



## Full length article

## My life has become a major distraction from my cell phone: Partner phubbing and relationship satisfaction among romantic partners



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## ABSTRACT

Partner phubbing (Pphubbing) can be best understood as the extent to which an individual uses or is distracted by his/her cell phone while in the company of his/her relationship partner. The present study is the first to investigate the oft-occurring behavior of Pphubbing and its impact on relationship satisfaction and personal well-being. In Study 1, a nine-item scale was developed to measure Pphubbing. The scale was found to be highly reliable and valid. Study 2 assessed the study's proposed relationships among a sample of 145 adults. Results suggest that Pphubbing's impact on relationship satisfaction is mediated by conflict over cell phone use. One's attachment style was found to moderate the Pphubbing – cell phone conflict relationship. Those with anxious attachment styles reported higher levels of cell phone conflict than those with less anxious attachment styles. Importantly, Pphubbing was found to indirectly impact depression through relationship satisfaction and ultimately life satisfaction. Given the ever-increasing use of cell phones to communicate between romantic partners, the present research offers insight into the process by which such use may impact relationship satisfaction and personal well-being. Directions for future research are discussed.

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## 1. Introduction

Portmanteau (n) – a word whose form and meaning are derived from a blending together of two or more distinct words.

Phubbing is a portmanteau of the words “phone” and “snubbing”. To be phubbed is to be snubbed by someone using their cell phone when in your company. The “phubb” could be an interruption of your conversation with someone when he or she attends to their cell phone or when you are in close proximity to another but they use their cell phone instead of communicating with you. Partner phubbing (Pphubbing) is when the above takes place when in the company of your spouse or significant other. The ubiquitous nature of cell phones makes phubbing in general, or more specifically, Pphubbing a near inevitable occurrence. In fact, seventy percent of a sample of 143 females involved in romantic relationships reported that cell phones “sometimes”, “often”, “very often,” or “all the time” interfered in their interactions with their partners (McDaniel & Coyne, 2014). Other studies have found Pphubbing to

be a common occurrence among romantic partners as well (Coyne, Stockdale, Busby, Iverson, & Grant, 2011; Lenhart & Duggan, 2014).

The present research investigates whether Pphubbing impacts relationship satisfaction and individual well-being. The potentially mediating impact of cell phone conflict (Coyne et al. 2011) and moderating effect of attachment style (Bowlby, 1969) are also investigated to better understand the process by which Pphubbing impacts relationship satisfaction amongst romantic partners.

## 1.1. Study contributions

The present study makes several important contributions to the current literature. First, we have built and validated a measure of Pphubbing. Valid and reliable scales are needed to advance our understanding of how technology impacts relationships. As a behavior that occurs regularly, Pphubbing should be at the forefront of any efforts to understand how cell phone use impacts romantic relationships. A second contribution is that the present study investigates how Pphubbing affects romantic relationships—an area of research that has received scant attention (McDaniel & Coyne, 2014). A third contribution is that the present study focuses on the impact of cell phone use on relationship satisfaction. To date, previous research has combined many

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different types of technology (television, computers, cell phones, iPads, and tablets) when investigating the impact of technology use on relationships obfuscating the unique role that any specific technology might play (Padilla-Walker, Coyne, & Fraser, 2012). A fourth contribution includes the potential mediating rule of cell phone conflict in the Pphubbing – relationship satisfaction link. Previous research suggests that it is not the time spent with technologies that impacts relationship satisfaction, but the conflict created by the technology use (Coyne et al., 2012). The present study also examines the potential moderating effect of attachment style on the Pphubbing—cell phone conflict relationship. A final contribution is that the present study investigates the impact of Pphubbing on personal well-being. Previous research suggests that cell phone use and texting can increase reported stress (Beranuy, Oberst, Carbonell, & Chamarro, 2009; Lepp, Barkley, & Karpinski, 2014) and unhealthy attachment to one's cell phone can increase symptoms of depression (Gentile, Coyne, & Bricolo, 2012; Harwood, Dooley, Scott, & Joiner, 2014). A sequential moderated-mediation model (Preacher & Hayes, 2008) is used to examine the hypothesized impact of Pphubbing on life satisfaction and depression.

## 2. Conceptual development and research hypotheses

### 2.1. Pphubbing and relationship satisfaction

Relationship and/or marital satisfaction may be best understood as, “the degree to which spouses perceive that their partners meet their needs and desires” (Peleg, 2008, p. 388). A stable and healthy relationship is seen by many as the cornerstone of happy individuals and well-adjusted families (Coyne et al., 2011). Bradbury, Fincham, and Beach (2000) identified interpersonal interactions between partners as one of several important predictors of relationship satisfaction (Ahlmstrom, Lundberg, Zabriske, Eggett, & Lindsay, 2012).

Given the increased use of cell phones to communicate with others (Coyne et al., 2011; Hertlein, 2012; Luo & Tuney, 2015; Lenhart & Duggan, 2014); it is of critical importance that increased research attention be focused on the impact technology use has on relationship satisfaction. With the ever-increasing presence and use of cell phones, the boundaries that separate other interests and partner relationships have become increasingly “blurred” (Chesley, 2005; Leggett & Rossouw, 2014).

For a relationship to be mutually satisfying, each partner must be present for the other (Siegel, 2010). It is not enough to be merely in each other's presence, but there must be a connection between partners. Leggett and Rossouw (2014) define presence as “... a process whereby we remain open and focused on the other without external or internal distraction” (p. 49). Romantic partners feel connected when they are present for each other.

It is clear from the above that distractions caused by Pphubbing could undermine relationship satisfaction. The basic human needs for control and attachment are at risk when an individual senses that his or her partner is not present. In her book, *Alone Together* (2011), Turkle argues that media use is separating people from one another. In essence, partners may be physically together, but not fully present for each other.

The displacement hypothesis (Coyne, Padilla-Walker, Fraser, Fellows, & Day, 2014; Valkenburg & Peter, 2007) can be used to explain the deleterious effects of Pphubbing on relationship satisfaction. This theory suggests that time spent on media, such as cell phones, may displace (or reduce) meaningful interactions with one's spouse. For example, not being fully present during conversations or shared time together because of cell phone-related distractions could lead to lower levels of satisfaction with one's romantic partner. In a study of video game playing and

relationships, Coyne et al. (2012) claim that conflict over video game use may not be because of the game playing itself but because it usurps time available for activities that the partner may enjoy more.

In a large dyadic sample of couples ( $n = 349$ ) where either one or both played Massively Multiplayers Online Role Playing Games (MMORPG), playing such games was found to be negatively associated with marital satisfaction (Ahlmstrom et al., 2012). Between 70 and 75 percent of independent-gamer couples (where only one spouse played MMORPGs) stated that gaming had negatively impacted their marriages. The authors conclude that, “displacing time spent with a significant other may indeed be a source of quarreling and marital conflict” (p. 16).

Even the mere presence of cell phones has been found to undermine perceived closeness, connection, and conversation quality. For example, Przybylski and Weinstein (2012) conducted two experiments in which they manipulated the presence of cell phones while a pair of subjects had either casual or meaningful conversations. In the cell phone present condition, a “non-descript” cell phone was placed on the top of a book on a nearby desk outside of the direct visual field of the subject. In the first experiment, subjects were asked to spend 10 min discussing an interesting event during the past month. After this discussion, subjects completed measures of relationship quality and emotional sensitivity. Subjects in the experimental condition reported lower relationship quality and less closeness with their partners after their discussion. A second experiment manipulated the content of the discussion (casual or meaningful) with the same manipulation of the cell phone as present or absent. Again, the presence of a mobile phone predicted lower relationship quality. An interaction between the presence of a cell phone and conversation type was also uncovered. Relationship quality and partner trust were only undermined when the conversation was meaningful. Perceived empathy was reduced when a cell phone was present independent of conversation type. Thus, it is clear that the presence of cell phones can interfere with perceived relationship quality among couples (Przybylski & Weinstein, 2012).

Based upon the theory and empirical results discussed above, sufficient evidence suggests that a partner's use of a cell phone while in the company of his or her romantic partner may have a negative effect on relationship satisfaction. Thus, we offer the following hypothesis:

**H1.** As Pphubbing increases, reported levels of relationship satisfaction will decrease.

### 2.2. The mediating impact of cell phone conflict

We posit that arguments over cell phone use (cell phone conflict) will mediate the impact of Pphubbing on relationship satisfaction. It is reasonable to assume that interruptions and distraction caused by Pphubbing will create conflict in romantic relationships (Servies, 2012). In a study of the impact of technology interference on relationship well-being, McDaniel and Coyne (2014) found that technology interference (Computers, TV, iPads, cell phones, etc.) caused conflict over technology use within romantic relationships. This conflict was then found to negatively impact relationship satisfaction among the sample of female respondents.

The authors reason that when one partner allows technology to interfere in time spent with their partner, it sends an implicit message of that partner's priorities (McDaniel & Coyne, 2014). Responding to a text message or checking social media during a conversation with a romantic partner, or instead of interacting with them at all, sends a message that interacting with one's romantic

partner is less important than what is available on his or her cell phone.

Multitasking is a common way cell phone use interferes with relationships. Humans have limited attention resources and cell phone interference directs one's attention away from his or her romantic partner (McDaniel & Coyne, 2014; Przybylski & Weinstein, 2012). Attention is an important factor in healthy relationships (Leggett & Rossouw, 2014). One cannot be fully present in a relationship when distracted by his or her cell phone.

In a large scale survey of 1333 couples, Coyne et al. (2012) found that men's time spent playing six different types of video games was positively correlated with spousal conflict over such play. The authors conclude that playing video games can lead to conflict in romantic relationships. This conflict, the authors reasoned, was the result of the "displacement of opportunities." That is, time spent playing video games displaced time that could have been spent with one's partner. Relatedly, a study of online game players found that time spent with such games created conflict amongst the couples studied (Ahlstrom et al., 2012).

A large scale survey of technology use among Americans by the PEW Research Center concluded that technology use can create conflict in relationships. Cell phones were found to have a "particularly distracting effect" on romantic relationships. Twenty five percent of all couples surveyed reported that their spouse or partner was distracted by his or her cell phone during their time spent together. Not surprisingly, this effect was stronger for those respondents between the ages of 18–29, where 42 percent reported distractions caused by cell phones during their time together. Thirty six percent of those married or living together for ten years or less felt their partner was distracted by their cell phone when together. Given the above, we offer the following hypothesis:

**H2.** The relationship between Pphubbing and relationship satisfaction will be mediated by cell phone conflict.

### 2.3. The moderating role of attachment anxiety

Attachment theory (Bowlby, 1969) assists in explaining the dispositions and propensities undertaken by individuals in their development of relationships (Weisskirch & Delevi, 2013). The theory proposes that individuals' unique interpersonal experiences during early childhood shape their perceptions and expectations of relationships, as well as how they behave in relationships (Ainsworth, Salter, Blehar, Waters, & Wall, 1978; Drouin & Landgraff, 2012; Morey, Gentzler, Creasy, Oberhauser, & Westerman, 2013). Although individuals' attachment styles are developed early in life, the associated patterns of behavior remain active over the course of life and are manifested in individuals' desires and tendencies to seek closeness and support (Bowlby, 1980; Fraley, Vicary, Brumbaugh, & Roisman, 2011; Hazan & Zeifman, 1999).

Attachment styles relate to how people view themselves based on the lens of their relationships with others (Ainsworth et al., 1978; Bowlby, 1969). Attachment anxiety, specifically, relates to the degree to which individuals worry about whether they will be accepted in relationships and fear abandonment (Mikulincer & Florian, 1998; Morey et al. 2013; Thomson & Johnson, 2006). Individuals with differing levels of attachment anxiety have different expectations regarding interpersonal encounters and social situations (Bartholomew & Horowitz, 1991). Individuals with high levels of attachment anxiety are strongly motivated by social factors and often engage in hyperactivating strategies (Cassidy & Kobak, 1998), whereby they are highly focused on information regarding relations with others (Ein-Dor, Mikulincer, & Shaver, 2011; Luo, 2014; Swaminathan, Stilley, & Ahluwalia, 2009). However, individuals

with lower levels of attachment anxiety tend to be more interdependent, that is, they are more comfortable depending on others and feel that others can be counted on to be trustworthy and reliable (Hazan & Shaver, 1987; Mikulincer, 1997). Thus, attachment anxiety likely impacts individuals' responses to being Pphubbed. Specifically, Pphubbing is likely to have a stronger effect on conflict among individuals with higher levels of attachment anxiety.

Individuals high in attachment anxiety have a strong need for closeness, a preoccupation with attachment, and often worry about relationships (Mikulincer & Nachshon, 1991). Individuals whose attachment styles are lower in anxiety, however, are less preoccupied with relationships, feel comfortable exploring their surroundings, and expect that others will be available and supportive when needed (Ainsworth et al., 1978; Bartholomew & Horowitz, 1991; Hansbrough, 2012). It is likely then that Pphubbing enhances interpersonal insecurity among highly anxiously attached individuals, thus causing conflict, and ultimately negatively impacting relationship satisfaction (Collins & Feeney, 2000). However, the impact of Pphubbing on conflict is likely weaker among individuals with lower levels of attachment anxiety. Indeed, related research has shown that individuals high in attachment anxiety are motivated to seek self-validation from others, while individuals lower in attachment anxiety do not require external validation from others (Bartholomew & Horowitz, 1991). Based on this review, we posit the following:

**H3.** The relationship between Pphubbing and cell phone conflict will be moderated by attachment anxiety.

### 2.4. Pphubbing and personal well-being

In the previous sections we hypothesized the process through which Pphubbing impacts relationship satisfaction. We posited that Pphubbing's impact on relationship satisfaction is mediated by the conflict created by such behavior. We also hypothesized that attachment anxiety moderates the Pphubbing – cell phone conflict relationship. In this section we argue that greater relationship satisfaction leads to higher levels of life satisfaction and lower levels of depression. Specifically, we posit that Pphubbing will indirectly impact depression through its impact on relationship and life satisfaction.

McDaniel and Coyne (2014) used the Marital Discord model (Beach, Sandeen, & O'Leary, 1990) to explain the link between relationship well-being and life satisfaction and depression. According to the model, marital discord, or dissatisfaction, leads to a greater risk of depression by removing or reducing spousal support and the attendant stress and hostility that often accompanies such discord (Proulx, Helms, & Buehler, 2007).

In their sample of 143 adult females currently in relationships, McDaniel and Coyne (2014) found significant bivariate correlations between relationship satisfaction and life satisfaction and depression. As hypothesized, greater relationship satisfaction led to greater satisfaction with life in general and was also negatively associated with expressed symptoms of depression. Technoforce (interference from a range of technology devices) was also found to be significantly correlated with depression (+) and life satisfaction (–).

The relationship between marital quality and personal well-being is well established in the family literature (Papp, Cummings, & Schermerhorn, 2004). Meta-analyses by Whisman (2001) and Proulx et al. (2007) found that marital discord leads to greater levels of depression across 100-plus studies. Proulx et al. (2007) concluded that marital dissatisfaction precedes depressive symptoms. Based upon the results from a large representative sample of US families, Carr, Freedman, Cornman, and Schwarz (2014)

concluded that marital satisfaction is a strong correlate of life satisfaction, as well. In a study of 325 Taiwanese respondents, Lee, Chang, Lin, and Cheng (2014) found that compulsive smartphone usage was positively associated with technostress and that daily exposure to stressors can have long-term effects on a user's mental health. Based upon the above, we offer the following sequential mediation (Preacher & Hayes, 2008; Model 6) hypothesis:

**H4.** Pphubbing will have an indirect negative impact on individuals' well-being. Specifically, the lower levels of relationship satisfaction resulting from conflict surrounding Pphubbing will be associated with lower levels of life satisfaction. In addition, lower levels of life satisfaction will be associated with more depressive symptoms.

Next, we present the results of two studies. The first study was designed as a pre-test to examine the measurement properties, including the reliability and validity of our 9-item measure of partner phubbing (Pphubbing). The second study was designed to test the hypotheses presented in H1–H4 and shown in the conceptual model in Fig. 1. Together, the two studies offer a valid and reliable measure of Pphubbing and demonstrate the important negative effects that Pphubbing has on relationships and ultimately individuals' well-being.

### 3. Methods

#### 3.1. Study 1

##### 3.1.1. Item development

Partner phubbing (Pphubbing) is the extent to which your romantic partner uses or is distracted by his/her cell phone while in your company. An initial item pool of over 100 items was generated to measure Pphubbing. Each author gathered items from both the academic literature and popular press sources including newspapers, magazines, and websites. Additionally, approximately thirty marketing research students were asked to generate phubbing items after being provided the above definition and discussing the concept of phubbing. It was evident that, among the college student age group, phubbing was a common behavior that all had experienced.

As part of a classroom assignment on scale development, each student was asked to provide at least five items they felt captured the essence of phubbing. The authors later re-worded where necessary any student generated items to reflect such behavior on the part of one's partner. The authors perused the 100-plus items generated and individually removed any they felt did not capture the essence of Pphubbing or were redundant with items ultimately selected for inclusion in the pre-test. Inter-rater agreement between the authors was over 90 percent. The above process led to the inclusion of 19 items in the study's pre-test. Respondents were asked to indicate how frequently their partner engaged in each of the 19 behaviors as it relates to his or her cell phone use. Response

categories ranged from "Never" (1), "Rarely" (2), "Sometimes" (3), "often" (4), to "All the Time" (5).

##### 3.1.2. Sample

A total of 308 (46% female) US adults from Mturk participated in our pre-test survey. To begin, participants responded to the 19 items that were designed to measure Pphubbing. Next, participants responded to the 10-item personal involvement measure (Zachkowsky, 1985), a 7-item measure of cell phone conflict (two items adapted from Theiss and Solomon (2006) directness of communication about irritations scale), a 3-item measure of cell phone addiction created for the present study, and a 4-item measure of relationship satisfaction (Murray, Holmes, Griffin, & Derrick, 2015). The order of these measures was randomized to account for any order effects, and each measure was separated by a unique distracting task, such that participants completed four ostensibly unrelated studies (Haws, Dholakia, & Bearden, 2010). At the end of the survey, participants responded to relationship status/length and demographic questions.

##### 3.1.3. Results

An exploratory factor analysis (EFA) was conducted to construct a Pphubbing scale on the basis of resulting factor loadings (Churchill, 1979). Principal components extraction and varimax rotation were used to interpret the factor loadings (Haws et al., 2010). Items that loaded on more than one factor as well as those with factor loadings below .60 were removed. This process reduced the 19 items into a 9-item Pphubbing measure. The data was well-suited for factor analyses as indicated by the KMO statistic (.94) and the Bartlett's test of Sphericity ( $X^2 = 1998.13$ ,  $p < .01$ ). The Pphubbing measure exhibited a factor structure consistent with the hypothesized one factor measure. Therefore, and to test discriminant validity of the measure, we next ran a series of confirmatory factor analyses (CFA's) on the scale using AMOS 21.0. Specifically, a CFA was conducted with the 9-item Pphubbing construct ( $X^2 = 80.02$ ,  $df = 27$ ,  $n = 308$ ; CFI = .97; NFI = .96; RMSEA = .08), and each of the following: the 10-item involvement construct ( $X^2 = 486.04$ ,  $df = 151$ ,  $n = 308$ ; CFI = .93; NFI = .90; RMSEA = .08), the 4-item attitude construct ( $X^2 = 127.60$ ,  $df = 64$ ,  $n = 308$ ; CFI = .98; NFI = .96; RMSEA = .06), the 3-item cell phone addiction measure ( $X^2 = 141.76$ ,  $df = 53$ ,  $n = 308$ ; CFI = .97; NFI = .95; RMSEA = .07), and the 7-item cell phone conflict measure ( $X^2 = 361.11$ ,  $df = 103$ ,  $n = 308$ ; CFI = .94; NFI = .92; RMSEA = .09).

As indicated by the fit statistics reported above, the results of the confirmatory factor analyses indicated that the models fit the data well. The chi-squared statistic was significant ( $p < .01$ ) in each CFA, but this was not unexpected since it is known to be sensitive to large sample sizes (Bearden, Sharma, & Teel, 1982; Marsh, Balla, & McDonald, 1988). The construct reliability estimates for the Pphubbing scale (.93), the involvement scale (.96), the attitude scale (.92), the cell phone addiction (.81), and the cell phone conflict scale (.94) were acceptable. Additionally, evidence of

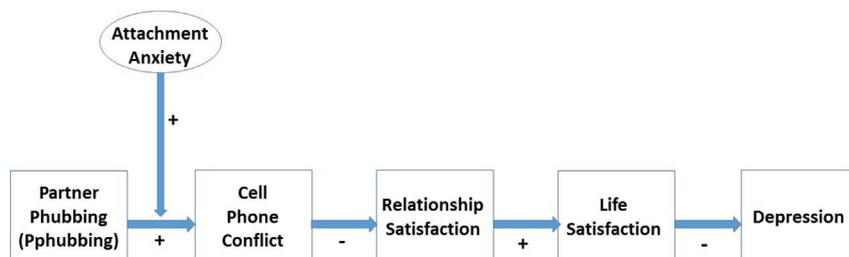


Fig. 1. Conceptual model.

convergent validity was established in each CFA, as all items loaded strongly and significantly on their respective factors and the average variance extracted for each latent variable exceeded .50 (Fornell & Larcker, 1981). In providing evidence for discriminant validity as recommended by Fornell and Larcker (1981), the AVE for each latent factor exceeded the respective squared correlation between factors.

Pphubbing scores covered the whole scale with a mean of 2.64 ( $SD = .68$ ), ranging from 1 to 5 (5 = high). Our instrument was thus able to capture the variance in intensity of which individuals feel that their partners phubbed them, thereby allowing us to test differences across Pphubbing levels. Unlike Pphubbing scores, which were normally distributed around the center point of the scale ( $M = 2.78/5.0$ ,  $SD = .91$ ), the cell phone addiction scores were skewed to the lower end of the scale ( $M = 3.01/7.0$ ,  $SD = 1.59$ ). The distribution of scores for attitudes toward cell phones ( $M = 3.81/5.0$ ,  $SD = .97$ ) and partner's cell phone involvement ( $M = 4.96/7.0$ ,  $SD = 1.33$ ) were also skewed, but to the high end of the scale. This reinforces the notion that it is possible an individual dislike cell phones, to feel as if his/her partner is addicted to his/her cell phone, and/or to feel that his/her partner is highly involved with his/her cell phone without necessarily feeling phubbed by their relationship partner (Russell, Norman, & Heckler, 2004).

Next, we tested the prediction in our conceptual model that Pphubbing has a positive effect on cell phone conflict and that cell phone conflict mediates the relationship between Pphubbing and relationship satisfaction (Preacher & Hayes, 2008 PROCESS Model 4). As predicted, the results indicated that Pphubbing has a significant and positive effect ( $\beta = .59$ ,  $p < .05$ ) on cell phone conflict ( $F_{(1, 307)} = 135.40$ ,  $p < .01$ ,  $R^2 = .31$ ). In addition, cell phone conflict has a significant and negative effect ( $\beta = -.48$ ,  $p < .05$ ) on relationship satisfaction ( $F_{(2, 306)} = 34.27$ ,  $p < .01$ ,  $R^2 = .18$ ). Importantly, the results show support for mediation. Specifically, the indirect effect of Pphubbing on relationship satisfaction is significant ( $\beta = -.29$ ,  $SE = .06$ , 95%CI:  $-.413, -.174$ ) (Preacher & Hayes, 2008; Zhao, Lynch, & Chen, 2010).

Overall, study 1 showed that the Pphubbing construct and its measurement instrument can significantly further our understanding of the use of cell phones and its effects on interpersonal relationships. As a means of establishing the construct's discriminant validity, we demonstrated that Pphubbing is conceptually and empirically different from attitude toward cell phones, partner's cell phone involvement, cell phone conflict, and cell phone addiction. In order to begin establishing the predictive validity of our Pphubbing construct, we showed that it is a significant predictor of cell phone conflict and has an indirect effect on relationship satisfaction. Further, the study included a broad cross section of individuals in relationships, and showed that the Pphubbing construct is relevant and applicable to different demographic groups and different stages of relationships.

### 3.2. Study 2

One hundred and forty-five US adults (55% female) from Mturk participated in study 2. To begin, participants responded to our 9-item measure of Pphubbing ( $\alpha = .92$ ). Later in the study, participants responded to the same 7-item measure of cell phone conflict ( $\alpha = .92$ ) and 4-item measure of relationship satisfaction ( $\alpha = .92$ ) as used previously in study 1. We also assessed participants' satisfaction with their life ( $\alpha = .92$ ) using 2-items measured on a 7 point Likert scale ("Overall, I am satisfied with my life," and "I am happy with my life in general"). Depression was assessed using a 4-item measure (PHQ-4) developed by Kroenke, Spitzer, Williams, and Lowe (2009) ( $\alpha = .92$ ), and interpersonal attachment style using the Johnson, Whelan, and Thomson (2012) 5-item measures

of attachment anxiety ( $\alpha = .86$ ) and avoidance ( $\alpha = .84$ ) which is similar to a shorten version of the Brennan, Clark, and Shaver (1998) 36-item measure of attachment style. Of note, attachment avoidance was included as a control variable in the analyses and it did not impact the results presented. The order of these measures was randomized to account for any order effects. Importantly, each measure was separated by a short distracting task.

#### 3.2.1. Results

The Preacher and Hayes (2008) Model 7 was used to test the prediction that Pphubbing increases cell phone conflict and that attachment anxiety moderates this relationship ( $F_{(3, 142)} = 65.09$ ,  $p < .01$ ,  $R^2 = .58$ ). The main effect of Pphubbing was significant ( $\beta = .47$ ,  $p < .05$ ), but the main effect of attachment anxiety was not significant. As predicted and as illustrated in Fig. 2, there was a significant interactive effect of Pphubbing and attachment anxiety on cell phone conflict ( $\beta = .10$ ,  $p < .05$ ). Post-hoc tests (at  $1SD \pm$  the mean attachment anxiety score) revealed three significant comparisons. Specifically, Pphubbing increases conflict among both securely ( $M_{low} = 1.31$ ,  $M_{high} = 2.46$ ,  $p < .05$ ) and anxiously ( $M_{low} = 1.38$ ,  $M_{high} = 3.06$ ,  $p < .05$ ) attached individuals. In addition, among individuals who experience high levels of Pphubbing, those with anxious attachment styles have greater conflict than those with secure attachment styles ( $M_{anxious} = 3.06$ ,  $M_{secure} = 2.46$ ,  $p < .05$ ). The results also showed that Pphubbing ( $\beta = -.34$ ,  $p < .05$ ) and cell phone conflict ( $\beta = -.84$ ,  $p < .05$ ) are significant predictors of relationship satisfaction ( $F_{(2, 143)} = 28.51$ ,  $p < .01$ ,  $R^2 = .29$ ). Importantly, the results indicate that cell phone conflict mediates the relationship between Pphubbing and relationship satisfaction, and the mediating effect of cell phone conflict is stronger among anxiously attached individuals. That is, support for moderated mediation is found ( $SE = .03$ , 95%CI:  $-.15, -.01$ ).

Next, the Preacher and Hayes (2008) Model 6 was used to test the remainder of our conceptual model (i.e., sequential mediation). The results indicate that relationship satisfaction has a significant and positive effect on life satisfaction ( $\beta = .460$ ,  $p < .01$ ), and life satisfaction has a significant and negative effect on depression ( $\beta = -.459$ ,  $p < .01$ ). As predicted, the results show support for sequential moderated mediation ( $\beta = .142$ ;  $SE = .05$ , 95%CI:  $.065, .258$ ), such that the indirect effect of Pphubbing on depression is significant via relationship satisfaction and then life satisfaction (See Fig. 1) (Preacher & Hayes, 2008).

## 4. Discussion

Previous research has documented the considerable amount of time people spend interacting with technology (Harris, Harris, Carlson, & Carlson, 2015). In a sample of college students, Roberts, Petnji Ya-Ya, and Manolis (2014) found that college

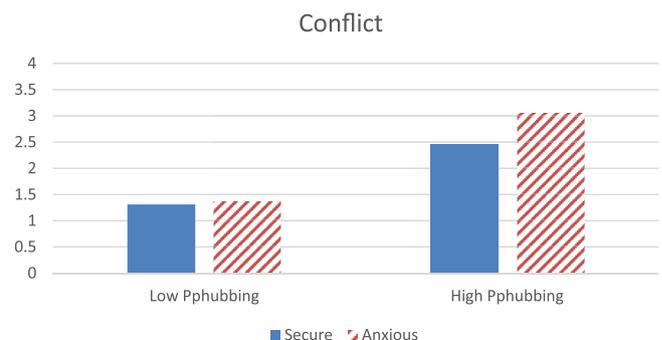


Fig. 2. Study 2 results.

students spend an average of nearly 9 h daily on their cell phones. Other studies have found similarly large amounts of time spent devoted to one's cell phone (Junco & Cotton, 2012; Lenhart & Duggan, 2014). It appears that people from all age groups are spending an increasing amount of time interacting with their cell phones and other electronic devices to the detriment of human interaction (Griffiths, 1999, 2000; Roberts & Pirog, 2013).

With their constant beeping, bells, vibrations and whistles, cell phones are like the petulant child who will not behave until he or she gets what they want. The desire of our cell phone is to be constantly attended to. Cell phones demand our attention and, as the present research finds, can undermine our satisfaction with our romantic relationships. The present study is the first to investigate the oft-occurring behavior of Pphubbing and its impact on relationship satisfaction. Given the scant existing research on how technology, specifically cell phones, distract or interfere with relationships, this study fills an important gap in the current literature.

An important contribution of the present study is the development of the Pphubbing scale. Given the increasing use of cell phones in general, it is critical that valid measures are available to document how, or if, such use impacts relationship satisfaction among romantic partners. Benefits of the current Pphubbing scale include that it is a brief (9 items) and documented valid measure of partner phubbing. It is also a scale that measures distraction specific to one technology—cell phones. Many current studies have investigated the impact the use of a broad array of technologies has on relationships (McDaniel & Coyne, 2014). Given the differences across these technologies (e.g., TV is passive while cell phones are more interactive and intrusive), any significant relationships between the variables of interest may have been masked by such differences.

A second important contribution is that the present study offers a model of the process by which Pphubbing impacts relationship satisfaction and ultimately personal well-being. As hypothesized, interruptions and distractions caused by a romantic partner's phubbing behavior increased conflict specifically related to such behavior (cell phone conflict). In turn, such conflict diminished a partner's satisfaction with his or her relationship.

In addition, we found that Pphubbing's impact on cell phone conflict was moderated by attachment anxiety. Although it appears that Pphubbing fosters cell phone related conflict for all types of people, we found that when Pphubbing occurs, those with highly anxious attachment styles reported higher levels of conflict than those with less anxious attachment styles. Those with anxious attachment styles may over-react to Pphubbing compared to those with more secure attachment styles leading to lower levels of relationship satisfaction (Neff & Karney, 2009).

Lastly, the present study finds that diminished relationship satisfaction negatively impacted life satisfaction and depression consistent with research in the marital satisfaction literature (Papp et al., 2004; Proulx et al., 2007; Whisman, 2001). Marital discord preceded depression, rather than vice-versa. Although McDaniel and Coyne (2014) did not distinguish in their model whether depression led to lower life satisfaction or vice-versa, the present study found that lower levels of relationship satisfaction (stemming at least in part from being Pphubbed) led to decreased life satisfaction that in turn led to higher levels of depression. Importantly, the findings of sequential mediation analysis (Preacher & Hayes, 2008) revealed that Pphubbing indirectly impacted depression through relationship satisfaction and ultimately life satisfaction. That is, Pphubbing has an indirect effect on personal well-being, such that greater Pphubbing results in not only lower relationship satisfaction, but also lower satisfaction with one's life and higher levels of depression.

## 5. Limitations and future research directions

Although the present research serves as the first to investigate the impact of Pphubbing on relationship satisfaction and personal well-being, its results must be tempered by certain limitations. First, although the samples used were adequate size and represented a broad swath of both women and men of all ages, future research in this area would benefit from studying both partners in romantic relationships. For instance, Ahlstrom et al. (2012) found that couples where only one partner played video games reported higher levels of marital discord than couples where both played video games. Couples where both partners played video games argued less about their play than couples where one spouse only played and approximately three-quarters of these couples reported that gaming had a positive impact on their relationship. Since the focus of the present paper is on relationship satisfaction, future research will be better able to tease out the nuances of technology's impact on relationship satisfaction if both partners are included in the research.

A second limitation of the present study is its correlational nature. Experimental and longitudinal studies are needed to more thoroughly establish the direction of causal flow. Could it be that those partners who are less satisfied with their relationship may exhibit more Pphubbing behaviors as an indication of their disenchantment? The present findings appear to suggest otherwise, but future causal research is needed to better understand the relationships between Pphubbing, relationship satisfaction, and personal well-being. In addition, future research could use longitudinal studies to examine whether an increase in Pphubbing overtime also results in a gradual decline in relationship satisfaction. As suggested by a reviewer of this article, it may be that some people are less likely to overuse technology, or frequently engaging in Pphubbing behaviors, in the early stages of their relationships.

Although the proposed sequential moderated-mediation model in the present study was supported, it would be an oversimplification to conclude that the variables included in the present study are the only through which Pphubbing impacts relationship satisfaction and personal well-being. Pphubbing may also affect respect for one's partner; undermine sense of self-worth, and/or general resentment in the offended partner. Or, as suggested by the displacement hypothesis discussed earlier, it may be that the time spent with one's cell phone usurps time spent on activities with one's spouse that may build a stronger, happier relationship. All of these variables need to be incorporated into research designs that are focused on how technology use among romantic partners impacts relationship satisfaction and well-being.

Future research will also benefit from the further validation of the newly constructed Pphubbing scale. As noted by Padilla-Walker et al. (2012), it is important that future research investigates the various technologies separately given that different medium "allow for different levels of co-orientation" (p. 428). Given the ubiquitous and potentially intrusive nature of cell phones, they were chosen for investigation in the present study.

## 6. Conclusion

The institution of marriage (and romantic relationships in general) is under attack. Approximately 40–50 percent of all marriages will end in divorce ([www.apa.org/topics/divorce/](http://www.apa.org/topics/divorce/)), while many of the intact unions are poorly functioning and are characterized by low levels of relationship satisfaction on the part of one or both partners (Ahlstrom et al., 2012). As intimated in the title of this

paper, it appears that life has become a major distraction from our cell phones. It is ironic that cell phones, originally designed as a communication tool, may actually hinder rather than foster satisfying relationships among romantic partners.

The results presented herein suggest that partner phubbing creates conflict over such use of one's cell phone which in turn impacts reported relationship satisfaction, and ultimately personal well-being. Attachment anxiety was found to moderate the Pphubbing – cell phone conflict relationship. Specifically, among individuals who experience Pphubbing, those with anxious attachment styles report higher levels of cell phone conflict than those with less anxious attachment styles. Given that the number of anxiously attached individuals has been increasing steadily over the past couple of decades and is thought to continue increasing (Bowlby, 1980, Holmes, 1993), the negative effects of Pphubbing may well grow stronger with time.

The results presented herein also found that relationship satisfaction had a positive impact on life satisfaction which in turn had a negative influence on depression. Support for sequential moderated mediation was provided in that Pphubbing's indirect effect on depression was significant via relationship satisfaction and then life satisfaction.

In summary, how individuals use cell phones in the presence of a romantic partner impacts the partner's satisfaction with their relationship, which in turn can negatively impact their personal well-being. Given that marital/relationship satisfaction is a cornerstone of both individual and family well-being (Ahlstrom et al., 2012), research that investigates how technology use impacts our relationships is critical.

## Appendix

### Partner phubbing (Pphubbing) scale items<sup>1</sup>

1. During a typical mealtime that my partner and I spend together, my partner pulls out and checks his/her cell phone (slight modification).
2. My partner places his or her cell phone where they can see it when we are together.
3. My partner keeps his or her cell phone in their hand when he or she is with me.
4. When my partner's cell phone rings or beeps, he/she pulls it out even if we are in the middle of a conversation (slight modification).
5. My partner glances at his/her cell phone when talking to me.
6. During leisure time that my partner and I are able to spend together, my partner uses his/her cell phone (slight modification).
7. My partner does not use his or her phone when we are talking (R).
8. My partner uses his or her cell phone when we are out together.
9. If there is a lull in our conversation, my partner will check his or her cell phone.

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<sup>1</sup> Items 1, 4, and 6 are adapted from McDaniel and Coyne (2014) TILES scale. Response categories ranged from "Never" (1) to "Sometimes" (3) to "All of the Time" (5).

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