Young adults' use of communication technology within their romantic relationships and associations with attachment style

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ABSTRACT

In an online survey with two cohorts (2009 and 2011) of undergraduates in dating relationships, we examined how attachment was related to communication technology use within romantic relationships. Participants reported on their attachment style and frequency of in-person communication as well as phone, text messaging, social network site (SNS), and electronic mail usage with partners. Texting and SNS communication were more frequent in 2011 than 2009. Attachment avoidance was related to less frequent phone use and texting, and greater email usage. Electronic communication channels (phone and texting) were related to positive relationship qualities, however, once accounting for attachment, only moderated effects were found. Interactions indicated texting was linked to more positive relationships for highly avoidant (but not less avoidant) participants. Additionally, email use was linked to more conflict for highly avoidant (but not less avoidant) participants. Finally, greater use of a SNS was positively associated with intimacy/support for those higher (but not lower) on attachment anxiety. This study illustrates how attachment can help to explain why the use of specific technology-based communication channels within romantic relationships may mean different things to different people, and that certain channels may be especially relevant in meeting insecurely attached individuals' needs.

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1. Introduction

Technology has become an integral part of the way that people communicate with one another, even within romantic relationships, which are one of the most intimate types of relationships an adult can have. Despite the prevalence of mediated communication, the reasons for choosing particular channels of communication as well as implications of using particular channels are not well understood. In this paper, we suggest that attachment theory may provide critical insight into one reason why adults might use different channels when communicating with romantic partners, and why the use of these technologies may be differentially associated with individuals' romantic relational quality depending on their attachment style.

1.1. Attachment

The formation of attachment relationships is important to humans across the lifespan (Bowlby, 1973) from the first attach-

ment relationships between infants and their caregivers to pair bonds between significant romantic partners in adulthood (Hazan & Shaver, 1987). The attachment style that one develops is partially based on interactions with early caregivers, particularly how the parent responds to the child's distress (Ainsworth, Blehar, Waters, & Wall, 1978). Individuals use their early relationships as a template by which they approach future relationships (Bowlby, 1973; Fraley, 2002; Roisman, Collins, Sroufe, & Egeland, 2005). Thus, the term attachment style represents relatively stable behavioral patterns within one's close relationships. The primary and innate strategy for a baby or young child is to seek out help from others when he or she perceives danger or is distressed. Ideally, a child would experience a history of supportive and responsive attachment figures, so that the child is likely to develop effective regulatory strategies, including an ability to cope with stressful events and knowledge that he or she can rely on others when needed (e.g., Bowlby, 1973). This outcome is referred to as developing a secure attachment style. As adults, individuals who are higher in attachment security are more likely to be in long-term, stable relationships (Hazan & Shaver, 1987), and generally report more frequent positive and less frequent negative emotions, as well as greater trust, satisfaction, interdependence, and commitment in their

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relationships (e.g., Brennan & Shaver, 1995; Collins & Read, 1990; Feeney, 1994; Simpson, 1990).

If parents are less responsive, then children develop a secondary strategy, which is often differentiated into one of two forms of attachment insecurity, either anxiety or avoidance (e.g., Mikulincer & Shaver, 2007). Children may develop a more anxious attachment pattern due to unpredictability in the parental relationship (Ainsworth et al., 1978). In other words, if a child's primary caregiver is inconsistently responsive, the child may develop hypervigilance about their caregiver and have difficulty establishing a sense of security. Anxious attachment is linked to the tendency to exhibit heightened distress levels and a desire to have attachment figures close by or available, though they remain concerned about others' dependability to meet their attachment needs (Main, Kaplan, & Cassidy, 1985; Mikulincer, Shaver, & Pereg, 2003). Within adults' romantic relationships, research shows that they prioritize intimacy but often have trouble establishing it to their desired levels (e.g., Feeney & Noller, 1991) and they tend to have lower satisfaction than securely attached individuals (e.g., Mikulincer & Erev, 1991; Stackert & Bursik, 2003). In addition, evidence indicates that their romantic relationships are also more conflictual than are relationships of securely attached couples, most likely due to anxious individuals' intense emotional reactions and to how critical their relationships are to their own well-being (e.g., Campbell, Simpson, Boldry, & Kashy, 2005).

Avoidant attachment may also develop from maladaptive caregiving responses, particularly rejecting caregivers who dismiss the infant's bid for attention or help (e.g., Ainsworth et al., 1978). These children learn to inhibit signs of distress because their attachment figures tend to withdraw their attention when the children show distress (Ainsworth et al., 1978; Cassidy, 1994; Main et al., 1985). Avoidant individuals are often uncomfortable with emotional intimacy and relying on others for support due to their negative views of others as untrustworthy or unsupportive. In adulthood, people who are more avoidantly attached tend to limit intimacy in their romantic relationships (Feeney & Noller, 1991), report less satisfaction with their relationships (e.g., Collins, 1996; Stackert & Bursik, 2003), and provide less support to their partners (Collins & Feeney, 2000; Feeney & Collins, 2001; Rholes, Simpson, & Oriña, 1999; Simpson, Rholes, Oriña, & Grich, 2002). Attachment theory therefore provides a useful framework to understand individual differences in technology-based communication among romantic partners.

1.2. Relationships and communication technology

While adults can certainly function without being physically close to their partners, having their partners be emotionally available and supportive remains a real concern. This concern is often mitigated by electronic communication where people now have a host of communication options at their fingertips. A recent report by the Pew Internet and American Life Project indicates that 66% of 18–29 year olds now have smartphones (Rainie, 2012). Research also indicates that electronic communication is frequent within romantic relationships (Coyne, Stockdale, Busby, Iverson, & Grant, 2011; Subrahmanyam & Greenfield, 2008), and is particularly useful for long distance relationships (Boneva, Kraut, & Frohlich, 2001; Dainton & Aylor, 2002; Stephen, 1986). Many different technologies are utilized in this process, from e-mail to social media (for a review, see Tong & Walther, 2011). Electronic communication is also found to enhance mutual self-disclosure and emotional intimacy (Cooper & Sportolari, 1997), and greater cell phone use among college students with a romantic partner was associated with more love and commitment and decreased relational uncertainty (Jin & Peña, 2010). Some past research has examined motivations for selecting specific types of technology, for example

with the content of messages dictating whether individuals chose telephone communication (for discussing urgent matters across relationship types) or email (for communicating important but not urgent matters with acquaintances; Tillema, Dijst, & Schwanen, 2010). However, we believe that an examination of attachment may help to further explain individuals' use of communication technology in their romantic relationships.

Even though attachment ties directly to why people prefer and establish different levels of intimacy and availability with relationship partners, few studies have examined the connection between attachment and communication technology. One study reported that with younger adolescents, problematic Internet use was found to relate to greater alienation with fathers and less trust (Lei & Wu, 2007). In another study, no link between attachment style and breadth and depth in online interactions with romantic partners was detected (Ye, 2007). Jin and Peña (2010) found that attachment was unrelated to texting frequency, but participants with high scores in avoidance communicated by phone significantly less than individuals lower on avoidance, and this link was particularly true for those who also had lower anxiety scores. Other recent research focusing on sexual text messages, or sexting, has detected significant links to attachment. Weisskirch and Delevi (2011) found that attachment anxiety was linked to propositioning sexual activity through text messaging for individuals in a relationship as well as positive attitudes and acceptance regarding sexting behavior. Also in a college-student sample, Drouin and Landgraff (2012) reported an association between anxious attachment and sending sexual text messages, and between avoidant attachment and sending both texts and pictures with sexual content. Our study extends the current literature by more comprehensively assessing communication technology use (including in-person communication, phone use, texting, email, and social networking site usage) among romantic partners. In addition, within the current study we examine the role of attachment as a moderating variable between technology usage and relationship quality, and incorporate data from two cohorts collected 2 years apart (2009 and 2011).

1.3. The present study

The main goal of the present study was to use an individual differences approach, by applying attachment theory, to better understand individuals' use of communication technology within their romantic relationships. Attachment was measured by participants' scores on avoidance and anxiety attachment dimensions (Brennan, Clark, & Shaver, 1998; Fraley & Waller, 1998). Our sample of college students is appropriate given that many individuals were expected to be in romantic relationships and to commonly rely on various technologies to communicate with partners. The survey data were collected from two different groups of college students – one in Spring 2009 and the other in Spring 2011. We did not expect that associations among attachment, relationship quality, and communication frequency would change across the cohorts, although mean differences in the frequency of channels used to communicate with one's partner may vary. We suggest that our use of two samples assessed 2 years apart may be especially important in this field given that technological advances and changes in accessibility may result in less stable trends. This approach allows us to address how communication rates within romantic relationships may change across a short time period as well as elucidate what patterns are similar over time.

We examined qualities of romantic relationships that were expected to be particularly relevant to both one's attachment and to patterns of communication: relationship satisfaction, intimacy, support, and conflict. Based on substantial prior psychological

research, relationship quality should be lower for people who report being more insecurely attached. Specifically, higher levels of anxiety should relate to lower satisfaction and greater conflict, and higher avoidance should relate to less satisfaction, support, and intimacy.

Based on prior communications research, we also proposed that more frequent communication was expected to relate to higher perceived quality of the romantic relationship (e.g., Parks & Adelman, 1983), particularly for the channels (e.g., phone) that may promote intimacy (Jin & Peña, 2010). Thus, we expected to confirm the following hypothesis.

Hypothesis 1. Communication using channels that promote intimacy (phone) would relate to more positive relationship quality, whereas the most mediated channels (email) would relate to lower relationship quality. Due to limited research pertaining to SNS and texting within romantic relationships, no specific predictions were made about these channels.

Next, we extended the current literature by testing how attachment is related to the use of multiple communication channels. This hypothesis stems from the idea that different technologies vary in the immediacy of responses and the intimacy afforded by their use, which is consistent with an underlying tenet of media richness theory (Daft & Lengel, 1986). This theory suggests that channels vary in richness – those where responses are more immediate and provide access to a greater number of cues (e.g., voice tone and inflection) will provide more information to the other party. More avoidant people who seek to limit intimacy may prefer using more mediated channels (e.g., email) or those that are more public and have lower levels of expected intimacy (e.g., social network site). The more anxious individuals who tend to worry about their partner's availability and fidelity may prefer using richer technology, where responses are often instantaneous and conversations occur in real-time (i.e., phone, texting). Hypothesis 2 pertains to the direct associations between attachment and the frequency of communication methods.

Hypothesis 2. Anxious attachment was expected to correlate with higher levels of communication frequency using channels (e.g., phone and texting) that provide greater capacity for immediate and intimate exchanges. In contrast, avoidant attachment should relate to less frequent communication using these immediate and intimate channels, but more frequent use of channels through which intimacy can be limited (e.g., email where there are no voice cues and responses are less immediate).

In addition, we expected that the use of different technologies may have different implications depending on the individual. For example, when a romantic partner answers a voice call or responds to a text message immediately, this conveys a sense of support and availability of one's secure base, which is especially critical to a highly anxious person's well-being. Thus, the use of these more intimate and immediate technologies, such as the phone, may be particularly important to more anxious individuals. With avoidance, individuals may instead prefer the more mediated communication channels, and we hypothesize that use of more mediated channels should better predict relationship quality for people who are higher on attachment avoidance. Thus, particular communication channels may be more relevant to some people than others depending on their attachment needs. We therefore expected to confirm the following hypothesis pertaining to attachment as a moderating variable.

Hypothesis 3. For more avoidantly attached individuals, greater use of more mediated communication (i.e., e-mail) should relate to better relationship satisfaction, but for those who are lower on avoidance, the frequency of these channels may not be associated

as strongly with positive relationship quality. Regarding the anxiety dimension, greater use of more immediate and intimate forms of communication (phone and text messaging) should be strongly associated with better relationship qualities (perceived support, intimacy, and satisfaction) for highly anxious individuals, but these associations may be less strong for those who are lower on the anxious attachment dimension.

2. Methods

2.1. Sample

The 2009 sample was 135 undergraduates recruited from introductory psychology courses (104 women; 77%). The ethnicity of the sample was 90.4% White, 3% African–American, 3% Asian–American, 2.2% other, and 1.5% Hispanic. The age range was 18–26 years ($M = 19.78$, $SD = 1.50$). All participants but one identified as being single and never married (the other was divorced). Their mean relationship duration was 20.98 months ($SD = 21.79$; range = 1–156 months) and the distance to their partners ranged from 0–709 miles ($M = 76.23$, $SD = 146.84$). Two outliers on the distance variable were recoded to the largest valid distance (709) within three standard deviations. These 135 students were from a larger sample with 297 participants, but we only report on the 135 who stated they were in a committed romantic relationship.

The 2011 sample included 145 undergraduates recruited from introductory psychology courses (119 women; 82.1%) who had stated they were in a committed romantic relationship (out of a larger sample of 302). The ethnicity of the sample was 93.1% White, 2.1% African-American, 2.1% Hispanic, 1.4% other, .7% Asian-American, and .7% Native American. The age range was 18–27 years ($M = 20.01$, $SD = 1.69$). Almost all participants ($n = 143$) identified as single and never married (one was married, the other was missing). Their mean relationship duration was 25.30 months ($SD = 18.23$; range = 2–78 months) and the distance to their partners ranged from 0–920 miles ($M = 83.02$, $SD = 178.01$). Four outliers on the distance variable were recoded to the largest number (920 miles) within three standard deviations. The 2009 and 2011 samples did not differ on the gender or ethnicity proportions, participants' age, relationship duration, or distance to one's romantic partner.

2.2. Procedure

Participants completed the study online during Spring 2009 or 2011. The questions about one's romantic partner were part of a larger survey in which participants were also asked to answer similar questions about one's best friend and closest family member (see Gentzler, Oberhauser, Westerman, & Nadorff, 2011). Students received extra credit for a psychology course for their participation.

2.3. Measures

2.3.1. Attachment

To assess individual differences in attachment style, participants completed the *Experiences in Close Relationships – Revised* (ECR-R; Brennan et al., 1998; Fraley, Waller, & Brennan, 2000). This measure is a 36-item questionnaire that includes two subscales with 18 items each. The avoidance of close relationships scale assesses one's difficulty with emotional intimacy and relying on someone for support ($\alpha = .93$ in 2009; $\alpha = .94$ in 2011; e.g., "I find it difficult to allow myself to depend on romantic partners"). The anxiety about close relationships scale assesses the desire to be extremely close to one's partner, but coupled with concerns about abandonment ($\alpha = .94$ in 2009; $\alpha = .93$ in 2011; e.g., "I worry that

romantic partners won't care about me as much as I care about them"). Items were answered on a 7-point scale (*strongly disagree* = 1 to *strongly agree* = 7).

2.3.2. Relationship qualities

Four subscales from the *Network of Relationships Inventory* (NRI; Furman & Buhrmester, 1985) were analyzed. These were answered on a 5-point scale (*little or none* = 1 to *the most* = 5). The full measure has 15 subscales, but we administered subscales that we expected to most strongly relate to communication and attachment. The four 3-item subscales included in the present report include: *Satisfaction* (α = .91 in 2009, α = .94 in 2011; "How satisfied are you with your relationship with this person?"); *Intimacy* (α = .85 in 2009, α = .92 in 2011; "How much do you talk with this person about things you don't want others to know?"); *Support* (α = .87 in 2009, α = .88 in 2011; "How much do you turn to this person for support with personal problems?"); and *Conflict* (α = .82 in 2009, α = .90 in 2011; "How much do you and this person argue with each other?").

Intercorrelations among the four relationship quality scales were examined. Because intimacy and support were highly correlated with one another (r = .83, p < .001 in 2009 and r = .86, p < .001 in 2011), these scales were aggregated. Satisfaction was less highly correlated with intimacy (r = .65, p < .001 in 2009 and r = .66, p < .001 in 2011) and support (r = .61, p < .001 in 2009 and r = .68, p < .001 in 2011), and was therefore kept as its own scale. Finally, the conflict scale also was assessed as a separate scale because associations between the positive relationship scales and conflict were nonsignificant or weakly correlated (satisfaction r = −.26, p = .003 in 2009 and r = −.18, p = .028 in 2011, and the aggregate of intimacy/support r = .01, p = .89 in 2009 and r = .02, p = .85 in 2011).

2.3.3. Frequency of use of five types of communication

Participants were asked how often they use four types of technology with their romantic partner: telephone, electronic mail, social networking sites (SNSs), and text messaging. We selected these due to their common usage across the different relationships (romantic partner, family, and friends). We also asked participants about their amount of in-person communication with their romantic partner to be included as a covariate. For each question, participants responded using an 8-point scale: 0 = *never*; 1 = *few times a year*; 2 = *once a month*; 3 = *few times a month*; 4 = *once a week*; 5 = *few times a week*; 6 = *for a short period of time each day*; 7 = *several hours a day*.

3. Results

3.1. Preliminary analyses

Descriptive information on the three major constructs (frequency of use for each type of technology with their partner, attachment style, and romantic relationships qualities) are presented in Table 1. Results indicated that everyone reported some amount of in-person communication in both years, and in 2011, everyone also reported text messaging with partners. Across both years, the means were also high for phone frequency, but using SNSs and especially email were relatively rare ways to communicate with one's partner. As shown with *t*-tests, texting and using a SNS with one's romantic partner were more frequent in the 2011 sample. However, the two samples did not differ on attachment or relationship quality.

Across both samples combined, we conducted several preliminary analyses to determine how attachment, relationship quality, and communication frequency may have varied with respect to

Table 1
Descriptive statistics for the major variables in 2009 and 2011, and results of independent *t*-tests comparing the two cohorts.

	2009 (n = 135)			2011 (n = 145)			t
	Mean	SD	Range	Mean	SD	Range	
Communication frequency							
In person	6.10	1.51	1–7	6.26	1.40	1–7	−0.95
Phone	5.99	1.10	0–7	5.80	1.25	0–7	1.31
Texting	5.83	1.92	0–7	6.39	0.98	1–7	−3.06**
SNS	2.80	2.08	0–6	3.37	1.95	0–7	−2.35*
Email	1.02	1.67	0–7	0.74	1.54	0–7	1.48
Attachment							
Avoidance	2.47	0.95	1–5.67	2.28	1.05	1–5.44	1.58
Anxiety	2.89	1.74	1–6.28	2.63	1.16	1–6.33	1.87
Relationship qualities							
Satisfaction	4.13	0.88	1.67–5	4.26	0.90	1.33–5	−1.21
Intimacy/support	4.10	.85	1.33–5	4.24	.88	1.67–5	−1.39
Conflict	2.01	0.85	1.00–5	1.97	0.97	1.00–5	0.36

Note. SNS = social network site. For communication frequency, the 8-point scale was labeled as 0 = *never*; 1 = *few times a year*; 2 = *once a month*; 3 = *few times a month*; 4 = *once a week*; 5 = *few times a week*; 6 = *for a short period of time each day*; 7 = *several hours a day*.
* p < .05.
** p < .01.

participants' gender, age, distance from one's partner, and relationship length. Women and men did not differ on the frequency of any mode of communication, on their level of anxious attachment, or on the amounts of reported relationship satisfaction and conflict. However, a gender difference for attachment avoidance indicated that men (M = 2.85, SD = 1.10) scored higher than women (M = 2.25, SD = 0.94), t(279) = 4.18, p < .001. Also, women reported higher levels of intimacy/support (M = 4.27, SD = .79) in their romantic relationships than did men (M = 3.80, SD = 1.03), t(278) = −3.68, p < .001. Regarding age, no differences were found for relationship qualities, but age was positively correlated with avoidance r(279) = .19, p = .001, and negatively correlated with frequency of texting one's partner, r(279) = −.14, p = .019. Greater distance to one's partner was significantly related to less in-person communication, r(263) = −.55, p < .001, more frequent email, r(263) = .22, p < .001, and less frequent total communication, r(263) = −.16, p = .01. Finally, relationship duration was negatively correlated with avoidance, r(263) = −.19, p = .001, and anxiety, r = −.14, p = .023, indicating that more insecure participants were reporting shorter relationships. Also, relationship duration was positively correlated with phone use, r(278) = .16, p = .008 and with intimacy/support, r(279) = .19, p = .001. Given these significant associations, we covaried these four variables (sex, age, distance, and duration) in the below analyses.

3.2. Analyses testing main hypotheses

To test Hypotheses 1 and 2, partial correlations were examined (see Table 2) in the overall sample, while partialling out the four control variables as well as year of data collection. Overall, the results supported Hypothesis 1 (that communication would be more frequent within better quality relationships, particularly using modes of communication that are more immediate and provide more cues). Specifically, the frequency of overall communication, as well as communication using phone and text messaging were positively correlated with relationship satisfaction and intimacy/support. In contrast, with relationship conflict, only in-person contact was positively linked to reported conflict.

Results indicated partial support for Hypothesis 2 that attachment avoidance would be linked to more frequent mediated forms of communication, but anxious attachment would be linked to

Table 2
Partial correlations between communication frequency and attachment, and relationship quality (controlling for year of data collection, participant sex and age, distance to one's partner and length of relationship).

N = 261	Attachment		Relationship quality		
	Anx.	Avd.	Satisfaction	Intimacy/support	Conflict
In person	.05	−.02	.02	.07	.13[*]
Phone	−.16[*]	−.21[**]	.15[*]	.16[*]	−.01
Texting	.06	−.13[*]	.14[*]	.14[*]	−.09
SNS	.04	−.06	.09	.11	−.01
Email	.13[*]	.16[*]	−.06	−.02	.11
Total	.07	−.09	.14[*]	.18[**]	.04

Note. SNS = social network site.
[*] $p < .05$.
[**] $p < .01$.

more frequent forms that allow for greater intimacy and immediacy of response. In particular, avoidance was negatively correlated with phone use and texting, but positively correlated with email. However, contrary to hypotheses, anxious attachment also was negatively correlated with phone use and positively with email. One consideration of these findings was that they were due to the covariance between the insecure attachment dimensions (i.e., anxiety and avoidance are correlated, $r = .45$, $p < .001$). In support of this idea, if avoidance is also covaried, the associations between anxiety and phone and email frequency drop to nonsignificance ($r = −.06$, and .08, respectively).

To test Hypothesis 3, that attachment would moderate how communication frequency related to relationship quality, again we combined our samples across the 2 years so that we are only reporting and interpreting moderated effects that remain significant regardless of the year of data collection. Three hierarchical linear regression models were conducted with satisfaction, intimacy/support, and conflict as the outcome variables. On the first step, covariates included gender, age, relationship length, distance to romantic partners, and year of data collection. On the second step, we entered the two attachment variables (anxiety and avoidance). On the third step, the types of communication including in-person communication were entered. On the fourth step, interaction variables between attachment and communication technology were entered stepwise; thus only significant interaction terms remained in the model. Interaction terms were computed from centered variables (Aiken & West, 1991). To unpack significant interactions, results were plotted and simple slopes were examined (Aiken & West, 1991; Preacher, Curran, & Bauer, 2006).

First, results for satisfaction indicated that no covariates were linked to participants' relationship satisfaction (see Table 3). With attachment, avoidance and anxiety were negatively associated with satisfaction indicating greater avoidance or anxiety predicted less positively-rated relationships. On step 3, communication frequency was not directly related to relationship satisfaction. However, two significant interactions emerged. First, an Avoidance X Texting interaction was found. Further analysis indicated that one of the simple slopes was significantly different from zero. Specifically, more frequent texting with one's partner was associated with greater relationship satisfaction for participants higher on avoidance ($B = .09$, $t = 2.69$, $p = .01$), but was not associated for less avoidant individuals ($B = −.00$, $t = −.11$, $p = .91$). Second, an Anxiety X Phone interaction was found. However, additional analysis of this interaction showed that neither simple slope reached significance. One slope (for individuals higher in anxiety) was marginal ($B = .08$, $t = 1.72$, $p = .09$), while the slope for those low in anxiety was also non-significant ($B = −.01$, $t = −.18$, $p = .86$). Thus, this interaction is not interpreted further.

For intimacy/support, two covariates (relationship length and gender) were significant, indicating that people in longer

relationships reported higher levels of intimacy/support and that women reported greater intimacy/support than did men (see Table 3). With attachment, avoidance was negatively associated with intimacy/support, indicating that individuals higher in attachment avoidance reported less intimacy/support in their relationships. No communication types directly predicted intimacy/support. However, on step 4 evidence for two significant interactions emerged. First, an Anxiety X SNS interaction was found. Further analysis showed that more frequent SNS use was related to greater intimacy/support for those high in anxiety ($B = .09$, $t = 2.66$, $p = .01$), but was unrelated for those lower in anxiety ($B = −.04$, $t = −1.11$, $p = .27$). Next, an Avoidance X Texting interaction was again found. Further analysis indicated that more frequent texting was associated with greater intimacy/support for participants higher on avoidance ($B = .06$, $t = 1.98$, $p = .048$), but was not associated for less avoidant individuals ($B = −.02$, $t = −.50$, $p = .62$).

Finally, for relationship conflict, results indicated that no covariates were linked to conflict. On the second step, anxiety was related to reporting more conflict within the romantic relationship. Communication channels were not directly related to conflict on the third step. However, one Avoidance X Email interaction emerged. Further analysis indicated that for participants lower on avoidance, more frequent email was unrelated to conflict ($B = −.01$, $t = −.21$, $p = .84$). However, for participants higher on avoidance, the amount of email use was positively related to the amount of reported conflict ($B = .09$, $t = 2.31$, $p = .02$).

4. Discussion

The present investigation advances the current understanding of how attachment theory can be applied to better understand communication in today's society. We tested novel hypotheses in two samples of young college students about how the frequency of communication channels would show different associations with perceived romantic relationship functioning depending on one's attachment style. Overall, our hypotheses were partially supported to suggest that specific communication channels are directly linked to relationship qualities and attachment. In addition, some evidence indicated that the same communication channels may have different associations to relationship quality depending on one's attachment.

In line with Hypothesis 1, we found support for the prediction that individuals who perceive their relationship more positively also report more frequent communication, both overall and using particular types of channels. Specifically, phone use and texting were linked to reports of positive relationships (higher satisfaction, and intimacy/support). The finding for phone is consistent with prior research (Jin & Peña, 2010), lending credence to the idea that the phone serves critical relationship functions in a college student sample. The finding for texting may be due to the ubiquitous nature of texting (Lenhart, 2010). The only mode of communication that related to conflict was in-person communication. Although our sample generally reported high levels of in-person communication (averages were daily for both samples), we do not know much about the nature and quality of these in-person interactions. It seems possible that individuals are choosing to discuss sensitive topics that they know could lead to conflict while they are face-to-face with partners. Knowing more details about participants' in-person communication patterns could help to elucidate why couples with more in-person interactions report greater conflict.

Interestingly, the results of the regression models told a different story than that of the correlation analyses. The regression findings suggested that communication channel frequencies were not directly linked to romantic relationship quality once other forms

Table 3
Multiple linear regression results predicting relationship quality from attachment, communication channel frequency, and the interactions.

N = 260	Satisfaction		Intimacy/support		Conflict	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1: (Data year, Distance to partner, Participant sex and age, Relationship duration)	.025	–	.081**	Rel. length = .19** Gender = .16*	.020	–
Step 2: (Anxiety, Avoidance)	.261***	Avd. = −.46*** Anx. = −.14*	.271***	Avd. = −.58***	.057**	Anx. = .21**
Step 3: (Frequency. – In person, Phone, Text, SNS, Email)	.009	–	.009	–	.037	–
Step 4: (Interactions - Attachment X Frequency)	.020**	Avd. X Text = .15**	.011*	Anx. X SNS = .11*	.022*	Avd. X Email = .16*
Step 5: (Interactions - Attachment X Frequency)	.017*	Anx. X Phone = .14*	.010*	Avd. X Text = .11*	–	–

Note. Only significant parameter estimates are provided. SNS = social network site.
Interaction effects were entered stepwise.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

of communication and attachment were covaried. In other words, no one communication channel stood out to predict relationship quality, which is consistent with Social Information Processing Theory (Walther, 1992) and other research that found no direct relation between types of media and qualities of relationships (Baym, Zhang, Kunkel, Ledbetter, & Lin, 2007; Coyne et al., 2011).

In terms of the direct associations between attachment and communication channel frequency (Hypothesis 2), the findings for avoidant but not anxious attachment were consistent with our hypotheses. Avoidance was correlated with less frequent phone and text messaging and correlated with more frequent email. Thus, there is some avoidance of certain communication tools that may allow for greater intimacy (Jin & Peña, 2010). These findings are consistent with attachment theory and research illustrating how avoidance may signify less interest in establishing emotionally close relationships (e.g., Feeney, 1994; Kobak & Hazan, 1991).

Our results for the anxious attachment dimension largely contradicted our hypotheses. Initially, correlational results paralleled findings for avoidance in that anxiety was negatively correlated with phone use and positively with email. However, when avoidance was also covaried, these associations became nonsignificant. Thus, anxiety was unrelated to communication channel frequency once removing its shared variance with avoidance. In general, there was no support for the hypothesis that people with higher attachment anxiety use the channels through which there is greater potential for intimacy or immediacy. Perhaps our use of global, self-reported, retrospective estimates of communication frequency impacted our findings. In other words, although we used tangible anchors for our frequency scales to aid in participants' estimations, more anxious people might have unintentionally under-reported the actual frequency of communication if their perception was that they were not talking enough with partners. While results of one regression analysis suggested that social networking site use may be especially important for anxiously attached people, the other finding for anxiety (as a moderator between phone use and satisfaction) was marginal. Overall, the relations among technology use, relationship quality, and attachment anxiety were not as consistent as those with attachment avoidance.

Some support was found for our Hypothesis 3, where we posited that communication frequency may relate to different relationship indices depending on one's attachment style. First, regarding communication with one's partner by text messaging, more frequent texting was related to greater satisfaction and intimacy/support for more avoidant participants, but was unrelated for participants lower in avoidance. This was the opposite of our hypothesis, in that we expected avoidant individuals to report more positive relationships with greater use of more mediated communication (such as email). A recent study (Drouin &

Landgraff, 2012) that examined texting and sexting in young adults' relationships found that avoidant individuals were less likely to text partners in general, but were more likely than those lower in avoidance to send sexually-themed texts and photographs. In the present study we did not ask participants whether they sexted their partners, but it is possible that individuals higher in attachment avoidance may find it easier to meet their intimacy and/or sexual needs via texting than other methods of communication. Recent statistics by the Pew Internet and American Life Project (Lenhart, Ling, Campbell, & Purcell, 2010) indicate that texting is the most common way for young adolescents to communicate with friends, which suggests its implications for relationships should be better understood. Future research could further examine text messaging in close relationships by assessing participants' views about text messaging, the content of sent messages, and by testing meditational models to further explain the current findings.

Also contrary to our hypotheses, we found in our Anxiety X SNS interaction that more frequent SNS use was associated with greater intimacy/support for individuals higher in attachment anxiety. This unexpected finding indicates that when controlling for other common modes of communication, using a SNS with one's romantic partner is linked to a more positive relationship for anxious individuals. Due to highly anxious individuals' proneness to jealousy (e.g., Guerrero, 1998; Knobloch, Solomon, & Cruz, 2001), we might have anticipated problems for their use of SNSs. Muise, Christofides, and Desmarais (2009) found that using a social networking site can create feelings of jealousy in romantic partners because individuals can view their partners' virtual conversations with others and can find out that their partners are communicating with former romantic partners. However, perhaps the public nature of SNSs (e.g., posting one's relationship status, posting photos of themselves with their romantic partner) can support anxious individuals in several ways. These public declarations may make anxious individuals feel more secure and supported by partners. Also, past posts from partners can be retained, which differs from other channels (i.e. in-person, phone use) with no written record. Perhaps this recorded history of supportive text serves to help anxious individuals feel more secure in their relationship during times of conflict or doubt. Some support for these ideas comes from recent studies into the positive outcomes of using Facebook for romantic relationships, which have suggested that people do post affectionate displays to Facebook that they know will be appreciated by partners (Mod, 2010) and that people report greater happiness than jealousy when asked about partners' Facebook activities (Utz & Beukeboom, 2011). Given that SNSs can provide many different types of communication within one site (public vs. private, synchronous vs. asynchronous) via multiple avenues (uploading photographs, "liking" statuses, instant messaging, emailing, public

wall postings) more detailed research on SNS use and attachment may provide more insight into these findings.

Finally, and again in contrast with our hypotheses, the Avoidance X Email interaction indicated that greater use of email was found to predict greater conflict in relationships for those higher in avoidance, but not for individuals lower in avoidance. However, as expected, results of correlations suggested that attachment avoidance was positively correlated with email usage. These patterns suggest that avoidant individuals choose to use email more often (and may therefore prefer it over other communication channels); but that this preference may be particularly deleterious for their romantic relationships if it leads to greater conflict. Avoidant individuals may prefer email as it is less intimate and allows for the preservation of emotional distance from partners; however, their partners (who may not be high in avoidance) may prefer to use less-distant channels of communication, and this discrepancy could stimulate conflict. However, given our correlational study, it is also possible that highly avoidant individuals rely on email more frequently when arguing with their partners, potentially because conflict is an emotional encounter that they may wish to avoid.

4.1. Study strengths and limitations

The present study has several methodological strengths. First, as mentioned, the discussed interactions emerged when including all other measured forms of communication in the analyses as covariates. Several other potentially important covariates (participant gender, age, distance to romantic partner, and relationship length) were included as well. Data were also collected across two cohorts of college students 2 years apart, which allowed for an investigation of change in technology usage across time. Finally, aggregating these two measured cohorts insured that discovered trends were more robust than analyzing one cohort alone.

Several important limitations of our study should be noted. First, our samples are not representative of young adults given that we only sampled college students, and there was limited ethnic diversity as well as more women than men. Also, future research would need to be conducted to determine if our findings could be generalized to populations of different ages (e.g., younger adolescents, older adults). In addition, we did not collect data on participants' past romantic relationships or experiences with technologies in these relationships, which might influence findings. Second, we only examined four types of communication in detail, yet some participants undoubtedly relied on other technologies (e.g., Skype®) to talk with their partners. We also did not have information as to whether communication was occurring mostly via mobile phones (which can be used for phone communication, texting, email, or SNS use) or by traditional means (i.e. computers, landline telephones). However, with the ubiquity of mobile phones (approximately 85% of adults had cell phones between 2009 and 2011; Pew Internet and American Life Project, 2012) it is likely that mobile devices were frequently used by this sample. Nevertheless, more precise questions regarding exactly how participants were using technology may have been valuable. For example, we did not collect information about the specific activities that SNSs were used for (e.g., posting photos, instant messages, email).

A third limitation is that the present study cannot fully address participants' motivations for selecting specific technologies. We did ask participants a forced choice question about their most common reason for using each channel (possible responses included looking for advice, talking about daily activities, talking about partner's activities, school-related talk, giving advice, talking about news, current events, etc.). Across all communication channels, the most common reason for communicating with partners was to discuss one's own daily activities. However, this forced-choice, global question provided limited information. Future research should more fully examine the reasons for communicating by various channels using different research designs (e.g., focus groups, experience-sampling methods). Also, examining the actual content of SNS posts is a potential research strategy (e.g., Mikami, Szwedo, Allen, Evans, & Hare, 2010; Thelwall, Wilkinson, & Uppal, 2010).

A fourth limitation was our study's cross-sectional and correlational design. To better understand the associations among attachment, communication frequency, and types of technology, obtaining daily reports of communication and feelings about one's romantic relationship would provide more precise information about how communication predicts relationship functioning. A final and important limitation is that we only obtained reports from one person within each relationship, and thus are getting an incomplete picture of the important dyadic constructs of interest.

4.2. Conclusions

In summary, this study offers new evidence that romantic partners' use of different forms of electronic communication is related to their relationship functioning and attachment. Although our findings should be replicated and extended, the results suggest that the way in which communication technology frequency relates to people's romantic relationship quality depends on their attachment style.

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