Association for Information Systems
AIS Electronic Library (AISeL)

Research Papers

ECIS 2016 Proceedings

WHY PHUBBING IS TOXIC FOR YOUR RELATIONSHIP: UNDERSTANDING THE ROLE OF SMARTPHONE JEALOUSY AMONG "GENERATION Y" USERS

Hanna Krasnova
University of Potsdam, krasnova@uni-potsdam.de

Olga Abramova
Technische Universität Darmstadt, Abramova@is.tu-darmstadt.de

Isabelle Notter
Universität Bern, isabelle.notter@students.unibe.ch

Annika Baumann
Humboldt-Universität zu Berlin, Annika.Baumann@wiwi.hu-berlin.de

Follow this and additional works at: http://aisel.aisnet.org/ecis2016_rp

WHY PHUBBING IS TOXIC FOR YOUR RELATIONSHIP: UNDERSTANDING THE ROLE OF SMARTPHONE JEALOUSY AMONG "GENERATION Y" USERS

Research

Krasnova, Hanna, Universität Potsdam, Potsdam, Germany, krasnova@uni-potsdam.de

Abramova, Olga, Technische Universität Darmstadt, Germany, abramova@is.tu-darmstadt.de

Notter, Isabelle, Universität Bern, Bern, Switzerland, isabelle.notter@students.unibe.ch

Baumann, Annika, Humboldt-Universität zu Berlin, Berlin, Germany, annika.baumann@wiwi.hu-berlin.de

Abstract

Coined as "phubbing", excessive use of smartphones in the romantic context has been shown to represent a barrier to meaningful communication, causing conflict, lowering relationship satisfaction, and undermining individual well-being. While these findings project a dire picture of the future of romance, the mechanisms behind the detrimental influence of partner phubbing on relationship-relevant markers are still little understood. Considering prior evidence that partner phubbing leads to the loss of exclusive attention towards the other party, we argue that these are rather the feelings of jealousy partner phubbing is triggering that are responsible for the negative relational outcomes. Based on the analysis of qualitative and quantitative responses from "generation Y" users, we find that partner phubbing is associated with heightened feelings of jealousy, which is inversely related to couple's relational cohesion. Moreover, jealousy plays a mediating role in the relationship between partner's smartphone use and relational cohesion, acting as a mechanism behind this undesirable link. Challenging the frequently promoted euphoria with regard to permanent "connectedness", our study contributes to a growing body of IS research that addresses dark sides of information technology use and provides corresponding implications for IS practitioners.

Keywords: Smartphones, Social Media, Phubbing, Relational Cohesion, Jealousy.

> *"The first couple of weeks he was on his phone 24/7. I assumed it was just the novelty of having a smartphone for the first time and I didn't think anything of it. But it never stopped. All of "our" time just twisted into him being on his phone. I was practically begging for his attention. I'd try to have deep conversations; he'd be on Reddit. I'd try snuggling and being cute; he'd be playing Heartstone. [...]. We can't have a quiet evening together [...] without his phone competing for his attention. I'm lonely and depressed." (MissHurt, 2015)[1]*

1   Introduction

We are in a coffee shop and we observe: *A couple walks in. She already has her smartphone in the hand. They sit down on opposite sides of the table. While he grabs some food for both of them, she starts to immediately focus on her smartphone, constantly scrolling and swiping. When he returns she*

---

[1] This quote has been edited for style to improve readability. Original can be found at:
https://www.reddit.com/r/TwoXChromosomes/comments/3lmz1h/i_know_a_lot_of_things_can_create_problems_in/

stops using it for just a minute. Once they start drinking their coffee, she keeps on interacting with her mobile device. He gets visibly bored and also takes out his smartphone, possibly to just have something to do. She notices and passes him her smartphone to show him something. When he returns her smartphone, she continues using it for almost 30 minutes straight. Meanwhile he goes through a routine to pick up his smartphone for a few minutes only to put it away for a short time and to grab it again, seemingly bored. They rarely talk to each other while looking at their smartphones. After about an hour they leave together. When he puts on his jacket, she still keeps looking at her smartphone.

With around 3.4 billion users worldwide (Ericsson Mobility Report, 2015), it is not surprising that smartphones are increasingly permeating our daily routines: We use them on the railway station waiting for the train, in the bus that brings us home. We use them when we meet friends, when driving cars (Smith, 2015), or crossing a busy road on a pedestrian walkway (Hatfield and Murphy, 2007). For many, smartphones are the first thing they touch when waking up, and the last one they look at before going to sleep (Cisco, 2014). Fueled by the widespread interest in Social Media apps (Salehan and Negahban, 2013), using smartphones is fun, useful, informative, and highly addictive (e.g. Jung, 2013). In fact, studies show that 81 percent of users keep their smartphones nearby for the entire day and check it 110 times per day on average (Woollaston, 2013).

Indisputably, the widespread adoption and usage of smartphones has changed our lives. However, the nature of these transformations is still ambiguous. Some studies report the positive influence of smartphones in professional environments such as healthcare coordination (Wu et al., 2011, Whitlow et al., 2014; Wickersham et al., 2015), infrastructure monitoring (Mohan et al., 2008, White et al., 2011), or simply emphasize their value in promoting socialization with geographically distant individuals (Smith, 2015; Amplitude Research, 2013). At the same time, another stream of research stresses the harmful consequences of smartphone interference across a variety of communication contexts, including face-to-face conversations (McDaniel and Coyne, 2016), parents-child interaction (Devitt and Roker, 2009), work-related management activities (Roberts, 2015) and educational processes (Ling, 2000; Campbell, 2005). Among these findings, the insights into the damaging role of smartphones in the romantic context are particularly alarming.

Indeed, coined as "phubbing", snubbing the romantic partner when using the smartphone in his or her company has been shown to cause conflict, lower relationship satisfaction, and individual well-being (McDaniel and Coyne, 2016; Roberts and David, 2016). While these findings project a dire picture of the future of romance and family structures, the mechanisms behind the detrimental influence of partner phubbing on relationship-relevant markers is still little understood. As of now, existing research suggests that smartphones may represent a barrier to meaningful communication, provoking feelings of constant interruption, disrespect (Duran et al., 2011, Tertadian, 2012) and irritation (Theiss and Solomon, 2006; Roberts and David, 2016). However, the mechanism behind these negative resentful reactions remains uncovered. To fill this gap and considering that partner phubbing inevitably leads to the loss of exclusive attention towards the other party, we argue that these are rather the feelings of *jealousy* partner phubbing is triggering that are responsible for the negative relational dynamics reported in past research. Indeed, defined as "*a protective reaction to a perceived threat to a valued relationship, arising from a situation in which the partner's involvement with an activity and/or another person is contrary to the jealous person's definition of their relationship*" (Bevan and Samter, 2004, p. 15), jealousy incorporates loss of exclusive attention as one of its major premises (Bauminger, 2010; Tov-Ruach, 1980). Negative in its essence, jealousy has commonly been associated with such undesirable relational outcomes as expressions of aggression and conflict (Guerrero et al., 1995), as well as relationship dissatisfaction (Parker et al., 2010). Against this background, the goal of our study is to investigate the role of jealousy as a mediating mechanism in the relationships between partner's smartphone use and corresponding relational outcomes.

The remainder of the paper is organized as follows. In the following section we summarize related work, and derive hypotheses that link *partner's smartphone use* with the feelings of *jealousy* and *rela-*

tional cohesion – a critical marker of relational health reflecting "*the degree of togetherness and emotional bonding*" between relational partners (Choi, 2012, p. 92). In the next step, we present results of our qualitative and quantitative studies, based on the responses of "generation Y" smartphone users (aged 26-40). Our qualitative findings suggest that the loss of attention is a key emotional consequence of partner phubbing, providing evidence for the salience of the smartphone-induced jealousy (Bauminger, 2010; Tov-Ruach, 1980). These findings justify further testing of our theoretical model. Implications of our findings for IS research and practitioners are discussed in the concluding section. Our focus on "generation Y" demographic segment has several reasons: First, this age cohort is largely composed of heavy smartphone users, who are most likely to use a wide range of the smartphone's functions (Zickuhr, 2011; Anderson, 2015) and thus might be particularly likely to engage in phubbing. Second, users in the age of 26-40 are more likely to seek meaningful romantic relationships, but at the same time encounter numerous hurdles and ambiguities on their way to do so. Examples include loosing social norms with regard to dating, growing narcissism and unwillingness to compromise characteristic for "generation Y" (Hudson, 2015; Reiner, 2014). Finally, brought up in the 80s and 90s with gadgets and social media still non-existent, generation Y matured into the era of pervasive technology use and are the first 'always-connected' generation (Bull, 2010). Hence, these users might hold conflictual attitudes towards pervasive technologies, when compared to generation Z which is growing with technology as a natural part of their lives (Gardasevic, 2015).

2 Theoretical Background

2.1 Understanding the concept of jealousy

Protective in nature, jealousy is typically viewed as a blend of negative feelings, including sadness and worry as well as feelings of exclusion and offense (Schmitt et al. 1994). As such, jealousy is often linked to the *loss of exclusive attention*, with a jealous subject fearing to lose his or her position in the relationship (Bauminger, 2010; Tov-Ruach, 1980). This reaction is natural, since social and romantic relationships universally represent a valuable asset, and hence deserve to be protected (Baumeister and Leary, 1995). While multiple theories have tried to address the antecedents and consequences of jealousy, *the dual factor conceptualization* of jealousy has gained particular importance (Hansen, 1991). According to this approach, emergence and strength of the feelings of jealousy are the product of two contributing factors. On the one hand, a jealous subject should perceive the "*partner's involvement with an activity and/or another person as contrary to the definition of relationship*"; on the other hand, the relationship itself should be perceived as valuable (Hansen, 1991, p. 214). While commonly discussed in the context of romantic triads (DeSteno et al., 2006, p. 627), jealousy experience is, hence, not solely limited to them. Instead, activities that are subjectively perceived as threatening, e.g. partner spending too much time at work or with friends, may also antagonize the subject, causing jealous feelings to arise.

Extending this approach, Hansen (1991) additionally introduced the concept of "boundary ambiguity", previously advanced by Boss (1987). Focusing on interactions within families, Boss et al. (1990, p. 5) define boundary ambiguity as "*the family not knowing who is in and who is out of the system*". In other words, "*the family may perceive a physically absent member as psychologically present or may perceive a physically present member as psychologically absent*". Especially the latter form may have a high potential to induce jealousy, as a subject might feel threatened by the psychological absence of the partner – a situation that may run contrary to his or her definition of the relationship. For example, immersion into one's smartphone may result in a boundary ambiguity, with the subject perceiving the other partner as psychologically absent, even though physically present. Facing such painful situation, the subject may try to adopt certain coping strategies. For example, one may try to achieve the psychological presence of the partner, which can be achieved by taking the attempts to change partner's behavior. On the other hand, a strategy aimed to achieve the physical absence of the partner is also possible, with the subject resorting to withdrawal, avoidance or separation (Hansen, 1991). All in all, jeal-

ousy is frequently associated with deteriorations in the relationship health (Andersen et al., 1995; Guerrero and Eloy, 1992), as well as an array of other detrimental outcomes oriented towards the self (e.g. reduced self-esteem (Bringle, 1981; Buunk, 1997)), or the target (e.g. violence (Chiffriller and Hennessy, 2007)).

2.2   Understanding the role of phubbing in the relational context

Past research has shown that all types of interpersonal relationships may be vulnerable to the interference of technology, which can take the form of "*interruptions in face-to-face conversations to the feelings of intrusion an individual experiences*" (McDaniel and Coyne, 2016, p. 85). Owned by 3.4 billion users around the globe (Ericsson Mobility Report, 2015), smartphones may represent the technological phenomenon with the distinct potential to intervene with interpersonal relationships (Billieux, 2012). So far, past research has delivered ambiguous results on the role of smartphones and phubbing in the interpersonal domain. On the one hand, smartphones can be used as a way to connect with others, creating favourable feelings of social connectedness (Chen and Katz, 2009; Devitt and Roker, 2009; Padilla-Walker et al., 2012). For example, serving as a platform for frequent social interaction and exchange of emotional support, smartphones have been shown to promote deeper intimacy between family members (Campbell and Ling, 2009). Furthermore, studies report positive influence of smartphones on the quality of professional communication in healthcare (Wu et al., 2011; Whitlow et al., 2014; Wickersham et al., 2015), on socialization of people with disabilities (O'Neill, 2015) and children suffering from autism (De Leo and Leroy, 2008).

On the other hand, intense engagement with a smartphone inhibits users from fully taking part in their present social surroundings, which may trigger "boundary ambiguity" on the part of others (Hansen, 1991). Indeed, a research report revealed that twenty percent of respondents reported that they could not even remember the phone ever being in a different room than they were (Groarke, 2014). As such, this present absence can be a reason for conflicts in social relationships (Tertadian, 2012; Bernroider et al., 2014), since interpersonal communication is inevitably neglected (Karadag et al., 2015). Furthermore, phubbing has been shown to undermine relational closeness (Przybylski and Weinstein, 2013), since accompanying face-to-face communication is of lower quality and less empathetic (Misra et al., 2014). In this way smartphones can be seen as a medium that disconnects conversational partners since one might feel left out as the other person is intensively absorbed with his or her smartphone. While any distraction during the time people spend together may provoke negative feelings, past research evidences that not all interrupters are equal, pointing out the stronger feelings of jealousy towards a social object in contrast to an inanimate object like a book (Hart et al., 2004). Perceiving computers to be "fundamentally social" (Nass et al., 2015, p. 72), users develop a strong emotional attachment towards mobile phones and are experiencing "intimacy with their electronic devices" (McDaniel and Coyne, 2016, p. 87 after Turner and Turner, 2013; Vincent et al., 2005; Wehmeyer, 2007). Thus, we believe smartphones are perceived as heavy intruders in communication, leaving the phubbed party feeling not only deprioritized, but also jealous because of the device's extended functionality with social interaction activities as particularly threatening ones. While this undesirable dynamics has been observed across a variety of social contexts, including parental (Radesky et al., 2014), work (Roberts, 2015) and educational (Ling, 2000; Campbell, 2005) settings, recent reports have sent alarming signals regarding the influence of smartphone use on romantic relationships. Often contrasted with friendships, a clear distinction of romantic relationships includes physical attraction, sexuality and a deliberate commitment to long-term, exclusive relationships (Hatfield and Rapson, 1987; Sternberg 1987; Connolly et al., 1999). Specifically, partner phubbing has been linked to lower relationship satisfaction (McDaniel and Coyne, 2016), increased conflict between romantic partners (Coyne et al., 2011; Roberts and David, 2016), and lower well-being (McDaniel and Coyne, 2016; Roberts and David, 2016). Especially partners strongly attached to their significant other are prone to experience conflictual emotions when it comes to the smartphone addiction of the latter (Roberts and David, 2016).

While this dynamics may have far-reaching detrimental implications in the long-run, the mechanisms behind the negative association between partner phubbing and markers of relationship health (e.g. relational cohesion, relationship satisfaction, level of conflict) are still unclear. Considering that partner phubbing inevitably leads to the loss of exclusive attention towards the other party – the core component of the *jealousy* experience (Lazarus, 1991; Tov-Ruach, 1980) - it might be that it is not partner phubbing per se that leads towards relationship dissatisfaction, but rather these are the feelings of *jealousy* this behaviour is triggering that are responsible for this unwanted outcome.

Indeed, while the relationship between partner phubbing and feelings of jealousy has not been explored so far, studies from other related contexts offer solid support for the salience of the jealousy experience in the context of Social Media use (Muscanell et al., 2013; Fox et al., 2014; Tokunaga, 2011; Phillips, 2009) – the focal activity of smartphone users (Smith, 2015; Perez, 2015). For example, the time a partner spends on Facebook has been linked to the heighted feeling of jealousy (Muise et al., 2009). Furthermore, experience of jealousy has been associated with such (somewhat unethical) behaviours, as partner's surveillance (Tokunaga, 2011; Phillips, 2009). Building on these insights, a theoretical model that focuses on the role of jealousy experience as a mechanism in the link between partner's smartphone use and relationship cohesion is developed in the following section.

3 Towards a Theoretical Model

3.1 The role of partner phubbing in evoking jealousy

While little scientific evidence is available, initial findings from market research hint at the increasingly important role of smartphones in eliciting jealousy among romantic partners (Waterloo, 2013; E.On Energie Deutschland, 2013). Especially "Generation Y" users may be vulnerable to this threat, since they exhibit high levels of addiction with regard to their smartphone use. For example, such users are likely to exhibit elevated anxiety levels if unable to regularly check their smartphones, reporting to feel "as if a part of them is missing" (Cisco, 2014). Considering their multi-faceted applicability, smartphones may tap into a number of components inherent in the emotional experience of jealousy. First, busy with his or her smartphone, a partner may be unfocused and less responsive with regard to the other party. Experienced in a recurrent pattern, this situation is likely to translate into the perception of "attention loss", which represents one of the core components of jealousy experience (Lazarus, 1991; Ben-Ze'ev, 2010). Moreover, the smartphone can be perceived as a threat to one's exclusive position in the partner's life, which also reflects an important element of the jealousy experience (e.g. Lazarus, 1991; Ben-Ze'ev, 2010; Hart, 2010; Parker et al. 2010; Tov-Ruach, 1980). Additionally, since smartphone use is increasingly associated with the usage of social networking sites, like Facebook, or location-based dating apps (Smith, 2015; Perez, 2015), a partner might fear competition from other parties. Indeed, male users of Facebook – one of the most popular utilities on smartphones (Smith, 2015) – have reported dating as an important reason to join and continue using this site (Bonds-Raacke and Raacke, 2010; Thelwall, 2008). Furthermore, a recent study has shown that smartphones are affecting the dating culture, with 44% of men and 37% of women in the study sample claiming that smartphones make it easier "*to flirt and get to know someone*" (Amplitude Research, 2013). This is in line with the most recent research evidence that suggests that the smartphone-addiction of one's partner can affect interpersonal trust in a negative way and may cause people to put their partner's faithfulness into question (McCormack, 2015) – a common consequence of jealousy (Bevan and Samter, 2004). Taken together, we hypothesize that:

Hypothesis 1 (H1): *The intensity of partner's smartphone use is positively associated with the feelings of jealousy experienced by the other party.*

3.2 The moderating role of personal smartphone use

While hypothesis 1 suggests an association between the intensity of partner's smartphone use and the feelings of jealousy, we argue that the strength of this relationship might be moderated by the intensity of the smartphone usage of the significant other. Indeed, the study of Roberts and David (2016) has shown that users who are strongly attached towards their partner are more likely to experience conflict as a result of partner phubbing. Similar outcomes have been observed for the jealousy-induced surveillance behavior, with strongly attached users being more likely to engage in this activity (Fox and Warber, 2014). Moreover, users who themselves use the internet as a leisure time activity appear to be more accepting towards their partner' involvement with phubbing (Klein, 2014). Evidently, partner phubbing is experienced differently when the significant other engages in this activity as well, leading him or her to be more likely to find justification and reasons for this activity. Taken together we argue that:

Hypothesis 1a (H1a): *The relationship between the intensity of partner's smartphone use and feelings of jealousy is moderated by the intensity of the smartphone use by the other party.*

3.3 The role of jealousy in relational cohesion

Serving to protect romantic bonds (Newberry, 2010), jealousy can in some cases promote more satisfying relationships (Guerrero et al., 1995). Nonetheless, jealousy is often seen as a cause of major relational problems, contributing to aggression and conflict between partners (Guerrero et al., 1995). Indeed, involving a blend of negative emotions, such as anger, sadness, fear and feelings of being hurt and excluded (e.g. Draghi-Lorenz, 2010; Legerstee et al., 2010; Schmitt et al., 1994), jealousy is "a major contributor to relationship dissatisfaction" (Parker et al., 2010, p. 526; Andersen et al., 1995; Bringle et al., 1979) and is predominantly expressed in a negative way. Among others, jealousy can lead to active distancing from the partner (i.e. pulling away from him or her); may involve the jealous subject suffering in silence or displaying such unfavorable emotions as frustration, sadness or anger towards the partner (Bevan and Samter, 2004). Further, giving another the 'silent treatment', sulking, inducing the feelings of guilt (Parker et al., 2010), and being passive aggressive (Adams, 2012) have been identified as common consequences of jealousy experience. Clearly, these expressions threaten to undermine relationship satisfaction, including its related components such as relational cohesion (Spanier, 1976). Indeed, "*broadly defined as the degree of togetherness and emotional bonding*" that relational partners have towards each other (Choi, 2012, p. 92), cohesion is likely to be undermined by the experience of jealousy, as it causes partners to avoid and, consequently, spend less time with each other, thereby interfering with their ability and desire to find time for common activities and conversations (Spanier, 1976). Taken together, we argue that:

Hypotheses 2 (H2): *Feelings of jealousy are negatively associated with perceptions of relational cohesion.*

3.4 The role of jealousy as a mediator

So far, several studies have linked smartphone use with conflict (Tertadian, 2012; McDaniel and Coyne, 2014) and relationship dissatisfaction (McDaniel and Coyne, 2016; Roberts and David, 2016) in romantic relationships. Moreover, additional evidence suggests that the mere presence of a mobile phone can decrease closeness as well as the quality of conversation and connection in dyadic relationships (e.g. Przybylski and Weinstein, 2012). While these findings draw a daunting picture of the future of romance in a smartphone-enabled society at large, little is known about the mechanisms behind these outcomes. Tapping into this critical research question, the study of Klein (2014) illustrates that a high percentage of smartphone-users assume that the usage of one's smartphone in the presence of the other may decrease attention towards that person. Since loss of attention and feelings of exclusivity are at the core of jealousy experience (e.g. Lazarus, 1991; Ben-Ze'ev, 2010; Hart, 2010; Parker et al., 2010; Tov-Ruach, 1980), and jealousy itself is associated with an array of negative relational out-

comes, it can be assumed that this is not the usage of the smartphone per se that causes the undesirable outcomes typically attributed to partner phubbing, but these are the feelings of jealousy this usage is evoking, which are responsible for such unwanted relational consequences, as diminishing cohesion between romantic partners. Hence, we hypothesize that:

Hypothesis 3 (H3): *Feelings of jealousy mediate the relationship between the intensity of partner's smartphone use and perceptions of relational cohesion.*

Figure 1 summarizes relationships advanced above in a theoretical model. In addition to focal variables, the model includes control variables that have been shown to influence focal constructs in the past research. Specifically, participant gender, partner's age, number of children, time respondent spends with a partner, duration of a relationship, and a living arrangement were included as controls.
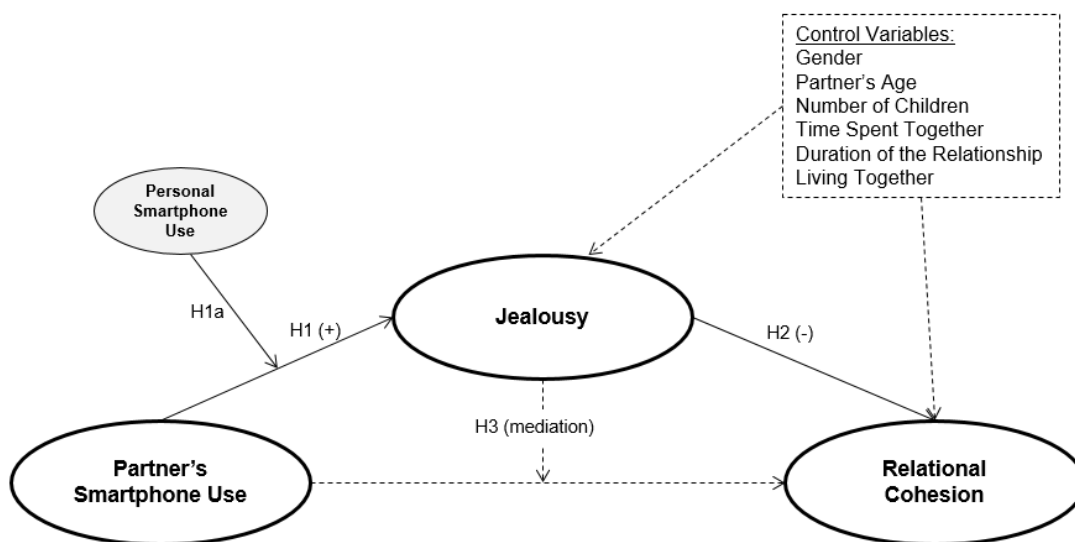

Figure 1. Research model.

4 Methodology and Results

4.1 Survey design and flow

To test the advanced hypotheses, a study involving questions for qualitative (here referred to as Study 1) and quantitative (here referred to as Study 2) analysis was conducted. While qualitative questions were included to establish the salience of jealousy feelings in response to partner phubbing (Study 1), scale-based questions posed in Study 2 aimed to explore the relationships proposed in our theoretical model (see Figure 1). Importantly, both studies were presented to the respondents in one online survey. To reduce cognitive overload, questions relating to Study 1 and Study 2 were psychologically separated using a cover story (see Ayyagari et al., 2011).

4.2 Sampling

Respondents were invited to participate in the survey using the mailing list of a large German university and by posting in Facebook groups in the fall of 2015. 40 Amazon.de gift cards (5 Euro value each) were raffled as an incentive to take part in the study. In total, 1475 people completed the survey (completion rate 64.9%). To ensure relevance, observations were cleaned according to the following criteria (resulting in n=1267): 1) a respondent owns a smartphone; 2) a respondent is involved in a romantic relationship; 3) respondent's partner owns a smartphone. Next, 212 observations with a session duration of less than 5 minutes were excluded (mean processing time of the survey comprised 16 minutes

and 34 seconds). Finally, considering our focus on the "generation Y", only heterosexual respondents at the age of 26-40 were considered, resulting in a final dataset of 286 observations.

With 64.0%, female respondents are somewhat overrepresented in our sample (male: 36.0%). An overwhelming majority of respondents (79.7%) belongs to the 26-30 age cohort, nearly 17.5% are 31-35 years old and 2.8% of respondents are at the age of 36-40. 76.2% of respondent's partners also belong to generation Y and are 26-40 years old, 18.9% of partners are slightly younger and are 21-25 years old. Approximately 64.7% of respondents have completed their higher education (36.4% have Bachelor and 28.3% have Master Degree). 77.3% of the sample has a student status, 11.9% are employed full-time and 17.8% work part-time. Half of the couples (50.3%) have a common home and 13.6% live "partly" together. Only one respondent claims to have no children, 84.6% of respondents have a child, 7.7% have two children and the rest 7.4% have families with 3 or more children

4.3 Results - Study 1: Exploring emotions and reactions triggered by partner phubbing

Considering the lack of studies directly addressing the concept of jealousy in the context of smartphone use, the goal of qualitative questions captured in Study 1 was to explore the salience of the jealousy experience as a reaction to partner phubbing. To achieve this goal, respondents were first asked: "*Think of the last time your partner was using his/her smartphone for too long in your presence. In which situation did it happen?*" Specifying the particular situation (i.e. "the last time") was purposed to decrease the cognitive load and make it easier for a respondent to recall the circumstances and the feelings at that very moment. Assuming that users may experience cases of excessive smartphone use by a partner regularly, this technique allows to reduce the question-answering process by helping the respondent to focus on a particular situation with the highest recall. About one-third of respondents (33.6%) claimed that the incident happened when spending time together at home, 19.6% recalled their partner overusing the smartphone in bed before going to sleep. Further, partner phubbing is noticeable when a couple is having a meal together at home (10.8%), when being on the way in a public transport or in a car (9.8%), and when going out (4.5%). Other occasions were less prominent, with respondents recalling watching TV (2.1%), taking a walk (2.4%), or shopping (0.7%). 22 respondents (8.4%) claimed that their partner has never used the smartphone for too long.

Next, respondents were asked to describe their emotions in this particular situation: "*How have you felt in this regard? Why?*" In total, 252 open answers were provided (34 missing values, correspondingly) and were used for qualitative analyses. Since research does not provide a universal and systematic scheme for coding emotions, inductive theory-driven content analysis was performed by screening the first 100 responses (Russel and Barret, 1999). When sorting, the schematic map of core affect offered by Russel and Barret (1999) was considered since it describes emotions in terms of two consciously accessible elemental processes. The first one - pleasure-displeasure dimension - subjectively summarizes how well a person is doing. The second - activation-deactivation dimension - is related to the level of mobilization or energy. Different possible combinations of two dimensions form a comprehensive set that encompasses all major prototypical emotions (Russel and Barrett, 1999). As a result, the following mutually exclusive seven categories have been identified: 1) *perceived loss of attention*; 2) *anger*; 3) *sadness/suffering*; 4) *boredom*; 5) *neutral/indifferent*; 6) *positive/happiness*; and 7) *other*. In the map of Russel and Barret, *positive/happiness* category would be described by pleasant/active core effect; *anger* as unpleasant/active core effect; *perceived loss of attention*, *sadness/suffering* and *boredom* fall into unpleasant/deactivation quadrant; and *neutral/indifferent* would be placed into the pleasant/deactivation quadrant. Following derived classification scheme (Table 1), 252 responses were coded by two coders independently (coding more than one emotion per response was possible), with Inter-Coder Reliability measured by Krippendorff's Alpha reaching 0.914, which satisfies the threshold of 0.8 (Landis and Koch, 1977). The final decision was taken by consensus. Table 1 presents the summary of the results for the overall sample; and female / male subsamples with a corresponding Wilcoxon rank-sum test used to check for gender-related differences.

Emotion	Key subcategories from open coding	Share of respondents			Wilcox-on test (p>|z|)
		Overall (n=252)	Male (n=90)	Female (n=162)	
Perceived loss of attention	Feeling neglected, unnoticed, less important, turned off, lonely, uninteresting, isolated, re-jected, unnecessary, jealous, unconsidered, excluded, dismissed.	28.6%	30.0%	27.8%	0.52
Anger	Feeling irritated, annoyed, disturbed, angry, nervous, under pressure, indignant, displeased, resentful, aggravated.	19.4%	14.4%	22.2%	0.20
Sadness / Suffering	Feeling unhappy, uncomfortable, stupid, unsat-isfied, offended, unsure, insecure, worried, bad, not nice, hurt, disrespected, insulted.	11.1%	8.9%	12.3%	0.49
Boredom	Feeling bored.	3.2%	4.4%	2.5%	0.34
Neutral/ indifferent	Feeling ok, no problem, neutral, normal, under-standing, indifferent, no matter, unchanged, undisturbed, unaffected, not caring, nothing specific, neither positive nor negative.	38.1%	33.3%	40.7%	0.42
Positive	Feeling good, cool, laugh, super, perfect, glad.	4.4%	7.8%	2.5%	0.04
Other	Feeling curious, tired.	4.8%	6.7%	3.7%	0.24

Table 1.   Emotions following partner phubbing.

Our results suggest that 38.1% of respondents have *neutral* feelings or are *indifferent;* while 4.4% of respondents associate partner phubbing with *positive* emotions. Nonetheless, for the majority of the sample (62.3%) excessive smartphone engagement of a partner was associated with negative jealousy-related feelings. Specifically, 28.6% of the respondents in the overall sample were disturbed by the *loss of partner's attention* – a key element of the jealousy experience (Lazarus, 1991; Ben-Ze'ev, 2010), reporting feeling neglected, unnoticed, less important, turned off, lonely, uninteresting, or isolated, just to name a few. 19.4% felt *angry*, irritated, annoyed, or disturbed amongst other things; and 11.1% of respondents reported feeling *sad* as a result of such behaviour. While only 2 respondents directly de-scribed their experience as that of jealousy, the set of negative emotional outcomes provide solid evi-dence for the salience of jealousy as an emotional reaction to partner phubbing. Indeed, past research has established that anger and sadness are inherent in the experience of jealousy (Bers and Rodin, 1984; Clanton and Smith, 1977); with other authors focusing on the loss of exclusive attention as a key component of jealous feelings (Lazarus, 1991; Ben-Ze'ev, 2010).

In the next step, to enhance understanding of the footprint excessive smartphone use leaves on roman-tic relationships, a follow-up question was posed aiming to elicit coping strategies that are adopted in response to partner phubbing: *"What was your reaction in this situation?" [referring to the situation when the smartphone was overused the last time]*. Supported by the theoretical framework by Hansen (1991), the coding scheme was developed on the basis of Rusbult et al.'s (1986) classification that distinguishes between four types of response to dissatisfaction: exit, voice, loyalty, and neglect (EVLN), and can be described by two primary dimensions: active versus passive, and constructive versus deconstructive. Similar to the previous coding procedure, the first 100 responses were initially screened. For the purpose of precision it was decided to distinguish between the following categories: 1) *voice/intervention*; 2) *voice/curiosity*; 3) *exit/mirror*; 4) *exit/other*; 5) *loyalty*; 6) *feeling negative*; 7) *no reaction*; and 8) *other*. *Voice* measures include expressions of dissatisfaction, with an accompany-ing attempt to change the situation. Specifically, the category *voice/intervention* subsumes requests to stop using the smartphone; while the category *voice/curiosity* involves such reactions as showing ac-tive interest in what is going on in the gadget, e.g. by asking what exactly the partner is doing, who is writing, or looking directly at the partner's smartphone screen. *Exit* strategy implies the dissatisfied person ending the interaction, quitting the partner, or choosing another occupation. We distinguish

between the case when a person mirrors the activity of the partner and turns to his or her own smartphone (*exit/mirror*); and when a person pursues another activity beyond the smartphone (*exit/other*). The *loyalty* strategy implies tolerance towards the behaviour of the partner, with a respondent playing a role of passive observer, who does not have an intention to interrupt partner's activity on the smartphone. The category *negative/hurt* summarizes answers that imply some degree of resentment, feelings of being hurt, or annoyance as a result of partner's smartphone overuse. A separate group was created for responses stating *no reaction* at all. In total, 247 answers were coded (39 missing values) from 90 men and 157 female users by two independent coders (coding more than one reaction per response was possible). Resulting Inter-Coder Reliability measured by Krippendorff's Alpha reached 0.727, suggesting an acceptable level of agreement between the coders. The final decision of the code assignment was taken by consensus.

Behavioral strategy	Key subcategories from open coding	Share of respondents			Wilcoxon test (p>|z|)
		Overall (n=248)	Male (n=90)	Female (n=157)	
Voice/ intervention	Active intervention with, or prevention of the smartphone use; making requests to take the smartphone away / stop using it.	27.1%	23.3%	29.3%	0.311
Voice/ curiosity	Expression of clear curiosity; suspicion about the use of the smartphone; looking at the smartphone screen of the partner.	7.3%	5.6%	8.3%	0.429
Exit/ mirror	Reproducing the partner's behaviour, i.e. involvement with one's own smartphone.	6.9%	10.0%	5.1%	0.144
Exit/ other	Choosing another occupation beyond the smartphone.	13.0%	12.2%	13.4%	0.795
Loyalty	Showing patience towards the use of the smartphone by a partner; waiting, understanding, tolerance.	22.3%	28.9%	18.5%	0.059
Feeling negative/ hurt	Feeling offended, insulted; experiencing resentment, annoyance, anger with the situation / partner.	7.3%	7.8%	7.0%	0.823
No reaction	No specific behavioural response	22.3%	20.0%	23.6%	0.518
Other	E.g. not interpretable responses	1.2%	1.1%	1.3%	0.911

Table 2.   Reactions following partner phubbing.

We observe that actively intervening with the usage of the smartphone by a partner is the most popular strategy, exercised by 27.1% of the respondents in the overall sample (*voice/intervention*). Next in importance are such strategies as *loyalty* (22.3%) and expressing *no reaction* (22.3%). Interestingly, 13% of the respondents admitted to start doing other things in this situation (*exit/other*), which typically includes watching TV, going to sleep, doing household duties, or reading. At the same time, 6.9% of the respondents copied the smartphone immersion of a partner (*exit/mirror*), suggesting that smartphone use by romantic partners might be contagious and also follow the "tit-for-tat" pattern. Interestingly, such strategy is used by men twice as often as by women, even though this difference is not statistically significant (p-value>0.05, according to Wilcoxon rank-sum (Mann-Whitney) test). *Curiosity was voiced* actively by 7.3% of the respondents who tried to find out what activity their partner was engaged in, who his or her conversational partner was, and what issue it was about. 7.3% of the respondents reported feeling "*negative/hurt*" without implying an active interruption of the partner. All in all, we observe that smartphone overuse provided a rich basis for conflictual situations, with a large share of respondents trying to interfere with this usage or resenting it. As such, the strategies users adopted are typical for the jealousy experience, as described in the past research (Hansen, 1991).

Providing evidence for the prevalence of jealousy as an emotional response to partner phubbing, as well as its conflict-producing nature, qualitative insights obtained in Study 1 provide a solid basis for further quantitative investigation of the role of jealousy in the relationship between partner's use of a smartphone and relational cohesion of partners as a couple (see Figure 1).

4.4 Results - Study 2: Understanding the role of jealousy

4.4.1 Survey Design

While we relied on pre-tested measures, where possible, some scales had to be developed new or slightly modified to fit the context of our study. Operationalization of *relational cohesion* was based on a dyadic adjustment scale proposed by Spanier (1976) including the following items: 1) you can calmly discuss something interesting; 2) you laugh together; 3) you exchange thoughts openly with each other; 4) you practice different activities together 5) you find time for each other 6) you are happy in your relationship (1=never; 5=always). To capture *jealousy*, the scale of Schmitt et al. (1994) was adopted, that reflected jealousy as a mix of five emotions: sadness, worry and anger as well as feelings of being excluded and offended. Specifically, respondents were asked to specify "to what extent do you have the following feelings when your partner actively uses the smartphone for too long in your presence?" with items including: 1) it makes me sad; 2) it worries me; 3) I feel excluded; 4) it annoys me; 5) it offends me (1=strongly disagree; 7=strongly agree | "not applicable"). As such, this methodology corresponds to conceptualization of jealousy as a blend of different emotions (Lazarus, 1977; Hansen, 1991). The measure of *partner's smartphone use* was adopted from the cell phone addiction scale of Roberts et al. (2014, p. 256) and included the following items: 1) my partner looks agitated when the smartphone is not in sight; 2) my partner looks nervous when the smartphone battery is almost depleted; 3) my partner spends more and more time on the smartphone; 4) my partner spends more time on the smartphone as he/she should 5) the smartphone is an important part in the life of my partner (1=strongly disagree; 7=strongly agree). Across constructs, the sequence of statements was randomized for each participant. Initially developed in English, the scales were then carefully translated into German. All constructs were measured as reflective. A net sample of 286 observations was included into our analysis (for demographics see section 4.2).

4.4.2 Control variables

To correctly test the hypothesized relations, several control variables were included into the model. First, considering that emotions are subjective experiences (Barrett, 2006) and the assessment of partner's smartphone usage may depend on one's own behaviour (H1a), *personal smartphone use* was measured by asking "How often do you turn to your smartphone on average per day?" on an 8-point scale: 1= less often than 2 times a day; 8=every 5 minutes (my smartphone is always in my hand). Further, to account for possible bias inherent in a different nature of romantic relationships, we controlled for the *time spent together:* "How much time do you and your partner spend together? (1=practically no time; 6=very much time); whether the couple *lives together* (1=no; 2=partly; 3=yes), *duration of the relationship* (1=less than a year; 6=more than 5 years) and *the number of children* (1=no; 5=more than three). Finally, *respondent's gender* (1=female; 2=male) was included to account for possible differences in gender perceptions; and *partner's age* was controlled for since the latter may be responsible for the so-called "generation gap" - differences of attitudes potentially leading to misunderstanding between people from different age cohorts (VanSlyke, 2003).

4.4.3 Evaluation of the research model

Our study is the first to test the relationship between partner phubbing, feelings of jealousy and relational cohesion, which makes our research exploratory in nature. Hence, the partial least squares (PLS) approach was chosen as a method of statistical analysis (Fornell and Bookstein, 1982). Moreover, non-normality of our data and a limited sample size strengthen the case for a variance-based type of evalu-

ation. Hence, SmartPLS 3.0 software was used (Ringle et al., 2015). Evaluation of our research model was done in two steps; the estimation of the Measurement Model (MM) was followed by the assessment of the Structural Model (SM). The MM was evaluated by verifying the criteria for Convergent Validity (CV) and Discriminant Validity (DV). To ensure CV, parameters for Indicator Reliability (IR), Composite Reliability (CR) and Average Variance Extracted (AVE) were assessed. For IR, constructs should explain at least 50 % of the variance of their respective indicators. Items with factor loadings below 0.4 should be removed from the model (Homburg and Giering, 1996). The overwhelming majority of items in all models satisfied the former strict criteria, with most item loadings exceeding the level of 0.7 (Hulland, 1999). Only 4 items measuring *partner's smartphone use* and *relational cohesion* had item loadings closely approximating the required threshold (0.692; 0.685 | 0.691; 0.699). Taken together, IR was assured. Further, CR values for all constructs were higher than the required level of 0.7 (Hulland, 1999), as shown in Table 3. The AVE values for all measured constructs by far surpassed the threshold level of 0.5 (Fornell and Larcker, 1981). Finally, Cronbach's Alpha (CA), a measure of Internal Consistency of construct scales, was higher than the required threshold of 0.7 for all constructs (Nunnally, 1978). Taken together, CV can be assumed. Next, DV was assessed by ensuring that the square root of AVE for each construct was higher than the correlation between this construct and any other construct in the model (Hulland, 1999). This requirement was fulfilled for all constructs in our model. Taken together, our MM is well-specified.

Construct	AVE	CR	CA
Partner's Smartphone Use	0.617	0.889	0.848
Jealousy	0.750	0.937	0.916
Relational Cohesion	0.555	0.882	0.840
Partner's Smartphone Use * Personal Smartphone Use	0.617	0.889	0.871

Table 3.   Quality criteria of the latent constructs.

Next, the Structural Model (SM) was assessed as summarized in Figure 2. Significance of path coefficients was determined via a bootstrapping procedure. We find that, *partner's smartphone use* is positively associated with the degree of *jealousy* experienced by the other party (the respondent) *(H1 supported)*. Moreover, the strength of this link is moderated by the *personal smartphone use* of the respondent, with low usage intensity of the respondent associated with heightened *jealousy* perceptions in response to partner's use *(H1a supported)*. Furthermore, *jealousy* exerts a significant negative impact on respondent's perceptions of relational cohesion *(H2 supported)*. Among the *six control variables* we tested, only *gender* was associated with the perceptions *of jealousy*, with female users being more jealous in response to partner phubbing than male users.
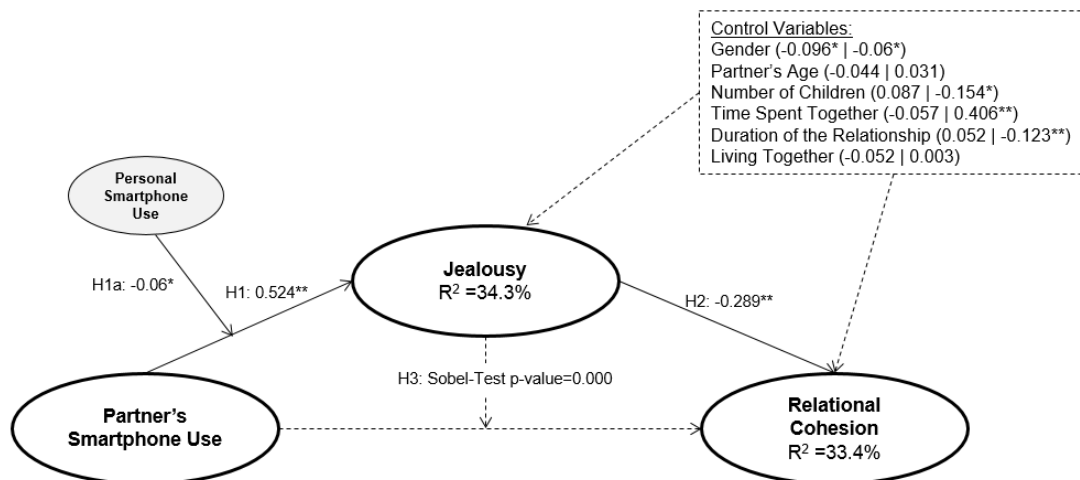

*Figure 2. Results of the model testing (significance: * at 5%; ** at 1% or lower).*

In terms of explanatory power, *jealousy* and six control variables together explain 33.4% of variance in the respondent's perceptions of *relational cohesion* – a noteworthy outcome, considering that a multitude of other factors can strongly influence this construct as well. Overall, this magnitude of explanatory power suggests that smartphone-induced *jealousy* significantly contributes to the relational health of "generation Y" users. For *jealousy,* R^2 has reached 34.3%. Finally, we hypothesized that *jealousy acts as a mediator* between the intensity of *partner's smartphone use* and *relational cohesion*. To test for this effect, the direct impact of the independent variable – *partner's smartphone use* – on *relational cohesion* was tested first, following (Baron and Kenny, 1986). This link was significant and negative *(b= -0.221**)*. However, once the *jealousy* construct was added to the model, the previously significant direct link between *partner's smartphone use* and *relational cohesion* disappeared *(b= -0.071; n.s.)* Furthermore, the *Sobel Test* statistic, typically used to test for mediation, was also significant (*p=0.000*) (Preacher and Leonardelli, 2010-2015). Taken together, we conclude that jealousy *fully mediates* the relationship between *partner's smartphone use* and *relational cohesion (H3 supported)*.

5   Discussion and Managerial Implications

Being an integral part of everyday life for many users, smartphones have the potential to permeate all types of interpersonal settings, including romantic relationships. So far, past research has primarily reported unfavourable consequences of phubbing in the romantic context, establishing smartphones as the cause of conflict (e.g., Roberts and David, 2016), lower relationship satisfaction and reduced well-being (e.g. McDaniel and Coyne, 2016). Contributing to this stream of research, the primary goal of this study was to uncover the mechanism behind this detrimental dynamics. We advance existing theories by proposing and validating a new set of dependences that offer a novel perspective on the undesirable impact of partner phubbing on romantic relationships. We find that observing a partner's smartphone activity may create "boundary ambiguity" (Boss, 1987), leading to heightened feelings of jealousy, which, in turn, may reduce couple's relational cohesion. Moreover, jealousy plays a mediating role in the relationship between partner's smartphone use and relational cohesion, acting as a mechanism behind this undesirable link. Our qualitative results also emphasize the presence and salience of jealousy feelings as a response to partner phubbing. Specifically, "generation Y" respondents report a plethora of negative jealousy-related emotions as a result of their partner's latest phubbing episode (Schmitt, 1994; Tov-Ruach, 1980; Lazarus, 1991), including perceived loss of attention, anger and sadness. As such, our findings challenge a frequently promoted positive view of smartphones as a medium for around-the-clock "connectedness" (Levitas, 2013). In fact, our study draws attention to the often overlooked negative developments, with smartphones impeding emotional bonding and disconnecting partners.

Our findings have implications for IS practitioners including smartphone producers, mobile app providers and other affiliated stakeholders. Indeed, the problem of excessive and, as confirmed by our study, detrimental smartphone use challenges app developers with a need for new innovative solutions. Possible remedies may take the form of an application or special settings, monitoring and managing phubbing activities (Hill, 2015). Moreover, with over 85% of "generation Y" users owning a smartphone (Nielsen, 2014), their impact on users' romantic relationships has meaningful social implications. Since users might be unaware about the ruining impact of phubbing on their romantic relationships, campaigns raising public awareness on this issue might be advisable.

The current study has several limitations. Since most respondents came from Germany, our results are especially valid for countries with a high level of smartphone adoption. Moreover, since partner's smartphone use was measured as a subjective perception of a respondent, future research may apply a more objective assessment of this construct. Further, extending the sample with a broader range of age cohorts may open the opportunity for between-generation comparisons, helping to disentangle psychological mechanisms behind phubbing on a larger scale. Finally, future studies might consider including a social desirability scale to control for the honesty of the responses provided by participants.

References

Adams, S. (2012). "Jealousy in romantic relationships, self-esteem and ego defenses." Doctoral thesis in clinical psychology, Victoria University. URL: http://vuir.vu.edu.au/21445/1/Sabrina_Adams.pdf (visited on 11/25/2015).

Amplitude Research (2013). *Mobile's Impact on Dating & Relationships*. URL: http://www.stateofdatingreport.com/docs/FINAL_Mobiles_Impact_on_Dating_and_Relationships_Study.pdf (visited on 11/27/2015).

Anderson, M. (2015). *6 Facts About Americans and Their Smartphones. Pew Research Center, April, 1*. URL: http://www.pewresearch.org/fact-tank/2015/04/01/6-facts-about-americans-and-their-smartphones/ (visited on 04/05/2016).

Anderson, P. A., Eloy, S. V., Guerrero, L. K. and B. H. Spitzberg (1995). Romantic jealousy and relational satisfaction: A look at the impact of jealousy experience and expression. *Communication Reports*, 8, 77-85.

Audience Dialogue (2011). *Know your audience: Chapter 16 – Coding for content analysis*. URL: http://www.audiencedialogue.net/kya16b.html (visited on 11/27/2015).

Ayyagari, R., Grover, V. and R. Purvis (2011). "Technostress: technological antecedents and implications." *MIS quarterly* 35 (4), 831-858.

Baron, R. M. and D. A. Kenny (1986). "The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations." *Journal of Personality and Social Psychology* 51, 1173-1182.

Barrett, L. F. (2006). "Are emotions natural kinds?" *Perspectives on psychological science* 1 (1), 28-58.

Baumeister, R. F., and M. R. Leary (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological bulletin*, 117(3), 497.

Bauminger, N. (2010). "Jealousy in autism spectrum disorders (ASD)." *Handbook of jealousy: Theory, research, and multidisciplinary approaches*, 267-292.

Beale, R. (2005). "Supporting social interaction with smart phones." *Pervasive Computing, IEEE* 4 (2), 35-41.

Ben-Ze'ev, A. (2010). Jealousy and romantic love. In: *Handbook of jealousy: Theory, research, and multidisciplinary approaches*. Ed. by S. L. Hart and M. Legerstee. Chichester, West Sussex: Wiley-Blackwell, 40-54.

Bernroider, E. W. N., Krumay, B. and S. Margiol (2014). "Not Without My Smartphone! Impacts of Smartphone Addiction on Smartphone Usage." In: *Proceedings of the 25th Australasian Conference on Information Systems (ACIS)*, Auckland: New Zealand, 1-20.

Bers, S. A. and J. Rodin (1984). "Social-comparison jealousy: A developmental and motivational study." *Journal of Personality and Social Psychology* 47 (4), 780-792.

Bevan, J. L. and W. Samter (2004). „Toward a broader conceptualization of jealousy in close relationships: Two exploratory studies." *Communication Studies* 55 (1), 14-28.

Billieux, J. (2012). "Problematic use of the mobile phone: A literature review and a pathways model." *Current Psychiatry Reviews* 8 (4), 1-9.

Bonds-Raacke, J. and J. Raacke (2010). "MySpace and Facebook: Identifying dimensions of uses and gratifications for friend networking sites." *Individual Differences Research* 8 (1), 27-33.

Boss, P (1987). Family stress. *Handbook of marriage and the family*. Springer, US, 695-723.

Boss, P. G., Greenberg, J. R. and D. Pearce-McCall (1990). *Measurement of boundary ambiguity in families*. Minnesota Agricultural Experiment Station, University of Minnesota.

Bringle, R. G and S. Evenbeck (1979). The study of jealousy as a dispositional characteristic. In: *Love and attraction*. Ed. by M. Cook and G. Wilson. New York, NY: Pergamon.

Bringle, R. G. (1981). "Conceptualizing jealousy as a disposition." *Alternative Lifestyles* 4, 274-290.

Bringle, R., Roach, S., Andier, C. and S. Evenbeck (1979). Measuring the intensity of jealous reactions. *Catalog of Selected Documents in Psychology* 9, 23–24.

Bull, G. (2010). "The always-connected generation." *Learning and Leading with Technology*, November 2010, 28-29.

Buunk, B. P. (1997). "Personality, birth order and attachment styles as related to various types of jealousy." *Personality and Individual Differences* 23, 997-1006. doi:10.1016/S0191-8869(97)00136-0

Campbell, M. A. (2005). "The impact of the mobile phone on young people's social life." In: *Social Change in the 21st Century Conference*. QUT Carseldine: Brisbane.

Campbell, S. W. and R. Ling (2009). Effects of mobile communication. In: *Media effects: Advances in theory and research.* 3rd Edition. Ed. By J. Bryant and M. B. Oliver. New York, NY: Taylor and Francis, 592-606.

Chen, Y. F. and J. E. Katz (2009). „Extending family to school life: College students' use of the mobile phone." *International Journal of Human-Computer Studies* 67 (2), 179-191.

Chiffriller, S. H. and J. J. Hennessy (2007). "Male batterer profiles: Support for an empirically generated typology." *Journal of Offender Rehabilitation* 44, 117-131. doi:10.1300/J076v44n02_05

Choi, A. W. K. (2012). "The relationship between family cohesion and intimacy in dating relationship: A study based on attachment and exchange theory." *Discovery – SS Student E-Journal* 1, 91-109.

Cisco (2014). *Cisco Connected World Technology Report*. URL: http://www.cisco.com/c/en/us/solutions/enterprise/connected-world-technology-report/index.html#~2012 (visited 11/27/2015).

Clanton, G. and L. G. Smith (1977). Jealousy. Englewood Cliffs. NJ: Prentice-Hall.

Connolly, J., Craig, W., Goldberg, A., and D. Pepler (1999). Conceptions of cross-sex friendships and romantic relationships in early adolescence. *Journal of Youth and Adolescence*, *28*(4), 481-494.

Coyne, S., Stockdale, L., Busby, D., Iverson, B. and D. Grant (2011). " 'I luv u :)!': A descriptive study of the media use of individuals in romantic relationships." *Family Relations* 60 (2), 150-162.

Crystal Jiang, L. and J. T. Hancock (2013). "Absence makes the communication grow fonder: Geographic separation, interpersonal media, and intimacy in dating relationships." *Journal of Communication* 63(3), 556-577.

De Leo, G. and G. Leroy (2008). "Smartphones to facilitate communication and improve social skills of children with severe autism spectrum disorder: special education teachers as proxies." In: *Proceedings of the 7th international conference on Interaction design and children*, 45-48).

DeSteno, D., Valdesolo, P. and M. Y. Bartlett (2006). "Jealousy and the threatened self: get-ting to the heart of the green-eyed monster." *Journal of personality and social psychology* 91 (4), 626-641.

Devitt, K. and D. Roker (2009). "The role of mobile phones in family communication." *Children & Society* 23 (3), 189-202.

Dey, A. K., Wac, K., Ferreira, D., Tassini, K., Hong, J. H. and J. Ramos (2011). Getting closer: an empirical investigation of the proximity of user to their smart phones. In: *Proceedings of the 13th international conference on Ubiquitous computing*. ACM. Bejing: China, 163-172.

Draghi-Lorenz, R. (2010). Parental reports of jealousy in early infancy: Growing tension between evidence and theory. In: *Handbook of jealousy: Theory, research, and multidisciplinary approaches*. Ed. by S. L. Hart and M. Legerstee. Chichester, West Sussex: Wiley-Blackwell, 235-266.

Duran, R. L., Kelly, L. and T. Rotaru (2011). "Mobile phones in romantic relationships and the dialectic of autonomy versus connection." *Communication Quarterly*, 59 (1), 19-36.

E.On Energie Deutschland (2013). *Sind Handys Beziehungskiller? Studie belegt: Deutsche sind eifersüchtig aufs Smartphone*. URL: http://www.presseportal.de/pm/109984/2592438 (visited on 11/05/2015).

Ericsson Mobility Report (2015). *On the Pulse of the Networked Society*. URL: http://www.ericsson.com/res/docs/2015/mobility-report/ericsson-mobility-report-nov-2015.pdf (visited on 11/27/2015).

Fornell, C. and D. F. Larcker (1981). "Structural Equation Models with Unobservable Variables and Measurement Errors." *Journal of Marketing Research* 18**,** 39-50.

Fornell, C. and F. L. Bookstein (1982). "Two structural equation models: LISREL and PLS applied to consumer exit-voice theory." *Journal of Marketing Research* 19**,** 440-452.

Fox, J. and K. M. Warber (2014). "Social networking sites in romantic relationships: Attachment, uncertainty, and partner surveillance on Facebook." *Cyberpsychology, Behavior, and Social Networking* 17 (1), 3-7.

Fox, J., Osborn, J. L. and K. M. Warber (2014). "Relational dialectics and social networking sites: The role of Facebook in romantic relationship escalation, maintenance, conflict, and dissolution." *Computers in Human Behavior* 35, 527-534.

Gallup (2015). *Most U.S. Smartphone Owners Check Phone at Least Hourly*. URL: http://www.gallup.com/poll/184046/smartphone-owners-check-phone-least-hourly.aspx?utm_source=Economy&utm_medium=newsfeed&utm_campaign=tiles (visited on 27/11/2015).

Gardasevic, S. (2015). *Can't Imagine Your Day Without Your Smartphone? Blame Dopamine!* URL: http://domain.me/cant-imagine-day-without-smartphone-blame-dopamine/ (visited on 11/27/2015).

Generation Chart (undated). List of Generation Chart URL: http://www.esds1.pt/site/images/stories/isacosta/secondary_pages/10%C2%BA_block1/Generations%20Chart.pdf (visited on 11/27/2015)

Groarke, H (2014). "The impact of smartphones on social behaviour and relationships." Department of psychology, Dublin Business School. URL: http://esource.dbs.ie/bitstream/handle/10788/2096/hdip_groake_h_2014.pdf?sequence=1 (visited on 11/24/2015).

Guerrero, L. K. and S. V. Eloy (1992). "Relational satisfaction and jealousy across marital types." *Communication Reports* 5, 23-31.

Guerrero, L. K., Andersen, P. A., Jorgensen, P. F., Spitzberg, B. H. and S. V. Eloy (1995). „Coping with the green-eyed monster: Conceptualizing and measuring communicative responses to romantic jealousy." *Western Journal of Communication* 59, 270-304.

Hansen, G. L. (1991). "Jealousy: Its conceptualization, measurement, and integration with family stress theory." The Psychology of Jealousy and Envy. Ed. by P. Salovey. 211-230.

Hart, S. L. (2010). A theoretical model of the development of jealousy: Insight through inquiry into jealousy protest. In: *Handbook of jealousy: Theory, research, and multidisciplinary approaches*. Ed. by S. L. Hart and M. Legerstee. Chichester, West Sussex: Wiley-Blackwell, 331-361.

Hart, S. L. Carrington, H. A., Tronick, E. Z. and S. R. Carrol (2004). "When infants lose exclusive maternal attention: Is it jealousy?." *Infancy* 6 (1), 57-78.

Hatfield, J. and S. Murphy (2007). "The effects of mobile phone use on pedestrian crossing behaviour at signalised and unsignalised intersections." *Accident Analysis & Prevention* 39 (1), 197-205.

Hatfield, E. and R. L. Rapson (1987). Passionate love: New directions in research. *Advances in personal relationships*, 1, 109-139.

Hill, S. (2015). *Is smartphone addiction real? We ask the experts*. URL: http://www.digitaltrends.com/mobile/is-smartphone-addiction-real/ (visited on 11/26/2015).

Homburg, C. and A. Giering (1996). „Konzeptualisierung und Operationalisierung komplexer Konstrukte." *Marketing-Zeitschrift für Forschung und Praxis* 18**,** 5-24.

Hudson, P. (2015). *10 Reasons Why This Generation Is Losing The Ability To Be In Love*. URL: http://elitedaily.com/dating/generation-giving-up-love/989885/ (visited 11/27/2015).

Hulland, J. (1999). "Use of partial least squares (PLS) in strategic management research: A review of four recent studies." *Strategic Management Journal* 20**,** 195-204.

IDC (2013). *How smartphones and social keep us engaged – An IDC research report*. URL: http://www.nu.nl/files/IDC-Facebook%20Always%20Connected%20(1).pdf (visited on 11/26/2015).

Jung, Y. (2013). "What a smartphone is to me: understanding user values in using smartphones." *Information Systems Journal* 24 (4), 299-321.

Karadag, E., Tosuntas, S. B., Erzen, E., Duru, P., Bostan, N., Mizrak, S., Culha, I. and B. Babadag (2015). „Determinants of phubbing, which is the sum of many virtual addictions: A structural equation model." *Journal of Behavioral Addictions*, 4 (2), 60-74.

Klein, V. (2014) Gemeinsam einsam: Phänomen Phubbing. *Information, Wissenschaft & Praxis* 65 (6), 335-340.

Landis J. R. and G. G. Koch (1977). "The measurement of observer agreement for categorical data." *Biometrics* 33 (1), 159-174.

Lazarus, R. S. (1977). "Cognitive and coping processes in emotion." Ed. by A. Monat and R. S. Lazarus. *Stress and coping: an anthology*. Columbia University Press, New York, 145–158.

Lazarus, R. S. (1991). *Emotion and adaption*. New York, NY: Oxford University Press.

Legerstee, M., Ellenbogen, B., Nienhuis, T. and H. Marsh (2010). Social bonds, triadic relationships, and goals: Preconditions for the emergence of human jealousy. In: *Handbook of jealousy: Theory, research, and multidisciplinary approaches*. Ed. by S. L. Hart and M. Legerstee. Chichester, West Sussex: Wiley-Blackwell, 163-191.

Levitas, D. (2013). *Always Connected: How Smartphones And Social Keep Us Engaged*. URL: https://www.academia.edu/7042070/Always_Connected_How_Smartphones_And_Social_Keep_U s_Engaged (visited on 11/23/2015).

Ling, R. (2000). "The impact of the mobile telephone on four established social institutions." In: *IS-SEI2000 Conference of the International Society for the Study of European Ideas*. Bergen: Norway, 14-18.

Lyndon A., Bonds-Raacke J. and A. D. Cratty (2011). "College students' Facebook stalking of ex-partners." *Cyberpsychology, Behavior, & Social Networking* 14, 711–716.

McCormack, M. (2015). *The role of smartphones and technology in sexual romantic lives*. Project Report, Durham University.

McDaniel, B. T. and S. M. Coyne (2016). "Technoference": The interference of technology in couple relationships and implications for women's personal and relational well-being. *Psychology of Popular Media Culture*, *5*(1), 85-98.

Misra, S., Cheng, L., Genevie, J. and M. Yuan (2014). "The iphone effect the quality of in-person social interactions in the presence of mobile devices." *Environment and Behavior*.

Mod, G. B. B. (2010). "Reading romance: The impact Facebook rituals can have on a romantic relationship." *Journal of comparative research in anthropology and sociology*, (2), 61-77.

Mohan, P., Padmanabhan, V. N. and R. Ramjee (2008). "Nericell: rich monitoring of road and traffic conditions using mobile smartphones." In: *Proceedings of the 6th ACM conference on Embedded network sensor systems*, 323-336.

Muise, A., Christofides, E. and S. Desmarais (2009). "More information than you ever wanted: Does Facebook bring out the green-eyed monster of jealousy?" *CyberPsychology & Behavior*, 12(4), 441-444.

Muscanell, N. L., Guadagno, R. E., Rice, L. and S. Murphy (2013). "Don't it make my brown eyes green? An analysis of Facebook use and romantic jealousy." *Cyberpsychology, Behavior, and Social Networking* 16 (4), 237-242.

Nass, C., Steuer, J. and Tauber, E. R. (2015). "Computers are social actors." *Human Factors in Computing Systems*, 72-78.

Newberry, M. A. (2010). "The positive and negative effects of jealousy on relationship quality: A meta-analysis." UNF Theses and Dissertations, Paper 280, University of North Florida. URL: http://digitalcommons.unf.edu/etd/380/ (visited on 11/25/2015).

Nielsen (2014). *Mobile Millennials: Over 85% of Generation Y Owns Smartphones*. URL: http://www.nielsen.com/us/en/insights/news/2014/mobile-millennials-over-85-percent-of-generation-y-owns-smartphones.html (visited on 11/27/2015).

Nunnally, J. C. (1978). *Psychometric theory*. McGraw-Hill, NY: New York.

O'Neill, M. (2015). *Smartphone Apps for People with Disabilities*. URL: http://www.makeuseof.com/tag/5-smartphone-apps-people-disabilities/ (visited on 11/20/2015).

Padilla-Walker, L. M., Coyne, S. M. and A. M. Fraser (2012). "Getting a High-Speed Family Connection: Associations Between Family Media Use and Family Connection." *Family Relations* 61 (3), 426-440.

Parker, J. G., Kruse, S. A. and J. Wargo Aikinis (2010). When friends have other friends: Friendship jealousy in childhood and early adolescence. In: *Handbook of jealousy: Theory, research, and multidisciplinary approaches*. Ed. by S. L. Hart and M. Legerstee. Chichester, West Sussex: Wiley-Blackwell, 516-546.

Perez, S. (2015). *Consumers spend 85% of time on smartphones in apps, but only 5 apps see heavy use*. URL: http://techcrunch.com/2015/06/22/consumers-spend-85-of-time-on-smartphones-in-apps-but-only-5-apps-see-heavy-use/#.hdibm0j:5bJy (visited on 11/27/2015).

PewInternet (2011), Generations and their gadgets, URL: http://www.pewinternet.org/files/old-media/Files/Reports/2011 /PIP_Generations_and_Gadgets.pdf [Created: 2011-02-03; Accessed: 2015-12-15].

Phillips, M. (2009). MySpace or yours?: Social networking sites surveillance in romantic relationships. Paper presented at the annual meeting of the Western States Communication Association, Mesa, AZ.

Phys.org (2015). *US smartphone use surges, at expense of other gadgets (Update)*. URL: http://phys.org/news/2015-10-smartphone-center-tech-universe-survey.html (visited on 27/11/2015).

Preacher, K. J. and G. J. Leonardelli (2010-2015). Calculation for the Sobel test. URL: http://quantpsy.org/sobel/sobel.htm (visited on 11/27/2015).

Przybylski, A., K. and N. Weinstein (2012). „Can you connect with me now? How the presence of mobile communication technology influences face-to-face conversation quality." *Journal of Social and Personal Relationships* 30 (3), 217-246.

Radesky, J. S., Kistin, C. J., Zuckerman, B., Nitzberg, K., Gross, J., Kaplan-Sanoff, M., Augustyn, M. and M. Silverstein (2014). „Patterns of mobile device use by caregivers and children during meals in fast food restaurants." *Pediatrics* 133 (4), e843-e849.

Reiner, A. (2014). *Love, Actually: Teaching Generation Y the Basics of a Strong.* URL. Relationshiphttp://www.nytimes.com/2014/02/09/education/edlife/teaching-generation-y-the-basics-of-a-strong-relationship.html (visited on 11/27/2015).

Ringle, C. M., Wende, S. and J.-M. Becker (2015). SmartPLS 3. Bönningstedt: SmartPLS. URL: http://www.smartpls.com (visited on 11/27/2015).

Roberts, J. A. (2015). *Did you get phubbed by your boss?*. URL: http://edition.cnn.com/2015/10/06/opinions/roberts-boss-phubbing/ (visited on 11/27/2015).

Roberts, J. A. and M. E. David (2016). "My life has become a major distraction from my cell phone: Partner phubbing and relationship satisfaction among romantic partners." *Computers in Human Behavior*, 54, 134-141.

Roberts, J., Yaya, L. and C. Manolis (2014). "The invisible addiction: Cell-phone activities and addiction among male and female college students." *Journal of Behavioral Addictions 3* (4), 254-265.

Rusbult, C. E., Johnson, D. J. and G. D. Morrow (1986). "Determinants and consequences of exit, voice, loyalty, and neglect: Responses to dissatisfaction in adult romantic in-volvements." *Human Relations* 39, 45-63.

Russell, J. A. and L. F. Barrett (1999). "Core affect, prototypical emotional episodes, and other things called emotion: dissecting the elephant." *Journal of personality and social psychology* 76 (5), 805-819.

Salehan, M. and A. Negahban (2013). "Social networking on smartphones: When mobile phones become addictive." *Computers in Human Behavior* 29, 2632-2639.

Schmitt, M. J., Montada, L. and K. Falkenau (1994). „*Modellierung der generalisierten und bereichsspezifischen Eifersuchsneigung mittels Strukturgleichungen.*" Berichte aus der

Arbeitsgruppe „Verantworung, Gerechtigkeit, Moral", Nr. 071. URL: http://www.gerechtigkeitsforschung.de/berichte/beri071.pdf (visited on 11/24/2015).

Smith, A. (2015). *Chapter Three: A „week in the life analysis of smartphone users.* URL: http://www.pewinternet.org/2015/04/01/chapter-three-a-week-in-the-life-analysis-of-smartphone-users/ (visited on 11/27/2015).

Spanier, G. B. (1976) "Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads." *Journal of Marriage and the Family*, 15-28.

Sternberg, R. J. (1987). Liking versus loving: A comparative evaluation of theories. *Psychological Bulletin*, 102(3), 331.

Tertadian, E. (2012). "The Smart Phone as a Conflicting Third Party in Interpersonal Relationships." *Communication Studies Undergraduate Publications: Presentations and Projects,* Paper 14.

Thelwall, M. (2008). "Social networks, gender, and friending: An analysis of mySpace member profiles." *Journal of the American Society for Information Science and Technology* 59 (8), 1321-1330.

Theiss, J. A. and D. H. Solomon (2006). A relational turbulence model of communication about irritations in romantic relationships. *Communication Research*, 33(5), 391-418.

Tokunaga, R. S. (2011). "Social networking site or social surveillance site? Understanding the use of interpersonal electronic surveillance in romantic relationships." *Computers in Human Behavior* 27 (2), 705-713.

Toma, C. L. and M. Choi (2016). Mobile Media Matters: Media Use and Relationship Satisfaction among Geographically Close Dating Couples. URL: https://www.academia.edu/16752532/Mobile_media_matters_Media_use_and_relationship_satisfaction_among_geographically_collocated_dating_couples (visited on 11/26/2015).

Tov-Ruach, L. (1980). When friends have other friends: Friendship jealousy in childhood and early adolescence. In: *Handbook of jealousy: Theory, research, and multidisciplinary approaches*. Ed. by A. Oksenberg Rorty. London: University of California Press, 465-488.

Turner, P. and Turner, S. (2013). Emotional and aesthetic attachment to digital artefacts, in: Cognition, Technology and Work, 15, 403-414.

Utz, S. and C. J. Beukeboom (2011). "The role of social network sites in romantic relationships: Effects on jealousy and relationship happiness." J*ournal of Computer-Mediated Communication* 16 (4), 511-527.

VanSlyke, T. (2003). "Digital natives, digital immigrants: Some thoughts from the generation gap." *The technology source 7* (3).

Vincent, J., Haddon, L. and L. Hamill (2005). The influence of mobile phone users on the design of 3G products and services, in: *Journal of the Communication Network*, 4, 69-73.

Waterloo, L. (2013). *You love your iPhone more than me! Almost half of cheaters admit they strayed because partner paid more attention to their mobile*. URL: http://www.dailymail.co.uk/femail/article-2500833/You-love-iphone-Almost-half-cheaters-admit-strayed-partner-paid-attention-mobile.html (visited on 11/25/2015).

Wehmeyer, K. (2007). Assessing users' attachment to their mobile devices, in: Management of Mobile Businesses, Proceedings of the ICMB, Toronto 2007; New York: IEEE Computer Society.

White, J., Thompson, C., Turner, H., Dougherty, B. and D. C. Schmidt (2011). "Wreckwatch: Automatic traffic accident detection and notification with smartphones." *Mobile Networks and Applications* 16 (3), 285-303.

Whitlow, M. L., Drake, E., Tullmann, D., Hoke, G. and D. Barth (2014). "Bringing technology to the bedside: Using smartphones to improve interprofessional communication." *Computers Informatics Nursing* 32 (7), 305-311.

Wickersham, A., Salehi, H., Pennathur, P., Linson, E., Are, C. and A. Kamath (2015). "Smartphones in the Improvement of Inter-Professional Communication." *Journal of Hospital Medicine* 10.

Woollaston, V. (2013). *How often do you check your phone? The average person does it 110 times a DAY (and up to every 6 seconds in the evening)*. URL:

http://www.dailymail.co.uk/sciencetech/article-2449632/How-check-phone-The-average-person-does-110-times-DAY-6-seconds-evening.html (visited on 11/27/2015).

Wu, R., Rossos, P., Quan, S., Reeves, S., Lo, V., Wong, B., Cheung, M. and D. Morra (2011). "An evaluation of the use of smartphones to communicate between clinicians: a mixed-methods study." *Journal of medical Internet research* 13 (3).

Zickuhr, K. (2011). Generations and their gadgets. Pew Internet & American Life Project, 20, URL: http://www.pewinternet.org/2011/02/03/generations-and-their-gadgets/ (visited on 27/11/2015)