HOW INTERNET USE MAY AFFECT OUR RELATIONSHIPS
Partner Effects of Compulsive Internet Use

A Self-Control Account
Abstract
To be a trustworthy partner, people need self-control. People infer others’ level of self-control from behavioral cues, and this perception influences how much they trust others. Exhibiting compulsive Internet use (CIU) might provide such cues. This research examined whether and how CIU affects perceptions of self-control and trust in a partner. In an experimental study, we manipulated CIU in descriptions of strangers, and found that participants in the CIU condition judged the other to have lower self-control and trusted them less than in a control condition. In a prospective dyadic study among newlyweds, we extended these results to close relationships. The results confirmed our hypotheses. Additionally, we found that low trait self-control makes people prone to CIU, illustrating that assessing others’ CIU is a good strategy to gauge others’ level of self-control. These results illuminate how and why CIU may be harmful for relationships.
People in close relationships are dependent on one another. Every day, they need to cooperate and coordinate their efforts to be able to live together, and work together towards their relationship goals. For the maintenance of a relationship therefore, it is crucial that partners feel that they can rely on and trust each another. To be a trustworthy close other, people need self-control (Righetti & Finkenauer, 2011). Self-control is the ability of the self to monitor, inhibit, and modify one's thoughts, feelings and behaviors in order to attain goals and conform to standards (Muraven & Baumeister, 2000). Self-control helps people to manage interpersonal dilemmas and to solve conflicts between responses in the interest of the self and responses in accordance with (cultural and social) standards or broader considerations such as relationship promotion and maintenance (Tangney, Baumeister, & Boone, 2004). By observing their partner’s behavior and behavioral cues, people infer the level of their partner’s self-control. These perceptions of the partner’s level of self-control, in turn, allow people to gauge their partner’s trustworthiness (Righetti & Finkenauer, 2011).

A behavior that is likely to provide cues relevant to low self-control is compulsive Internet use (CIU). CIU is described as a loss of control over one's Internet behavior (LaRose, Lin & Eastin, 2003) and is characterized by unsuccessful efforts to control, cut back, or stop Internet use when intended (Young, 2004). Different terms have been used for CIU (for an overview see LaRose et al., 2003; Turel, Serenko & Bontis, 2011). In this study, we use the term CIU to refer to an overarching set of characteristics, behaviors, and preoccupations that can be experienced with all Internet-mediated applications. Following LaRose et al. (2003), we characterize CIU not as an addiction or habit, but as a set of behaviors that represent a continuum of unregulated media behavior, ranging from normal media consumption patterns to problematic behavior that might be called pathological.

The role of the Internet in daily life has increased exponentially and will continue to do so. For example, in the Netherlands the percentage of people that used the Internet every day increased from 68% in 2005 to 86% in 2011 (CBS, 2012). Given this steep growth in Internet use, more people are likely to become compulsive Internet users (Meerkerk, 2007; van der Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008). Previous research (Kerkhof, Finkenauer & Muusses, 2011) has shown that CIU is negatively related to and predicts a decrease in perceived relationship quality. In the present study, we turn to the question how and why CIU affects interpersonal relationships and propose that people use their
observations of others’ CIU as a gauge for the others’ level of self-control, which, in turn, affects perceptions of the other person’s trustworthiness (Study 1 and 2). Additionally, we propose that people with low trait self-control are prone to CIU, suggesting that using CIU as a behavioral cue for the other’s level of self-control is a good strategy (Study 2).

Compulsive Internet Use and Trait Self-Control
Self-control as a dispositional trait varies across people, some people have a higher level of self-control than others (Baumeister, Gailliot, DeWall, & Oaten, 2006; Tangney et al., 2004). People with high self-control have higher success rates pursuing long-term goals and are more successful in life on a broad range of human strivings in domains such as grade point average, adjustment, psychopathology, self-esteem, binge eating, alcohol abuse, maintaining healthy relationships, interpersonal skills, and secure attachment (Baumeister et al., 2006; Tangney et al., 2004). On the contrary, people low in self-control show more addictive behaviors, such as alcohol-use and impulsive spending (for a review see Baumeister et al., 2006).

Given the definition of CIU as unregulated media behavior (LaRose et al., 2003), low self-control is also likely to be related to CIU. CIU, when compared to frequent Internet use, is characterized by a lack of control over one's Internet behavior (van den Eijnden, et al., 2008). In the existing literature CIU is conceptualized as deficient self-regulatory processes, which undermine Internet users’ ability to monitor, judge, and adjust their own behavior (LaRose, 2001; LaRose et al., 2003; LaRose, Eastin, and Gregg, 2001; LaRose, Mastro & Eastin, 2001; Kim, Namkoong, Ku & Kim, 2008). These processes are not only observed among highly compulsive Internet users, but also among Internet users who showed relatively low levels of CIU. Core elements of CIU, identified by the literature, highlight its addictive characteristics; withdrawal reactions when the Internet is not available, preoccupation with the Internet, using the Internet for coping or mood modification and repeated, unsuccessful efforts to control, cut back or stop Internet use (Greenfield & Ceap, 1999; Meerkerk, van den Eijnden, Vermulst, & Garretsen, 2009; Young, 2004). High CIU predicts negative outcomes, such as missing social engagements or activities and difficulties in managing one’s life because of Internet use (Caplan, 2010). Following the above-mentioned conceptualization of CIU, a lack of trait self-control should make individuals vulnerable to CIU. So far, the relationship between CIU and trait self-control has not been tested, therefore in Study 2 we will test whether they are indeed related.

Compulsive Internet Use as a Signal for Low Self-Control
If CIU is predicted by low trait self-control within people, between people it should serve as a gauge for self-control. Righetti and Finkenauer (2011) found that people are capable of inferring partners’ level of self-control from observing their behavior. In their studies, both intrapersonal behavior (e.g., accomplishing personal goals) and interpersonal behavior (e.g., forgiving, accommodating behavior) were diagnostic behaviors from which people inferred their partner’s level of trait self-control. Given the behavioral characteristics of CIU (e.g.,
continue using the Internet despite intending to stop; Kerkhof, Finkenauer & Muusses, 2011; van den Eijnden et al., 2008), it should indicate low self-control to close others.

In close relationships, it is helpful to have self-control. High self-control individuals are better able to suppress feelings of attraction to alternative partners (Pronk, Karremans, Overbeek, Vermulst & Wigboldus, 2010; Ritter, Karremans & van Schie, 2010; Vohs, Finkenauer & Baumeister, 2011) and to exhibit pro-relationship behaviors, such as accommodation, forgiveness, and keeping promises (Finkel & Campbell, 2001; Kammrath & Peetz, 2010; Pronk et al., 2010). For example, Finkel and Campbell (2001) found that individuals whose self-regulatory resources were depleted behaved less constructively towards their romantic partner than individuals whose self-regulatory resources were not depleted, even when controlling for commitment. Thus the ability to exert self-control has reliably been found to predict (interpersonal) behavior that adheres to socially accepted standards. Self-control allows people to override selfish impulses and self-interested behaviors for the better of the relationship (Finkel & Campbell, 2001).

Since relationship partners strive to reduce relational uncertainty (Berger, 1987; Knobloch & Solomon, 1999, 2002), perceiving high self-control might serve as a cue that reduces partner uncertainty by signaling that the partner is reliable, trustworthy and dependable. Indeed, to judge whether a person is trustworthy, reliable, and has the ability to engage in pro-relationship behavior, people observe her behavior and infer her level of self-control. Righetti and Finkenauer (2011) found that people's perception of others' level of self-control determined how much they trusted the other person. Partners who were perceived to have high self-control were trusted more than partners perceived to have low self-control. Therefore, if people use their partner's CIU to infer their level of self-control, perceiving low self-control should lead people to infer that their partner is not a trustworthy relationship partner.

Aims and Hypotheses

To our knowledge, this is the first study that proposes and tests a mechanism through which CIU might impact the quality of close relationships. The aims of this study are twofold. First, we adopt an individual difference perspective and focus on the link between trait self-control and CIU within people. Although the literature suggests a causal link between low trait self-control and CIU and assesses CIU as deficient self-regulation of Internet use (Kim et al., 2008; Song, LaRose, Eastin & Lin, 2004; LaRose et al., 2003), we aim to tease trait self-control and CIU apart in order to test whether the two are related. Using a prospective longitudinal study, we tested whether low trait self-control makes individuals vulnerable to CIU. More specifically, we predicted that low trait self-control predicts an increase in CIU over time (H1).

Second, we adopt a relational perspective and focus on the question whether people use their partner's CIU as a gauge for his trustworthiness, because it indicates their partner's level of self-control. For CIU to serve as a gauge for the partner's self-control, people need to perceive their partner's CIU. We predicted a cross-partner effect in that Partner A's CIU should increase...
perceived CIU in Partner B (H2). Based on previous research (Righetti & Finkenauer, 2011), we predicted that when people detect their partner’s CIU, they infer low self-control (H3). Finally, we predicted that the effect of perceived CIU on trustworthiness is mediated by perceived self-control (H4, for an overview of the hypotheses, see Figure 1).

Two studies tested our hypotheses. An experimental study examined the direct link between CIU, perceived self-control and trust, by manipulating CIU in a scenario study. In this study, we compared the perception of self-control in people who engaged in either frequent or CIU. In a 3-year prospective study among a large sample of newlywed couples, we examined whether trait self-control is linked to CIU within partners. Additionally, we tested, between partners, whether perceived CIU is related to perceptions of self-control, which in turn are related to trust in the partner. Extending existing research on the impact of problematic Internet use on marital relationships (for a review see Hertlein & Webster, 2008), we tested our hypotheses on both relationship partners. By involving both relationship partners, we were able to examine both individual and cross-partner effects. Given the dyadic design of our study, its results will not only contribute to our understanding of CIU but also illuminate how and why it affects relationships.

### Study 1

Research has shown that observers infer the presence of trait self-control in others when they observe behavior that requires high self-control (Righetti & Finkenauer, 2011). In light of these findings, behavior that indicates a lack of self-control, in our case CIU, should indicate low self-control, which, in turn, should lead to low trust. To test the between persons effects of CIU on self-control and trustworthiness, we conducted an experiment. This experiment investigated whether self-control and trust are detected by people through the observation of behavioral cues (H3 and H4).

In the crucial condition, we asked participants to form an impression of a stranger who used the Internet compulsively (CIU condition). In order to establish whether the effect can be attributed to CIU, rather than to Internet use in general, we contrasted the CIU condition with a condition describing non-compulsive (frequent) Internet use. The non-compulsive Internet use condition was intended to describe frequent, rather than compulsive Internet behavior. Although frequent Internet use is related positively to CIU, it does not show the adverse effects on personal and relational well-being that is typical for CIU (e.g., Kerkhof et al., 2011).

First, as a manipulation check, the two conditions were pretested to see if they were perceived as respectively compulsive Internet use and non-compulsive Internet use. Participants were 24 individuals who were recruited and completed the questionnaire online (17 women). They were randomly assigned to one of the two conditions (12 in each condition, mean age 32.9 years, SD = 11.7). CIU was measured using a shortened version of the Compulsive Internet Use Scale (CIUS; Meerkerk, van den Eijnden, Vermulst, & Garretsen, 2009). A t-test revealed that the
compulsive Internet use condition was judged to reflect significantly more compulsive Internet use ($M = 3.85, SD = 0.67$) than the non-compulsive Internet condition did ($M = 1.47, SD = 1.05$); $t(22) = -6.66, p < .001$, Cohen's $d = 2.70$. These finding indicate that our manipulation was successful.

We then examined whether people use behaviors indicative of CIU to infer trait self-control in strangers. In addition, we tested whether their perceptions of the stranger's self-control affected their perception of trustworthiness of this person.

**Method**

**Participants**
Participants were 59 individuals (31 women). They were recruited on the campus of the VU University Amsterdam, and were paid €2.50 for taking part in the experiment. Participants were 21.4 years old, on average. Upon arrival at the laboratory, we randomly assigned participants to one of two experimental conditions (CIU versus non-compulsive Internet use, 29 individuals in the CIU condition).

**Procedure**
Participants’ described an event that had happened to them in the previous week. This task was to support the cover story that there was an ostensible other participant who was doing the same task. Participants would then exchange their descriptions with the other participant to get to know each other before having an interaction. When finished, participants received the description that was supposedly written by the other participant. As a function of condition, one of two descriptions was given to participants. One implied that the writer was a compulsive Internet user and one implied that the writer used the Internet frequently but not compulsively (Appendix A). The CIU description was derived from the description for the CIU scale (CIUS; Meerkerk, van den Eijnden, Vermulst, & Garretsen, 2009), in the frequent Internet description the content was changed to mention merely frequency, not compulsion.

We asked participants to form an impression of the other participant and reply to questions about him or her on the computer. The computer randomly presented items from a set of questionnaires. To assess perceived other’s trait self-control we used an adapted version of the Tangney et al. (2004) Self-Control Scale (11 items; e.g., “I think that the other participant has a hard time breaking bad habits”; Finkenauer, Engels, & Baumeister, 2005; $\alpha = .91$), and a three items self-control scale, that directly assessed trait self-control (e.g., “I think that the other participant has a lot of self-control”; $\alpha = .92$). We used a short and adapted translated version of the Rempel, Holmes and Zanna (1985) instrument to assess trust in the other person. The scale consisted of 12 items, representing all aspects of close relationship trust, and was adapted so that the questions were about the other participant, a stranger, instead of a close partner (e.g. “Whenever we have to make an important decision in a situation we have never
encountered before, I know the other participant will be concerned about my welfare” instead of “… my partner …”; $\alpha = .80$). We asked participants to imagine that the other participant was a good friend, and answer the questions accordingly. Finally, we measured liking (3 items; “The other participant is a nice person”; $\alpha = .73$) to control for possible variations in liking across conditions.

**Results**

**Key findings**

To test whether participants attribute lower dispositional self-control to the other participant in the compulsive Internet condition than in the frequent Internet use condition, we performed an independent samples $t$ test (CIU vs. frequent Internet use) on the two measures of the other’s perceived self-control. As intended, in the frequent Internet use condition, the other participant was perceived to have more self-control on the Tangney et al. (2004) and the three-items measure ($M = 4.06, SD = 0.73$ and $M = 4.08, SD = 1.03$, respectively) than in the CIU condition ($M = 2.04, SD = 0.47$ and $M = 1.04, SD = 0.87$), $t(57) = 12.62, p < .001$, Cohen’s $d = 3.29$; and, $t(57) = 10.76, p < .001$, Cohen’s $d = 3.19$, respectively.

To examine whether there were differences between how much participants trusted the other participant in the two conditions, we performed an independent samples $t$ test (CIU vs. frequent Internet use) on the trust scale. Consistent with our predictions, frequent Internet use led to greater trust ($M = 3.33, SD = 0.66$) than CIU ($M = 2.85, SD = 0.64$), $t(57) = 2.81, p = .007$, Cohen’s $d = .74$.

We conducted mediation analyses using the bootstrapping method (Preacher & Hayes, 2004) to examine whether the perception of the other participant’s self-control mediated the effect of the conditions on trust. The bootstrap estimates are based on 5,000 bootstrap samples. The results revealed that the total effect of the conditions on trust (total effect = -.47, $p = .007$) became non-significant when the perceived other’s trait self-control or the three items self-control scale were included in the model (direct effect of the conditions = .42, $p = .17$ and .37, $p = .16$ respectively).

Furthermore, the analyses revealed that the total indirect effect was significant with a point estimate of -.89 and a 95% confidence interval (CI) of -1.42 to -.36 for the perceived other’s trait self-control measure and a point estimate of -.85 and a 95% CI of -1.30 to -.40 for the three items self-control scale. Thus, perceived other’s self-control fully mediated the effects of the conditions on trust.

**Auxiliary analyses**

To test whether participants liked a compulsive Internet user less than a frequent Internet user, we performed an independent samples $t$ test (frequent Internet use vs. CIU; $M = 3.81, SD = 0.82$, $M = 3.80, SD = 0.79$, respectively) on liking. Results revealed no significant difference between the three conditions, $t(57) = .03, p = .98$, Cohen’s $d = .01$. 

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Discussion

Consistent with our hypotheses, this study provides support for the idea that, between strangers, a compulsive Internet user is perceived to have less self-control than a frequent Internet user. This, in turn, affects trust in that person. Furthermore, this study revealed that, in an interaction between strangers, the perception of these behaviors influences trust but not liking.

Study 2

Although Study 1 was consistent with the suggestion that CIU is an indicator of low self-control, which contributes to lower trust in the other, a number of questions remain unanswered. First, in Study 1, the other participant was a stranger. We hence do not know whether these findings hold for CIU in close relationships. Second, although we showed that CIU can serve as a cue for low self-control and trust, longitudinal data might give clues about the long-term effects. Third, Study 1 only involved the perceiver of CIU. It thus remains unclear whether low self-control is related to CIU within persons, and whether partners of relatively more compulsive Internet users use the behavior to infer low self-control. To examine these questions and circumvent the limitations of Study 1, Study 2 gathered data from both partners in married couples in a prospective study. This design allowed us to test (a) the relation between trait self-control and CIU (H1), (b) whether Partner A’s self-reported CIU is related to Partner B’s perception of Partner A’s CIU (H2), (c) the relation between Partner B’s perceived partner CIU and perceived partner self-control (H3), and finally (d) the relation between Partner B’s perceived partner self-control and partner trust (H4) (for an illustration of these hypotheses see Figure 1).

To ensure that the relation between perceived CIU and trust was not attributable to commitment or partner commitment, we also assessed these variables and controlled for them in our main analyses. Previous research has highlighted the role of trust in promoting commitment in close relationships (Murray, Holmes, & Collins, 2006; Wieselquist, Rusbult, Foster, & Agnew, 1999). Partners might trust high self-control individuals more, or might infer more commitment from a high self-control individual. Therefore, we examined whether our effects held when including these variables in the model.

Method

Participants

The data used for this study are derived from Waves 3, 4, and 5 of the VU University Panel on Marriage and Well-Being, a longitudinal study among newlywed couples in the Netherlands (Finkenauer, 2006-2010); for a description of the first two waves of the study see Finkenauer, Kerkhof, Righetti, & Branje, 2009). We did not include the first two waves, because the measures
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central to our research questions were not assessed in these waves. In the third, fourth and fifth wave respectively 190, 157, and 140 newlywed couples participated. Thus, 73.7% of the couples who participated in the third wave still participated in the fifth wave. The first wave of this study took place one month after marriage (for more information see Finkenauer et al., 2009; Pollmann & Finkenauer, 2009). At wave three, couples had been romantically involved on average for 7.71 (SD = 3.03) years and had been living together for an average of 5.81 (SD = 2.31) years. The mean age of husbands was 34.07 years, and the mean age of wives was 31.20 years. Nearly all the couples (98.5% of the husbands and 96.4% of the wives) were Dutch.

Procedure

Participants were recruited via the municipalities in which they got married. The municipalities were average sized Dutch cities. Selection criteria were that (1) for all participants this was their first marriage, (2) at the first data collection, couples had no children from this marriage or from previous relationship partners, (3) both partners were between 25 and 40 years old, and (4) couples were heterosexual. Nineteen percent of the couples who were sent a letter of invitation to participate in the study agreed to participate. This response rate is similar to other studies recruiting participants from public records in the United States (e.g., Kurdek, 1993). This study was introduced to participants as a study on the influence of personal dispositions, behavior in the relationship, and partner perception on marital wellbeing in the first years of marriage. Wave three took place in the summer of 2008, the following waves took place at one-year intervals. At the data collections, both members of the couple separately filled out an extensive questionnaire at home in the presence of a trained interviewer, who visited them at home. The interviewer’s presence ensured that partners independently completed the questionnaires without consulting each other. The questionnaire took about 90 minutes to complete. At each data collection, after they completed the questionnaire, couples received 15 Euros and a small gift (e.g., pen-set, gift voucher). To increase commitment, we sent birthday cards to each participant. Also, participants were able to get updates about the progress of the study via the study website.

Only scales relevant to this article are described in the following sections. For a more detailed description of the study, see studies by Finkenauer et al. (2009) and Finkenauer, Wijngaards-de Meij, Reis, and Rusbult (2010).

Measures

Self-control was assessed using Tangney, Baumeister, and Boone (2004) Self-Control Scale. The questionnaire contained 11 items, rated on a 5-point Likert scale (1 = absolutely does not apply to 5 = absolutely does apply; e.g., “I find it difficult to kick bad habits”, “I find it hard to say no” and “I often have trouble concentrating”; (α wave 3 = .74, wave 4 = .79 and wave 5 = .76). For perceived partner self-control, we used an adapted version of the Tangney et al. (2004) Self-Control Scale (11 items; e.g., “My husband finds it difficult to kick bad habits”; Finkenauer,
CIU was assessed using a shortened version of the Compulsive Internet Use Scale (CIUS; Meerkerk, van den Eijnden, Vermulst, & Garretsen, 2009). The original questionnaire consists of 14 items, rated on a 5-point Likert scale (1 = not at all to 5 = very much), has shown high reliability in previous studies and contains items about loss of control, withdrawal symptoms, conflict with regard to the use of the Internet (Meerkerk et al., 2009). We used a 5-item short version of the original 14-item CIUS scale. Item selection was based on the factor loadings reported in the three studies that Meerkerk et al. (2009) used in their scale construction. We selected the five items with the highest average loadings on the single factor that the authors found during scale construction. The items were slightly modified because the original items were aimed at adolescents rather than at an adult population (see Kerkhof et al., 2011). 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?” (α wave 3 = .79, wave 4 = .82 and wave 5 = .84). For perceived partner CIU we used the same items, but adjusted them to represent items about the partner (e.g., How often does your husband find it difficult to stop using the Internet when he is online?) (α wave 3 = .79, wave 4 = .82 and wave 5 = .84).

For partner trust we used a short and translated version of the Rempel et al. (1985) instrument to assess trust in close others (e.g. “Whenever we have to make an important decision in a situation we have never encountered before, I know the other participant will be concerned about my welfare”). The scale consisted of 12 items, representing all aspects of close relationship trust. (α wave 3 = .89, wave 4 = .88 and wave 5 = .89). Finally, we assessed commitment and partner commitment using the Rusbult, Martz and Agnew (1998) Scale (8 items; α wave 3 = .93, α wave 4 = .93 and α wave 5 = .94).

Results

Strategy of analysis
The data provided by a given participant on multiple research occasions are nonindependent, as are data from the two partners in a given relationship; in like manner, the data from the two ideal-relevant interactions are nonindependent. Accordingly, we analyzed our data using hierarchical linear modeling (Raudenbush & Bryk, 2002). This technique accounts for the nonindependence of observations by simultaneously examining variance associated with each level of nesting, thereby providing unbiased hypothesis tests. Following recommended procedures for couples research, we represented intercept terms as random effects and represented slope terms as fixed effects (Kenny, Mannetti, Pierro, Livi, & Kashy, 2002). We performed preliminary analyses to explore possible moderation by participant gender, by
including main effects and interaction effects for participant gender to the analyses testing
the hypothesized effects. These analyses revealed very few gender effects: out of 18 possible
main effects or interactions involving participant gender, only five effects were marginal
or significant. None of the 10 possible effects of the main variables of interest changed
in direction or level of significance when adding gender as a main effect or interaction
term. Given that very few associations were significantly moderated by participant gender,
given that none of the hypothesized effects changed in direction or level of significance,
and given that these effects were inconsistent across predictors and criteria, we dropped
participant gender from the analyses. Consequently, we treated dyad members as if they were
indistinguishable.

Furthermore, to test the validity of our model, we tested whether it held above and beyond
commitment and partner commitment, by adding these variables one by one to the predicted
associations, and all other possible associations. All predicted associations remained significant
and in their original direction (positive or negative) and all unpredicted effects remained the
same as they were without adding these control variables to the association.

For the longitudinal models, we performed residualized lagged regression analyses. In these
analyses we regressed each criterion variable onto the earlier predictor and the earlier measure
of the criterion. Such analyses allowed us to assess how much the predictor variable account
for change over time in the criterion. We performed double-lagged analyses, in that we
simultaneously predict Time 4 criteria from Time 3 predictors and predict Time 5 criteria from
Time 5 predictors. Furthermore, we checked if the effect sizes of the predicted paths were
significantly stronger than the ones of the reverse path. The means and standard deviations as
well as the within-individual and cross-partner correlations are presented in Table 1.

**Predicting key model variables cross-sectionally**

**Within-person effects**
To test our hypothesis that self-control would be related to CIU (H1), we regressed Partner
A’s CIU on Partner A’s self-control. Consistent with our hypothesis, Partner A’s self-control was
significantly negatively associated with Partner A’s CIU ($\beta = -0.16, p < .01$).

**Between-person effects**
To test the hypothesis that Partner A’s CIU is related to Partner B’s perceived CIU (H2), we
regressed Partner B’s perception of Partner A’s CIU on Partner A’s CIU. Consistent with our
hypothesis, Partner A’s CIU was associated with Partner B’s perception of Partner A’s CIU across
all three time points ($\beta = 0.40, p < .01$).

To test the hypothesis that perceived partner CIU is related to perceived partner self-control
(H3), we regressed Partner B’s perception of Partner A’s self-control on Partner B’s perception
of Partner A’s CIU. Consistent with our hypothesis, Partner B’s perception of Partner A’s CIU was
significantly negatively associated with Partner B’s perception of their partner’s self-control across all three time points ($\beta = -.14, p < .01$).

The hypothesis that perceived partner self-control was related to partner trust, we regressed Partner B’s partner trust on Partner B’s perception of Partner A’s self-control (H4). Consistent with our hypothesis, Partner B’s perception of Partner A’s self-control was significantly associated with Partner B’s partner trust across all three time points ($\beta = .30, p < .01$).

Other effects
To test for all other possible associations between the model variables that were not hypothesized, we ran ancillary analyses. We tested if Partner B’s perceived partner CIU was related to Partner B’s perceived partner trust. Partner B’s perception of Partner A’s CIU was significantly negatively associated with Partner B’s partner trust across all three time points ($\beta = -.16, p < .01$). Partner A’s self-control was significantly associated with Partner B’s perception of their partner’s self-control across all three time points ($\beta = .24, p < .01$). No significant effects were found for the association between Partner A’s self-control and Partner B’s perception of Partner A’s CIU ($\beta = -.04, p = .30$) and Partner A’s CIU and Partner B’s perception of Partner A’s self-control ($\beta = -.05, p = .10$).

Mediation of perceived partner self-control
To test if perceived partner self-control mediated the observed effect of perceived partner CIU and partner trust, we performed mediation analyses (Baron & Kenny, 1986). As described, Partner B’s perceived partner CIU was significantly related to both Partner B’s partner trust, and to Partner B’s perception of Partner A’s self-control. Furthermore, as described, Partner B’s perception of Partner A’s self-control was significantly related to Partner B’s partner trust. To test if the effect of Partner B’s perception of Partner A’s CIU on Partner B’s partner trust disappeared when adding Partner B’s perception of Partner A’s self-control, we regressed both perceived partner self-control and perceived partner CIU on partner trust. Both variables were significantly associated with partner trust (self-control: $\beta = .23, p < .01$; CIU: $\beta = -.16, p < .01$). The effect of perceived partner CIU did not change in significance, and the association between perceived partner CIU and partner trust is partially mediated by perceived partner self-control. A Sobel’s test revealed that perceived partner’s self-control partially mediated the effects of perceived CIU on partner trust ($z = -4.13, -4.11$ and $-4.15$, all $p$s < .001).

Longitudinal analyses
As described in our strategy of analysis, to test our model longitudinally and explore the hypothesized predictions of change over time in the criteria we performed residualized double lagged analyses. In these analyses the earlier independent variable was regressed on the dependent variable one year later, controlling for the dependent variable one year earlier (see Figure 2). All effects were tested while controlling for the earlier measure of the criterion
variable (e.g., earlier self-control predicts later CIU, while controlling for earlier CIU). Each effect therefore predicts the change in the dependent variable.

**Within- and between-person effects**

Consistent with our hypothesis (H1), within an individual, earlier self-control significantly negatively predicts later CIU ($\beta = -.07, p < .05$). Confirming the hypothesis, Partner A’s earlier CIU significantly predicted Partner B’s later perception of their partner’s CIU (H2) ($\beta = .12, p < .01$). However, Partner B’s earlier perception of Partner A’s CIU did not predict Partner B’s later perception of their partner’s self-control ($\beta = -.03, p = .28$) (H3). Consistent with our hypothesis (H4), Partner B’s earlier perception of Partner A’s self-control significantly predicted Partner B’s later partner trust ($\beta = .07, p < .05$).

**Testing the reverse relations**

We also tested the relations that were the reverse of our hypotheses, to see if the directions of the effects that we predicted would be stronger than its reverse (see Figure 2). The effects of H1 and H2 were stronger than its reverse, and H3 was non-significant in both directions. Concerning H4 however, the reverse effect was found to be stronger than the hypothesized effect.

**Discussion**

Study 2 provides support for most of the within and between person effects we hypothesized. First of all, within people, low self-control negatively influences CIU. Between partners, it provides support for the suggestion that CIU influences perceived CIU by the partner, which in turn influences perceived partner self-control and partner trust. Furthermore, Study 2 shows that the relations that were found among strangers in Study 1, can also be found in close relationships. That is, consistent with our predictions, perceived CIU is related to perceived self-control, which is related to partner trust.

**General Discussion**

Do people use their partner’s CIU as a gauge to assess their self-control? Why does CIU affect trust? How do we determine whether a partner is trustworthy? The present research

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2 Because the mean CIUS score was relatively low, we replicated all analyses including only those couples of whom at least one of the partners reported a score of 2 or higher during at least one of the time points. In these analyses 64 (Wave 3), 52 (Wave 4), and 36 (Wave 5) couples were included. In both the cross-sectional and the longitudinal analyses, all four hypotheses were supported by the results and similar betas were found as in the analyses that included all participants.
began addressing these questions by examining CIU and its link with trait self-control as determinants of partner trust. 

Study 1 demonstrated that compulsive Internet users are perceived to possess lower trait self-control than people who use the Internet non-compulsively. They were also trusted less, and this effect was mediated by self-control. These results are in accordance with H3 and H4. Attesting to the generalizability of the effects and circumventing shortcomings of Study 1, Study 2 demonstrated that, in close relationships, perceived CIU is related to perceived self-control, which in turn is related to partner trust. H3 and H4 thus hold across both stranger and close partner relationships.

Furthermore, Study 2 provides evidence for the suggestion that CIU is a good gauge for others’ level of self-control. Within individuals, low trait self-control did predict CIU within people one year later (H1). Furthermore, within couples, Study 2 demonstrated that Partner A’s CIU influences Partner B’s perception of Partner A’s CIU (H2). Moreover, CIU positively predicted the change in perceived partner CIU, suggesting that marital partners accurately perceive their partner’s CIU, even one year later.

Given the effects that other factors can have on trust (e.g., commitment, liking; Rempel et al., 1985; Wieselquist, et al., 1999; Schlenker, Helm & Tedeschi, 1973), we ensured that our findings were evident while statistically or methodologically controlling for these factors. Thus, the found effects cannot be explained by the effects of confounds such as commitment and liking.

**Implications and Future Research**

Although CIU has been linked to a lack of self-control (Kim et al., 2008), to our knowledge this relationship had not yet been explicitly tested. Our findings provide support for the suggestion that low trait self-control predicts an increase of CIU over time. Although the predicted influence of self-control on CIU was stronger than the reverse relation, surprisingly, we also found that CIU predicted a decrease in self-control over time. These findings suggest that CIU is not only a signal of low self-control, but may also undermine self-control in the long-run.

One possible explanation is that relatively more compulsive Internet users use the Internet to manage their moods (e.g., escape sad or depressive moods) (LaRose et al., 2003). In the very short-run, the using the Internet satisfies the need to escape negative mood states and will decrease the need. In the longer-run, however, this effectiveness of mood management will reinforce Internet use (cf. Baumeister & Vohs, 2007). More research is needed to examine this suggestion. Additionally, more research is needed to examine the interplay between trait and state self-control and their links with CIU. The present research focused on trait self-control. Self-control as a state varies across situations (Righetti & Finkenauer, 2011), and it is likely that people who are depleted are more susceptible to using the Internet compulsively than people who are not depleted.

We do not claim that CIU always has detrimental effects on relationships. Our goal here was to demonstrate, to our knowledge for the first time that CIU can lead to a decrease in trust, partly
because it signals low self-control to others. It has to be noted that levels of CIU in this study were relatively low, and only a small percentage of participants scored above the midpoint on the CIU measure. Thus, it is unclear at this point whether the effect generalizes to samples with very high levels of CIU as well as different types of relationships, such as relationships between parents and adolescents. Although additional analyses of this sample have shown that the hypotheses are supported when only looking at participants that scored higher on the CIU scale, empirical research is needed to investigate these questions.

In previous studies, CIU has mainly been examined as an individual phenomenon. Yet, it clearly has implications for relationships, especially close relationships such as marriage. Kerkhof et al. (2011) found that relatively more compulsive Internet users report less relationship satisfaction, commitment, and feelings of intimacy and passion for their partner over time. They also report more feelings of exclusion, more concealment, less disclosure and a higher frequency of conflict with their partner. One possible mechanism for these effects is that they are trusted less by their partners.

There is an ongoing debate whether or not CIU should be seen as an addiction. Some authors regard CIU as a disorder that should be included in the Diagnostic and Statistical Manual of Mental Disorders (DSM) with other behavioral addictions, like gambling addiction (see Shapira, Goldsmith, Keck, Khosla and McElroy, 2000; Greenfield, 1999). Other authors (Hall & Parsons, 2001; LaRose, Lin, & Eastin, 2003) do not regard CIU as a pathology or disorder, but argue that it resembles (bad) habits or deficient self-regulation over Internet behavior. In our research, it was not the aim to take a stand on either of these sides. Although the deficient self-regulation explanation is congruent with our findings, it cannot be ruled out that CIU exists both as a disorder and as behavior stemming from deficient self-regulation.

Related to this debate is the question whether CIU should be studied as a distinct entity, or that CIU is in fact the unregulated use of one or several specific Internet applications. Indeed, several studies show that compared to non-compulsive Internet users, compulsive Internet users engage in more gambling, compulsive shopping, and sexual activities, and show more aggressive behavior, both on- and offline, than noncompulsive Internet users (for reviews, see Bayraktar & Gün, 2007; Chou, Condon, & Belland, 2005; Grüsser, Thalemann, & Griffiths, 2007; Widyanto & Griffiths, 2006). Compulsive Internet users are more likely to have a sexual addiction (Greenfield & Ceap, 1999), and gambling and erotica are the most important Internet applications related to CIU (Meerkerk, van den Eijnden, & Garretsen, 2006). Recently, MRI research by Zhou et al. (2011) showed that Internet addiction disorders, as the authors called it, are associated with abnormal white matter integrity that can also be found in individual with substance addictions, suggesting that different behaviors underlying CIU share at least some neural mechanisms. It is likely that CIU as described in our research is related to one or more of these unregulated (online) behaviors. Each of these behaviors may negatively affect relationship quality in several ways.
Many behaviors associated with CIU are conducted online and may therefore be perceived as having something in common. In fact, CIU can be perceived by relationship partners without any knowledge of the specific underlying behaviors. Difficulties in turning attention away from the computer screen to one’s family and to one’s relationship partner is probably where the perception of CIU starts. This may affect a relationship regardless of what can be seen on the computer screen.

The fact that many behaviors associated with CIU require the Internet makes it complicated to regain control over one’s Internet use. The Internet is used for different applications and activities, such as balancing check-books, using Facebook, Instant messaging, shopping, chatting, or watching pornography. Using the Internet is not something people can easily avoid. Every time we use the Internet for activities that few people would compulsively do (e.g., writing one’s master’s thesis), we might get tempted to use it for a purpose that is related to CIU (e.g., checking for Facebook updates). Temptation is constantly present, and it only takes one or two clicks to give into it. Resisting temptation may deplete resources necessary to exert the self-control necessary to refrain from engaging in CIU. This depletion (i.e. the state in which self-control resources have temporarily run out; (Baumeister et al., 2006) may ultimately result in the inability to resist the temptation. These complicating factors make it necessary to take into account all online behavior when wanting to cut back and regain control over one’s CIU, even when the compulsive behaviors are restricted to just a few websites or to one specific kind of online content.

These theoretical and practical implications of CIU and related behaviors warrant scientific research, especially research that examines how the effects of CIU and behaviors associated with the Internet on relationships are similar or different. Future studies that include both CIU and specific online behaviors are needed to disentangle the effects of CIU and specific online behaviors associated with it.

Compulsive Internet use does not go unnoticed in relationships. Relationship partners’ perception of each other’s CIU is anchored in reality. Importantly, people use their judgment of each other’s compulsive Internet behavior to infer each other’s self-control. Both intra- (goal achievement) and interpersonal behaviors (forgiveness, accommodation) have been linked to self-control (Finkel & Campbell, 2001; Righetti & Finkenauer, 2011). The present research demonstrates that CIU too seems to be diagnostic of self-control. More research is needed to identify whether other (physically) harmful and non-harmful compulsive behaviors similarly serve as behavioral cues for people to infer their partner’s level of self-control.

In the present research, people used their judgments of their partner’s level of self-control and CIU as indicators for their partner’s trustworthiness. People with high self-control are more able to be reliable and to behave in a conscientious manner (e.g., completing assignments, fulfilling commitments) (Righetti & Finkenauer, 2011; Tangney et al., 2004). They are better able to achieve goal accomplishment than people with low self-control (e.g., school achievement) (Tangney et al., 2004). Also, when faced with a partner’s transgression, people with high self-
control are better able to refrain from retaliation, and instead act constructively, than people low in self-control (Balliet, 2010; Pronk et al., 2010). Thus people infer the level of a partner’s self-control by observing behaviors that are diagnostic of self-control, one of which is CIU.

**Strengths and Limitations**

Before concluding, we should acknowledge several strengths and limitations of the present research. Although we did find causal support that CIU affected perceived self-control in strangers, and that it predicted it in married couples, we did not find that perceived CIU predicted perceived self-control one year later in married couples. It is possible that the time interval between the data collections was too long. Our model required participants to anchor their judgment of partner’s self-control on a behavior that was performed one year before, a very long time interval. It is very likely that people’s perception of their partner’s self-control is more affected by his or her current behavior than by their behavior one year later. But at the same time, our results are noteworthy in that they rest on experimental data and data obtained from both partners in ongoing relationships. To our knowledge, the present research is the first to investigate CIU by using multiple methods that provide converging evidence for our hypotheses. The sample of couples in Study 2 was considerable and we observed consistent patterns of results across the two types of studies in tests of our key hypotheses. Our findings thereby promote confidence the CIU is a useful gauge for self-control both within and between people.

Furthermore, in our longitudinal analyses, we found that some of the predicted relations were bi-directional, indicating that these variables mutually reinforce each other. We found that self-control not only influenced CIU, but CIU also influenced self-control, CIU not only predicted perceived partner CIU, but perceived partner CIU also influenced CIU, and perceived partner self-control not only influenced partner trust, but partner trust also influenced perceived partner self-control. Nevertheless, the predicted effects were stronger than the links in the opposite direction. Especially the bi-directional relation between self-control and CIU deserves more attention, to further develop the concept of CIU, and perhaps even gain information that will help in diagnosing and treating CIU. One suggestion is that future research focuses on the difference in effects between trait and state self-control on CIU.

**Conclusions**

The present research examined how CIU might be harmful to relationships. Our results showed that self-control plays a key role in this process. In the literature, CIU is characterized by a diminished self-control over Internet use (LaRose et al., 2003; Greenfield & Ceap, 1999; Meerkerk et al., 2009; Young, 2004). Our findings show that this loss of control is associated with low trait self-control. Using converging methods, we found that a lack of trait self-control makes individuals vulnerable to CIU over time. Importantly, in line with earlier findings (Righetti & Finkenauer, 2011), people used CIU to infer low self-control in partners, which, in
turn, was associated with lower trust in their partners. Consistent with earlier work (Kerkhof, Finkenauer, & Muusses, 2011), these findings suggest that CIU can have deleterious effects on relationships. Extending this work, we identified one mechanism through which CIU may be harmful for relationships and undermine trust. Perceived partner CIU and perceived partner self-control predicted partner trust over time. Trust plays a crucial role for the maintenance of close relationships (Wieselquist, Rusbult, Foster & Agnew, 1999). Our findings show that CIU may have an important influence on trust, both directly and indirectly, through the perception of self-control.

Table 1:

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Compulsive Internet use</td>
<td>1.61</td>
<td>.56</td>
<td>.01</td>
<td>.51**</td>
<td>.04</td>
<td>-.01</td>
<td>-.05</td>
</tr>
<tr>
<td>2 Perceived compulsive Internet use</td>
<td>1.63</td>
<td>.65</td>
<td>.29**</td>
<td>.10**</td>
<td>-.09**</td>
<td>-.06</td>
<td>-.08*</td>
</tr>
<tr>
<td>3 Self-control</td>
<td>3.27</td>
<td>.47</td>
<td>-.27**</td>
<td>-.15**</td>
<td>-.03</td>
<td>.32**</td>
<td>.09**</td>
</tr>
<tr>
<td>4 Perceived self-control</td>
<td>3.42</td>
<td>.47</td>
<td>-.16**</td>
<td>-.19**</td>
<td>.29**</td>
<td>.03</td>
<td>.20**</td>
</tr>
<tr>
<td>5 Partner trust</td>
<td>4.19</td>
<td>.49</td>
<td>-.13**</td>
<td>-.24**</td>
<td>.34**</td>
<td>.47**</td>
<td>.34**</td>
</tr>
</tbody>
</table>

Note: The correlations on and above the diagonal are across partner correlations between model variables. The correlations below the diagonal line are within-individual correlations.

*p < .05, **p < .01.

Figure 1:

Model of the hypothesized associations between self-control, CIU, perceived partner CIU,
Figure 2

The double-lagged longitudinal model above stability, and the reverse effects.

Note: The thick lines are hypothesized effects, the fine lines are stability effects and the dotted lines are reverse effects and other effects.
Appendix
Condition 1: Compulsive Internet use
I use the internet every day and once I’ve started I find it hard to stop. I often use the internet longer than I actually need to. I catch myself enjoying being on the internet more than spending time with others. Sometimes I can even spend an entire night sitting behind my computer, making me unable to function properly the next day. Last week there was an outage at my Internet service provider (ISP) and I noticed that it made me feel irritable and agitated. When the outage was over, I felt really relieved.

Condition 2: Frequent Internet use
I use the internet every day and once I’ve started I find it easy to stop. I often only use the internet no longer than I need to. I enjoy spending time with others more than being on the internet. I don’t understand people that can spend an entire night sitting behind a computer making them unable to function properly the next day. Last week there was an outage at my Internet service provider (ISP) and I noticed that it didn’t really bother me. When the outage was over, I felt indifferent.