

Testing Relationships Between Smartphone Engagement, Romantic Partner Communication, and
Relationship Satisfaction

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Abstract

As smartphone technology has spread rapidly across the globe, growing concern has spotlighted how these devices can limit the quality of our communication with others and harm interpersonal relationships. The current study examined how self-reported smartphone use and smartphone dependency were associated with romantic partner communication, and how these variables subsequently tied to relationship satisfaction. Working with a sample of 433 American young adults in romantic relationships, the study found that smartphone use was associated with increased communication between romantic partners, and increased mediated communication between partners predicted more affectionate communication. Conversely, increased smartphone dependency was directly associated with less affectionate communication and lower relationship satisfaction. The study offers insights into how smartphones potentially affect how we connect with romantic partners.

KEYWORDS: smartphone use, smartphone dependency, interpersonal communication, affectionate communication, romantic relationships

Testing Relationships Between Smartphone Use/Dependency, Romantic Partner Communication, and Relationship Satisfaction

A little more than a decade since its introduction into society, the smartphone has transitioned from novelty to necessity with 77% of adults reporting ownership (Pew Research Center, 2018). This is particularly true for young adults (ages 18-29) as 94% of people in this age group claim to own one. Compared to their older peers, young adults are also more likely to pass time using these devices and engage in a broader range of use (Pew Research Center, 2019).

The potential influence that smartphones have on users' lives and their ability to connect with others, particularly among younger generations that have "grown up" with these devices, warrants thorough investigation. Smartphones offer users an array of applications to help manage their lives (Campbell, 2015), and smartphone owners readily acknowledge the value of their smartphones (Jung, 2014). Nevertheless, there is evidence to suggest that these devices can negatively affect personal well-being and interpersonal relationships. Moreover, psychologist Jean Twenge (2017) suggested in *The Atlantic* that smartphones may have "destroyed a generation."

When examining the literature on smartphone use/engagement, there is some cause for concern because research has tied smartphones to a variety of adverse outcomes including increased depression (Alhassan et al., 2018), increased loneliness (Bian & Leung, 2015), decreased academic performance (Hawi & Samaha, 2016), increased anxiety (Matar Boumosleh & Jaalouk, 2017), and decreased sleep quality (Demirci, Akgönül, & Akpınar, 2015). Moreover, a growing body of research suggests that smartphones potentially affect our ability to connect with others and can possibly harm interpersonal relationships, including romantic relationships (Lapierre & Lewis, 2018; McDaniel & Coyne, 2016; Roberts & David, 2016; Turkle, 2015).

Scholars have argued that smartphones harm interpersonal relationships because they displace time spent building and maintaining our bonds with others (e.g., Turkle, 2012, 2015; Twenge, 2017; Twenge, Martin, & Campbell, 2018). This phenomenon, otherwise known as “technoference” (McDaniel & Coyne, 2016) or “phubbing” (Roberts & David, 2016), has been implicated in diminished romantic partner communication and relationship satisfaction. After isolating smartphone dependency, a gauge of compulsive behavior rather than time investment (see Kim et al., 2014), other scholars have identified one’s pathological attachment to their device rather than general smartphone use as the culprit for associated negative relationship outcomes (e.g., Lapierre & Lewis, 2018).

Although ample research has implicated smartphones in negative outcomes within romantic and other vital relationships, little is known about *how* they influence these relationships. Using a sample of 433 American young adults in romantic relationships, this study first explores whether smartphone use is the primary driver for relational discord (see Sbarra, Briskin, & Slatcher, 2019; Turkle, 2012, 2015), or if smartphone dependency (a.k.a., smartphone addiction, problematic smartphone use) is the actual problem (see Lapierre & Lewis, 2018). Second, this study takes a closer look at *how* individuals use their phones and whether there are differential effects based on these different types of use. In other words, rather than looking at the smartphone as a monolithic communicative device, this study identifies smartphones as an interpersonal communicative device via texting and email, mass media device via surfing the internet and watching videos, and social media device via applications such as Twitter and Facebook. Lastly, this study investigates how smartphones possibly affect the amount of time participants communicate with their romantic partners and the quality of that communication (i.e., affectionate communication).

Smartphones as Multi-faceted Communicative Devices

There exists abundant yet mixed research on how older mobile devices (i.e., cellphones) affect both romantic and platonic relationships. On one hand, increased ability to reach out to romantic partners via text and telephone helps to connect romantic partners and is associated with increases in relational happiness (Jin & Peña, 2010; Miller-Ott, Kelly, & Duran, 2012; Schade, Sandberg, Bean, Busby, & Coyne, 2013). On the other hand, cellphones could overwhelm romantic partners (Schade et al., 2013), increase stress related to access (Baron, 2011), and interrupt interpersonal interactions (Oulasvirta, Rattenbury, Ma, & Raita, 2012).

Although cellphones and smartphones share some communicative features, it is important to note that smartphones are markedly different than these older mobile devices. The cellphones and Blackberries that were popular more than a decade ago are distant cousins of smartphones because they were primarily person-to-person communicative devices. Although some of these earlier devices connected to the internet and featured applications, the affordances associated with cellphones do not approach what is available on the average smartphone (Schrock, 2015). Moreover, when looking at time use data from 2008 (the year after Apple introduced the iPhone and smartphone ownership rates were still quite low) the average cellphone user spent just over 30 minutes each day with their mobile device (Schonfeld, 2010). By 2017, the average American was spending ten times that amount on their mobile device with approximately 5 hours per day spent using one's smartphone (Perez, 2017).

The likely reason why smartphones take up significantly more of users' time than cellphones is that they offer considerably greater opportunity to interact with the world (Schrock, 2015). These communicative affordances allow smartphone users to interact with others in a way that older devices simply could not. For example, smartphones provide users a range of options

(e.g., immediacy, mobility) that both older mobile and traditional internet devices (e.g., PCs) were unable to (L. S. Chan, 2017). This extends to how we can access others because smartphones condense a range of communicative methods and affordances into one multimodal communication device (M. Chan, 2018). Beyond interpersonal features such as email, texting, and calling, smartphones allow users to read the news, surf the internet, watch YouTube videos, and play video games. They also act as a conduit to social media applications, which exist at the intersection of person-to-person communication and mass communication. For example, on a platform such as Twitter, users can read tweets from celebrities and news sources as well as interact directly with friends in their social networks. To be clear, not only do smartphones have different features than traditional cellphones and older mobile devices (see Evans, Pearce, Vitak, & Treem, 2017) but also they afford users the variability to reach out to others.

With these differences in mind, it is crucial that research in this area distinguishes between types of communication affordances when considering how smartphones affect users, particularly when looking at interpersonal relationships. For instance, a smartphone owner who uses their five hours of smartphone time engaged in person-to-person communication is likely going to be quite different than another user who uses that same five hours to binge-watch YouTube videos. Moreover, recent research indicates that looking at various ways that individuals use their smartphones offers greater explanatory power when understanding the effects associated with general smartphone use (see M. Chan, 2018; Elhai, Hall, Levine, & Dvorak, 2017; Rozgonjuk et al., 2019). Therefore, the current study takes a segmented approach when considering how smartphones possibly affect both communication and satisfaction in romantic relationships.

Smartphone Use vs. Smartphone Dependency

One of the emerging concerns in smartphone research is what exactly makes them problematic. Some scholars claim that smartphones are generally problematic because they are displacing interpersonal communication. For example, Turkle has argued in two separate books (2012, 2015) that the general use of these devices interferes with our ability to connect with others, which produces negative outcomes. Furthermore, Twenge and colleagues (2018) have argued that the general increase in smartphone use among teens has potentially led to decreases in psychological well-being. The theorizing here is that because users are spending their time engaging with smartphone technology, they are not practicing the interpersonal skills (i.e., listening, empathy, nonverbal cues) needed to support rewarding relationships.

In a somewhat similar vein, researchers have argued that smartphones produce negative outcomes because of the distractions caused by these devices (e.g., Sbarra et al., 2019), with evidence suggesting that smartphone owners check their phones 70 to 80 times each day (Andrews, Ellis, Shaw, & Piwek, 2015; Dscout, 2016). McDaniel & Coyne (2016) found that these technological intrusions (i.e., “technoference”) come at the expense of romantic couples spending quality time together, resulting in lower relationship satisfaction. Similarly, Roberts and David (2016) found that using a mobile phone in the presence of one’s partner stirs conflict, which leads to relational conflict.

Other scholars have claimed that the focus on smartphone use is misplaced. Rather, it is one’s psychological attachment to the device that deserves attention. Across the literature examining such smartphone engagement, the terms “dependency” (e.g., Park, Kim, Shon, & Shim, 2013), “addiction” (e.g., D. Kim, Lee, Lee, Nam, & Chung, 2014), and “problematic smartphone use” (Elhai, Dvorak, Levine, & Hall, 2017) have been used interchangeably to define a pathological reliance on one’s device (Alhassan et al., 2018; Elhai, Dvorak, et al., 2017;

Elhai, Levine, Dvorak, & Hall, 2016). More importantly, the evidence indicates that when smartphone use and dependency are used to simultaneously predict adverse outcomes, smartphone dependency is consistently the stronger predictor. This is true for psychological well-being (see J. H. Kim, 2017) and in relational contexts (see Lapierre, 2019; Lapierre & Lewis, 2018). To be clear, smartphone use and smartphone dependency tend to be significantly correlated; however, evidence suggests that it is smartphone dependency rather than smartphone use that is the primary driver for these outcomes when testing use and dependency simultaneously.

Smartphones and Communication Among Romantic Partners

One way to test these competing hypotheses regarding smartphone use/dependency is to simultaneously examine how each influences communication between romantic partners. Specifically, the current study explores how smartphone use/dependency is associated with how romantic partners communicate, the amount that they communicate, and if these devices are associated with the kind of communication that has been associated with sustaining relationships (i.e., affectionate communication; Floyd et al., 2009). If researchers are correct who argue that smartphone use interrupts one's ability to connect with loved ones, then we should expect that communication with one's romantic partner will decrease as smartphone use increases (regardless of type of use). This should be true for face-to-face communication with romantic partners, mediated communication with partners (i.e., emailing, texting, telephoning), and affectionate communication. As such, we propose the following hypotheses:

H1a-c: After controlling for other types of self-reported smartphone use and smartphone dependency, increased person-to-person smartphone use by participants will be associated

with decreased a) face-to-face communication, b) mediated communication, and c) affectionate communication with their romantic partners.

H2a-c: After controlling for other types of self-reported smartphone use and smartphone dependency, increased mass media smartphone use by participants will be associated with decreased a) face-to-face communication, b) mediated communication, and c) affectionate communication with romantic their partners.

H3a-c: After controlling for other types of self-reported smartphone use and smartphone dependency, increased social networking smartphone by participants use will be associated with decreased a) face-to-face communication, b) mediated communication, and c) affectionate communication with their romantic partners.

Conversely, if the dependency hypothesis is true and a pathological reliance on one's smartphone acts as an impediment to connecting with others, we should expect that those individuals who demonstrate greater dependency on their smartphone will be less likely to communicate with their romantic partners. As such, we propose the following hypotheses:

H4a-c: After controlling for the three types of self-reported smartphone use, increased smartphone dependency will be associated with decreased a) face-to-face communication, b) mediated communication, and c) affectionate communication with their romantic partners.

Communication and Relational Health Among Romantic Partners

Another focus of the current study is exploring how communication in romantic partnerships ultimately affects relationship satisfaction among participants. When examining relational interactions, some (e.g., Barnes, 1993) have argued that quantity of communication in close relationships is paramount. Specific to martial couples, research has revealed a link between quantity of time spent together and relational satisfaction (e.g., Kingston & Nock,

1987). The same has also been found with couples who were in the early stages of their relationship, as the quantity of communication was associated with increased intimacy among these couples (Emmers & Dindia, 1995). As such, we propose the following hypotheses:

H5a: Increased face-to-face communication with one's romantic partner will be associated with increased relationship satisfaction.

H5b: Increased mediated communication with one's romantic partner will be associated with increased relationship satisfaction.

Other research has highlighted the benefits of communication *quality* in close relationships. Emmers-Sommer (2004) found that communication quality significantly predicted relationship satisfaction, particularly through smooth interactions, satisfying interactions, and engaging in activities during interactions. In the present study, the authors look at communication quality through the lens of affectionate communication because there is significant overlap between these two constructs (Floyd & Morman, 1998; Montgomery, 1988). Affectionate communication has been linked to relational formation and trajectories (Owen, 1987), relational maintenance (Bell & Healey, 1992), and relational quality (Floyd & Morman, 1997). Research has further demonstrated that receivers *and* senders of affection alike enjoy a host of individual and relational advantages (Floyd, 2002). In support of this claim, even when controlling for the amount of affection received from a close relational partner, Floyd and Morman (2005) found that affectionate individuals—those who routinely engage in verbal, nonverbal, and supportive behaviors that convey love and support for others—enjoyed more individual and relational advantages than those who were less affectionate. Furthermore, Floyd and colleagues (2009) found affectionate communication to be causally linked to increased relationship satisfaction. As such, we propose the following hypothesis:

H6: Increased affectionate communication with one's romantic partner will be associated with increased relationship satisfaction.

An additional process that should be considered is that increased communication with romantic partners by participants will be associated with more affectionate communication with one's partner. The rationale is that the more a person communicates with their romantic partner the more chances they have to tell their partner they love them or offer some words of support. This could either be through face-to-face communication or through mediated communication, such as a flirtatious text or a quick phone call. We propose the following:

H7a: Increased face-to-face communication with one's romantic partner will be associated with increased affectionate communication.

H7b: Increased mediated communication with one's romantic partner will be associated with increased affectionate communication.

Smartphone Dependency and Relationship Satisfaction

Lastly, smartphone dependency plays a possible role with respect to relationship satisfaction. Studies examining smartphone dependency and romantic relationships have suggested a negative association between dependency and relationship satisfaction. Lapierre and Lewis (2018) identified an association between smartphone dependency and decreased relational certainty. Notably, this study implicated psychological reliance on smartphones but not general smartphone use when predicting relational attitudes. These findings were supported in another study by Lapierre (2019) where smartphone dependency predicted relationship satisfaction even after controlling for smartphone use (which was not associated with relationship satisfaction) and participant loneliness. Another study found that smartphone addiction could play a role in inhibiting social capital. Specifically, the authors found that smartphone addiction was associated

with increased loneliness, which was then negatively linked to how much participants felt connected to other people (Bian & Leung, 2015). With these past findings in mind, we propose the following hypothesis (see Figure 1 for the full hypothesized model):

H8: Increased self-reported smartphone dependency will be associated with decreased relationship satisfaction in romantic relationships.

Method

Participants

After receiving approval from the Institutional Review Board at the authors' home institution, the sample for this study was recruited via a participant sample pool provided by the research company Qualtrics. To qualify for the study, participants needed to be between the ages of 18 and 29, in a romantic relationship for more than one month, and they (and their partner) had to own a smartphone. Eligible participants who provided consent were directed to the main survey, and 1,059 participants agreed to take part in the study.

To ensure data quality, attention checks (e.g., "Please answer somewhat for this question") were used to screen out participants who were not paying attention to the questions, and participants who completed the survey too quickly were removed from the sample. In all, 470 of these participants were removed from the study leaving 589 participants in the full sample. For this particular study, the sample was limited to participants who reported seeing their romantic partner on a daily basis, which resulted in 433 total participants. The final sample was 45.7% female ($N = 198$), the average age of participants was 25.45 ($SD = 2.88$), and 55.2% ($N = 239$) of the participants said they were married to their romantic partner.

Measures

Mediated smartphone use. Mediated smartphone use was measured by asking how often, in minutes, on a typical day participants used their phone to access media. Specifically, participants were asked to report how often they used their smartphone to surf the net, play video games, and/or use news/weather apps. Participant use across these types of smartphone use were summed to create the measure ($M = 162.96$, $SD = 158.94$). Due to significant positive skew, the variable was transformed using a log transformation ($M = 2.01$, $SD = 0.48$).

Person-to-person smartphone use. Participants were asked how often they used their smartphone for person-to-person communication on a typical day. They were specifically asked to report how often, in minutes, they used their smartphone to text, talk on the phone, use email, and use FaceTime (or other video chat/call applications). Their responses were summed to create the measure of person-to-person smartphone use ($M = 162.66$, $SD = 190.92$). Because of positive skew, this variable was transformed using a log transformation ($M = 2.03$, $SD = 0.39$).

Social media smartphone use. Participants were asked how much they used various social media applications on a typical day via their smartphone (e.g., Instagram, Twitter, Facebook; $M = 85.90$, $SD = 100.83$). The variable was transformed using a log transformation due to significant positive skew ($M = 1.68$, $SD = 0.56$).

Smartphone dependency. Smartphone dependency was measured using a scale from Kim and colleagues (2014). Items asked participants to indicate their level of agreement with 15 statements regarding smartphone use/dependency for themselves (e.g., "I panic when I cannot use my smartphone") on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*; $M = 2.14$, $SD = 0.52$, $\alpha = 0.90$).

Mediated communication with romantic partner. Participants were asked to estimate how much time they spent communicating, in minutes, with their romantic partner on a typical

day using various mediated technologies. Specifically, they were asked how much time they spent texting, on the phone, communicating over social media, and email. These were summed to create a mediated communication with romantic partner measure ($M = 106.35$, $SD = 156.89$). The variable was transformed using a log transformation because of positive skew ($M = 1.76$, $SD = 0.49$).

Face-to-face communication with romantic partner. In addition to mediated communication, participants were asked to estimate how long they communicated face-to-face with their romantic partner each day in minutes ($M = 261.73$, $SD = 226.07$). The variable was transformed using a log transformation because of positive skew ($M = 2.13$, $SD = 0.72$).

Affectionate communication. Affectionate communication was measured using the Affectionate Communication Index (Floyd & Morman, 1998). This 19-item measure asks respondents to indicate how often they engage in a range of affectionate behaviors with their romantic partner. These include both non-verbal (e.g., kissing on the cheek) and verbal behaviors (e.g., say “I love you”). All questions were answered using a 7-point scale (1 = never or almost never do this to 7 = always or almost always do this) and were averaged to create an affectionate communication score ($M = 5.63$; $SD = 0.93$, $\alpha = 0.92$).

Relationship satisfaction. The 16-item version of the Couples Satisfaction Index (CSI-16; Funk & Rogge, 2007) was used to assess relationship satisfaction. The first item on the scale asked respondents to indicate the degree of happiness within their relationship on a 7-point scale (1=extremely unhappy to 7 = perfect). The second item asked participants to indicate how often they thought things were going well in the relationship (1 = never to 6 = all the time). Respondents were then asked to indicate their agreement with four statements (e.g., “I really feel like part of a team with my partner”) using a 6-point scale (1 = strongly disagree to 6 =strongly

agree). The four items after these asked how strongly the respondent felt about their partner and relationship (e.g., “how well does your partner meet your needs”; 1 = not at all to 6 = completely). Finally, participants filled out six semantic differential items regarding their relationship using a 6-point scale. Responses were summed to create a score of relationship satisfaction. Scores could range from 16 to 97 with higher scores indicating greater satisfaction ($M=83.28$, $SD=12.81$, $\alpha = 0.96$). Due to significant negative skew, this variable was transformed using a logarithmic reflection with higher values indicating greater satisfaction ($M= -0.99$, $SD= 0.43$).

Analysis Strategy

Table 1 shows the zero-order correlations for all variables of interest. The hypothesized model (see Figure 1) was tested using path modeling techniques in AMOS 23¹. To support a stated hypothesis, the path needed to be in the hypothesized direction and significant at the $p \leq .05$ level. If the path was not significant, the path was removed until all remaining paths were significant. For the path model, chi-square (χ^2), the root mean squared error of approximation (RMSEA), the comparative fit index (CFI), the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), and the normed fit index (NFI) were used to assess model fit. The standards used to determine fit were RMSEA at less than or equal to 0.05, a non-significant χ^2 , and goodness of fit indices above 0.90 (Byrne, 1998; Kline, 2010).

Results

The hypothesized model is presented in Figure 1 and was used to test H1a-c, H2a-c, H3a-c, H4a-c, H5a-b, H6, H7a-b, and H8. The model was tested and demonstrated a good fit to the

¹ The model was originally tested with covariates included (gender, relationship serious, married to romantic partner). The inclusion of these covariates did not materially alter model fit or the relationship between variables. As such, the model presented here does not include the covariates.

data, $\chi^2(4) = 2.882, p = 0.578$. Each of the goodness-of-fit indices met recommended thresholds CFI = 1.000, GFI = 0.998, AGFI = 0.985, and NFI = 0.996. The RMSEA for this model was less than 0.001. That noted, a number of paths were not significant. These paths were: person-to-person smartphone use to face-to-face communication with one's romantic partner ($\beta = -0.002, p = 0.97$), social media smartphone use to mediated communication with romantic partner ($\beta = 0.04, p = 0.30$), smartphone dependency to mediated communication with romantic partner ($\beta = -0.01, p = 0.79$), face-to-face communication with romantic partner and affectionate communication ($\beta = 0, p = 0.99$), mediated communication with romantic partner and relationship satisfaction ($\beta = -0.01, p = 0.84$), face-to-face communication with romantic partner and relationship satisfaction ($\beta = 0.03, p = 0.53$), person-to-person smartphone use to affectionate communication ($\beta = 0.01, p = 0.94$), mediated smartphone use to affectionate communication ($\beta = 0.001, p = 0.98$), and social media smartphone use and affectionate communication ($\beta = -0.03, p = 0.61$).

In order to get to a more parsimonious model, these non-significant paths were removed. The revised model demonstrated a good fit to the data $\chi^2(13) = 4.681, p = 0.982$. All of the goodness-of-fit indices met recommended thresholds CFI = 1.000, GFI = 0.997, AGFI = 0.993, and NFI = 0.994. The RMSEA for this model was less than 0.001. All of the paths in this model were significant with the exception of smartphone dependency to face-to-face communication with romantic partners which was only marginally significant ($\beta = -0.08, p = 0.09$; see Figure 2 for final model, Table 2 for a summary of results for all hypotheses, and Table 3 for total standardized effects for primary outcome variables).

Discussion

The current study examined how smartphones were associated with communication with one's romantic partner and relationship satisfaction among a large sample of young adults across the United States who were in romantic relationships and saw their partner on a daily basis. Young adults have been quick to adopt these devices, and many report that these devices are essential for helping them negotiate their day-to-day existence (Pew Research Center, 2015). However, this increased use and reliance on smartphones has generated concern among a number of scholars who have expressed worry that these devices represent a serious threat to psychological and interpersonal well-being (Alderman, 2017; Naumburg, 2017; Turkle, 2012, 2015; Twenge, 2017).

One of the emerging issues in the smartphone literature centers on determining what is driving these negative associations. On one hand, researchers have argued that smartphones are displacing our time spent engaging with others, which hampers our ability to foster interpersonal relationships (e.g., Turkle, 2012, 2015; Twenge, 2017; Twenge et al., 2018). Scholars have suggested that it is the distractions caused by increased smartphone use that can explain these deleterious outcomes in relationships (e.g., McDaniel & Coyne, 2016; Roberts & David, 2016). On the other hand, researchers have suggested that smartphone dependency does a better job of explaining why smartphone engagement is linked with deleterious relationship outcomes and attitudes (e.g., Lapierre & Lewis, 2018).

As seen in Table 2, the results broadly support the notion that smartphone dependency is the potential hazard when it comes to relational health. Specifically, smartphone dependency significantly predicted less affectionate communication and relationship satisfaction among participants. Conversely, smartphone use on its own as potentially harmful for romantic relationships was not found in the current study. In fact, results revealed that increased

smartphone use was associated with *more* communication with one's romantic partner and that increased mediated communication between partners predicted more affectionate communication. In other words, rather than hampering how much we connect with the people that we love, smartphones can help us stay in touch with these loved ones and potentially engage in more communication that is causally linked to increased relationship satisfaction (see Floyd et al., 2009).

Smartphone Dependency, Communication and Romantic Relationships

The results of the current study lend further support to the contention that excessive psychological reliance on smartphone devices could potentially harm interpersonal relationships (Lapierre, 2019; Lapierre & Lewis, 2018) while contributing to a growing body of research demonstrating that smartphone dependency predicts other adverse outcomes (Demirci et al., 2015; Elhai, Dvorak, et al., 2017; Matar Boumosleh & Jaalouk, 2017). Yet, it is unclear just why these links exist. Some have suggested that people become psychologically reliant on technology as a way to manage their moods or escape from the issues that surround them (Reissmann, Hauser, Stollberg, Kaunzinger, & Lange, 2018) via mood-management theory (Knobloch-Westerwick, 2011), while other scholars have argued that people who are struggling to connect with others or are experiencing psychological distress take solace in their smartphones (e.g., Pivetta, Harkin, Billieux, Kanjo, & Kuss, 2019). Such reasoning suggests that smartphone dependency is a symptom rather than a cause for relational and psychological well-being. However, there is a relative dearth of longitudinal examinations of these issues, which means that the temporal ordering of these variables is not certain.

This is particularly concerning because there is evidence from longitudinal studies suggesting that smartphone dependency precedes key negative outcomes. For example, Lapierre,

Zhao, and Custer (2019) found that smartphone dependency significantly predicted loneliness and depression three months later, not the other way around. Interestingly, these findings are mostly supported by longitudinal studies on problematic/compulsive internet engagement. In one study, Muusses, Finkenauer, Kerkhof and Billedo (2014) found that compulsive internet use at time 1 predicted negative outcomes at time 2 (e.g., loneliness). Another longitudinal study by Tokunaga (2014) did not find that problematic internet use predicted psychosocial problems; however, the results showed that internet engagement did predict later problems connecting with family and friends.

At issue then, is determining just *how* smartphone dependency affects relational well-being that is consistent with the current fact pattern. In other words, if smartphone dependency is a potential causal agent in decreased relational satisfaction, how does it play that role? One possible explanation is that smartphone dependency generates increased stress for individuals, which then affects their engagement with loved ones. Research on smartphone dependency and stress has found a consistent link between the two (Elhai, Dvorak, et al., 2017; Samaha & Hawi, 2016) while stress is also a well-established predictor of relationship issues in romantic couples (Randall & Bodenmann, 2009, 2017). Moreover, there is evidence that stress exacerbates some types of dependency, which could further affect relational health (Sinha, 2008). That noted, to better understand how smartphone dependency and relational outcomes are linked, future research should explore these variables longitudinally to determine the temporal ordering of these relationships.

Smartphone Use and Communication with Romantic Partners

There are two points of interest to be addressed here. First, this study offers insights on how to approach the study of smartphones because much of the earlier research in this area has

examined the smartphone as a monolithic device and neglected to explore the nuances associated with the smartphone as a communicative tool. As others have noted (e.g., L. S. Chan, 2017; Schrock, 2015), smartphones do not represent a simple linear advancement in mobile technology—compared to traditional cellphones, they have fundamentally changed how we encounter our information environment via affordances. Smartphones offer users a variety of means to interact with the world. When using their smartphone to email, text, and voice/video call, people are primarily facilitating interpersonal connections. Smartphones act as mass media devices when people use them to watch videos, read the news, and surf the web. Finally, when used to engage with social media applications (e.g., Twitter, Instagram) smartphones fill the space between interpersonal and mass mediated communication. The current study revealed differences regarding types of smartphone use and how much participants communicated with their romantic partners. In other words, rather than looking at smartphones and their users as “boxed in” with regard to how they communicate, an approach that appreciates the variability of features and their associated affordances appears to yield greater explanatory power. With that in mind, future research on smartphones and romantic communication should account for functionality differences and affordances when looking at how partners interact.

Second, contrary to what others have suggested (e.g., Turkle, 2012, 2015), this study did not find that smartphone use harms how much participants communicate with their romantic partners or limits the exchange of affectionate communication. To be clear, all types of smartphone use examined in the current study were significantly (albeit slightly) associated with increased smartphone dependency. However, after accounting for the influence of dependency, smartphone use was associated with *increased* communication with one’s romantic partner through increased person-to-person smartphone use (e.g., texting, emailing, calling), and mass

media smartphone use was associated with increased mediated communication with romantic partners. This study also revealed that mass media smartphone use and social networking smartphone use were linked to increased face-to-face communication.

More importantly, this study provided no evidence to support the notion that smartphone use directly harms the quality of communication between romantic partners as there were no direct significant pathways between smartphone use and reduced affectionate communication. Instead, there was an indirect and significant (see Table 3) pathway between both person-to-person smartphone use and mass media smartphone use on affectionate communication as increased mediated communication with romantic partners was associated with increased affectionate communication. Moreover, there was an indirect and positive relationship of person-to-person and mass media smartphone use on relationship satisfaction. Consequently, the notion that smartphone use, absent dependency, is eroding our ability to meaningfully connect with others does not seem to be borne out by the evidence.

In retrospect, these relatively positive findings regarding smartphone use should not be entirely surprising because these devices do provide increased opportunities to reach out to those around us. The range of communicative capabilities associated with smartphone use should help individuals send flirtatious texts to their romantic partner, call to offer a quick “I love you,” or video chat to exchange nonverbal cues. Abundant evidence, including experimental results, supports the link between such interactions and increased relational satisfaction in romantic relationships (Dainton, Stafford, & Canary, 1994; Floyd et al., 2009; Punyanunt-Carter, 2004).

Future Research

These findings point to two intriguing areas of future research. First, how would these findings translate to couples in long distance relationships or relationships where the partners do

not see each other every day? This study focused solely on those who reported that they saw their partner on a daily basis. To date, little research has explored how smartphones affect long distance relationships, but it seems likely that these devices would play a greater role in helping these kinds of partnerships flourish. Emmers-Sommer (2004) found that, apart from face-to-face interactions, quantity of communication did not predict relationship satisfaction, which she ascribed to the absence of nonverbal cues (e.g., proximity, physical presence, facial expression). The smartphone, which debuted a few years after the study was published, has changed how we communicate nonverbally when apart. From emoji characters, to video calling applications such as FaceTime and Skype, to visual social media such as Snapchat and Instagram, smartphones offer countless opportunities for communication involving verbal and nonverbal cues alike. In particular, as suggested in the previous paragraph, future research should explore how particular behaviors like flirtatious texting or sexting might affect relational outcomes among couples who do not see one another with great regularity.

Second, how might the type of use that produces “technoference” (McDaniel & Coyne, 2016) and, somewhat relatedly, “phubbing” (Roberts & David, 2016) be implicated in romantic relationships with regard to romantic partner communication as both of these constructs have been linked to reduced relationship satisfaction. For example, Sbarra and colleagues (2019) have argued that these kinds of smartphone use in social situations intrude on our face-to-face interactions and can pull us away from connecting with others. As such, it would be interesting to test whether these aspects of smartphone engagement affect relational quality and communication or if it is still smartphone dependency that accounts for these outcomes. In other words, such a study could offer clarity on whether it is (1) the type of use in social situations via

phubbing/technoferece or (2) connection to one's device via dependency that best predicts relational outcomes.

Limitations

There are a few limitations with the current study that ought to be addressed. First, as this was a cross-sectional survey study, it is not possible to make definitive claims regarding the directionality of relationships. However, the authors would argue that the ordering of variables here makes more sense than the possible alternatives². In addition, experimental research on affectionate communication and relationship satisfaction has established a causal link with increased affectionate communication leading to increased relationship satisfaction (Floyd et al., 2009). Future research should examine each of the relationships included in the current study longitudinally to confirm the appropriate temporal ordering for these variables.

Second, there was attrition associated with the data collection. A significant number of participants were removed because they failed the attention screening questions and/or moved too quickly through the survey. Unfortunately, there exists a trade-off between using these types of national online samples (e.g., Qualtrics, MTurk) and ensuring data quality because participants are motivated to complete surveys as quickly as possible to make more money. The authors would have preferred keeping these individuals in the sample and not screen them out; however, each completed survey participant costs money, and it did not make sense to increase costs while accumulating suboptimal data.

Third, our measure of smartphone dependency showed that the average score for dependency was below the midpoint for the measure (2.14 on a scale from 1 to 5), indicating

² An alternative model was tested with the results from the final model tested in reverse ordering. This reversed model was significant ($\chi^2(13) = 59.527, p < 0.001$) and the Akaike Information Criterion (AIC), which provides a comparative measure of fit with lower values indicating better fit, was lower for our final model (AIC = 50.68) vs. the reversed model (AIC = 105.53).

that, in the aggregate, dependency was somewhat low. To be clear, our interest in the current study was seeing how changes in dependency were linked to changes in relational quality and communication between partners, so these findings are still meaningful. However, it would be interesting to see if these findings might change among populations that are highly dependent on their devices. For example, it is possible that these issues are exacerbated among this population as smartphone dependency has been linked to a range of negative outcomes which could further affect relational quality (e.g., depression and loneliness; Lapierre et al., 2019).

Finally, this study was limited by a reliance on self-report data to assess smartphone use among participants. Due to the nature of the data collection and the desire to have a broad sample of young adults from across the United States, the authors needed to rely on self-report estimates for these measures. Future research should include objective measures of smartphone use, particularly because many smartphones now offer applications to measure use. For example, the Apple iPhone now has an application that tracks smartphone use (Simon, 2018), but that update to the operating system was not available as the time of the study's data collection.

Conclusion

Smartphones offer users an array of tools to help them connect with the world around them. They can be used to text, voice/video call, engage with social media, watch videos, and surf the web. However, accumulating evidence suggests that these devices are potentially harming well-being and relationships with others, particularly for those people who become psychologically reliant on these devices. The current study extends the field's understanding of how smartphones potentially affect relationships by looking at how they are linked to communication with romantic partners. Across different elements of smartphone use, increased use of these devices was associated with *more* communication with one's romantic partner and

increased mediated communication with that partner predicted more affectionate communication. However, the study also found that increased smartphone dependency was associated with less communication with romantic partners, less affectionate communication, and lower relationship satisfaction. With these disparate findings regarding smartphone use and smartphone dependency, it is perhaps necessary to disentangle these two variables more carefully and move forward with a research agenda that unpacks both the good and bad with smartphones.

References

- Alderman, L. (2017, May). The phones we love too much. *New York Times*.
- Alhassan, A. A., Alqadhib, E. M., Taha, N. W., Alahmari, R. A., Salam, M., & Almutairi, A. F. (2018). The relationship between addiction to smartphone usage and depression among adults: A cross sectional study. *BMC Psychiatry, 18*(1), 1–9.
<https://doi.org/10.1186/s12888-018-1745-4>
- Andrews, S., Ellis, D. A., Shaw, H., & Piwek, L. (2015). Beyond self-report: Tools to compare estimated and real-world smartphone use. *PLoS ONE, 10*(10).
<https://doi.org/10.1371/journal.pone.0139004>
- Barnes, F. (1993, July). Quantity time. *The New Republic, 209*.
- Baron, N. S. (2011). Concerns about mobile phones: A cross-national study. *First Monday, 16*(8). <https://doi.org/10.5210/fm.v16i8.3335>
- Bell, R. A., & Healey, J. G. (1992). Idiomatic communication and interpersonal solidarity in friends' relational cultures. *Human Communication Research, 18*(3), 307–335.
<https://doi.org/10.1111/j.1468-2958.1992.tb00555.x>
- Bian, M., & Leung, L. (2015). Linking loneliness, shyness, smartphone addiction symptoms, and patterns of smartphone use to social capital. *Social Science Computer Review, 33*(1), 61–79.
- Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Campbell, S. W. (2015). Mobile Communication and Network Privatism: A Literature Review of the Implications for Diverse, Weak, and New Ties. *Review of Communication Research, 3*(1), 1–21. <https://doi.org/10.12840>
- Chan, L. S. (2017). Who uses dating apps? Exploring the relationships among trust, sensation-

- seeking, smartphone use, and the intent to use dating apps based on the Integrative Model. *Computers in Human Behavior*, 72, 246–258. <https://doi.org/10.1016/j.chb.2017.02.053>
- Chan, M. (2018). Mobile-mediated multimodal communications, relationship quality and subjective well-being: An analysis of smartphone use from a life course perspective. *Computers in Human Behavior*, 87(May), 254–262. <https://doi.org/10.1016/j.chb.2018.05.027>
- Dainton, M., Stafford, L., & Canary, D. J. (1994). Maintenance strategies and physical affection as predictors of love, liking, and satisfaction in marriage. *Communication Reports*, 7(2), 88–98. <https://doi.org/10.1080/08934219409367591>
- Demirci, K., Akgönül, M., & Akpınar, A. (2015). Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *Journal of Behavioral Addictions*, 4(2), 85–92. <https://doi.org/10.1556/2006.4.2015.010>
- Dscout. (2016). *Mobile touches; Dscout's inaugural study on humans and their tech. Mobile Touches.*
- Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of Affective Disorders*, 207, 251–259. <https://doi.org/10.1016/j.jad.2016.08.030>
- Elhai, J. D., Hall, B. J., Levine, J. C., & Dvorak, R. D. (2017). Types of smartphone usage and relations with problematic smartphone behaviors: The role of content consumption vs. social smartphone use. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 11(2). <https://doi.org/10.5817/CP2017-2-3>
- Elhai, J. D., Levine, J. C., Dvorak, R. D., & Hall, B. J. (2016). Fear of missing out, need for

- touch, anxiety and depression are related to problematic smartphone use. *Computers in Human Behavior*, 63, 509–516. <https://doi.org/10.1016/j.chb.2016.05.079>
- Emmers-Sommer, T. M. (2004). The effect of communication quality and quantity indicators on intimacy and relational satisfaction. *Journal of Social and Personal Relationships*, 21(3), 399–411. <https://doi.org/10.1177/0265407504042839>
- Emmers, T. M., & Dindia, K. (1995). The effect of relational stage and intimacy on touch: An extension of Guerrero and Andersen. *Personal Relationships*, 2, 225–236.
- Evans, S. K., Pearce, K. E., Vitak, J., & Treem, J. W. (2017). Explicating Affordances: A Conceptual Framework for Understanding Affordances in Communication Research. *Journal of Computer-Mediated Communication*, 22(1), 35–52. <https://doi.org/10.1111/jcc4.12180>
- Floyd, K. (2002). Human affection exchange: V. Attributes of the highly affectionate. *Communication Quarterly*, 50(2), 135–152.
- Floyd, K., Boren, J. P., Hannawa, A. F., Hesse, C., McEwan, B., & Veksler, A. E. (2009). Kissing in marital and cohabiting relationships: Effects on blood lipids, stress, and relationship satisfaction. *Western Journal of Communication*, 73(2), 113–133. <https://doi.org/10.1080/10570310902856071>
- Floyd, K., & Morman, M. T. (1997). Affectionate communication in nonromantic relationships: Influences of communicator, relational, and contextual factors. *Western Journal of Communication*, 61(3), 279–298. <https://doi.org/10.1080=10570319709374578>
- Floyd, K., & Morman, M. T. (1998). The measurement of affectionate communication. *Communication Quarterly*, 46(2), 144–162.
- Floyd, K., & Morman, M. T. (2005). Fathers' and sons' reports of fathers' affectionate

- communication: Implications of a naïve theory of affection. *Journal of Social and Personal Relationships*, 22(1), 99–109. <https://doi.org/10.1177/0265407505049323>
- Funk, J. L., & Rogge, R. D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the Couples Satisfaction Index. *Journal of Family Psychology*, 21(4), 572–583.
- Hawi, N. S., & Samaha, M. (2016). To excel or not to excel: Strong evidence on the adverse effect of smartphone addiction on academic performance. *Computers & Education*, 98, 81–89. <https://doi.org/http://dx.doi.org/10.1016/j.compedu.2016.03.007>
- Jin, B., & Peña, J. F. (2010). Mobile communication in romantic relationships: Mobile phone use, relational uncertainty, love, commitment, and attachment styles. *Communication Reports*, 23, 39–51. <https://doi.org/10.1080/08934211003598742>
- Jung, Y. (2014). What a smartphone is to me: Understanding user values in using smartphones. *Information Systems Journal*, 24(4), 299–321. <https://doi.org/10.1111/isj.12031>
- Kim, D., Lee, Y., Lee, J., Nam, J. K., & Chung, Y. (2014). Development of Korean Smartphone Addiction Proneness Scale for youth. *PLoS ONE*, 9(5), e97920. <https://doi.org/10.1371/journal.pone.0097920>
- Kim, J. H. (2017). Smartphone-mediated communication vs. face-to-face interaction: Two routes to social support and problematic use of smartphone. *Computers in Human Behavior*, 67, 282–291. <https://doi.org/10.1016/j.chb.2016.11.004>
- Kingston, P. W., & Nock, S. L. (1987). Time together among dual-earner couples. *American Sociological Review*, 52(3), 391–400.
- Kline, R. B. (2010). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford Press.

- Knobloch-Westerwick, S. (2011). Mood management: Theory, evidence, and advancements. In J. Bryant & P. Vorderer (Eds.), *Psychology of Entertainment* (pp. 370–396). New York, NY: Routledge.
- Lapierre, M. A. (2019). Smartphones and loneliness in love: Testing links between smartphone engagement, loneliness, and relational health. *Psychology of Popular Media Culture*.
<https://doi.org/10.1037/ppm0000230>
- Lapierre, M. A., & Lewis, M. N. (2018). Should It Stay or Should It Go Now? Smartphones and Relational Health. *Psychology of Popular Media Culture*, 7(3), 384–395.
<https://doi.org/10.1037/ppm0000119>
- Lapierre, M. A., Zhao, P., & Custer, B. E. (2019). Short-Term Longitudinal Relationships Between Smartphone Use/Dependency and Psychological Well-Being Among Late Adolescents. *Journal of Adolescent Health*, 65(5), 607–612.
<https://doi.org/10.1016/j.jadohealth.2019.06.001>.
- Matar Boumosleh, J., & Jaalouk, D. (2017). Depression, anxiety, and smartphone addiction in university students- A cross sectional study. *PLoS ONE*, 12(8), 1–15.
<https://doi.org/10.1371/journal.pone.0182239>
- McDaniel, B. T., & Coyne, S. M. (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. <https://doi.org/10.1037/ppm0000065>
- Miller-Ott, A. E., Kelly, L., & Duran, R. L. (2012). The Effects of Cell Phone Usage Rules on Satisfaction in Romantic Relationships. *Communication Quarterly*, 60, 17–34.
<https://doi.org/10.1080/01463373.2012.642263>
- Montgomery, B. M. (1988). Quality communication in personal relationships. In S. W. Duck, D.

- F. Hay, S. E. Hobfoll, W. Ickes, & B. M. Montgomery (Eds.), *Handbook of Personal Relationships: Theory, Research, and Interventions* (pp. 343–359). Chichester, UK: Wiley.
- Muusses, L. D., Finkenauer, C., Kerkhof, P., & Billeo, C. J. (2014). A longitudinal study of the association between Compulsive Internet use and wellbeing. *Computers in Human Behavior, 36*, 21–28. <https://doi.org/10.1016/j.chb.2014.03.035>
- Naumburg, C. (2017, October). I made my smartphone less useful, and it made me a better parent. *Washington Post*.
- Oulasvirta, A., Rattenbury, T., Ma, L., & Raita, E. (2012). Habits make smartphone use more pervasive. *Personal and Ubiquitous Computing, 16*, 105–114. <https://doi.org/10.1007/s00779-011-0412-2>
- Owen, W. F. (1987). The verbal expression of love by women and men as a critical communication event in personal relationships. *Women's Studies in Communication, 10*(1), 15–24. <https://doi.org/10.1080/07491409.1987.11089701>
- Park, N., Kim, Y.-C., Shon, H. Y., & Shim, H. (2013). Factors influencing smartphone use and dependency in South Korea. *Computers in Human Behavior, 29*(4), 1763–1770. <https://doi.org/10.1016/j.chb.2013.02.008>
- Perez, S. (2017). U.S. consumers now spend 5 hours per day on mobile devices.
- Pew Research Center. (2015). *The Smartphone Difference*. Washington, DC.
- Pew Research Center. (2018). Mobile fact sheet. Retrieved August 8, 2018, from <http://www.pewinternet.org/fact-sheet/mobile/>
- Pew Research Center. (2019). *Smartphone ownership is growing rapidly around the world, but not always equally*. Washington, DC. Retrieved from <https://www.pewglobal.org/2019/02/05/smartphone-ownership-is-growing-rapidly-around->

the-world-but-not-always-equally/

Pivetta, E., Harkin, L., Billieux, J., Kanjo, E., & Kuss, D. J. (2019). Problematic smartphone use:

An empirically validated model. *Computers in Human Behavior, 100*, 105–117.

<https://doi.org/10.1016/j.chb.2019.06.013>

Punyanunt-Carter, N. M. (2004). Reported affectionate communication and satisfaction in

marital and dating relationships. *Psychological Reports, 95*(3), 1154–1160.

<https://doi.org/10.2466/pr0.95.3f.1154-1160>

Randall, A. K., & Bodenmann, G. (2009). The role of stress on close relationships and marital

satisfaction. *Clinical Psychology Review, 29*(2), 105–115.

<https://doi.org/10.1016/j.cpr.2008.10.004>

Randall, A. K., & Bodenmann, G. (2017). Stress and its associations with relationship

satisfaction. *Current Opinion in Psychology, 13*, 96–106.

<https://doi.org/10.1016/j.copsyc.2016.05.010>

Reissmann, A., Hauser, J., Stollberg, E., Kaunzinger, I., & Lange, K. W. (2018). The role of

loneliness in emerging adults' everyday use of facebook – An experience sampling approach. *Computers in Human Behavior, 88*, 47–60.

<https://doi.org/10.1016/j.chb.2018.06.011>

Roberts, J. A., & David, M. E. (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.

Rozgonjuk, D., Elhai, J. D., Täht, K., Vassil, K., Levine, J. C., & Asmundson, G. J. G. (2019).

Non-social smartphone use mediates the relationship between intolerance of uncertainty and problematic smartphone use: Evidence from a repeated-measures study. *Computers in*

Human Behavior, 96, 56–62. <https://doi.org/10.1016/j.chb.2019.02.013>

Samaha, M., & Hawi, N. S. (2016). Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. *Computers in Human Behavior*, 57(32), 321–325.

<https://doi.org/http://dx.doi.org/10.1016/j.chb.2015.12.045>

Sbarra, D. A., Briskin, J. L., & Slatcher, R. B. (2019). Smartphones and Close Relationships: The Case for an Evolutionary Mismatch. *Perspectives on Psychological Science*, 14(4),

596–618. <https://doi.org/10.1177/1745691619826535>

Schade, L. C., Sandberg, J., Bean, R., Busby, D., & Coyne, S. M. (2013). Using technology to connect in romantic relationships: Effects on attachment, relationship satisfaction, and stability in emerging adults. *Journal of Couple and Relationship Therapy*, 12, 314–338.

Schonfeld, E. (2010). People spend as much time on mobile as reading newspapers and magazines. Retrieved November 26, 2018, from <https://techcrunch.com/2010/12/15/time-mobile-newspapers/>

Schrock, A. R. (2015). Communicative affordances of mobile media: Portability, availability, locatability, and multimediality. *International Journal of Communication*, 9, 1229–1246.

Simon, M. (2018). Apple finally tackles smartphone addiction with new Screen Time app, grouped notifications. Retrieved January 22, 2019, from

<https://www.macworld.com/article/3278585/ios/apple-smartphone-addiction-ios-12.html>

Sinha, R. (2008). Chronic stress, drug use, and vulnerability to addiction. *Annals of the New York Academy of Sciences*. <https://doi.org/10.1196/annals.1441.030>

Tokunaga, R. S. (2014). A Unique Problem or the Manifestation of a Preexisting Disorder? The Mediating Role of Problematic Internet Use in the Relationships Between Psychosocial Problems and Functional Impairment. *Communication Research*, 41(4), 531–560.

<https://doi.org/10.1177/0093650212450910>

Turkle, S. (2012). *Alone together: Why we expect more from technology and less from each other*. New York, NY: Basic Books, Inc.

Turkle, S. (2015). *Reclaiming conversation: The power of talk in the digital age*. New York, NY: Penguin Books.

Twenge, J. M. (2017). Have smartphones destroyed a generation? *The Atlantic*.

Twenge, J. M., Martin, G. N., & Campbell, W. K. (2018). Decreases in Psychological Well-Being Among American Adolescents After 2012 and Links to Screen Time During the Rise of Smartphone Technology. *Emotion, 18*(6), 765–780. <https://doi.org/10.1037/emo0000403>

Table 1

Zero-order Correlations for All Variables of Interest

	2.	3.	4.	5.	6.	7.	8.
1. Smartphone dependency	0.13**	0.14**	0.14**	-0.05	0.10*	-0.21***	-0.19***
2. Person-to-person smartphone use		0.44***	0.37***	0.09 ⁺	0.72***	0.12*	0.07
3. Mass media smartphone use			0.38***	0.17***	0.44***	0.06	0.01
4. Social networking smartphone use				0.14**	0.32***	0.02	0.02
5. Face-to-face communication with partner					0.13**	0.04	0.05
6. Mediated communication with partner						0.19***	0.09 ⁺
7. Affectionate communication							0.56***
8. Relationship satisfaction							

Note: + $p \leq 0.1$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Table 2

Summary of Results for Study Hypotheses

Hypothesis Number	Stated Hypothesis	Result
H1a	After controlling for other types of self-reported smartphone use and smartphone dependency, increased person-to-person smartphone use by participants will be associated with decreased face-to-face communication with their romantic partners.	Not supported
H1b	After controlling for other types of self-reported smartphone use and smartphone dependency, increased person-to-person smartphone use by participants will be associated with decreased mediated communication with their romantic partners.	Not supported, significant but opposite direction than predicted, $\beta = 0.65^{***}$
H1c	After controlling for other types of self-reported smartphone use and smartphone dependency, increased person-to-person smartphone use by participants will be associated with decreased affectionate communication with their romantic partners.	Not supported
H2a	After controlling for other types of self-reported smartphone use and smartphone dependency, increased mass media smartphone use by participants will be associated with decreased face-to-face communication with romantic their partners.	Not supported, significant but opposite direction than predicted, $\beta = 0.14^{**}$
H2b	After controlling for other types of self-reported smartphone use and smartphone dependency, increased mass media smartphone use by participants will be associated with decreased mediated communication with romantic their partners.	Not supported, significant but opposite direction than predicted, $\beta = 0.15^{***}$
H2c	After controlling for other types of self-reported smartphone use and smartphone dependency, increased mass media smartphone use by participants will be associated with decreased affectionate communication with romantic their partners.	Not supported
H3a	After controlling for other types of self-reported smartphone use and smartphone dependency, increased social networking smartphone by participants use will be associated with decreased face-to-face communication with their romantic partners.	Not supported, significant but opposite direction than predicted, $\beta = 0.10^*$
H3b	After controlling for other types of self-reported smartphone use and smartphone dependency, increased social networking smartphone by participants use will be associated with decreased mediated communication with their romantic partners.	Not supported

Hypothesis Number	Stated Hypothesis	Result
H3c	After controlling for other types of self-reported smartphone use and smartphone dependency, increased social networking smartphone by participants use will be associated with decreased affectionate communication with their romantic partners.	Not supported
H4a	After controlling for the three types of self-reported smartphone use, increased smartphone dependency by participants will be associated with decreased face-to-face communication.	Marginally supported, $\beta = -0.08^+$
H4b	After controlling for the three types of self-reported smartphone use, increased smartphone dependency by participants will be associated with decreased mediated communication.	Not supported
H4c	After controlling for the three types of self-reported smartphone use, increased smartphone dependency by participants will be associated with decreased affectionate communication with their romantic partners.	Supported, $\beta = -0.23^{***}$
H5a	Increased face-to-face communication with one's romantic partner will be associated with increased relationship satisfaction.	Not supported
H5b	Increased mediated communication with one's romantic partner will be associated with increased relationship satisfaction.	Not supported
H6	Increased affectionate communication with one's romantic partner will be associated with increased relationship satisfaction.	Supported, $\beta = 0.54^{***}$
H7a	Increased face-to-face communication with one's romantic partner will be associated with increased affectionate communication.	Not supported
H7b	Increased mediated communication with one's romantic partner will be associated with increased affectionate communication.	Supported, $\beta = 0.21^{***}$
H8	Increased self-reported smartphone dependency will be associated with decreased relationship satisfaction in romantic relationships.	Supported, $\beta = -0.08^*$

Table 3:

Standardized Total Effects for Smartphone Use and Dependency on Affectionate Communication and Relationship Satisfaction

Variable	Affectionate Communication (95%CI)	Relationship Satisfaction (95%CI)
Smartphone dependency	-0.228 (-0.321, -0.130)	-0.204 (-0.298, -0.110)
Person-to-person smartphone use	0.138 (0.079, 0.194)	0.075 (0.043, 0.108)
Mass media smartphone use	0.032 (0.015, 0.057)	0.018 (0.008, 0.032)
Social networking smartphone use	N/A	N/A

Note: 95% confidence intervals calculated from bias corrected bootstrap of 5,000 samples

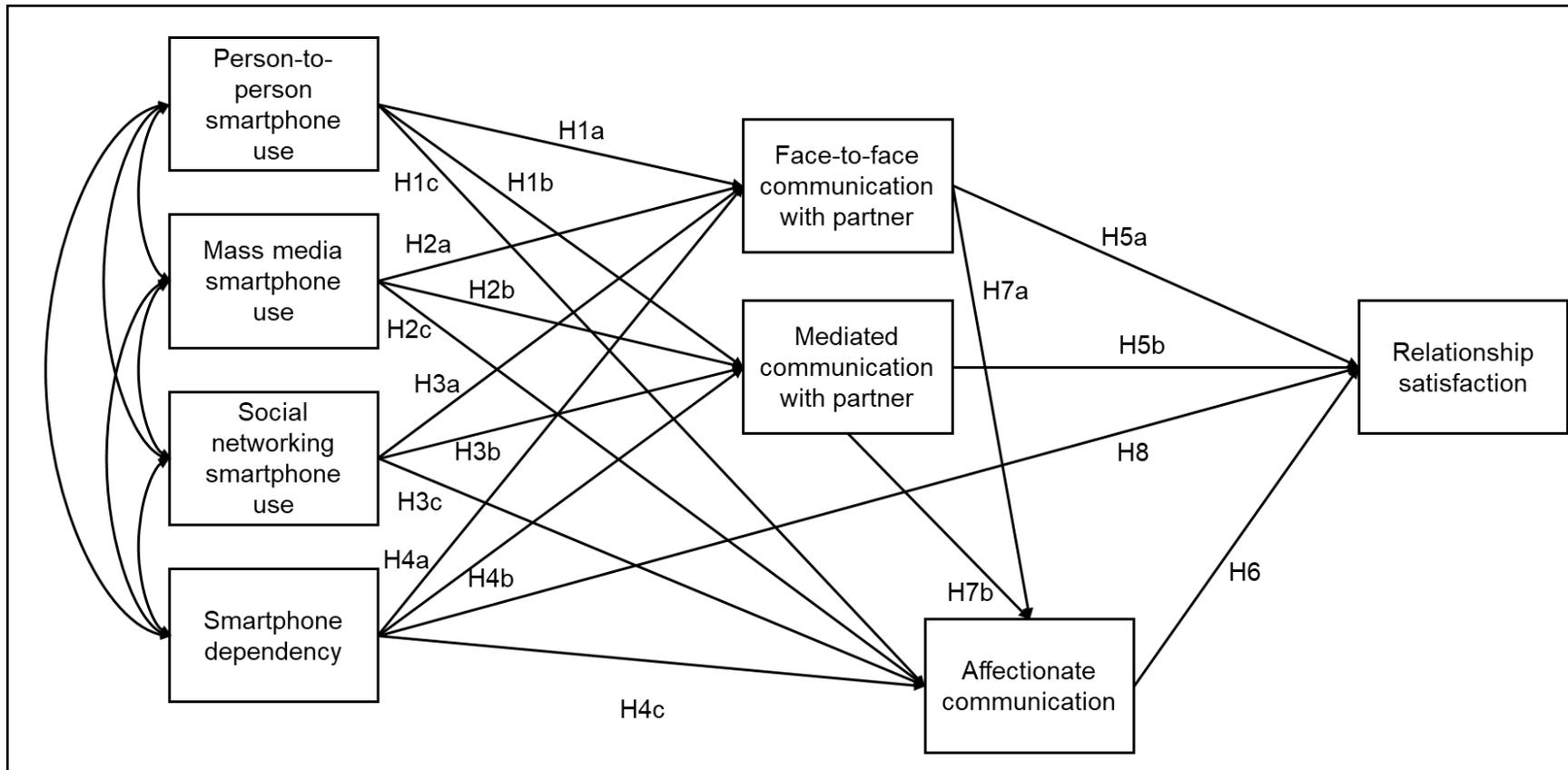


Figure 1

Hypothesized Model

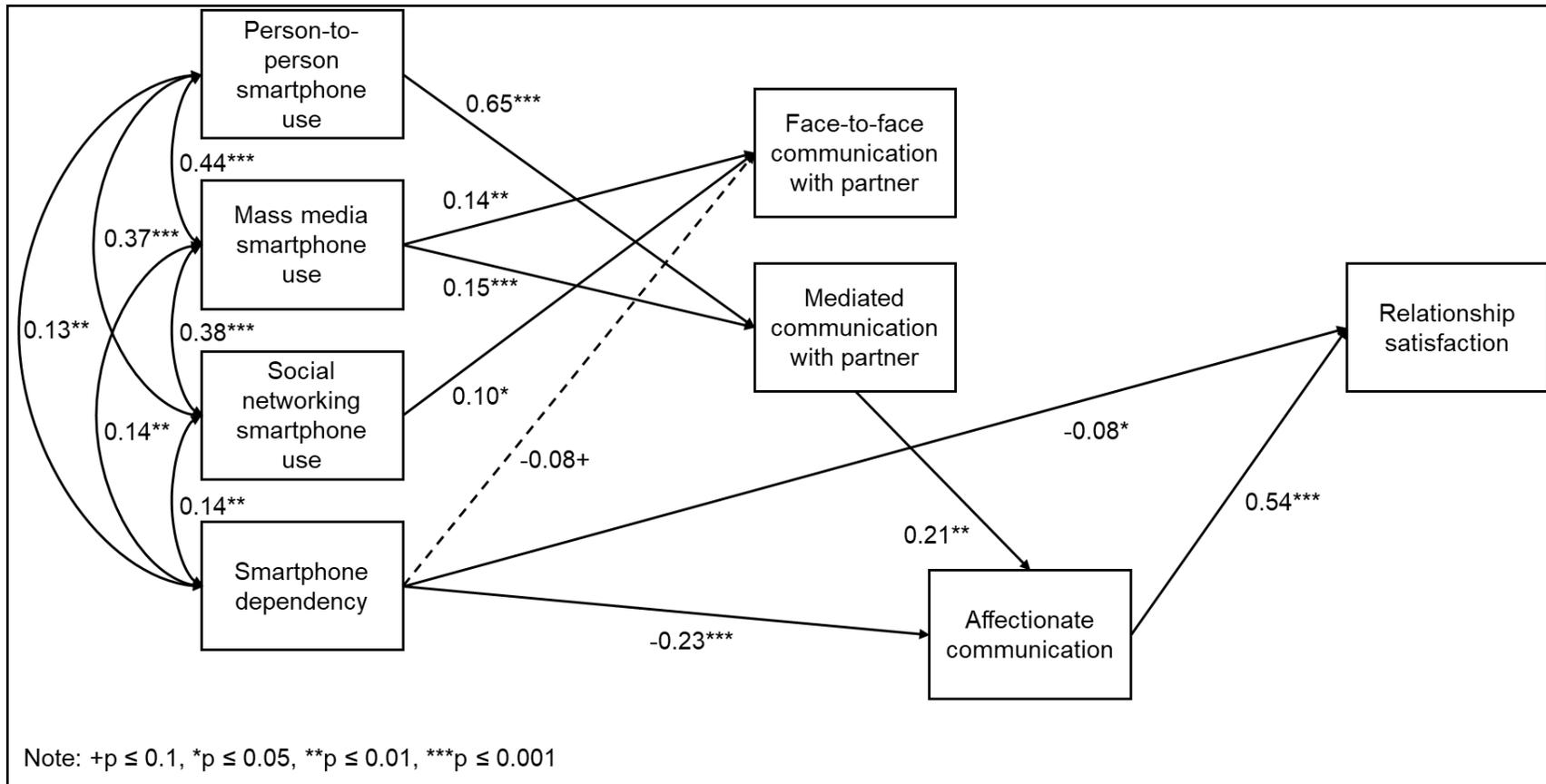


Figure 2

Final Model with all Significant Paths