romantic relationships and looking at partner effects, and establishing long-term directionalities of the effects. The results from the studies in this dissertation underline the need to continue to examine directionality and between partner effects when looking at characteristics of Internet use and personal and relational wellbeing, in the changing Internet use landscape.