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## “Technoference” and Implications for Mothers’ and Fathers’ Couple and Coparenting Relationship Quality

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### Abstract

Technology devices are widely used today, creating opportunities to connect and communicate with distant others while also potentially disrupting communication and interactions between those who are physically present (i.e., technoference or phubbing). These disruptions in couple and coparenting relationships have the potential to negatively impact relationship outcomes. In this two-part study of 182 married/cohabiting couples from the *Daily Family Life Project* and 239 couples from the *Couple Well-Being Project*, we examined the role of technoference in couple and coparenting relationship quality and potential gender differences utilizing dyadic data. We found that greater technoference related to greater conflict over technology use, and greater conflict predicted lower relationship satisfaction and poorer perceptions of coparenting quality (Study 1). Using a more diverse sample (Study 2), we again found support for the main pathways tested in our first study, suggesting that results found in Study 1 and in previous work are not artifacts of sampling. As satisfaction, support, and agreement among relationship partners and parents are often critical to relationship health and family cohesion, it is important for couples and families to evaluate, monitor, and be willing to adapt their technology usage patterns so that these patterns do not cause conflict and possibly relationship deterioration over time.

### Keywords

media use; couple relationships; relationship quality; coparenting; smartphones; phone addiction

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## 1. Introduction

Over the past fifteen years, technology use has grown rapidly, and the majority of United States (U.S.) and Canadian households now have access to cell phones, smartphones, and/or other technological devices that allow them to connect to the internet (Anderson, 2015; Pew Research Center, 2016a). In fact, there is about one mobile phone subscription for every resident in the U.S. and Canada (World Bank Group, 2017). These devices frequently allow individuals to connect with others via e-mail, instant messaging, chat rooms, texting, social media, and more (e.g., Coyne, Stockdale, Busby, Iverson, & Grant, 2011). These devices are also used in a variety of other ways that individuals find helpful or enjoyable (e.g., Hawkins & Hertlein, 2013). Thus, not surprisingly, technology has become a mainstay in modern family life (Hertlein, 2012; Rappleyea, Taylor, & Fang, 2014).

Technology can be used to benefit romantic relationships in a variety of ways—for example, facilitating relationship maintenance (Papp, Danielewicz, & Cayemberg, 2012), providing long-distance relationships with more options to stay connected (Jiang & Hancock, 2013), and allowing partners to stay connected throughout the day (Coyne et al., 2011). Research has found that these technology-facilitated relationship maintenance behaviors (e.g., texting during the day) are related to increased commitment, satisfaction (Sidelinger, Avash, Godorhazy, & Tibbles, 2008), and communication (Coyne et al., 2011). However, when technology use becomes a disruption to the individual or the couple, couples might experience issues such as diminished time spent together, conflict over use, feeling a lack of emotional support, and lower levels of intimacy (e.g., Hawkins & Hertlein, 2013; Krasnova, Abramova, Notter, & Baumann, 2016; McDaniel & Coyne, 2016a; Miller-Ott, Kelly, & Duran, 2012).

Multiple studies have shown that people use technology while engaging in social interactions with others. For example, 89% of cellphone owners reported using their phones during their most recent social situations (Rainie & Zickhur, 2015); 79% have texted others while in face-to-face conversations; and 52% have texted someone else during a date (Harrison, Bealing, & Salley, 2015). When we look specifically at technology usage within interactions between romantic partners, 38% of the seriously dating or married participants in Coyne et al.'s (2011) sample reported using technology (i.e., texting and email) during interactions with their partner. Additionally, in McDaniel and Coyne's (2016a) sample of married or cohabiting women, 35% of women reported that their partner interrupted a conversation to check their device at least once a day.

Researchers have investigated whether this everyday technology usage has a negative impact on relationships. For example, Czechowsky (2008) found that some individuals viewed their partners as less emotionally available when they used their mobile devices, and Miller-Ott et al. (2012) showed that when one partner viewed cellphone use as problematic, that partner also reported lower relationship satisfaction. Przybylski and Weinstein (2013) extended this work to interaction interference, finding that when cellphone use interferes in an interaction, interaction partners report lower levels of perceived relationship quality, partner trust, and perceived empathy in that interaction.

More recently, researchers have built upon this work to examine how technology-based intrusions are related to a myriad of relationship outcomes (e.g., Amichai-Hamburger & Etgar, 2016; Halpern & Katz, 2017; Krasnova, et al., 2016; McDaniel, 2015; McDaniel & Coyne, 2016a; Roberts & David, 2016; Wang, Xie, Wang, Wang, & Lei, 2017). In one of the first studies to address this topic specifically, McDaniel and Coyne (2016a) investigated “technoference” in romantic relationships, finding that married women reported technoference commonly occurred in their relationship. More importantly, they found that greater reported technoference was related to increased conflict over technology use, lower relationship satisfaction, lower life satisfaction, and more depressive symptoms (McDaniel & Coyne, 2016a). These findings were later extended in a study using both male and female participants—although *not* couple-level data—looking specifically at how cellphones can be used in a process called “phubbing” or phone snubbing (Roberts & David, 2016). Of note, Roberts and David’s (2016) measure of phubbing contained items from the original McDaniel and Coyne (2016a) technoference measure and confirmed McDaniel and Coyne’s findings.

In other recent work, scholars have begun to explore the influence of these technology-based intrusions in romantic relationships around the world. For example, Krasnova et al. (2016) found that the majority of German “generation Yers” who experienced phubbing (in this case, excessive smartphone use) from their romantic partners reported negative emotional reactions (e.g., loss of attention, anger, sadness). Moreover, greater jealousy related to their partner’s excessive use was related to lower levels of relational cohesion (Krasnova et al., 2016). Amichai-Hamburger and Etgar (2016) explored the topic of phubbing with Israeli undergraduates and found that those individuals who reported higher levels of their partner’s private multitasking (i.e., using a smartphone for their own private activities while spending time with a partner) reported significantly lower emotional intimacy with their partner. Halpern and Katz (2017) focused specifically on texting behavior within romantic relationships in Chile, and found very similar results to McDaniel and Coyne (2016a)—namely, that phubbing predicted greater conflict and lower intimacy and these then predicted lower relationship quality.<sup>1</sup> Finally, Wang et al. (2017) found that, in their sample of 243 married individuals from China, phubbing was associated with lower relationship satisfaction.

Researchers have also examined the effects of technology on family life, focusing on parent-child and coparenting interactions (e.g., McDaniel & Coyne, 2016b; McDaniel & Radesky, 2017). Some of the earliest work in this area examined work-related tasks intruding on the family domain (Derks & Bakker, 2014; 2015; Desrochers, Hilton, & Larwood, 2005; Mazmanian, 2013; Milliken & Dunn-Jensen, 2005). Often referred to as work-to-family spillover, such intrusions have been found to negatively impact family satisfaction (Chelsey, 2005). More recent work beyond family satisfaction has shown that technological intrusions can also affect the coparenting relationship. Coparenting is a multidimensional construct that can be defined broadly as the extent to which parents support or fail to support one another’s parenting (Feinberg, 2003). Not surprisingly, coparenting researchers have consistently

<sup>1</sup>Although again this part of their model used data from only a single point in time, and they utilized data from individual participants, not couples

found a positive association between effective coparenting and couple relationship satisfaction (e.g., Bonds & Gondoli, 2007; Le, McDaniel, Leavitt, & Feinberg, 2016; McDaniel, Teti, & Feinberg, 2017). Extending exploration of technology's effects to the coparenting relationship, McDaniel and Coyne (2016b) found that mothers who perceived greater levels of technofence in their coparenting reported worse coparenting quality. Combined, these studies suggest that technofence in the family context has the potential to negatively impact multiple family relationships, including coparenting.

Another area of research has explored individual characteristics that are associated with problematic technology use and phubbing behaviors. In terms of personality characteristics, some researchers have found that individuals who are more neurotic, lonely/depressed, extraverted, or anxious tend to use their phones more frequently or in problematic ways (Bianchi & Philips, 2005; Billieux, Van der Linden, & Rochat, 2008; Butt & Philips, 2008; Ehrenberg, Juckes, White, & Walsh, 2008; O'Connor et al., 2013; Takao, Takahashi, & Kitamura, 2009). This problematic use—use that begins to take away time from others and where individuals begin to have problems managing their use—likely leads to greater technology interference (Chotpitaysunondh & Douglas, 2016; Halpern & Katz, 2017; McDaniel & Radesky, 2017) and has been associated with worse relationship satisfaction (e.g., Elphinstone & Noller, 2011). Age may also influence the perpetration and/or experience of technofence, as younger individuals are more likely to adopt newer technologies and also use technology more frequently than older individuals (Carbonell, Oberst, & Beranuy, 2013). Additionally, Chotpitaysunondh and Douglas (2016) found that lower self-control, greater fear of missing out, and Internet addiction predicted the development of cellphone addiction, which had a significant positive relationship to phubbing behavior. Finally, due to prior experiences, individuals have particular beliefs concerning how relationships should function (e.g., how their partner should treat them, what sort of intimacy they should have in relationships, etc.), which form one's working model of relationships (e.g., Shaver & Mikulincer, 2006). Prior work suggests that individuals with greater attachment anxiety (i.e., higher levels of insecurity and a greater need for relational assurances) may perceive more phubbing from their partner (Roberts & David, 2016). Combined, these findings suggest that there are multiple factors that may predict technofence.

## 2. Theoretical Background

The associations between technology interference and relationship or coparenting satisfaction can be interpreted within the context of social exchange relationship models. Exchange-based relationship theories suggest that relationship partners continually evaluate costs and rewards of the relationship, resulting in either satisfaction or dissatisfaction (Sabatelli & Shannon, 1993; Van Lange & Rusbult, 2012). Social exchange theory states that individuals within couple relationships obtain what they need and want by making exchanges with their partner, while simultaneously working to minimize costs (Thibault & Kelley, 1959). Partners in a relationship choose to maintain the relationship when they perceive the relationship to yield desirable outcomes (Turner, 1991), and partners report being most satisfied when the give and take is perceived to be equal (Canary & Stafford, 2007). When social exchange becomes unbalanced, such as when one partner puts in more

resources (underbenefitted exchange) or one partner receives more and gives less (overbenefitted exchange), one or both partners may recognize the relationship inequality, which can have deleterious effects on the relationship (Dainton, 2003; Sprecher, 1998). Conversely, when the current outcomes and interactions in the relationship meet or exceed an individual's expectation for the relationship that individual is likely to be satisfied with the relationship (Van Lange & Rusbult, 2012).

Social exchange theory can be applied to better understand the potential negative impact technological intrusions may have on romantic relationships. When romantic partners spend face-to-face time together, they may have an expectation of undivided attention, at least at times (Miller-Ott & Kelly, 2015). If a partner is physically present but using a device, their partner may perceive this as a slight or a preference for communicating with someone else over them, which may prompt feelings of rejection or conflict (decreased reward/increased cost). In Krasnova et al.'s (2016) study, the majority of their respondents (62%) noted negative feelings related to their partner's use of smartphones. As a participant in Miller-Ott and Kelly's (2015) aptly stated in reference to their partner's phone use, "...if you were interested, you wouldn't really want to check your phone..." (p. 260). In social exchange theory terms, feelings of rejection, sadness, suffering, or boredom while with one's partner would be considered increased costs; while loss of attention or decreased time together could be categorized as decreased rewards (e.g., McDaniel & Coyne, 2016a). The imbalance in rewards versus costs that results may lead to conflict and/or jealousy, and ultimately to lower satisfaction in the couple or coparenting relationship (Halpern & Katz, 2017; Krasnova et al., 2016; McDaniel & Coyne, 2016a; Van Lange & Rusbult, 2012). Moreover, greater dissatisfaction in the couple relationship may disrupt their ability to work effectively as coparents, in general (Kitzmann, 2000) and on a daily basis (McDaniel et al., 2017).

### 3. Aims for Current Research

In the current work, we expand upon and complement prior and emerging work by examining data from *both* partners within established couple/coparenting relationships across two studies. The majority of prior work has been limited by the use of samples of college students or individuals rather than couples. In other words, it is not known whether processes work similarly in established couple relationships. Additionally, the current work and sampling allow us to examine gender differences *within couples*, as opposed to examining differences between separate samples of men and women and assuming that similar results would be found in samples of coupled partners. Study 1 was designed to address three main aims: (1) to examine predictors of technofence—including personality, attachment, depression, problematic phone use, and demographic variables, (2) to determine whether prior conceptual models (e.g., McDaniel & Coyne, 2016a) of the influence of technofence on relationship and coparenting outcomes can be replicated in dyadic data, and (3) to examine potential gender differences *within couples*. The purpose of Study 2 was to examine whether the main paths in Study 1 could also be confirmed in a sample of parents drawn from a more diverse and multinationally-representative sample of couples in the United States and Canada, including those in non-heterosexual unions.

Based on previous research (e.g., Bianchi & Philips, 2005; Billieux, Van der Linden, & Rochat, 2008; Butt & Philips, 2008; Carbonell et al., 2013; Chotpitaysunondh & Douglas, 2016; Ehrenberg et al., 2008; McDaniel & Radesky, 2017; O'Connor et al., 2013; Takao, Takahashi, & Kitamura, 2009) and as explained earlier, we expected that a number of individual factors (e.g., age, problematic technology use, neuroticism, agreeableness, attachment anxiety, and depression) would predict technology interference in couple relationships. Additionally, based on recent research (e.g., Amichai-Hamburger & Etgar, 2016; Czechowsky, 2008; Halpern & Katz, 2017; Krasnova et al., 2016; McDaniel & Coyne, 2016a, 2016b; Miller-Ott et al., 2012; Roberts & David, 2016; Wang et al., 2017) and the application of social exchange theory, we hypothesized that this technology interference would increase the likelihood of relationship conflict related to technology use, resulting in a decrease in relationship satisfaction and coparenting functioning. Finally, we explored potential gender differences within couples across these variables and paths, which should help to inform future studies into the relatedness of technology and couple relationship processes.

## 4. Study 1 Method

### 4.1. Study 1 Participants & Procedure

Participants were 183 heterosexual couples (95% married) with a young child who were part of the *Daily Family Life Project* (McDaniel, 2016), a longitudinal, online survey study. The participants were recruited through three primary sources, including contacting families in a Northeastern state willing to be contacted by researchers, announcements on parenting websites, and postings in the local community. In the current study, we utilize baseline data from those participants who were not missing technofence data, resulting in a sample of 181 mothers and 177 fathers (from 182 families), with 176 matched analytic pairs (where both partners in the couple have data). Participants who completed the survey had the opportunity to enter into a drawing for one of three \$100 gift cards.

In our analytic sample, most participants were Caucasian (91%), in primarily married (95%) and long-term relationships ( $M = 9.94$  years,  $SD = 4.07$  years), and had a Bachelor's degree or higher (72%). Median yearly family income was \$69,000 ( $M = \$74,050$ ,  $SD = \$39,400$ ), although this ranged greatly from \$0 to \$250,000 with 21% reporting some form of state or federal aid. Participants were located in the following regions of the U.S.: 53% Northeast, 17% West, 15% South, and 15% Midwest. On average, mothers were 31.82 years old ( $SD = 4.22$ ), and fathers were 33.34 ( $SD = 4.93$ ). A little more than half the families (58%) had more than one child ( $M = 1.85$ ,  $SD = 0.91$ ), and the child participants reported on was on average 2.88 years old ( $SD = 1.33$ ). For more sample details, see Table 1. In comparison to the recruited sample ( $n = 366$ ), those in our analytic sample ( $n = 358$ ) were more likely to be Caucasian ( $\chi^2(1) = 36.70$ ,  $p < .001$ ) and to have received at least some college education ( $\chi^2(1) = 13.42$ ,  $p < .001$ ).

### 4.2. Study 1 Measures

**4.2.1. Technofence.**—We utilized the *Technology Interference in Life Examples Scale* (TILES; McDaniel & Coyne, 2016a) to measure how often participants perceive their



partner as allowing technology and mobile devices to interrupt or interfere with time they spend together. This scale contains 5 items that assess technoferece during couple mealtimes, conversations, leisure, and time spent together in general (e.g., “My partner sends texts or emails during our face-to-face conversations”). In the current study, we also included a sixth item, “My partner is on his/her phone, tablet, or computer but I would like to talk or do something together as a couple.” Participants responded on an 8-point scale ranging from 0 (never) to 7 (10 or more times a day). Items were averaged with higher scores indicating greater perceptions of technoferece (Cronbach’s  $\alpha$ s = .86 for women, .84 for men).

**4.2.2. Relationship satisfaction.**—Participants were asked to rate their relationship satisfaction across 6 items from the *Quality of Marriage Index* (QMI; Norton, 1983). The wording was changed to “partner” and “relationship” for inclusivity. The first five items ask participants to rate their agreement from 1 (strongly disagree) to 7 (strongly agree) and the sixth item asks participants to rate their overall happiness on a 10-point Likert scale ranging from 1 (unhappy) to 10 (perfectly happy). Items were summed to produce an overall relationship satisfaction score (Cronbach’s  $\alpha$ s = .96 for women, .95 for men).

**4.2.3. Coparenting quality.**—Participants responded to the *Coparenting Relationship Scale* (CRS; Feinberg et al., 2012), which consists of 35 items that measure a variety of coparenting perceptions such as support, undermining, agreement, and more. Negative items were reverse scored, and then all items were averaged to produce an overall coparenting score with higher scores indicating perceptions of higher quality coparenting (Cronbach’s  $\alpha$ s = .94 for women, .94 for men).

**4.2.4. Conflict over tech use.**—Participants were asked to respond concerning how often time spent on various types of technology is a problem in their relationship (McDaniel & Coyne, 2016a). They responded to 11 items (e.g., internet, social networking sites, TV, cell phone, texting, smartphone, computer), and items were averaged to produce an overall conflict over technology use score (Cronbach’s  $\alpha$ s = .87 for both women and men).

**4.2.5. Attachment in romantic relationships.**—Attachment anxiety and attachment avoidance were measured using the *Experiences in Close Relationship Scale-Short Form* (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007). Participants were asked to rate their agreement on a 7-point scale (1 = disagree strongly, 7 = agree strongly) across 6 items in regards to anxiety (e.g., “I need a lot of reassurance that I am loved by my partner”) and 6 items in regards to avoidance (e.g., “I try to avoid getting too close to my partner”). One anxiety item (“I do not often worry about being abandoned”) was dropped (as has also occurred in other research, e.g., Ruppel & Curran, 2012) due to low correlation with the other 5 anxiety items. Separate attachment anxiety and avoidance scores were created by averaging the items, with higher scores indicating greater anxiety or avoidance respectively (Cronbach’s  $\alpha$ s for avoidance = .83 for women, .78 for men; Cronbach’s  $\alpha$ s for anxiety = .72 for women, .77 for men).

**4.2.6. Agreeableness.**—Participants completed the agreeableness (12 items) subscale of the *NEO Five Factor Inventory* (NEO-FFI; Costa & McCrae, 1992). Items were summed



with higher scores representing greater agreeableness (Cronbach's  $\alpha$ s for agreeableness = .79 for women, .82 for men).

**4.2.7. Neuroticism.**—Participants completed the neuroticism (12 items) subscale of the *NEO Five Factor Inventory (NEO-FFI)* (Costa & McCrae, 1992). Items were summed with higher scores representing greater neuroticism (Cronbach's  $\alpha$ s = .86 for women, .88 for men).

**4.2.8. Depression.**—To assess depressive symptomology, participants completed the *Center for Epidemiological Studies – Depression Scale (CES-D)* (Radloff, 1977). The CES-D is a 20-item measure that asks participants to rate how often they experienced symptoms (e.g., “I felt lonely” and “I could not get going”) during the past week, on a 4-point scale ranging from 0 (rarely or none of the time, less than 1 day) to 3 (most or all of the time, 5–7 days). Items were summed, and higher scores indicate greater depressive symptoms (Cronbach's  $\alpha$ s = .89 for women, .89 for men).

**4.2.9. Problematic mobile phone use.**—Participants responded to 4 items regarding problematic tendencies with their mobile phone (e.g., “When my mobile phone alerts me to indicate new messages, I cannot resist checking them” and “I feel like I use my mobile phone too much”). Items were adapted from prior studies of problematic use (e.g., Derks & Bakker, 2014). Items were averaged with higher scores indicating greater tendencies for problematic phone use (Cronbach's  $\alpha$ s = .83 for women, .85 for men).

**4.2.10. General media use.**—Participants rated how much time they spent on a typical day across 9 media use activities (e.g., “using a computer,” “watching TV,” “texting on cellphone,” “using internet on mobile device,” etc.) on an 11-point scale, which ranged from 0 (none) to 10 (7 or more hours). Conceptualized as a formative construct (Bollen & Lennox, 1991; Borsboom, 2005) that represents cumulative media use (rather than the underlying level of media use across all technologies), items were averaged, with higher scores indicating greater daily media use. In our model, partners' ratings of their own media use were included as an indicator of partner media use.

### 4.3. Study 1 Analysis Plan

Utilizing a multilevel model (MLM) in SAS Proc Mixed, we examined predictors of technofence—including personality, attachment, depression, one's own and one's partner's general and problematic media use, and demographic variables in line with the prior research on problematic phone and media use (outlined in the Introduction). We utilized MLM to account for partners being nested within couples, and we tested for potential gender differences by interacting predictors with gender. Nonsignificant gender interactions were removed to be more parsimonious and for ease of interpretation of main effects.

Given the theoretical and empirical non-independence between partners (Galovan, Holmes, & Proulx, 2017), we then constructed a multilevel structural equation model (SEM; cf. Johnson et al., 2017) that accounts for the correlated nature of partners' reports (see Results section). In line with prior conceptualizations of the potential connections between

technoference and relationship well-being (e.g., McDaniel & Coyne, 2016a), in our model technoference is connected to couple conflict over technology use, which is then connected to levels of relationship satisfaction and coparenting quality (see Figure 1). We accounted for those predictors that were significant in the prior MLM (e.g., anxious attachment style, partner media use, partner problematic phone use) and gender. Similar to analyses in multilevel modeling, data were formatted in a pairwise data structure format (see Ledermann & Kenny, 2015). Within the multilevel SEM, partners were nested within couples and we used the complex samples correction to account for non-independence among partners, which employs maximum likelihood estimation with robust standard errors (MLR). This uses a sandwich estimator to compute the standard errors and a correction factor to adjust model fit statistics (Muthén & Muthén, 2015; Muthén & Satorra, 1995). We tested interaction terms with gender to determine if path coefficients differed by gender.

## 5. Study 1 Results

### 5.1. Descriptives and Bivariate Associations with Technoference

Descriptives and bivariate correlations for main study variables are reported in Table 2. Women ( $M = 2.51$ ;  $SD = 1.43$ ) and men ( $M = 1.86$ ;  $SD = 1.17$ ) reported perceiving technoference occurring around once each week, although this average masks the broad range of responses. For example, about 17.6% of participants reported technoference occurring at least once a day, and this increases to 38.5% if we examine those who reported at least once every few days; only 2.5% reported it never occurring. Greater technoference was correlated with lower relationship satisfaction, lower coparenting quality, greater conflict over technology use, greater attachment anxiety, greater media use, and greater problematic phone use. It was also correlated with agreeableness, neuroticism, and depression in men only.

### 5.2. Within-Couple Correlations and Comparisons

Bivariate correlations between men and women within couples are reported along the diagonal in Table 2. In many instances, partners' responses were correlated, illustrating the value of our multilevel SEM approach. Indeed, in our sample, men's and women's perceptions of relationship satisfaction, coparenting, and conflict over technology use were moderately correlated between partners ( $r$ s range from .43 to .51,  $ps < .001$ ). Furthermore, women who reported more problematic phone use tended to have partners who reported more problematic use, although this correlation was somewhat weak ( $r = .25$ ,  $p < .001$ ). In contrast, women who perceived greater technoference did not necessarily have partners who perceived greater technoference ( $r = .05$ ,  $p = .57$ ) and partners' general frequency of media use was uncorrelated ( $r = .10$ ,  $p = .19$ ).

Despite the relatedness of partners' responses in several domains, mean differences between partners in some parts of our model suggested the need to explore the moderating effect of gender. In addition to the non-significant correlation in partners' technoference ratings, women perceived technoference with their partner more often than men perceived technoference ( $t(175) = -4.71$ ,  $p < .001$ ). As one example, 40% of women but only 18% of men indicated that their partner pulling out their phone or device during their face-to-face

conversations was a daily occurrence (or more often). Women also perceived themselves as having greater problematic phone use than men perceived themselves as having ( $t(175) = -3.20, p < .01$ ). However, there were no significant mean differences between partners in perceptions of conflict over technology use ( $t(176) = -1.46, p = .15$ ) or general media use ( $t(175) = 1.30, p = .20$ ).

### 5.3. Predictors of Technoference

In our MLM, gender was a significant predictor of perceptions of technoference ( $b = -0.74, p < .001$ ), with women perceiving more technoference than men. Although we found bivariate correlations between many of the other variables and technoference, the results of our MLM (see unstandardized estimates in Table 2) suggest that attachment anxiety was a key predictor of perceptions of technoference and, once controlled for, most other predictors were no longer significant. In other words, insecurely-attached individuals perceived more technoference from their partner ( $b = 0.26, p < .001$ ). We also found that greater frequency of one's partner's media use ( $b = 0.13, p < .05$ ) as well as the partner's problematic tendencies with their phone ( $b = 0.46, p < .001$ ) predicted greater perceptions of technoference with one's partner. Further, the association between technoference and partner problematic phone use was stronger for women than men ( $b = -0.22, p < .05$ ).

### 5.4. Model of Technoference, Conflict over Technology Use, and Relational Well-Being

We judged our multilevel SEM to fit the data well ( $\chi^2(8) = 13.26, p = .10$ ; RMSEA = .04; CFI = .99; TLI = .96; SRMR = .03), and our conceptual model held for both men and women even when controlling for the predictors of technoference found earlier. Standardized estimates are displayed in Figure 1, and gender differences in paths are also displayed when found. Greater technoference related to greater conflict over technology use for women ( $\beta = .45, p < .001$ ) and men ( $\beta = .27, p < .001$ ), and this path was stronger for women as compared with men at the trend level ( $\beta = -.18, p = .07$ ). Greater conflict, in turn, predicted lower relationship satisfaction ( $\beta = -.18, p < .01$ ) and poorer perceptions of coparenting quality ( $\beta = -.34, p < .001$ ); no gender differences were found in the strength of these respective paths.

## 6. Study 2

In Study 2, we extended our inquiry to a larger and more representative sample from the *Couple Well-Being Project* (Galovan, Schramm, McDaniel, & Goddard, 2016) to determine if similar associations would be found in a U.S. and Canadian sample more diverse in income, education, age, child age, and minority status, and which included non-heterosexual couples. Similar to Study 1, we sought to determine the extent to which technoference was associated with relationship satisfaction and coparenting with data from both relationship partners. Because of the large scale of this second study, some measures were excluded or modified; however, the main predictors within the conceptual model of Study 1 (e.g., technoference, etc.) were maintained in Study 2.

## 7. Study 2 Method

### 7.1. Study 2 Participants & Procedure

Participants were recruited by Qualtrics from an online panel of participants across the United States and Canada who had previously agreed to participate in survey research. Qualtrics is a U.S. research firm that collects data for researchers, corporations, and other organizations (cf. Jensen, Shafer, & Holmes, 2017). As an incentive, participants received compensation valued between \$5 and \$10 US either in points (which they accumulate to receive various goods or services), gift cards, or cash payments. Participants completed the survey online and were instructed not to discuss the questions with their partner until after they had submitted their responses. In total, 616 couples were recruited for the larger project studying couple relationships.

Qualtrics used a national quota sample by country to achieve representativeness in terms of participant age and race/ethnicity. Researchers have found that though quota samples may be less generalizable than probability-based samples, results are often comparable (Cumming, 1990). Indeed, when participants in online panel surveys are appropriately sampled and the data is carefully weighted, results may not differ from traditional, probability-based surveys (Pew Research Center, 2016b). Thus, following data collection, the data were separately weighted by country to be nationally representative in terms of race/ethnicity, location (region of the United States or Canadian province), age, income, education, and religious affiliation (or non-affiliation). To reduce concerns about influential observations skewing the results, extreme weights were trimmed so that no single case would unduly bias the results (Lumley, 2010).

From the larger project, 239 couples (478 individuals) who were parents of children under the age of 18 were included in the present study. In total, parent data included responses from 130 couples (260 individuals) in the United States and 109 couples (218 individuals) in Canada. Parents from the United States came from 36 of the 50 states, while parents from Canada represented 10 of Canada's 13 provinces and territories. Of the 239 couples, 20 were non-heterosexual male couples and 34 were non-heterosexual female couples.

Participants ranged in age from 19 to 85 years (United States:  $M = 36.78$ ,  $SD = 10.09$ ; Canada:  $M = 38.83$ ,  $SD = 11.30$ ) and had lived with their partner for 11.33 years (United States;  $SD = 8.39$ ) or 12.37 years (Canada;  $SD = 8.61$ ). The average age of the youngest child was 5.49 years (United States;  $SD = 4.92$  years) or 6.83 years (Canada;  $SD = 6.12$  years), while the average age of the oldest child was 9.40 years (United States;  $SD = 6.67$  years) or 10.45 years (Canada;  $SD = 5.88$  years). Overall, 55.1% of U.S. participants and 82.0% of Canadian participants were white, non-Hispanic. The median annual income for United States participants was \$52,953 USD ( $M = \$67,084$ ;  $SD = \$50,832$ ), while Canadians' median annual income was \$57,994 USD ( $M = \$77,133$ ;  $SD = \$87,965$ ). In 2015, the national median annual income was approximately \$57,000 USD in the United States and \$66,000 USD in Canada (data from the U.S. Census and Statistics Canada). In terms of education, 41.3% of U.S. participants and 49.1% of Canadian participants had a bachelor's degree or higher. For more sample details, see Table 1.

## 7.2. Measures

**7.2.1. Technoference.**—Participants responded to the same 6 technoference items on the same 8-point scale as in Study 1. Items were averaged, with higher scores across items indicating greater perceived technoference (Cronbach's  $\alpha$ s = .93 to .98 across sex, country, and sexual orientation).

**7.2.2. Relationship Satisfaction.**—Participants rated their relationship satisfaction using the 4-item Couple Satisfaction Index (CSI-4; Funk & Rogge, 2007). Funk and Rogge found that the CSI-4 was strongly correlated ( $r = .93$ ) with the QMI (that we used in Study 1). Participants responded to items such as, “I have a warm and comfortable relationship with my partner,” or “In general, how satisfied are you with your relationship?” on a 5-point Likert scale, with options ranging from *Not at all (True)* to *Completely (True)*. Items were averaged; higher scores indicated greater degrees of satisfaction. Reliability estimates for the CSI-4 were in acceptable ranges (Cronbach's  $\alpha$ s = .88 to .96 across sex, country, and sexual orientation).

**7.2.3. Coparenting quality.**—Participants rated their coparenting quality using 12 items from the brief form of the *Coparenting Relationship Scale* (CRS; Feinberg et al., 2012). The CRS brief form has been shown to function similarly to the full measure (e.g., Feinberg et al., 2012). Higher average scores represent better overall coparenting. Reliability estimates for the coparenting scale were acceptable (Cronbach's  $\alpha$ s = .68 to .91 across sex, country, and sexual orientation, with all but one above  $\alpha = .77$ ).

**7.2.4. Couple Conflict.**—Participants completed Braiker and Kelley's (1979) 5-item conflict scale. They responded to items such as “How often do you and your partner argue with each other?” or “How often do you feel angry or resentful toward your partner?” on a 9-point Likert scale with options ranging from *Not at all* to *Very Much*. Scores were averaged, with higher scores representing more overall couple conflict. Reliability estimates for the anxious attachment subscale were in acceptable ranges (Cronbach's  $\alpha$ s = .85 to .90 across sex, country, and sexual orientation).

**7.2.5. Attachment Anxiety.**—As in Study 1, participants also completed the 6 items from the *Experiences in Close Relationships Scale – Short Form* (ECR-S; Wei et al., 2007) to measure attachment anxiety. As also occurred in Study 1, the same anxiety item (“I do not often worry about being abandoned”) was dropped due to low correlation with the other 5 anxiety items. Scores were averaged with higher scores indicating more anxiety. Reliability estimates for the anxious attachment subscale were in acceptable ranges (Cronbach's  $\alpha$ s = .77 to .91 across sex, country and sexual orientation).

**7.2.6. General media use.**—Participants rated how much time they spent on a typical day across 4 media use activities (e.g., “making calls on cellphone,” “texting on cellphone,” “watching TV,” “using social networking sites”) on a 9-point scale, which ranged from 0 (none) to 8 (5 or more hours). Again, as in Study 1, this is conceptualized as a formative construct (Bollen & Lennox, 1991; Borsboom, 2005) that represents cumulative media use (rather than the underlying level of media use across all technologies), and thus items were

averaged with higher scores indicating greater daily media use. As in Study 1, in our model partners' self ratings of their own media use were included as an indicator of partner media use.

### 7.3. Study 2 Analysis Plan

Prior to constructing the multi-level SEM, we considered correlations between partners and evaluated possible mean differences between partners' scores. This was done separately for heterosexual and non-heterosexual couples, as partners in non-heterosexual relationships cannot be distinguished by gender. To explore the effect of gender for heterosexual couples, we evaluated within-person correlations separately for each gender. We also evaluated correlations between partners for each of the constructs. For non-heterosexual couples, we evaluated within-person correlations based on the order in which they completed the survey (i.e., Partner 1 completed the survey first; Partner 2 completed the survey second). As with the heterosexual couples, we also evaluated correlations between partners for each of the constructs.

As in Study 1, we constructed a multilevel SEM—accounting for the interrelatedness of partners' reports—to consider how technofence was associated with couple conflict, relationship satisfaction, and coparenting quality while accounting for attachment anxiety and partner media use (see Figure 2). We again used the complex samples correction to account for non-independence among partners in calculating the standard errors and fit statistics. We tested interaction terms with gender and same-sex status to determine if path coefficients differed by either factor.

## 8. Study 2 Results

### 8.1. Descriptives and Bivariate Associations with Technofence

In general, participants reported technofence occurring just over once each week ( $M = 2.15$ ;  $SD = 1.88$ ), with 21.6% of participants reporting technofence occurring at least once a day and 15.7% reporting technofence never occurring. Reports of couple conflict were just below the midpoint on the scale ( $M = 4.73$ ;  $SD = 1.51$ ), while mean relationship satisfaction scores indicated ( $M = 3.85$ ;  $SD = 1.08$ ) that couples were mostly to almost completely satisfied with their relationship and found that positive statements about their coparenting quality ( $M = 4.31$ ;  $SD = 1.16$ ) were somewhat true. Technofence was correlated with conflict, relationship satisfaction, coparenting, attachment anxiety, and partner media use (see Table 4 for descriptives and correlations).

### 8.2. Within-Couple Correlations and Comparisons

The mean scores and bivariate correlations among variables are shown in Table 4. Bivariate correlations between heterosexual men and women and between non-heterosexual partners are reported along the diagonals of the correlations shown in Table 4; these correlations illustrate the value of the multilevel SEM in accounting for non-independence among partners. In the heterosexual portion of the sample ( $n = 185$ ), men's and women's perceptions of couple conflict, relationship satisfaction, and coparenting were moderate to strongly correlated between partners ( $r$ s range from .65 to .70,  $ps < .001$ ). Furthermore,



women who perceived greater technofence often had male partners who also perceived greater technofence ( $r = .50, p < .001$ ), and partners' frequency of media use was also moderately to strongly correlated ( $r = .63, p < .001$ ). For non-heterosexual couples, interrelations were similar. Perceptions of couple conflict, relationship satisfaction, and coparenting were moderate to strongly correlated between partners ( $r$ s range from .54 to .91,  $p$ s  $< .001$ ).

As in Study 1, mean differences between partners suggested the need to explore the effect of gender in our model. Women perceived technofence from their male partner significantly more often than men perceived technofence from their female partner ( $t(184) = 3.39, p < .01$ ), with 29% of women and 22% of men reporting that their partner pulled out their phone or device during their face-to-face conversations at least a once a day. Heterosexual women also reported more media use than did their partners ( $t(184) = 2.03, p < .05$ ). In contrast, non-heterosexual partners were only marginally different in their perceptions of technofence ( $t(53) = 1.91, p = .06$ ), and there were no significant differences in partners' reports of media use ( $t(53) = 0.38, p = .70$ ).

### 8.3. Model of Technofence, Conflict, and Relational Well-Being

As in Study 1, greater technofence related to greater levels of couple conflict ( $\beta = .33, p < .001$ ). In turn, greater conflict predicted lower relationship satisfaction ( $\beta = -.38, p < .001$ ) and poorer perceptions of coparenting quality ( $\beta = -.41, p < .001$ ); no gender or sexual orientation differences were found in the strength of these paths. This model fit the data well:  $\chi^2(8) = 14.48, ns$ ; RMSEA = .04; CFI = .99; TLI = .97; SRMR = .03; standardized estimates are displayed in Figure 2.

## 9. Discussion

In a number of recent studies, relationship and family researchers have investigated the role of technofence or phubbing on the functioning of couples and families (e.g., (Amichai-Hamburger & Etgar, 2016; Czechowsky, 2008; Halpern & Katz, 2017; Krasnova et al., 2016; McDaniel & Coyne, 2016a, 2016b; McDaniel & Radesky, 2017; Miller-Ott et al., 2012; Roberts & David, 2016; Wang, 2017). Overall, these researchers have demonstrated rather consistently that technology interference in romantic relationships is associated with negative emotional reactions (e.g., jealousy, anger, sadness), conflict, and negative relationship outcomes (e.g., lower levels of intimacy and relationship satisfaction) and negative individual outcomes (e.g., depression and life satisfaction). Moreover, a number of researchers have developed and tested conceptual models of how these variables interrelate (e.g., Halpern & Katz, 2017; McDaniel & Coyne, 2016a, Roberts & David, 2016; Wang et al., 2017). However, the vast majority of this work has been limited by the use of samples of college students or individuals rather than couples. As Roberts and David (2016) aptly noted "future research in this area would benefit from studying both partners in romantic relationships." In the current work, we expanded upon prior work by examining data from *both* partners within couple relationships across two studies.

In Study 1, we used dyadic data from couples with children within the U.S., and we found that attachment anxiety and partner media use (general frequency and problematic phone



use) were significant predictors—over and above many others—of perceptions of technofence in relationships. These results are consistent with recent work that has suggested a potential link between attachment anxiety and phubbing (e.g., Roberts & David, 2016), and our results also align with findings that those with greater attachment anxiety often have negative expectations and reactions to a partner's behaviors (e.g., Shaver & Mikulincer, 2006). It is also not surprising that partner media use and partner problematic phone use significantly predict one's perceptions of technofence, as the more time and attention one's partner devotes to media, the more opportunities this use will have to intrude in their relationship.

In our dyadic data, we successfully replicated previous conceptual models developed on individual-level data (e.g., McDaniel & Coyne, 2016a). More specifically, our results suggested that technology sometimes interrupts everyday interactions in couple relationships, and these small interruptions are associated with greater conflict and lower relationship satisfaction. Notably, technofence and conflict over technology use were also related to coparenting quality. In Study 2, we utilized a more diverse sample from the U.S. and Canada and included parents with children of different age ranges (not just young children, as was the criterion for admission in Study 1). As we predicted, the same associations emerged as in Study 1: Technofence and conflict over technology use were mediators in the association between partner's media use and couple and coparenting quality.

The dyadic nature of our data allowed us to examine potential gender differences *within couples*, as opposed to differences between samples of male and female participants who were not in relationships with each other. Overall, our data (from both studies) suggests that women perceive greater technofence from their partner than men perceive from their partner. However, our results generally suggest that if technofence is perceived, then this technofence likely will relate to men's and women's perceptions of conflict and poorer relationship functioning.

These findings are meaningful for a number of reasons. First, they validate previous research that has used convenience samples and/or individuals to examine these technofence interaction patterns. Indeed, dyadic data is ideal to explore topics that relate to couple satisfaction and relationship dynamics. Second, they extend most of the previous work on the topic by examining not only couples, but couples within families. The impact of technology on romantic relationship partners is a fast-growing field, but very few (e.g., McDaniel & Coyne, 2016b; McDaniel & Radesky, 2017) have examined the impact of technology interference on family relationships. This critical expansion is important for both family cohesion and child development, and we hope that this research lays the foundation for more research with parents and families. Third, when we consider the results of this work alongside other recent findings (e.g., Halpern & Katz, 2017; McDaniel & Coyne, 2016a, Roberts & David, 2016), a consistent pattern is emerging whereby individual traits and technology usage patterns appear to be leading to technology interference in romantic couples. Moreover, these researchers are consistent in their suggestion that these interruptions are causing conflict and ultimately, dissatisfaction among relationship partners, and the patterns are robust across studies.

Although we recognize that the cross-sectional nature of prior studies and our current work does not allow for causal inferences about directionality to be made, we also point to the consistency of these aforementioned conceptual models, Halpern and Katz's (2017) cross-lagged panel analysis, and the social exchange model as support for our assumptions related to directionality. In their cross-lagged panel analysis, Halpern and Katz (2017) found that it was texting frequency that predicted lower perceived relationship quality one year later, but lower relationship quality did not predict a higher frequency of texting behavior. In other words, it did not appear that relationship dissatisfaction was causing romantic partners to disconnect and increase texting behavior. Instead, their results suggest that couple behaviors pertaining to technology use lead to deterioration in relationship quality. When viewed through the lens of social exchange theory, this deterioration may occur because of a shift in costs and benefits in the relationship. Some of the added relational costs of technology usage might be feelings of alienation or sadness, conflict, or jealousy, and the reduction of relational benefits could occur through spending less overall or quality time with a partner. In short, investment behaviors that could be directed to a romantic partner (e.g., time, attention, energy) shift towards one's technology (decreased relationship benefits), and this leads to negative feelings and conflict (increased costs). Future research can explore these relational costs and benefits more directly; however, based on the available research on the topic we feel confident in asserting that partners and parents should assess their technology use to avoid the potential relationship pitfalls related to technofence. Practical actions partners and parents might take could include discussions about expectations for technology use, identifying technology free zones or times, or the development of a family media plan (e.g., [healthychildren.org](http://healthychildren.org)).

### 9.1. Limitations & Conclusion

Despite our attempt to extend the literature in important ways, we acknowledge that our studies have features that limit the interpretation of the findings. First, and most importantly, we acknowledge that poor relationship quality may lead to more technofence, and this has not been ruled out by our cross-sectional study. However, we also assert that based on circular causality, we can expect that increased technofence would then likely lead to more conflict over technology use, and more spillover into later relationship satisfaction. Thus, although our study does not further our understanding of directionality, it represents a snapshot of one aspect of a likely circular model. As others have done (e.g., McDaniel & Coyne, 2016a; 2016b), we call for future researchers to examine these causal relationships more directly with longitudinal and daily diary studies. Additionally, although we explored a number of variables as predictors and outcomes of technofence, we recognize that there may be other personality and relationship variables that are yet unexplored that may be causal or mediating factors in the relationship between technology usage, relationship satisfaction, and coparenting quality. Again, we see this as a promising direction for future research. Moreover, we proposed social exchange theory as one theoretical lens through which our findings can be contextualized. Although this fits well, we acknowledge that alternative theories, such as displacement theory and symbolic interactionism (e.g., Halpern & Katz, 2017), can also fit and complement these patterns. Finally, although the current work utilizes dyadic data to confirm prior conceptual models and to examine potential gender differences within couples, future work should extend the foundation we have laid to

examine the potential discrepancies in media use habits between partners within couples and what impact discrepancies in habits may have on relationships.

Technology use and the simple ever-presence of smartphones and other devices are related to interruptions or interference in couple relationships (termed “technoference;” McDaniel & Coyne, 2016a), and it appears that couples and parents, at least within the U.S. and Canada, are not immune to these interruptions (also see McDaniel & Radesky, 2017). These disruptions are related to lower relationship satisfaction and coparenting quality, which may damage the fabric of family life and family processes. As satisfaction, support, and agreement among parents appear to be critical to relationship health and family cohesion, it is important for couples and families to evaluate, monitor, and be willing to adapt their technology usage patterns so that these patterns do not cause conflict and possible relationship deterioration over time. Moreover, as these technologies are at times designed to be addictive (Alter, 2017; Cooper, 2017), technology industry executives and policy makers should also critically evaluate the potentially widespread effects of technology addiction (e.g., technoference in families).

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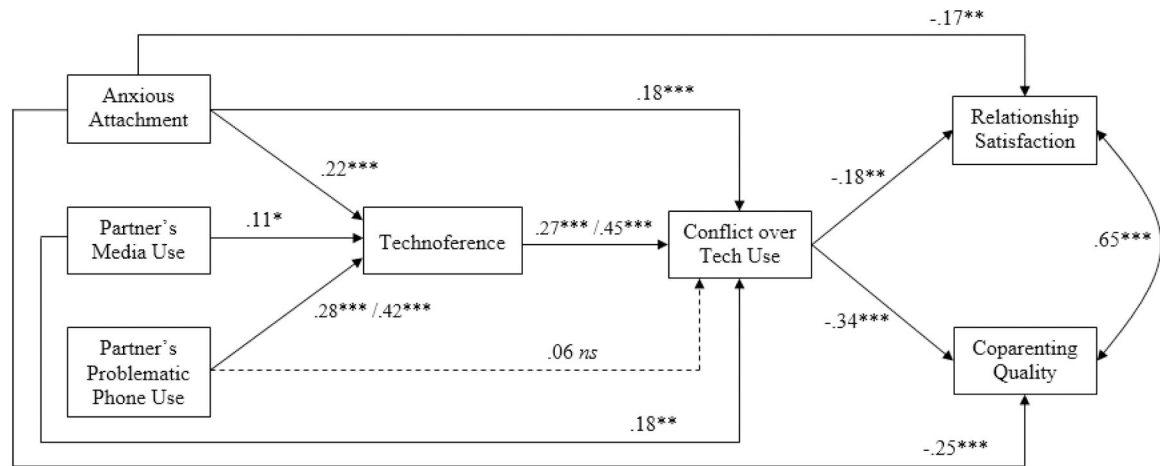


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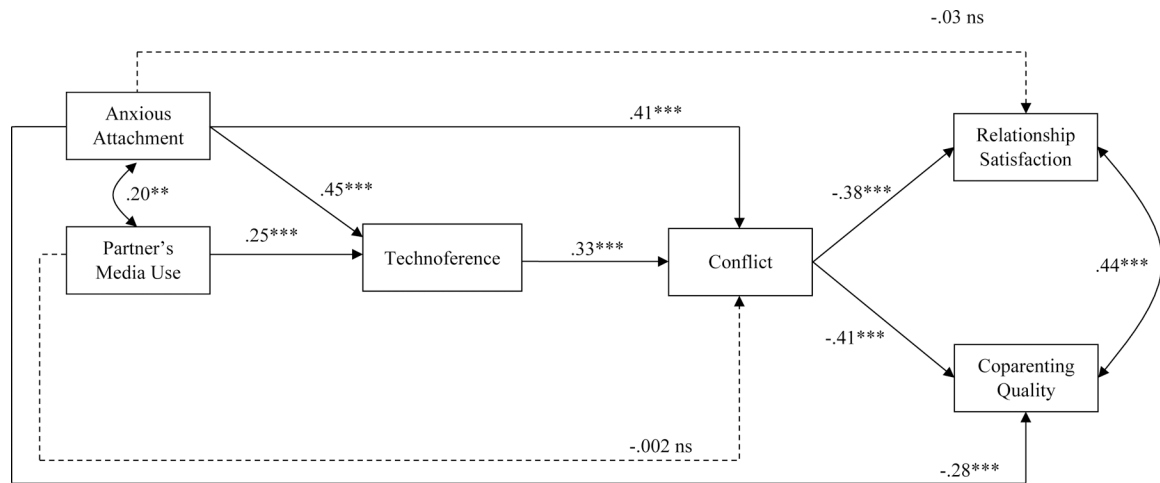
**Highlights**

- Measured perceptions of technofence by both men and women in couples.
- Technofence related to conflict, relational dissatisfaction, worse coparenting.
- Greater technofence predicted greater conflict over technology use.
- Conflict then predicted worse relationship satisfaction and coparenting.
- Associations also appeared in a more diverse sample of couples.



**Figure 1.**

Model of predictors of technology interference and how technology interference in couple interactions may lead to conflict over technology use which may then spill over into feelings about the couple and coparenting relationship. The figure shows the standardized estimates. Gender was also controlled in the model (paths not displayed). Paths with significant gender differences ( $p < .07$ ) are indicated in the following way: Men's estimate / Women's estimate.



**Figure 2.**

Model of predictors of technology interference and how technology interference in couple interactions may lead to conflict which may then affect feelings about the couple and coparenting relationship.

*Notes.*  $N = 239$  couples, including 20 same sex male couples and 34 same sex female couples. The figure shows the standardized estimates. There were no gender differences in the substantive paths, so paths were constrained to be equal across men and women. There were also no sexual orientation differences in the substantive paths, so paths were constrained to be equal across sexual orientation.

**Table 1.**

Participant demographic characteristics in Study 1 and Study 2

	Study 1 (N = 184)	Study 2 (N = 239)
Sex (%)		
Female	50.6	52.9
Male	49.4	47.1
Race (%)		
White, non-Hispanic	91.1	66.7
Latino	3.1	13.8
African American/Black	2.5	8.8
Asian	1.4	7.0
Mixed/Other	2.0	3.7
Education (%)		
No High School	0.6	5.9
High School Diploma	8.9	21.7
Some College	13.4	13.4
Associate or Trade degree	5.0	14.4
Bachelor's Degree	36.3	30.7
Graduate or Professional Degree	35.8	14.0
Annual Income (in U.S. dollars)		
Median	\$69,000	\$57,994
Mean	\$74,050	\$71,442
Standard Deviation	\$39,400	\$69,520
Age (Years)		
Mean	32.4	37.7
Standard Deviation	4.8	10.7
Relationship Duration (Years)		
Mean	9.9	11.8
Standard Deviation	4.1	8.5
Percent in Same-Sex Relationship	0.0	22.7

**Table 2.**  
Study 1 Bivariate Correlations and Descriptives for Study Variables for Men (above diagonal) and Women (below diagonal)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Technoforence	<b>.05</b>	-.15*	-.28***	.31***	.30***	.10	-.16*	.17*	.15*	.24**	.30***	.11	.24**
2. Relationship satisfaction	-.22**	<b>.51</b>	***	-.16*	-.17*	-.59***	.22**	-.21**	-.25**	.05	.01	-.01	.02
3. Coparenting	-.33***	.76***	<b>.43</b>	***	-.34***	-.56***	.37***	-.29***	-.40***	-.11	-.07	-.07	-.11
4. Conflict over tech. use	.50***	-.30***	-.41***	<b>.45</b>	***	.16*	-.25**	.32***	.29***	.21**	.12	.23**	.27***
5. Attachment anxiety	.17*	-.28***	-.34***	.26***	-.03	.29***	-.32***	.52***	.46***	.24**	.06	.12	.11
6. Attachment avoidance	.14	-.64***	-.59***	.32***	.26***	<b>.36</b>	-.34***	.32***	.41***	.02	-.01	-.03	-.01
7. Agreeableness	-.12	.30***	.36***	-.31***	-.44***	-.37***	<b>.29</b>	***	-.25**	-.16*	-.11	-.10	-.25**
8. Neuroticism	.06	-.30***	-.26***	.23**	.57***	.33***	-.46***	<b>.03</b>	.73***	.22**	.07	.02	.00
9. Depression	.11	-.49***	-.44***	.34***	.49***	.47***	-.44***	.67***	<b>.27</b>	.08	.06	-.04	.08
10. Own prob. phone use	.24**	-.04	-.08	.20**	.13	.04	-.20**	.18*	.11	<b>.25</b>	.25**	.48***	.11
11. Partner prob. phone use	.46***	-.03	-.17*	.18*	-.04	.09	.01	-.08	.06	.25**	<b>.25</b>	.11	.23**
12. Own media use	.23**	-.02	-.13	.31***	.08	.05	-.24**	.17*	.14	.23**	.11	<b>.10</b>	.10
13. Partner media use	.27***	.06	-.13	.26***	-.12	.08	-.02	.01	.09	.11	.48***	.10	<b>.10</b>
<i>Women</i>													
Mean	2.51	38.06	4.98	1.80	3.16	1.93	49.77	30.70	11.16	3.17	3.17	2.82	2.82
Std. Dev.	1.43	7.01	0.77	0.67	1.14	0.96	5.44	8.61	8.83	1.20	1.20	1.00	1.00
<i>Men</i>													
Mean	1.86	37.96	4.97	1.71	3.07	2.28	46.55	27.60	10.41	2.83	2.83	2.98	2.98
Std. Dev.	1.17	7.15	0.75	0.60	1.24	0.97	6.40	8.87	8.43	1.18	1.18	1.31	1.31

Note.

\*  
p < .05

\*\*  
p < .01

\*\*\*  
p < .001.

N = 181 mothers and 177 fathers (from 182 families). Correlations for men are presented above the diagonal and for women below the diagonal. Correlations between men and women are bolded, italicized, and on the diagonal.

**Table 3.**

Study 1 Unstandardized Estimates for the Multilevel Model of Predictors of Technoference

	Estimate	Standard Error
Intercept	2.61 ***	(.10)
Parent age	-.005	(.02)
Family income	-.002	(.002)
Ethnicity	.18	(.24)
Education	-.30	(.17)
Marital status	.21	(.31)
Relationship length	.03	(.02)
Gender	-.74 ***	(.14)
Attachment anxiety	.26 ***	(.07)
Attachment avoidance	.07	(.08)
Agreeableness	-.004	(.01)
Neuroticism	-.005	(.01)
Depression	-.005	(.01)
Problematic phone use	.08	(.06)
Partner problematic phone use	.46 ***	(.08)
Gender X Partner prob. phone use	-.22 *	(.11)
General media use	.08	(.06)
Partner general media use	.13 *	(.06)

Note.

\*  
 $p < .05$ \*\*  
 $p < .01$ \*\*\*  
 $p < .001$ .

Gender is coded 0 = female and 1 = male; for interactions, the main effect is for women, and the interaction is the value to add to the main effect in order to get the effect for men. Non-significant interactions were trimmed from the model. Variables were coded as follows: Gender (1 = male, 0 = female), Ethnicity (0 = Caucasian, 1 = other race), Education (1 = college grad., 0 = less education than college grad.), and Marital status (1 = living together, not married, 0 = married). Except for the above mentioned variables, all other variables were grand mean centered. Family income was in \$1,000 units.

**Table 4.****Study 2 Descriptive Statistics and Correlations among Variables**

<i>Heterosexual Couples (n = 185)</i>								
Variable	1.	2.	3.	4.	5.	6.	7.	
1. Anxious Attachment	<b>.51***</b>	.10	−.01	.45***	.56***	−.41***	−.57***	
2. Own Media Use	.37***	<b>.63***</b>	.63***	.27***	.34***	−.13	−.16*	
3. Partner Media Use	.19*	.63***	<b>.63***</b>	.29***	.09	−.02	−.07	
4. Technoference	.57***	.35***	.27***	<b>.50***</b>	.47***	−.17*	−.37***	
5. Couple Conflict	.52***	.18*	.20**	.57***	<b>.65***</b>	−.39***	−.56***	
6. Relationship Satisfaction	−.27***	.11	−.02	−.27***	−.51***	<b>.69***</b>	.50***	
7. Coparenting Quality	−.50***	−.15*	−.26***	−.51***	−.68***	.63***	<b>.70***</b>	
Men’s Mean	3.52	4.17	4.35	2.59	4.32	4.98	5.61	
Men’s Standard Deviation	1.27	1.37	1.49	1.62	1.94	1.06	1.07	
Women’s Mean	3.40	4.35	4.17	3.02	4.60	4.94	5.46	
Women’s Standard Deviation	1.33	1.49	1.37	1.86	1.97	1.02	1.18	
<i>Non-heterosexual Couples (n = 54)</i>								
Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Anxious Attachment	<b>.44***</b>	.28*	.32*	.53***	.68***	−.24	−.62***	−.08
2. Own Media Use	.53***	<b>.82***</b>	.82**	.60***	.26	.13	−.21	−.26
3. Partner Media Use	.39**	.82**	<b>.82***</b>	.47**	.25	.11	−.18	−.16
4. Technoference	.44***	.62***	.56***	<b>.78***</b>	.50***	.10	−.44***	−.22
5. Couple Conflict	.49***	.33*	.27*	.62***	<b>.64***</b>	−.33*	−.53***	.03
6. Relationship Satisfaction	.19	.22	.16	.11	−.13	<b>.54***</b>	.53***	.13
7. Coparenting Quality	−.39**	−.16	−.19	−.38**	−.39**	.57***	<b>.91***</b>	.26
8. Gender	.13	−.16	−.26	−.32*	.14	.07	.23	—
Partner 1 Mean	3.98	5.08	5.02	4.48	5.60	4.43	4.53	.37
Partner 1 Standard Deviation	1.10	1.48	1.72	1.75	1.86	1.14	0.97	.49
Partner 2 Mean	4.45	5.02	5.08	4.16	5.72	4.62	4.61	.37
Partner 2 Standard Deviation	1.05	1.72	1.48	1.91	1.80	1.22	0.97	.49

*Notes.* For heterosexual couples ( $n = 185$ ), values above the diagonal are men's correlations and values below the diagonal are women's correlations. For non-heterosexual couples ( $n = 54$ ), values above the diagonal are Partner 1 correlations, and values below the diagonal are Partner 2 correlations. Bold values on the diagonal are correlations between partners. Gender is coded 0 = female and 1 = male.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .