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Text Messages and Romantic Relationships: An Investigation of Mobile Communication Technologies, Attachment Processes, and Relationship Quality.

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Text Messages and Romantic Relationships: An Investigation of Mobile Communication
Technologies, Attachment Processes, and Relationship Quality

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Abstract

Mobile technologies have transformed the way that people interact with one another, and manage their friendships and intimate relationships. Text messages of love and support nurture feelings of closeness and connection in romantic relationships and are related to reports of higher relationship quality (Jin & Pena, 2010). More recently, the use of texts to voice criticisms, continue arguments, and create emotional distance has become a focus of research attention (Hertline & Ancheta, 2014). The current program of research explored attachment anxiety and attachment avoidance, text messaging, and texting parameters as predictors of relationship quality in committed adults.

Across four studies and a combined sample of 1648 participants, a new technology measure was refined and tested. The Technology Questionnaire (TQ) assessed the extent to which participants turned towards or turned away from relationship partners via text. The TQ also examined texting parameters such as text frequency, response expectations, text targets, and text motives. Associations between texting, relationship satisfaction, intimacy, social and emotional loneliness, destructive conflict, partner care, and partner control were examined. Texting behaviour was considered in the context of romantic attachment, relationship status, and commitment. Principles of sound relationship house theory (SRH; Gottman, 1999) were used with the TQ subscales (Turning Towards and Turning Away) to predict relationship quality and destructive conflict by attachment type. Expressions of positive and negative sentiments via text were related to attachment anxiety, attachment avoidance, relationship quality, and destructive conflict. Results suggest that text communications mirror face-to-face patterns of interpersonal communication, reflecting attachment proclivities and relationship principles known to predict relationship satisfaction and distress.

Declaration of Originality

This work has not been submitted for a degree or diploma at any university. To my knowledge, the thesis does not contain any material previously published or written by another person, except where due reference is made in the thesis itself.

Jodie Nicole Bradnam

24 July 2017

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Chapter 1: Text Messaging and Romantic Attachment

Mobile technologies have emerged as tools to create and sustain social and romantic relationships (Lenhart, Ling, Campbell, & Purdell, 2010). Between 2008 and 2013, mobile internet use increased by approximately 510% and the use of text messaging, gaming and social media applications on mobile handsets gained popularity (Australian Communications and Media Authority ACMA Report, 2014). The purported benefits of mobile phone ownership include improvements in personal and professional communication, increases in work efficiency and mobility, enhanced feelings of connection, and a sense of personal control (EY Digital Australia, 2014). Such benefits have translated into an emerging foundation for romantic connection whereby mobile phone contact between romantic partners has been associated with higher intimacy and lower relational uncertainty (Jin & Pena, 2010).

Communication via text represents a generational shift in how romantic partners connect or fail to connect over time, with many couples integrating technology into their everyday interactions with one another (Coyne, Stockdale, Busby, Iverson, & Grant, 2011; Pettigrew, 2009). Text messages commence, advance, and maintain interpersonal relationships, as do other forms of communication (Pettigrew, 2009). In romantic dyads, partners attune through the sharing of internal emotional states, in a process referred to as emotional resonance (Siegel, 2011). Findings from interpersonal neurobiology suggest that emotional resonance occurs when energy and information flows between people in an integrated way, resulting in physical and psychological well-being (Siegel, 2011; Siegel, 2012). This energy and information flow supports the emotional attunement of a couple and largely determines the quality of the romantic bond.

Attachment theory has emerged as a tool to understand individual interactions and the formation of romantic relationships (Fraley & Shaver, 2000), and as a framework to examine the motives that drive texting behaviour and contribute to relationship quality (Weisskirch &

Delevi, 2011). Attachment theory is based on the premise that humans have a natural inclination to make and maintain lasting affectional bonds to significant others (Bowlby, 1977). The quality and stability of these interpersonal bonds, which are established during early infancy, are related to emotional health and physical well-being throughout the lifespan (Bartholomew & Horowitz, 1991). Attachments formed between infants and primary caregivers relate to exploratory behaviour, emotional regulation, and the capacity for intimacy in adulthood (Bartholomew, 1990). Through interactions with parents, children shape how they regulate their behaviour and their internal affective states, how they perceive themselves and others, how they respond to stress, and what they expect of close relationships (Howe, 2011). Consequently, early learning experiences are related to proclivities in the nervous system that shape responses to romantic partners and to others in adult relationships in later life (Siegel, 2011). These proclivities are central to the expression of attachment behaviours that resonate prominently into the adult years. An exploration of how these tendencies shape engagements with mobile communication technologies and relate to relationship quality is a focus of the present thesis.

A key tenet in Bowlby's theory is that early attachment experiences set the stage for individuals to navigate relationships with parents, siblings, close friends, teachers and mentors (Fraley & Roisman, 2015). Repeated experiences of sensitive, responsive care in early attachment networks support the development of skills for maintaining high quality relationships in adulthood. Conversely, erratic or deficient demonstrations of care in early childhood are likely to undermine confidence and comfort with close emotional connections in adulthood. Mikulincer and Shaver (2003) assert that repeated interactions with others, positive or otherwise, contribute to the development of internal working models of oneself in terms of being worthy of love and affection, and of others in terms of being caring and likely to help in times of need. These models, or representations, play a role in multiple domains

including interpersonal communication, emotional regulation, close relationship formation, relationship maintenance, exploratory behaviours, response flexibility, and caregiving. As with other modes of interpersonal communication, attachment orientation is likely to relate to the use of mobile communication technologies with romantic partners.

The Rise in Texting

In recent years, text messaging has been widely adopted and has surpassed voice calls as a preferred mode of technology based, mobile communication, particularly among teenagers and young adults (Nielsen Online, 2009; Smith, 2011). Texting became available in Australia in 1995 (Harper & Clark, 2002), with an agreement among service providers to exchange messages across networks from April 2000 (Horstmanhof & Power, 2005). Since then, text messaging has been integrated into professional, social and romantic relationships, supporting functions from appointment confirmations to romantic liaisons. Texting offers a time efficient, flexible and economical tool of connection with benefits reflected in rapid adoption rates and an increasing reliance on this technology (Coyne et al., 2011). Australians are more likely to use a mobile phone than a landline phone or computer to stay connected to others (Australian Census Bureau, 2014) and the use of technology to maintain social connections with friends, family and romantic partners is transforming patterns of interpersonal communication (Hertlein & Blumer, 2014).

Seventy-seven percent of Australians aged 13 years and older own a mobile phone that has capacity to send and receive text, photo and video messages (Australian Census Bureau, 2014). Average daily text estimates of 20 messages for adults and 95 messages for teenagers are reported in the literature (Pew Research Centre, 2012; Reid & Reid, 2010; Schade, Sandberg, Bean, Busby, & Coyne, 2013; Smith, 2011). The proportion of adults who text increased from 58% to 72% over a period of three years, with 18% of adults under 24 years sending more than 200 messages each day (Lenhart, Ling, Campbell, & Purdell, 2010).

Global estimates suggest that over 23 billion text messages are sent every 24 hours, supplementing traditional face-to-face and voice call communication pathways between parents and children, romantic couples, acquaintances, and friends (Portio Research, 2015).

Despite growing acknowledgement of the use of technology in romantic relationships, there are few instruments available to capture the content of messages and the nature of text exchanges (Campbell & Murray, 2015; Hertlein & Blumer, 2014). The absence of a reliable measure of texting behaviour represents a significant gap in the understanding of mobile communication technologies and the extent to which attachment variables relate to technology use, relationship quality or distress. Emerging research suggests that texting is associated with positive as well as negative interactions, and with strengthening and weakening interpersonal ties (Hertlein & Ancheta, 2014). However, the rapid adoption of mobile communication technologies has meant that texting research has lagged behind the pace of developing user trends.

Contributing to a gap in the literature is an awareness that text communication varies in important ways from face-to-face communication. When engaged in patterns of effective communication, partners attune to a complex mix of verbal and nonverbal cues and encode this information to appraise partner understanding. The essence of contingent communication is an interpersonal exchange in which the attuned response of a romantic partner resonates strongly with an individual's experience (Wallin, 2007). In face-to-face interactions, partners attune to variations in eye contact, facial expression, prosody, body posture, gestures, timing, and response intensity to appraise the strength of the romantic connection and the extent to which they have been heard and understood (Siegel, 2011). These nonverbal cues underpin a dynamic process and rich interpersonal climate. Partners are privy to feedback that confirms attunement or, in the case of misattunement, are presented with an opportunity to make a repair. With the exchange of text messages, however, partners access only two of these seven

nonverbal cues. In the absence of eye contact, facial expressions, prosody, posture, and nonverbal gesturing, cues like response expectations and text content are pronounced indicators of partner attunement when communication occurs via text. These qualities and unique characteristics of text communication have been largely overlooked in examinations of texting, attachment, and relationship quality providing the impetus for the current research.

Text messaging represents a unique, interactive, written form of communication that is transmitted and responded to in real time (Holtgraves, 2011). Texting is more economical than voice calls, and discretion and directness are cited among the advantages of this technology (Faulkner & Culwin, 2005). Texting permits asynchronous communication, allowing time for the editing and review of texts before pressing send. Text messages may be exchanged in dyads or shared within small friendship circles (Pettigrew, 2009). Text messages are governed by etiquette and include emoticons and abbreviations that are unique to this form of communication. The elliptical nature of texts, that is, the frequent use of abbreviations, acronyms and emoticons, personalise text exchanges between intimates over time (Holtgraves, 2011). In the same way that verbal dialogue is personalised between friends and partners (Pettigrew, 2009; Holtgraves, 2011), text etiquette governs expectations on response time, message length, emoticon use and conversation exits. Personal preferences for content, depth of personal disclosure, frequency, and length of engagement characterise text exchanges just as they characterise other interpersonal interactions. The interpretation of what these text frequencies, response times, and conversation exits mean may reflect activations of the attachment system.

Early studies of text messaging identified significant associations between attachment styles, relationship satisfaction and text frequency (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011), and identified positive, negative and maintenance functions that are achieved through mobile communication (Schade et al., 2013). Responses and reactions to text

messages appear to reflect priming of attachment responses and mirror the complexities of face-to-face communications. Priming occurs when an external threat prompts an activation of the attachment system and triggers a response that is linked to early learning experiences, relationship attributions and expectations. Priming explains how implicit and explicit representations of historical events can influence behavioural responses in the present, often without awareness that the emotional trigger is emerging from the past (Siegel, 2011). In close relationships, priming, through the activation of early attachment behaviours can influence how an interaction is perceived or enacted. Priming also supports an explanation of how differences in perspective and interpretation arise when two people are involved in the same interpersonal exchange (for example, a relational conflict that arises from the misinterpretation of a well-meaning text). Sending and responding to texts may be associated with primed attachment responses and contribute to the quality of romantic relationships by promoting or hindering emotional attunement.

Texts are multivalent. Rather than represent entirely positive or negative relationship behaviours, texts might also reflect the attachment orientations of each partner, the mood of the sender and recipient, emotional climate of the relationship, and quality of the romantic connection. Text messages convey meaning on many levels, influencing the recipient and the sender in ways that may not be consciously recognised in moment-to-moment experiences. The capacity of texts to foster connection or provoke disconnection appears to relate to the content and tone of the messages that are exchanged, the attachment orientations of each partner, the priming of attachment responses, and perceptions of emotional attunement. Jin and Pena (2010) found that increased phone use among college students with a romantic partner was associated with greater love and commitment, as well as decreased relational uncertainty about the status of the relationship. Evidence suggests that when engaged in emotionally attuned relationships, texts exchanged between partners can augment these

romantic connections (Lincoppe, 2004; Jin & Pena, 2010). Technology use, however, also opens partner interactions to semantic misinterpretations, creating barriers to problem solving, impaired trust (Hertline & Ancheta, 2014), and obstacles to intimacy development (Hertline & Stevenson, 2010) including the emergence of destructive conflict in negative text exchanges.

Overview of Thesis

The current program of research examined the associations between mobile communication technologies, attachment orientation, and relationship quality by examining call and message content, frequency, response expectations, contact targets, and attitudes towards calling and texting. A new measure of technology use, the Technology Questionnaire, was developed to examine how mobile technologies are used differentially in romantic relationships, reflecting individual preferences, attachment influences, and personal and relationship variables. The contribution of attachment orientation and mobile communication technologies to relationship quality was tested through the lens of Sound Relationship House theory (SRH; Gottman, 1999). This theory of relationship quality integrates evidence-based predictors of relationship success and distress that have been identified across four decades of research (Gottman, 1982; Gottman, 1999; Gottman & Levenson, 2000). In the literature, positive patterns of interpersonal communication that feature mutual empathy, warmth and a secure attachment foundation, relate to higher relationship quality (Crooks & Baur, 2017). Conversely, negative patterns of interpersonal communication that feature escalating, destructive conflict, emotional disengagement, and an insecure attachment foundation, relate to lower relationship quality (Crooks & Baur, 2017). This thesis evaluates whether attachment anxiety, attachment avoidance and the behaviours known to characterise successful and unsuccessful partnerships are embedded in text communications, and are related to relationship quality.

Chapter 1 reviews the significance of early attachment relationships in shaping interpersonal communication and relationship security. Attachment styles, reflecting early interactions with primary caregivers and adult models of relationship safety and security, are related to bids for attention and affection, including those bids made via text (Drouin & Landgraff, 2012). The present chapter also explores the integration of mobile technologies in regular patterns of interpersonal communication, considers the qualities that differentiate texting from calling, and examines the personal variables that contribute to differences in technology use. Text parameters including message content, tone and response expectations, unique to this mode of communication, are assessed as contributors to relationship satisfaction in romantic dyads. Aspects of relationship quality in addition to satisfaction are considered in the examination of texting and romantic relationships. Measures of intimacy, loneliness, destructive conflict, partner care and control extend the breadth of the investigation beyond measures of relationship satisfaction. These measures, together with the Technology Questionnaire, are evaluated as predictors of relationship success and distress in this program of research, with a framework that is consistent with SRH theory.

The Significance of Attachment

Attachment types were originally defined categorically by Bowlby (1977) as *secure*, *anxious ambivalent* or *avoidant*, based on infant response styles to primary attachment figures. Bowlby observed that children who had been separated from primary caregivers frequently expressed intense anxiety and despair, often communicating their distress in the form of “protest reactions” or “protest behaviours”, which included crying, clinging and searching (Fraley & Roisman, 2015). Bowlby (1973) argued that these protest behaviours were an adaptive strategy to restore proximity to a primary attachment figure who was capable of providing protection and care. Children use primary caregivers as a base from which to engage with the world (Siegel, 2003). The more confident and secure children feel

in the availability of an attachment figure, especially in times of need, the more independent and playful they become in explorations of their environment and in relationships with others (Fraley & Roisman, 2015). The exhibition of protest behaviours, however, signals the perception of a threat and the desire to connect with a safe base (Howe, 2011). Over time and through repeated experience, children develop mental models of their attachment figures as responsive and available or unavailable, and mental models of themselves as worthy or unworthy of love and affection (Park, Crocker, & Mickelson, 2016).

Secure children tend to be exploratory, confident, and inquisitive (Howe, 2011). They seek support and assistance from the primary caregiver as required, trusting in the responsiveness of the parent to provide reassurance and comfort. When separated from primary caregivers, securely attached children show moderate distress, seek connection, and are soothed by the reunion with the parent (Crooks & Baur, 2017). Children with a secure attachment relationship tend to exhibit empathy, learn to regulate their emotions effectively, and develop a sense of worthiness of love and affection (Fraley & Roisman, 2015; Siegel, 2011).

In contrast, children who lack a secure base, *anxious ambivalent* or *avoidant*, tend to feel generally anxious and fearful (Howe, 2011). Early life experiences for these children shape their perceptions of attachment figures as unavailable and unresponsive (neglectful) or erratic and unpredictable (chaotic). When separated from a primary caregiver, insecurely attached children show higher levels of distress than securely attached children, respond with hostility or indifference on reconnection, and require longer to calm down (Crook & Baur, 2017; Siegel, 2012). Insecurely attached children behave with more anger, greater hostility and less empathy and confidence in social situations than securely attached children (Fraley & Roisman, 2015).

Qualities of early emotional bonds between children and primary caregivers are thought to shape implicit and explicit memory systems, capacities for self-regulation, and the priming of the nervous system in response to cues signalling disconnection from others (Siegel, 2011). Contingent communication, where the internal state of the child is perceived and responded to by an attachment figure, has been observed universally across cultures in attuned parent-child interactions and secure attachment relationships. These interactions allow the child to “feel felt” and for neural development to progress “in a typical way” with confidence in the presence, availability and reliability of others in times of need (Siegel, 2012, p. 155). The nature of infant attachment relationships leads to specific organisational changes in brain function and behaviour and translates into characteristic attachment orientations and behavioural tendencies in adulthood (Maine, 1990; Siegel, 2011). Repeated experiences of supportive, responsive care in early relationships shapes the development of pervasive mental models of the self and others (Bartholomew & Horowitz, 1991) as well as the development of social competence, which is fundamental for effectively navigating romantic relationships in adulthood (Fraley & Roisman, 2015). These mental models are reflected in capacities for intimacy and emotional closeness, feelings of trust and emotional safety, and in the enactment of behaviours that cultivate close, romantic connections or regulate emotional distance in adult relationships.

According to attachment theory (Bowlby, 1977), secure attachment and adaptive functioning is promoted by caregivers who are emotionally available and responsive to the behaviour of children and capable of regulating their own positive and negative emotional experiences (Mikulincer & Shaver, 2003). Individuals with secure attachment classifications in adulthood tend to score low on the two dimensions of attachment: attachment anxiety and attachment avoidance. Attachment anxiety represents the degree to which individuals are comfortable with close intimate relationships and trust romantic partners to meet their

physical and emotional needs. Attachment avoidance represents the degree to which individuals are challenged by requests for physical and emotional intimacy and desire autonomy in close relationships (Levine & Heller, 2012). Securely attached adults, who are low on both attachment anxiety and attachment avoidance, are comfortable with emotional intimacy and confident that their partners will be available in times of need (Mikulincer & Shaver, 2003). In contrast, adults with an insecure attachment style tend to score high on one or both attachment dimensions. Attachment insecurity results from unstable, erratic, unreliable, absent or dismissing patterns of early parenting or profound experiences of loss in early childhood (Ainsworth, Blehar, Walters, & Wall, 1978). Insecure attachments in childhood appear to manifest as anxious or avoidant behavioural tendencies in adulthood (Bowlby, 1973).

Measurement of Attachment

While it is widely accepted that two dimensions of insecurity, attachment anxiety and attachment avoidance, underlie self-report measures of adult attachment (Howe, 2011; Solomon & George, 2016), there is some debate in the literature regarding whether attachment is best-measured using continuous or categorical variables (Fraley & Spieker, 2003; Feeney, 2016). Dimensional measures of attachment capture the degree to which individuals feel secure and comfortable with close, intimate relationships using continuous measures of attachment anxiety and attachment avoidance (Fraley & Shaver, 2000). Dimensional measures operate on the assumptions that attachment anxiety and attachment avoidance exist on a continuum and that the classification of adults into attachment types creates overgeneralised response sets that compromise the precision of attachment measures.

An alternate model of adult attachment recognises four attachment types as the interaction of anxiety and avoidance in intimate adult relationships (Brennan & Shaver, 1995; Brennan, Clark, & Shaver, 1998). The styles are defined using a combination of a self-image

(e.g., positive or negative) and image of others (e.g., positive or negative). The four styles are *secure* (e.g., low anxiety, low avoidance, positive self, positive others), *preoccupied* (e.g., high anxiety, low avoidance, negative self, positive others), *fearful avoidant* (e.g., high anxiety, high avoidance, negative self, negative others) and *dismissing* (e.g., low anxiety, high avoidance, positive self, negative others; Bartholomew & Horowitz, 1991). These adult attachment types are related to patterns of contingent communication, where romantic partners perceive, interpret and respond to each other's signals (Wallin, 2007), and to the quality of interpersonal interactions by contemporary technologies, such as text messaging (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011). In this program of research, dimensional and categorical measures of adult attachment are examined with respect to texting and relationship quality.

Attachment in Adult Romantic Relationships

In contemporary adult attachment models, the avoidance dimension represents the degree to which individuals feel comfortable with interpersonal closeness, and physical and emotional intimacy in relationships (Simpson & Rholes, 2010). Individuals with avoidant attachment styles (i.e., dismissing and fearful avoidant types high in attachment avoidance) tend to be autonomous and seek to retain a sense of psychological and emotional distance from the romantic partner (Hazan & Shaver, 1987). Attachment anxiety captures to the extent to which individuals fear rejection or abandonment by their partners (Simpson & Rholes, 2010). Adults with anxious attachment types (i.e., preoccupied and fearful avoidant high in attachment anxiety), experience feelings of uncertainty regarding the availability of partners in times of need (Hazan & Shaver, 1987). Anxiously attached adults often experience an exaggerated fear of abandonment, display possessive or attention seeking behaviours (i.e., preoccupied type) or disengage as a protective strategy against rejection (i.e., fearful avoidant type, Simpson & Rholes, 2010). Adults with high attachment anxiety may cling to

relationships and look to others for validation and acceptance (i.e., preoccupied type) or show changing patterns of engagement and disengagement (i.e., fearful avoidant type) as they seek to protect themselves from experiencing rejection (Siegel, 2011).

Environmental influences in early infancy, particularly the quality of parent-child relationships and emotional interactions, shape neurological, psychological, and social functioning, with effects that extend into adulthood. Disruptions in parent-child relationships have been associated with alterations in neuronal development in regions linked with emotional regulation, emotional processing, and the moderation of the stress response (Newman, Sivaratnam, & Komiti, 2015). Prolonged periods of stress in childhood and poor quality attachment relationships increase vulnerabilities to later psychiatric conditions including mood and anxiety disorders (Penza, Helm, & Nemeroff, 2003). This research suggests that adults with compromised attachment foundations may be prone to greater emotional reactivity, stronger attributional biases, and primed activations of the attachment system in response to perceived interpersonal threats. Threats to attachment security may translate into specific relational behaviours, including those observed in text interactions.

Research has repeatedly demonstrated the significance of early attachments, their associations with psychological and physical wellbeing, and the quality of adult romantic relationships (Penza et al., 2003; Siegel, 2011; Wallin, 2007). Further, research supports the capacity for attuned relationships to stimulate the activation and growth of integrated fibres in the brain (Siegel, 2011). Integrative neural fibres link disparate cortical regions, thereby promoting emotional regulation and psychological wellbeing (Siegel, 2011). Promoting attunement through contingent communication in adult romantic relationships may support a shift towards a more secure attachment stance, despite early learning experiences that may have compromised attachment security (Levine & Heller, 2012).

From an interpersonal neurobiology perspective, higher attachment avoidance and higher attachment anxiety reflect neural integration patterns of early brain development where either differentiation (anxious attachment) or integration of the left and right hemisphere (avoidant attachment) has been compromised (Siegel, 2011). When individuals with an anxious attachment style sense disconnection from an attachment figure, for example due to conflict or perceived relationship distance, there is a flooding of emotions from the right hemisphere to the left, priming a chaotic drive to establish reconnection (Siegel, 2011). With higher attachment anxiety, thoughts of the relationship fracturing are exaggerated and efforts are made to restore contact and security with the relationship partner (Feeney, 2016; Simpson & Rholes, 2010). Activation of the attachment system provokes the emergence of protest behaviours that in children may resemble distressed crying, searching, and clinging to the primary carer. In adults, protest behaviours may include cognitive rumination (e.g., about the partner and the relationship), excessive calling or texting, threats to leave the relationship, and obsessive partner monitoring (Levine & Heller, 2012). The demonstration of protest behaviours via text was examined in this program of research through texting parameters and the subscale items of the Technology Questionnaire.

When an individual higher in attachment avoidance senses partner withdrawal or enmeshment, there is a disconnection of the right hemisphere from the left and the priming of distancing behaviour as a protective behavioural strategy (Siegel, 2016). Resultant protest behaviours may include emotional disengagement, the diversion of attention to others, or the deliberate rejection of partner calls or texts (Levine & Heller, 2012). With higher attachment avoidance, thoughts of the relationship are suppressed in service of self-preservation and autonomy is re-established to confirm security (Siegel, 2011). Neural pathways, consolidated through implicit and explicit memories of early parent-child interactions, direct emotional and behavioural responses to perceived threats of separation, even in adulthood. With neural

priming, protest behaviours may emerge in response to what feels like abandonment or enmeshment. Old patterns of relating can emerge as experiences, “that don’t feel like memories”, and individuals can “find themselves lost in familiar places” as they repeat old patterns of interpersonal distancing or dependent attachment (Siegel, 2011).

Using experimental manipulations, researchers have primed increases and decreases in attachment security and found that the resultant shifts were associated with changes in cognition, physiology and behaviour (Gillath, Seluk, & Shaver, 2008; Mikulincer & Shaver, 2007). In a study of attachment priming, participant responses were primed with one of three scenarios (a) with affectionate words such as hug, love and affection, (b) with memories of times when participants have received emotional support from relationship partners, or (c) with the name of a person who provided safety and security to the participant in childhood. Priming increased short term perceptions of attachment security and decreased short term attachment anxiety and attachment avoidance (Gillath, Hart, Nofhle, & Stockdale, 2009) and the effects remained significant even when dispositional narcissism, positive affect, and self-esteem were later examined as covariates (Mikulincer, Hirschberger, Nachmias, & Gillath, 2011). Studies of priming support early attachment relationships as critical in shaping adult patterns of partner attunement and connection (Gillath, 2015). Priming studies also support an observation that protest behaviours emerge in response to activations of the attachment system in all partner interactions, including interactions that occur via text. An exploration of texting parameters, including text content, response time expectations, text targets, and text frequency in this program extends the research on attachment priming and relationship quality, utilising text communications to observe protest behaviours.

Emerging from research in interpersonal neurobiology are two key findings regarding attachment and attuned communication. The first acknowledges that while insecure attachment relationships block integration, healthy and stable relationships with romantic

partners in adulthood promote integration and support wellbeing (Howe, 2011; Neuman et al., 2015; Penza et al., 2003). Despite the early learning experiences of an individual, neural differentiation and neural integration are processes that can be cultivated in stable, secure adult relationships. When experiences of early childhood are integrated with a coherent narrative, there is a shift toward a more secure, open, trusting attachment stance, and higher relationship quality (Siegel, 2011). Attachment systems are stable and plastic (Fraley, 2002) and shifts toward attachment security are possible through improvements in relationship communication and emotional attunement, which in turn enhance relationship quality and stability.

The second finding is that early learning experiences profoundly shape expectations of and responses to others in romantic relationships (Neuman et al., 2015; Siegel, 2003; Wallin, 2007). Priming appears to shape responses to romantic partners in all contexts, including text communication, with insecurely attached adults responding to separation cues in ways that are consistent with their relationship expectations and partner attributions. The tone and content of text messages reflect response expectations and perceptions of connection or disconnection. In response to attachment primes, partners may distance themselves by ignoring or delaying responses to texts from the romantic partner (i.e., priming attachment avoidance). Alternately, they may seek contact by actively pursuing the partner with expressions of affection or by initiating arguments via text in a misguided attempt to restore connection (i.e., priming attachment anxiety). In hyperactivation, even contact that is a negative interaction and represents conflict is preferable to disconnection (Johnson, 2008; Mikulincer & Shaver, 2007). Thus, conflict via text may sometimes represent a misguided attempt to meaningfully engage and make contact. Individuals with avoidant attachment styles may use texts to keep interactions brief, control the timing and depth of contact, and maintain a safe emotional distance in romantic relationships. Conversely, anxiously attached

adults may utilise texts to engage partners without the potential for rejection that accompanies face-to-face interactions. Adults with secure attachments may use texts as an adjunct to existing communication streams, introducing spontaneity, demonstrating responsiveness, and increasing opportunities for regular connection. Consequently, exchanges via text may be functional or dysfunctional within a romantic relationship if text processes are used to meet attachment needs for connection or separateness. While these ideas remain untested, the present thesis examines the nature and function of text exchanges and their associations with attachment and relationship quality.

Activation and Deactivation of Attachment Strategies in Romantic Relationships

Attachment orientation moderates the way romantic partners interact with one another, in communication, conflict and sexuality (Simpson & Rholes, 1998). According to Mikulincer and Shaver (2003, 2007), the primary function of the attachment system is to seek proximity to attachment figures in times of distress. When a threat is perceived, the primary strategy of the attachment system is to seek proximity to an attachment figure, usually a caregiver (in early childhood) or relationship partner (in adulthood), and to establish a sense of safety and security (Howe, 2011). When proximity is obtained, the individual tends to feel relieved and secure. Proximity to the attachment figure promotes emotional regulation and the restoration of exploratory behaviour (Main, 1990; Siegel, 2011). Not all interactions, however, lead to attachment security. In early childhood, if attachment figures are consistently unavailable, unresponsive or unreliable, secondary attachment strategies are sought to deal with the resulting sense of insecurity. Secondary strategies involve the deactivation or hyperactivation of the attachment system (Mikulincer & Shaver, 2007).

When caregivers are intrusive, blending their own emotional states with those of the child, or provide inconsistent or insensitive support, individuals are likely to develop an anxious attachment style (Siegel, 2011). Individuals who report high attachment anxiety tend

to perceive themselves as worthless and helpless, and remain hypervigilant to relationship related cues. Highly anxious individuals tend to employ hyperactivating strategies that are attempts to establish a connection with their partner in response to a fear of rejection or abandonment (Mikulincer & Shaver, 2007). In hyperactivation, an event provokes anxiety in a person A, who tries to reduce anxiety by seeking the physical or psychological closeness of person B. If person B rejects the request for closeness, the lack of responsiveness from person B increases feelings of insecurity and anxiety for person A. Consequently, person A enters a cycle, repeatedly trying to achieve closeness, experiencing rejection and then mobilising additional resources to gain the partner's attention and affection (Mikulincer & Shaver, 2007). Attempts for connection may represent positive attention (e.g., requests for closeness, bids for connection) or negative attention (e.g., provocation of conflict). The cycle continues until the situation shifts to a security based strategy (i.e., person B responds positively to person A's requests for closeness) or when person A gives up on receiving a positive response from person B and withdraws. However, this is significantly less likely in adults who are high in attachment anxiety.

When caregivers are perceived as unemotional and rejecting in times of need, individuals who seek proximity and support from them are likely to develop an avoidant attachment style. Individuals scoring high on attachment avoidance tend to downplay the importance of emotions and suppress attachment related thoughts, emotions and memories (Siegel, 2012). Highly avoidant individuals employ deactivating strategies that represent attempts to distance themselves from their romantic partner. These deactivating strategies are likely to reflect fears that they will become dependent upon their partner or will be relied upon for emotional support (Simpson & Rholes, 2010). In deactivation, person A perceives the requests of person B for closeness and affection as excessive and stifling, provoking anxiety in person A. In response, person A distances him or herself from person B. Person B

often exacerbates attempts for connection which are interpreted as confirmation of the excessive neediness of partner B. Partner A's negative thoughts about the relationship are reinforced and emotional distancing generally follows (Mikulincer & Shaver, 2007).

Anxious and avoidant individuals employ a combination of hyperactivating and deactivating strategies as they move between a desire for intimacy and protective detachment (Simpson & Rholes, 2010). Patterns of hyperactivation and deactivation are observed in adults who report high attachment anxiety as well as high attachment avoidance (Mikulincer & Shaver, 2007). Attachment styles influence the perception of support from others as well as the tendency to seek support from others. Individuals who have secure attachment orientations and partners who respond consistently and positively to requests for closeness tend to seek more support overall, enhancing perceptions of intimacy. Individuals with insecure attachment orientations and a poor history of responsive relationships tend to rely less on their partners and are less likely to ask for support (Mikulincer & Shaver, 2007), although this does not necessarily reflect a lack of desire for connection. Early learning models based on attachment relationships with caregivers prime behavioural responses in adulthood. Repeated experiences with caregivers in early childhood contribute to the development of internal working models. These internal working models in insecure attachment (otherwise referred to as schemas) appear to activate attachment triggers and translate into behaviours that demand attention and care or, alternately, lead to withdrawal and self-sufficiency.

With respect to text interactions, patterns of hyperactivation and deactivation may be observed as changes in text frequency and text content across time, as in processes described by Mikulincer and Shaver (2007) above. Hypothetically, responses and reactions to text exchanges may reflect protest behaviours that indicate the attachment system has been activated. In hyperactivation, initial texts to a partner may represent warm, affectionate bids

for connection. However, should bids remain unnoticed for an extended period, without a plausible explanation for a tardy response, the content and intensity of bids via text may shift from casual to demanding and conflictual. The emergence of protest behaviours may reflect the sender's striving for connection and their efforts to re-establish attachment security, as described above (Mikulincer & Shaver, 2007). In deactivation, especially in response to what is perceived as excessive text contact from the partner (either excessive in frequency, or excessive in depth of disclosure), the individual may ignore or withdraw from text interactions leaving the other partner feeling emotionally vulnerable and uneasy. As explained by Mikulincer and Shaver (2007), in response to withdrawal the pursuer is likely to increase rather than decrease attempts at connection. Consecutive texts, with an increasingly urgent tone, may be followed by direct mobile contact, in an attempt to bridge the experience of separateness. Applying the pursuer-distancer cycle to texting (Lavy, Mikulincer & Shaver, 2009), shorter response time expectations and higher text frequencies may represent protest behaviours. In response to the activation of the attachment system, the person who withdraws may continue to ignore the partner, avoid text contact altogether, or engage in alternate activities with other contacts to self-soothe. Shifts in target of contact for texts or response time expectations may signal protest behaviours for the partner with a more avoidant attachment stance. Continued pursuit by one partner, in response to withdrawal by the other, is likely to result in conflict as both parties attempt to down regulate their emotional arousal through connection (for the pursuer) or separateness (for the distancer). In this exchange, both parties are seeking to re-establish attachment security. However, due to inherent differences in their attachment styles, they employ very different and somewhat incompatible strategies. The text interaction described here represents an intrusive pursuer-distancer pattern (Lavy, et al., 2009) and a struggle for individuals to find an appropriate balance between proximity and autonomy (Lavy, Mikulincer, Shaver, & Gillath, 2009). Intrusiveness

reflects attempts to monitor or influence partner behaviour, invade partner boundaries, or make unreasonable relational demands with critical, controlling or clingy behaviour (Lavy et al., 2009), while withdrawal suggests a desire to create emotional distance and restore independence (Levine & Heller, 2012; Siegel, 2011). The pursuer-distancer cycle with respect to text communication remains untested in the literature.

At present, most research has focussed on text frequency as a measure of texting behaviour. Although studies of text frequency have shown associations between texting and relationship satisfaction, associations between broader texting parameters (i.e., variables including attitudes towards texts, message content, message intent and response expectations) and relationship quality remain largely untested. This gap in the current literature reflects limitations in the measurement and assessment of text messaging and an opportunity to extend this research area. The adoption of modern communication technologies has been rapid (Smith, 2011), often outpacing the empirical research. This paper proposed that a more comprehensive assessment of texting behaviour and attitudes may extend the current understanding of text communications, attachment principles, and relationship quality.

Attachment Orientation and Calling and Texting

Whereas few studies have examined the relationship between text messaging and relationship characteristics, research has now established that early attachment styles influence adult interaction patterns (Holtgraves, 2011). Lincoppe (2004) found that mobile phone use supports a connected presence in committed relationships and text messaging strengthens interpersonal bonds and fosters intimacy. Avoidant attachment is associated with shorter duration and fewer mobile phone interactions (Jin & Pena, 2010) and attachment anxiety has been associated with greater reassurance seeking in romantic relationships (Impett & Peplau, 2002). Related research has examined attachment status and sexts, a subcategory of text messages that express flirtatious, sexually provocative or explicit content

(Delevi & Weisskirch, 2013). Motives for sending sexts have shown to vary as a function of attachment orientation (Weisskirch & Delevi, 2011; Drouin & Landgraff, 2012). Sexual texts have been viewed as a form of flirting, a prelude to sex or a way to reduce relational uncertainty (Impett & Peplau, 2002).

An early empirical study of sexual texts proposed that differences in attachment styles prime adults to text differently (Weisskirch & Delevi, 2011). In a study of over 700 college students, Weisskirch and Delevi examined how texting practices were related to adult attachment. Participants completed the Experiences in Close Relationship Scale Revised (ECR-R), measuring attachment orientation, and responded to questions that examined the frequency of text and sext exchanges. Attachment anxiety was associated with sending text messages propositioning sex that were motivated by a desire to please the partner and reduce relationship insecurity. The data supported the proposal that texting is a strategy to manage hyperactivation for those with an anxious attachment stance. Texts were sent to reduce relationship tension, draw the romantic partner closer, and reassure the sender of the recipient's interest. Individuals higher in attachment anxiety reported stronger tendencies to shape the content of messages to please the relationship partner, even if the message created discomfort for the sender. This finding is consistent with previous research highlighting the extent to which those with higher attachment anxiety will go to in the service of maintaining a romantic relationship (Levine & Heller, 2012). Weisskirch and Delevi (2011) proposed that mobile technologies are presenting new ways for anxious attachment behaviours to emerge. This program of research tests this proposal with text frequency, response expectations, and target of contact examined as indicators of protest behaviour in romantic relationships.

In a subsequent study, Drouin and Landgraff (2012) explored the relationship between mobile messaging technology and attachment style in romantic relationships in a sample of 744 college students. Participants completed a survey containing questions about texting and

sexting practices and attachment styles with relationship partners. Results showed that texting and sexting were both relatively common relationship behaviours that were related to attachment style. Adults with a secure attachment orientation reported higher text frequencies than the other three attachment orientations. Individuals higher in attachment avoidance reported lower text frequencies, as hypothesised. Higher attachment anxiety was associated with a preference for making voice calls to partners over sending texts, supporting the proposal that attachment anxiety primes immediate reassurance-seeking behaviour and that calls are more intimate, and possibly less ambiguous, than texts. Sex differences emerged from the data with attachment anxiety as a predictor of sending sexts for females, but not for males. This finding emphasises the importance of controlling for gender in exploring patterns of hyperactivation and deactivation. While females high in attachment anxiety used sexting to reduce relationship tension and draw the romantic partner closer, there was no support for sexting in response to hyperactivation for males. In the same study, attachment avoidance emerged as a significant predictor of sending texts containing sexual content and sexual images. Although attachment avoidance was associated with sending fewer texts, it was associated with the sending of more sexts to romantic partners. This is consistent with the avoidance of activities that build intimacy and participation in activities that meet a personal need. Sending sexual texts may be a deactivating strategy for those higher in attachment avoidance, supporting emotional regulation and facilitating sexual interactions devoid of emotional intimacy (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011).

Adding to the complexities of text communications is the semi-permanence of message content. While phone calls are ephemeral, text messages remain stored on the phone until deleted. Reviewing messages of support or affection (for example, "I love you") may function to build and maintain relationships (Kasesniemi & Rautanen, 2003), whereas ruminating over negative messages may be harmful to the romantic bond. An aspect of

attachment activation is a tendency for individuals to hold confirmatory biases and to look for environmental cues to support their attachment-based expectations (Collins, Ford, Guichard, & Allard, 2006). With rising attachment anxiety, there exists an inclination for individuals to seek evidence to support an inherent belief that romantic partners are not reliably there for them (Levine & Heller, 2012). Conversely, with rising attachment avoidance there is a tendency for individuals to seek evidence of others' neediness and use these observations as support for retaining emotional distance in close relationships. Confirmatory biases reinforce these belief systems and perpetuate attachment patterns over time, both in the selection of partners and in the regulation of relationship closeness (Levine & Heller, 2012).

Confirmatory biases also impede contingent communication with romantic couples viewing one another through the lens of their early attachment experiences. Text parameters (i.e., target of contact, response time expectations) and message content (Turning Towards and Turning Away) may provide evidence to support the attachment biases that are embedded in an anxious or avoidant attachment stance. While currently untested, these associations are studied in this program of research, extending the examination of texting to include the content and purpose of sent messages.

Text content reflects the communication style, confidence, personality, and mood of the sender. Individuals with an expressive style may exchange lengthy messages with partners, while others rely on abbreviations, acronyms or emoticons to communicate comparable, yet abbreviated sentiments (Pettigrew, 2009). The personalisation of texts that occurs with increased familiarity and contact, however, does not necessarily infer compatibility of partner text styles. Individuals who are less comfortable with expressions of emotion via text may avoid engagement in texting all together, ignoring or delaying responses to texts from the partner. These differences are likely to exacerbate conflict and increase feelings of disconnection (Duran, Kelly, & Rotaru, 2011), especially if the other

partner is feeling anxious and unsure about the state of the relationship. The characteristics of texting, described as *affordances* by Reid and Reid (2014), support explorations into how and why people text the way that they do. Differences in text content and response style are likely to reflect personality characteristics, motivations, and attachment orientations, as much as the strength of the bond between romantic partners.

In an early study of text messaging, Reid and Reid (2007) found a clear distinction between “texters”, who preferred to exchange text-based messages, and “talkers”, who preferred to make voice calls using a mobile phone. Texters were characterised in the research as lonelier, more socially anxious, and more likely to disclose their real selves through texts than face-to-face interactions as compared with talkers. Texters were also more likely to form close knit “text circles” connecting with groups of friends in continuous text contact. Over time, as texting has become more widely adopted, the distinction between talkers and texters has probably diminished and interactions between texting processes, attachment, and personal characteristics have become a focus of research. These early studies acknowledge relationships between communication preferences and technology use and invite an exploration of texting through an attachment lens.

Considerations of Text Content

Texting, like face-to-face communication, serves a greater purpose than the mere exchange of information. Text messages are a tool of connection. According to Thurlow and Brown (2013), approximately one third of text messages are informational and distributed for sharing content. Two thirds are relational, designed to create, develop or maintain connections with others, and represent a reciprocal bidding for attention and connection between the sender and receiver (Thurlow & Brown, 2003). Bids serve an important maintenance function in romantic relationships, reminding partners of their availability to one another.

In a study of relational maintenance, Park, Lee, and Chung (2016) surveyed 414 students regarding text frequency, time spent texting, motivations for sending texts, and psychological consequences in *strong tie* and *weak tie* networks. Strong tie networks were defined as intimate relationships characterised by emotional closeness (i.e., partners, close friends) while weak tie networks were more casual connections with lower emotional investment (i.e., colleagues, acquaintances). Motivations for texting strong tie network partners were reflected in desires to “feel closer to friends” to “let others know that I care for them” and “feel or express caring”. Motivations for texting within weak tie network partners related to coordinating social events, sharing information, and maintaining contacts across distance or time. For both strong tie and weak tie networks, higher relationship satisfaction was negatively correlated with the total time spent texting (overall text time). In contrast, higher text frequency (number of texts sent and received) to strong tie network partners was correlated with lower loneliness, higher perceived intimacy, and higher relationship satisfaction. There was a negative correlation between the total time spent texting overall (to strong tie networks and weak tie networks) and relationship satisfaction, suggesting that greater time spent texting to broader contact networks was associated with lower relationship quality. There was a positive association between the number of texts sent to strong tie partners and relationship satisfaction. When texts were directed preferentially to the strong tie partner, there was a positive association between texting and satisfaction. These data emphasise the significance of text dynamics and identifying to whom text messages are sent, in examining associations with relationship quality. Park and colleagues speculated that when texts were sent for instrumental purposes (e.g., to confirm a meeting time), rather than emotional or expressive purposes (e.g., communicate affection), the positive association between texting and relationship satisfaction lessened. Sending emotional or expressive texts, as opposed to instrumental texts, was associated with higher relationship quality. The Park et

al. study did not identify the target (i.e., to whom texts were sent) of strong tie (close friends or romantic partners) or weak tie networks (acquaintances, coworkers) or the motives of the sender and these limitations directed the current program of research. The research of Park and colleagues highlights the importance of exploring subtleties in text communication, including the content, tone, motivation, and text recipient, in addition to measures of text frequency. These variables are examined in this current program of research through considerations of target of contact (i.e., to whom texts are sent) and the inclusion of text items that assess positive and negative perceptions of text messages in romantic partnerships (i.e., text attitudes, motives, and response expectations).

In an earlier study, Pettigrew (2009) found significant differences in the use of text messages in strong tie and weak tie dyads. Pettigrew analysed data from interviews with 38 participants in 19 pairs and explored feelings of connectedness that were cultivated by exchanging texts. Perpetual contact, the opportunity for connection during periods when contact would otherwise be taboo, was found to be a valued advantage of texting for romantic couples, along with message privacy, discretion, and the balance between autonomy and connectedness. Privacy and discretion referred to the capacity for text messages to facilitate a connection that was intimate and discrete, while autonomy and connectedness referred to the flexibility of this technology to manage preferences for intimacy and separateness. Even among strong tie networks, not all participants used text messaging to facilitate feeling of closeness and connectedness with their partner. “Specifically, long-time friends, roommates, and collegial coworkers did not seem to value the connectedness afforded by text messaging as much as dating couples, cohabiting partners, or engaged couples” (Pettigrew, 2009, p. 705). While non-romantic pairs used texting to communicate social engagements, for romantic couples there was an additional dimension to texting with an emphasis on connectedness. Döring and Dietmar (2003) found that text messages for romantic couples

were viewed as an important and time efficient emotional resource. Short texts throughout the day were valued as enhancing the relationship, allowing romantic partners to remain intimately, even secretly, connected across time. While Döring and Dietmar's research examined text functions, Pettigrew's (2009) research identified variations in texting across different relationship types, including romantic partners, close friends, roommates, and colleagues. Study 1 extends these early research pathways by comparing text preferences among relationship targets (i.e., romantic partners, close friends, parents, acquaintances, colleagues) and examining associations between text parameters and relationship quality.

Emotional Attunement through the Exchange of Texts

Emotional attunement reflects a shared belief that the investment in a romantic relationship through the provision of time, attention, affection, effort, and resources will be worthwhile. Attunement has been related to adult attachment styles, early learning experiences, and parental modelling (Crooks & Baur, 2017) as well as to relationship satisfaction (Siegel, 2011). Among stable, happy couples, high emotional attunement reflects positive perceptions of partner trustworthiness and feelings of safety and stability (Siegel, 2011). These qualities feature prominently in models of relationship success. In a study of couples married for an average of 40 years, determinants of positive relationship quality included love, reciprocity, communication, understanding, shared religious orientation, patience, commitment, intimacy, shared responsibilities, personal identity, persistence, hopefulness, flexible boundaries, and congruence (Robinson & Blanton, 1993).

According to SRH theory, successful relationships are founded on friendship and connection (Gottman, 1999; Gottman, 2015; Gottman & Levenson, 2000; Gottman & Silver, 1999). Modern technologies, including phones with the capacity for text, photo and video messaging have transformed the way couples interact, build and sustain friendships, by increasing opportunities for connection that were previously limited during periods of

separation (Hertline & Ancheta, 2014). Modern technologies present an opportunity for romantic couples to interact at any time with sustained conversation or intermittently and spontaneously with minimal interruptions to their respective activities (Pettigrew, 2009). Text messages can be exchanged during work hours, while undertaking routine domestic, leisure or personal activities and texts are not subject to privacy constraints that may affect the timing of personal phone calls between romantic partners (Hertline & Ancheta, 2014).

Texting practices permit response flexibility and text conversations may unfold in a dialogue stream or be staggered across time. Unlike real time conversations, text conversations span across time zones, external circumstances and mood states, adding a host of factors to the interpretative mix (Pettigrew, 2009). Text messaging permits almost constant connection between partners. While promoting connection, perpetual contact is accompanied by a loss of autonomy (Pettigrew, 2009) and presents new challenges for interpersonal communications. Nonverbal and environmental cues, present in face-to-face conversations, and to a lesser extent in phone conversations, are not available to individuals communicating via text. In addition, subtle contextual cues that are useful in promoting attunement moment to moment are missing from text exchanges. Their absence during text conversations may contribute to misunderstandings and breaches of trust (Hertline & Ancheta, 2014).

Differences in contact preferences, expectations of text quantity and content have also been associated with conflict between partners over shared expectations of the importance of text exchanges (Duran et al., 2011; Hertline & Ancheta, 2014). The present thesis examined whether text messaging supports connection or contributes to conflict and disconnection in romantic relationships, or both.

The relationship between texting and relationship quality is nonlinear and complex. Attachment orientations, personality characteristics and personal communication styles relate to the content and style of messages as significantly as they do to the relationship status and

dynamics of the sender-receiver relationship (Drouin & Landgraaf, 2012). An assumption that texts are either negative or positive within relationships presents an oversimplified view of text exchanges and their association with relationship quality (Skeirkowski & Wood, 2001). This program of research examines the more complex associations between texting, attachment types, relationship motives and communication styles that predict relationship quality.

Predictors of Relationship Quality

According to the SRH theory, seven principles characterise successful relationships (Gottman, 1999; Gottman & Silver, 2012; Gottman, 2014; Gottman, 2015). The seven principles are build love maps, nurture fondness and admiration, turn towards instead of away, the positive perspective, manage conflict, make life dreams come true, and create shared meaning. The first three represent the strength of the couple's friendship. The first principle, *build love maps*, refers to the tendency for couples in satisfying relationships to develop and maintain a detailed awareness of their partner's internal and external world (Gottman & Silver, 1999; Gottman, 2015). A love map includes a shared understanding of the partner's daily challenges, current stressors, fears, hopes and dreams for the future (Gottman, 1999; Gottman & Silver, 1999; Gottman, 2015). This awareness, built through receptive, open questioning supports emotional attunement in couples and the development of an intimate friendship (Gottman, 2011; Gottman & Silver, 1999).

In studies of text communication, messages have been identified as tools to connect with the partner during periods of separation, seek reassurance, and show support (Hertline & Ancheta, 2014). Texting a romantic partner to communicate empathy, demonstrate attunement or show interest in their day is aligned with behaviours shown in the SRH theory to enrich love maps and enhance relationship satisfaction. Coyne et al. (2011) found that the use of communication technologies, including texts, was associated with relationship

satisfaction. Individuals who rated their relationships as highly satisfying were more likely to report the use of technology to express affection to their romantic partners than were those who reported lower relationship satisfaction. In contrast, lower relationship satisfaction was related to the use of texts to broach difficult topics or to continue discussions after a face-to-face argument. The study by Coyne et al. did not consider the use of texts to express criticism, contempt or hostility (patterns of destructive communication) or to take time before responding in anger, make a repair or apologise for a regrettable incident (patterns of constructive communication). These constructive and destructive communication patterns were explored in Study 1 with an examination of positive and negative perceptions of technology use and, later, in the item content of the Technology Questionnaire and subscales of Turning Toward and Turning Away.

The second principle, *share fondness and admiration*, emphasises the importance of expressing appreciation for relationship partners. Conveying appreciation communicates positive affect and respect, and is an antidote to the highly destructive communication tactics of criticism, contempt, belligerence and stonewalling (Gottman & Levenson, 2000). In relationships rated as satisfying, intimate friendships are built through tiny rituals of courtesy, kindness, humour and appreciation. The cultivation of a fondness and admiration system appears to protect the romantic bond. In unhappy couples, the relative dearth of positive feedback and shared appreciation engenders a negative cognitive shift over time (Gottman, 2014). With respect to texting, the sharing of fondness and admiration may vary in tone from loving to flirtatious to sexually provocative, and be expressed in statements of appreciation, gratitude and support. Supportive or encouraging text messages may contribute favourably to the maintenance of a fondness and admiration system and to positive appraisals of relationship quality. This proposal was tested in Study 2 with the expansion of the

Technology Questionnaire to examine message content and the associations with relationship quality, measured by relationship satisfaction, intimacy and loneliness.

The third principle, *turning towards*, recognises the importance of bids for emotional connection that occur regularly within a relationship (Gottman, 2014). Texting practices seem closely aligned to turning toward behaviours. Bids for emotional connection represent a reaching out from one partner to the other, which parallels the exchange of texts between romantic partners. Bids may be made for a partner's attention, interest, conversation, humour, affection, sex, warmth, empathy, assistance and support (Gottman, 2015). These moments of connection contribute to an emotional bank account that is built over time and provides a buffer against momentary irritability or emotional distance (Gottman, 2015). Research suggests that couples who regularly exhibit turning towards behaviours are sensitive and responsive to bids for attention, affection and connection, remain mindful of their partner's sensitivities, and maintain a reliable presence in their partner's physical and emotional lives (Gottman & Silver, 1999; Gottman, 2015).

Romantic partners who turn towards their partners demonstrate emotional availability through their actions and seek opportunities for connection through verbal and nonverbal means (Gottman, 1999; Gottman, 2015). When individuals acknowledge bids for emotional connection, they demonstrate responsiveness to their partner's needs, bear witness to their partner's emotional experiences, and communicate empathy, care and understanding (Gottman & Silver, 2012; Gottman, 2015). However, when individuals repeatedly ignore or fail to respond to bids, they communicate disinterest and disengagement with fractures emerging in the intimate relationship (Gottman & Silver, 1999). Unrecognized bids for attention and connection are perceived as blows within a romantic relationship and may be experienced by the bidding partner as an acute rejection (Gottman & Silver, 1999; Gottman

& Levenson, 2000). Responsiveness to partner bids, as well as the likelihood of repeating a missed bid, has been associated with relationship satisfaction and stability.

If text messaging can function as a form of *turning toward* or bidding, then text frequency, text content, and response expectations may be predictors of relationship satisfaction in adult romantic relationships. As a reciprocal exchange, text messaging may enhance relationship intimacy by facilitating intermittent contact during periods of separation. Text messages may serve as a reminder of a partner's proximity, availability, and interest, and facilitate regular emotional engagement. Texts may also serve as opportunities for connection through the sharing of subjective realities and the provision of empathy and social support.

Conversely, imbalances in the exchange of text messages between partners may be destructive, with resentments building for those who send and do not receive timely responses, and irritation building for those who receive streams of unsolicited text messages. Text messages sent to communicate negative sentiments (i.e., raising problem issues in a harsh manner, communicating displeasure with personal criticisms, or expressing contempt) are likely to lead to an exacerbation of conflict or patterns of withdrawal. Rather than enhance connection, these messages may serve to undermine the emotional attunement of a couple, just as comparable, destructive behaviours would in face-to-face interactions. Text messages are also open to misinterpretation, mismatched response expectations, and related obstacles that increase the likelihood of conflict (Duran et al., 2011; Hertline & Ancheta, 2014). It is probable that text messages have the potential to both enhance and diminish relationship quality at different times and in different contexts across romantic dyads (Skeirskowski & Wood, 2012). The present program of research extended the current literature through a systematic investigation of these text dynamics and their associations with relationship quality.

The fourth principle, *the positive perspective*, relates to the climate of the romantic relationship and is a barometer of the couple's friendship (Gottman, 2011). When couples are working together, building love maps, sharing fondness and admiration, and turning towards, the climate of the relationship is positive, creating a sense of good will and buffer against negativity. This state is identified as *positive sentiment override* (Weiss, 1980, as cited in Hawkins, Carrere, & Gottman, 2002; Gottman, 2011). In a state of positive sentiment override, couples are more likely to perceive difficulties in the relationship as temporary and transient, be accepting of individual differences, and be willing to compromise (Gottman & Silver, 1999; Gottman, 2015). Conversely, when couples neglect the friendship in the relationship, fail to update their love maps for one another, fail to express appreciation or acknowledge bids for emotional connection, they enter a state of *negative sentiment override* (Weiss, 1980, as cited in Gottman, 1980; Gottman, 2011). In a state of negative sentiment override, couples are more likely to perceive minor problems in the relationship as global, negative and enduring, creating an attribution bias (Gottman, 2011; Gottman, 2015). Partners are more likely to be reactive, defensive and to attribute interpersonal difficulties to what they perceive as character flaws in their partner (Gottman, 2015). The relationship between texting and sentiment override was examined in Study 4 using Turning Towards, Turning Away and the SRH scales to predict relationship quality. Sentiment override was operationalised as Turning Towards minus Turning Away scores, consistent with estimations of emotional climate in the SRH theory.

Text frequency, text content, response expectations and message engagement (i.e., length of the message and detail in the response) may reflect the emotional climate of relationships, as do comparable cues in face-to-face exchanges. Texts can increase feelings of connection in a relationship if they are used in a purposeful way (Pettigrew, 2009), but when sent to escalate negativity, can have damaging consequences (Schade et al., 2013). In a state

of positive sentiment override, bids for attention and connection via text, and timely, well-considered text responses, may contribute positively to the emotional climate. In a state of negative sentiment override, however, an abrupt reply or unacknowledged message may engender feelings of rejection for the sender and lead to conflict or emotional disconnection. The activation of the attachment system and the use of texts to exhibit protest behaviour is very likely to weaken the attachment bond, unless partners are able to decode protest behaviours as signals of a desire for safe connection (Levine & Heller, 2012). The state of sentiment override is a strong determinant of general relationship satisfaction, how conflict is managed, and how individual differences are perceived in the romantic relationship (Gottman, 2015). Text exchanges, if associated with sentiment override, may contribute to predictions of relationship quality.

Historically, the frequency of conflict in a romantic relationship was presumed to predict relationship distress (Crooks & Baur, 2017). More contemporary research suggest that it is the way in which conflict is managed, rather than the frequency of conflict, that predicts discord over time (Gottman & Silver, 1999; Gottman, 2011; Gottman & Levenson, 2000; Markman, Stanley & Blumberg, 1994). Harsh start-ups, where issues are raised in an accusatory tone by one partner and escalate rapidly into a heated exchange, are among the strongest predictors of destructive conflict (Gottman & Silver, 1999; Gottman, 2011). When complaints or criticisms are conveyed with hostility or belligerence, research has shown that they are likely to lead to an escalation of conflict as they incite defensiveness in the target of the complaint. Conversely, when problems are raised with a softened start-up, conflict discussions are more likely to be characterised by perspective taking and expressions of understanding, though not necessarily agreement. Other predictors of relationship distress include the presence of destructive communication patterns including criticism, contempt, defensiveness and emotional disconnection (referred to in SRH theory as stonewalling),

negative body language, and failed attempts to defuse or resolve conflict (Gottman & Silver, 1999; Gottman, 2014). Contempt has been shown to be particularly destructive in interpersonal relationships and is the behaviour most predictive of distress and divorce in married couples (Gottman, 2015; Gottman & Silver, 1999). Despite emerging anecdotal evidence of conflict discussions occurring between partners via text, destructive patterns of text communication have not been systematically explored in the literature. Studies 3 and 4 examine the presence of criticism, contempt, defensiveness, and stonewalling in text content and their associations with relationship satisfaction and intimacy.

Diffuse physiological arousal, where partners experience excessive autonomic arousal during conflict discussions and lose the capacity to attend, show empathy and track conversations, features as a reliable predictor of distress (Gottman, 2015). In clinical settings, diffuse physiological arousal is referred to as flooding and is indicative of heightened amygdala activity, the activation of sympathetic nervous system, and initiation of the fight or flight response (Gottman, 2015). Diffuse physiological arousal is often associated with escalations of destructive conflict, emotional distancing, and withdrawal by one or both partners (Gottman & Silver, 1999). With ongoing diffuse physiological arousal and escalating patterns of destructive conflict, early positive memories of the couple's courtship tend to reflect an increasingly negative light and couples report periods of emotional disconnection and growing relationship dissatisfaction, reflective of negative sentiment override (Gottman & Levenson, 2000). The successful management of conflict reflects a willingness to raise issues gently, make repairs during conflict discussions, use humour to defuse tension, self-regulate emotional arousal, and avoid destructive patterns known to escalate disagreements (Gottman, 2014). The management of conflict via text, including the relevance of positive and negative sentiment override, is examined in this program of research.

Early studies on the role of text messaging in relationship conflict confirmed that romantic couples communicate negative as well as positive sentiments via text message, with some relationship conflicts initiated and intensified through text exchanges (Schade et al., 2013). It is feasible that the predictors of distress in face-to-face conflict discussions may also be predictive of distress in text exchanges. Flooding may be triggered in response to a text, as it is to verbal criticisms or contemptuous nonverbal gestures in face-to-face encounters. Negative text exchanges may exaggerate the destructive potential of the harsh start up due to the probability that partners are geographically separated and in different emotional contexts when messages are exchanged. Criticism, defensiveness and contempt may be communicated via text and stonewalling may be enacted in delayed responses to texts received from a partner. Text messages may exacerbate disconnection when they are used during conflict discussions and feature the qualities known to characterise destructive communication. Conversely, if texts are used to address conflict constructively, the opportunity to draft and review messages before sending may offer an advantage to quarrelling couples (Reid & Reid, 2007). Opportunities to apologise, take time between messages to self soothe, use humour to defuse conflict or reduce tension with a carefully worded repair suggest that texting may be a functional and positive relationship tool. Relationship behaviours that have been shown to predict relationship satisfaction and distress in interpersonal exchanges have not been explored in the context of text communications. The use of text messages to make repairs, support emotional regulation, encourage perspective taking and reconnect after conflict is examined in this program of research.

Texting as a Lens for Observing Connection and Disconnection

SRH theory emphasises friendship as a quality that enhances connection and, through the emotional climate of the relationship, protects it from negativity in times of stress (Gottman, 2015). The extent to which text messaging functions as a positive tool, nurturing

friendship and contributing to the emotional climate of the relationship, has not been explored in the literature. While research has confirmed an association between texting and relationship satisfaction, the extent to which text messaging contributes to distress warrants investigation. Couples who hold poor love maps of one another, fail to express fondness and admiration, dismiss bids for attention and connection, and fight destructively tend to report lower relationship satisfaction and greater regrets about entering the relationship (Gottman, 2014). In times of stress, relationships that feature patterns of general negativity are more likely to involve destructive conflict (Gottman, 2014) and possibly more conflict via text. Relational conflict, emerging from a text exchange, represents a significant contributor to relationship distress if text content replicates patterns known to characterise destructive communication. The extent to which texting practices mirror behaviours known to be damaging to interpersonal relationships has not been systematically investigated nor aligned with an empirically valid model of relationship quality.

Research Directions

Although studies have begun to explore the psychological and personal characteristics of those who send text messages, early studies reflect the challenges of measuring engagement with technology that is dynamic and evolving (Skierkowski & Wood, 2011). Research to date has focussed on text frequency as predictor of relationship satisfaction, with limited attention paid to the quality, content and timing of the texts exchanged between partners, the attachment stance of the sender and receiver, and the status of the romantic relationship. While there is evidence to suggest that text frequency is associated with assessments of relationship quality (Henline, 2006; Luo, 2014; Morey, Gentzler, Creasy, Oberhauser, & Westerman, 2013; Schade et al., 2013), frequency estimates are relatively unreliable measures of actual behaviour (Gold, Rauscher, & Zhu, 2015). In a recent study of college students, Gold and colleagues (2015) compared estimated text frequencies for a

sample of 106 participants using phone bill data to accurately document the number of texts sent. Gold et al. reported 26% agreement between self-report estimates and phone bill derived numbers for daily texts sent. Among those who did not accurately estimate the number of daily texts sent, 81% overestimated the number of texts exchanged. Although some studies have attempted to overcome these challenges in with the use of actual phone data combined with frequency estimates (as in Gold et al., 2015), these methods are not always reliable or accessible for large samples (Weisskirch & Delevi, 2011). Recognising the limitations of using frequency measures alone, in the present program of research text frequency was augmented with measures of text attitudes, text content, response expectations, and recipient targets (targets of contact).

Few studies prior to 2012 used comprehensive measures of texting behaviour and attitudes to examine the complex relationships between technology, attachment, and relationship quality. This gap in the research was a motivator for the development of a specialised Technology Questionnaire (TQ). In 2013, Schade Sandberg, Bean, Busby, and Coyne reported that the positive use of mobile technology, including messages of affection, fostered relationship satisfaction, intimacy, and relationship stability. In their study, 276 college students completed surveys related to their romantic connections. Actor and partner effects were obtained and attachment behaviours were tested as mediators of relationship satisfaction and stability. Attachment anxiety and attachment avoidance were universally associated with relationship satisfaction and stability for men and women. The study found that male sent text frequency was negatively associated with relationship satisfaction and stability scores for both partners, whereas female sent text frequency was positively associated with their own relationship stability scores. For men and women, texting to express affection was associated with stronger partner engagement, supporting the use of texting to facilitate partner attunement. Negative use, however, such as the communication of

hurtful sentiments or the use of technology to regulate the relationship, was related to lower satisfaction and intimacy.

Coyne et al. (2011) found that sending texts to express affection, broach potentially controversial topics, and to hurt partner feelings, was associated with perceptions of positive and negative communication in the relationship. Although relationship satisfaction did not predict technology use, it was associated with participant motivations for sending texts. Participants reporting higher relationship satisfaction were more likely to send messages of affection, whereas participants reporting lower satisfaction were more likely to send messages designed to broach confrontational topics. Coyne and colleagues found that most contact between relationship partners via technology tended to be positive and varied as a function of age, gender, length of relationship, and education status. In the current program of research, the entry of predictors and examination of research covariates followed the precedents of Coyne et al. (2011), Drouin and Landgraff (2012), and Weisskirch and Delevi (2011) and included age, gender, and relationship length.

Most studies that have explored the role of technology in romantic relationships have used relationship satisfaction as the criterion (Coyne, 2012; Drouin & Landgraff, 2012; Weisskirch & Delevi, 2012). Research findings that report positive and negative associations between texting and relationship satisfaction may reflect both an overreliance on frequency as a measure of texting behaviour (Gold et al., 2015) and too narrow a focus on relationship satisfaction as an outcome. Relationship satisfaction inventories tend to include items about the “suitability of the partner”, “feelings of love for the partner” or “regrets about entering the relationship”. Relationship satisfaction measures capture the acceptability of the relationship without referencing the quality of interactions, the nature of the friendship or the feelings of connection or isolation experienced within the union. To examine associations between texting and the broader construct of relationship quality, measures of intimacy, social and

emotional loneliness, destructive conflict, partner care and control were added progressively to each study in this research program. Relationship quality was operationalised as relationship satisfaction in Study 1, as satisfaction, intimacy and loneliness in Study 2, and as satisfaction, intimacy and destructive conflict in Studies 3 and 4.

Although a consideration of relationship status is important in examining texting and relationship quality, status has not been systematically investigated in previous research. Text messaging is most prevalent in young adults and in early stage romantic relationships, and as such, the stage of the relationship is likely to be reflected in the content and nature of the texts exchanged. During the formative stages of passionate love, motivations for sending texts may reflect a desire to build intimacy, enhance positive attributions, and foster reciprocity. In the early stages of a new romantic relationship, partners establish communication patterns and negotiate relationship expectations that will later characterise their romantic relationships (Crooks & Baur, 2017). During these early stages, texting may contribute to interpersonal explorations and text content may reflect the novelty, excitement, and positivity of romantic attraction, as well as a presentation of *one's best self*. In more established relationships, texting may support relationship maintenance and enhance interpersonal attunement as partners bid for attention, reassurance, affection, and connection, consistent with the relationship goals of established partnerships. Texts may also support the regulation of conflict, host bids for connection and for repairs following conflict.

In an early exploration of relationship stage and texting, Coyne et al. (2011) proposed that in committed relationships, texts reflect the host of relationship and family responsibilities that occur each day, while texts in newly formed relationships reflect the presence of fewer shared responsibilities and a lighter, more affable tone. It is probable that the quality of contingent communication in committed relationships is associated with the content sent via text. It is also probable that as relationships increase in stability and

commitment (e.g., as couples shift from non-cohabitating to cohabitating status) and partners begin to feel “seen and heard”, the balance of communication content (via text and face-to-face interactions) shifts proportionately from informational to relational, and contingent communication increases.

Fraley and Davis (1997) describe attachment transfer in young adults as a gradual movement away from parents, and towards peers and romantic partners. Attachment transfer is recognized as a normal and important developmental process, supporting connection to the romantic partner as a stable base (Fraley & Davis, 1997). It is possible that with increasing commitment, text content evolves toward a more personalised exchange and dynamic factors (e.g., response expectations, content, timing, length of text) emerge as significant. Therefore, explorations of relationship status are important in controlling for differences in texting and relationship quality that emerge as a function of attachment, commitment, and relationship stage, as highlighted in Study 1. Differences in text communication by relationship status were controlled for by including length of relationship and relationship status as covariates in Study 2.

Research Outline

In this program of research, romantic attachment and the principles that characterise successful and unsuccessful romantic relationships, as outlined in the SRH (Gottman, 2014), were investigated as they apply to text communication. Study 1 examined the use of technology in romantic relationships, compared patterns of texting and calling, and explored differences in text attitudes and relationship satisfaction as functions of attachment anxiety, attachment avoidance and relationship status. A Technology Questionnaire exploring parameters of calling and texting (i.e., text frequency, text target, response expectations, informational vs relational text content), and attitudes towards technology (positive versus negative attitudes) was developed in the first study, refined and retested in subsequent

studies. Attachment dimensions, relationship status, text targets, and positive and negative technology attitudes were tested as predictors of relationship satisfaction.

In Study 2, relationship quality was examined in committed romantic relationships, as opposed to dating relationships, with established relationships identified as reflecting differing goals and dynamics as compared with dating couples. A focus on text messaging and the expansion of the Technology Questionnaire revealed two subscales reflecting texting for connection (Turning Towards) and texting for disconnection (Turning Away). The measure for seeking connection via text (Turning Towards) explored participant engagement in texting as a tool for building friendship, expressing fondness and admiration, bidding for attention and affection, and contributing to the positive emotional climate of the romantic relationship. The measure for disconnecting via text (Turning Away) examined participant engagement in texting behaviours that led to an escalation of destructive conflict, failed bids for attention and connection, controlling or distancing behaviours, and an exacerbation of negative relationship sentiment. Measures of intimacy, social and emotional loneliness extended the assessment of relationship quality beyond relationship satisfaction. The concept of relationship quality was expanded to determine if text exchanges were differentially related to aspects of the relationship such as intimacy, feelings of closeness, and social or emotional loneliness. Associations between attachment anxiety and attachment avoidance, texting, and relationship quality were examined using dimensional and categorical measures of attachment. Texting behaviours and attitudes were evaluated as a function of attachment anxiety and attachment avoidance. Attachment status, text frequency, Turning Towards, and Turning Away (via text) were tested as predictors of relationship quality, as measured by relationship satisfaction, intimacy, and loneliness.

Study 3 further refined the Technology Questionnaire, by improving its psychometric properties and consolidating the texting subscales. Measures of destructive conflict, partner

care and partner control added to the prediction of relationship quality and to the use of text messaging to Turn Towards and Turn Away from the romantic partner. The relationship satisfaction measure used in Studies 1 and 2, the Relationship Assessment Scale, was replaced with the Couple Satisfaction Index. Study 3 tested attachment anxiety, attachment avoidance, texting frequency, Turning Towards, and Turning Away as predictors of relationship satisfaction, intimacy and destructive conflict, respectively. A measure of partner care and control was added in Study 3 to explore associations between attachment, relationship behaviours, and the two subscales of the TQ, and consider the activation of protest behaviours in text communications.

In Study 4, refined measures of Turning Towards and Turning Away and the SRH scales (Gottman, 1999) were used to predict relationship quality and destructive conflict by attachment type. An additional measure of relationship quality (Locke Wallace Marital Adjustment Test; MAT; Locke & Wallace, 1959) was added and the Technology Questionnaire reflected broader text content, assessed text motives, and detected protest behaviours enacted via text.

Chapter 2: Technology Use and Relationship Satisfaction

Numerous studies have reported that romantic relationship success is dependent on the quality of the friendship (Gottman & Silver, 1999). Genuine interest in one another, the communication of fondness and affection, sensitivity to bids for attention and connection, effective communication, conflict management skills, and a shared meaning system are among the predictors of relationship satisfaction and stability over time (Gottman, 2014). In romantic relationships, intimacy is built through rituals and connections that occur gradually through interpersonal exchanges, traditionally occurring face-to-face (Gottman & Silver, 1999). With the integration of mobile technologies, couples are increasingly noting the use of texts to convey feelings, foster closeness, and stay connected to their romantic partner during periods of separation (Hertline & Ancheta, 2014). Previous research has examined the contributions of text messaging to relationship quality. These associations, however, may be explained by preexisting characteristics, such as attachment. There is a need to examine the associations between text messaging and relationship quality while controlling for predisposing relationship characteristics.

There is a growing awareness in clinical settings and in the literature, that texting is of relevance in young adult romantic relationships (Coyne et al., 2011; Luo, 2014; Schade et al., 2013). The extent to which mobile technologies enhance connection or create disconnection, foster feelings of safety and support or exacerbate relationship conflict, requires empirical examination. Emerging research suggests that personality characteristics and attachment orientations relate to the use of calling and texting and to the interpretation of message content (Drouin & Landgraff, 2012; Jin & Pena, 2010; Morey et al., 2013; Schade et al., 2013). Relationship status also appears to be associated with patterns of calling and texting in romantic relationships, with relationship status reflecting unique developmental stages within a committed relationship (Coyne et al., 2011). Study 1 extended previous

investigations (Coyne et al., 2011; Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011) regarding the social and psychological characteristics of those who text, examining the content, timing, and frequency of text messages, and the response expectations of young adults who use this technology. Relationship status and texting were also investigated in this research. Study 1 employed a comprehensive assessment of calling and texting, including measures of frequency, message content and response time expectations, as well as attitudes toward technology use and patterns of contact with partners, close friends, colleagues, acquaintances, and parents. These measures were included to inform item construction for the refinement of the Technology Questionnaire in later studies. In the main analysis, attachment orientation, relationship status, and text messaging were tested as predictors of relationship satisfaction.

Attachment orientation, relationship status, age, and gender have been identified in the literature as important variables in technology use in romantic relationships (Coyne et al., 2014; Drouin & Landgraff, 2012; Luo, 2014; Weisskirch & Delevi, 2011). Higher attachment anxiety and higher attachment avoidance have consistently been associated with lower relationship satisfaction and poorer relationship outcomes. Individuals in committed cohabitating partnerships generally report higher relationship satisfaction than those in dating relationships, reflecting the security and safety of emotional attunement and its relationship to stability (Amato, 2015). Further, married individuals consistently report superior relationship quality as compared to cohabitators (National Survey of Families and Households, 2010). There is evidence in the attachment literature to support the formal promise of marriage as a stabilising factor in promoting attachment security and relationship satisfaction (Hepper & Carnelley, 2012; Luke, Sedikis & Carnelley, 2012) which necessitates the inclusion of relationship status as a control variable in the current study.

Research Hypotheses Study 1

Hypothesis 1. A comparison of daily call and text frequencies was expected to reveal a preference for texting over calling, consistent with rising rates of texting in the literature and the growing use of this technology to connect with others.

Hypothesis 2. In examining message content, a larger proportion of texts were expected to be informational, and a larger proportion of calls classified as relational, consistent with assertions that calling is perceived as more intimate than texting.

Hypothesis 3. It was hypothesised that response expectations for calling and texting would be associated with relationship satisfaction. Higher relationship satisfaction was expected to be related to shorter response expectations for calls and texts.

Hypothesis 4. It was hypothesised that participants would send proportionately more calls and texts to romantic partners than close friends, acquaintances, colleagues and parents. Higher proportions of calls and texts to the romantic partner, over other contacts, were expected to be related to higher relationship satisfaction scores.

Hypothesis 5. It was hypothesised that principle components analysis of the Technology Questionnaire would reveal an underlying two-factor structure for calls and texts. Item loadings would be consistent with the positive (Technology Positive) and negative (Technology Negative) use of technology in romantic relationships.

Hypothesis 6. After controlling for age, gender, relationship length, and relationship status, it was predicted that texting would account for unique variance in relationship satisfaction above the contribution of attachment anxiety and attachment avoidance. It was predicted that higher relationship satisfaction would be associated with higher Technology Positive (TP) scores and lower Technology Negative (TN) scores.

Method Study 1

Participants

One hundred and eleven participants were recruited from undergraduate psychology classes at Bond University in Queensland, Australia. Subjects received research credit for participation. All participants stated that they were currently in a romantic relationship and the sample included 92 females and 19 males with an average relationship length of two years and six weeks ($SD = 32.42$ months). Participants ranged in age from 18 to 54 years ($M = 23.08$, $SD = 7.32$). Of the participants in the sample, 45% were in a relationship and living separately ($n = 50$), 28% were dating ($n = 31$), 18% were in a defacto relationship ($n = 20$), and 9% were married ($n = 10$). Research has established differences between married and defacto relationships with respect to commitment, satisfaction, and health (see Amato, 2015) and technology use (Coyne et al., 2011). However, due to small sample size in the four status groups, subjects in the two latter groups (defacto and married) were combined to form a committed cohabitating relationship group ($n = 30$). As the married and defacto participants both cohabit, this grouping variable supports an examination of the use of calling and texting between cohabitating and non-cohabitating couples. Sixty-seven percent of participants reported their nationality as Australian, 15% as American, 9% as British, French, German, Greek or Turkish, and less than 1% for each of the following, Indian, Vietnamese, Danish, New Zealander, Chinese Canadian, Malaysian, Croatian or Polish. All participants confirmed they used a mobile phone to call and text.

Materials

Demographic questionnaire. A demographic questionnaire gathered data on participant age, gender, and nationality, relationship status, and relationship length (see Appendix A). Participants confirmed the use of a mobile phone with the capacity to create, send and receive text messages.

Adult romantic attachment. Adult attachment orientation was measured using the 36 item, Experiences in Romantic Relationships Scale Revised, ECR-R (Fraley, Waller, & Brennan, 2000, see Appendix B). The ECR-R measures two dimensions of adult romantic attachment, *attachment anxiety* (questions 1-18) and *attachment avoidance* (questions 19-36). Example items for the ECR-R include, “I worry a lot about relationships”, “I find it difficult to allow myself to depend on romantic partners”, and “I prefer not to show a partner how I feel deep down”. Participants rated their agreement or disagreement with 36 items using a seven-point Likert scale, from 1 (*strongly disagree*) to 7 (*strongly agree*). Scale items were randomized on presentation and 14 items were reverse scored to calculate average scores for attachment anxiety and attachment avoidance. Higher scores on the attachment anxiety and attachment avoidance subscales are indicative of insecure attachment, whereas lower scores on both dimensions reflect more secure attachment.

The attachment anxiety subscale measures the degree to which individuals fear that a partner will leave, abandon or reject them (e.g., “I often worry that my partner will not want to stay with me”). Attachment anxiety is associated with greater reassurance seeking from the romantic partner, greater feelings of relationship insecurity, and greater sensitivity to feelings of disconnection from the relationship partner. The attachment avoidance subscale measures the degree to which individuals experience discomfort with emotional intimacy, openness and depending on others in a romantic relationship (e.g., “I prefer not to be too close to romantic partners”). Attachment avoidance is associated with an aversion to partner neediness, emotional detachment, and greater relationship autonomy.

ECR-R items were derived from an item response theory (IRT) analysis of existing self-report measures of adult attachment (Fraley et al., 2000). An examination of the psychometric properties of the ECR-R by Sibley and Liu (2004) supported the stability of indicators of latent avoidant and anxious attachment during a six-week period, with 86% of

variance shared over this period. Exploratory and confirmatory factor analyses determined that the ECR-R provided a two factor self-report measure of adult romantic attachment (Sibley & Liu, 2004). Criterion-related validity was supported with attachment and attachment avoidance explaining 30% to 40% of the between person variation in social interaction diary ratings of attachment-related emotions experienced with romantic partners, compared with 5% to 15% of interactions with family and friends (Sibley, Fischer & Liu, 2005). In previous research, the attachment anxiety and attachment avoidance subscales have demonstrated high internal consistency (Cronbach's $\alpha = .94$ and Cronbach's $\alpha = .93$ respectively; Sibley et al., 2005). In the present study, the internal consistency coefficients for attachment anxiety and attachment avoidance were Cronbach's $\alpha = .95$ and Cronbach's $\alpha = .91$, respectively.

Relationship satisfaction. The Relationship Assessment Scale (RAS) was used to measure general relationship satisfaction (Hendrick, 1988). Participants responded to the seven RAS items using a 5-point Likert scale ranging from 1 (*low*) to 5 (*high*). Two items were reverse scored and responses were summed to calculate a total score for relationship satisfaction. The items access three relationship dimensions including *love* (e.g., "How much do you love your partner?"), *relationship problems* (e.g., "How often do you wish you had not gotten into this relationship?"), and *relationship expectations* (e.g., "To what extent has this relationship met your expectations?"). The RAS is suitable for use in dating and committed relationships. Scores on the RAS range from 7 to 35, with higher scores indicating greater relationship satisfaction. Items for the RAS are presented in Appendix C. In the original study of the RAS, principal-component analyses yielded one factor for the RAS that accounted for 46% of the variance (Hendrick, 1988).

The RAS has been shown to correlate significantly with convergent measures of love, sexual attitudes, self-disclosure, commitment, and emotional investment in relationships.

High total score correlations have been reported for the RAS and the Dyadic Adjustment Scale (Spanier, 1976), a 32 item questionnaire used to assess adjustment in married and committed couples (Hendrick, 1988). In predictive studies, the RAS has shown to effectively discriminate couples who remain together over time, from those who eventually separate (Hendrick, 1988). The RAS demonstrated high internal consistency in previous research (Cronbach's $\alpha = .86$, Hendrick, 1988) and in the present study (Cronbach's $\alpha = .86$). For the present research, total RAS scores were used in the analyses.

Technology use. The Technology Questionnaire was constructed for the purpose of the present study to explore patterns of mobile phone use and text messaging in intimate relationships (TQ, see Appendix D) in the absence of a comprehensive measure of texting frequency, texting behaviour and attitudes (that is, prior to 2012). The TQ assembled questions related to frequency, content, response time expectations and attitudes toward technology use, based on previous studies (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011) and proposed relationships between technology use and relationship satisfaction. The psychometric properties for this instrument were established across the current program of research.

Frequency of calls and texts. Participants estimated the frequency of calls and text messages sent and received each day. For questions regarding daily call/text frequency, (e.g., “How many text messages do you send each day?” and “How many text messages do you receive each day?”), participants selected from five response categories: 0, 1-10, 11-20, 21-50 or >50 texts.

Content of calls and texts. Participants considered the content of calls and texts sent to the romantic partner and estimated the extent to which calls focused on sharing information (e.g., “What time will you be home?”) and expressing relational content (e.g.,

“How did you feel about the meeting today?”). Participants provided percentage estimates for calls and texts.

Response expectations for calls and texts. The response expectations items required participants to estimate how long they would expect to wait for their romantic partner to respond to a missed call or sent text. Participants selected from seven intervals to record their response expectations for calls and texts: 0-5, 5-10, 10-30, 30-60 minutes or 1-2, 3-6 or > 6 hours.

Target of contact for calls and texts. Following Fraley and Davis (1997), subjects estimated the percentage of contact initiated with romantic partners, close friends, acquaintances, colleagues, and parents. Two questions were asked of participants regarding call and text contact. “Of the text messages that you send each day, what percentage of texts are sent to each of the following contacts: romantic partner, close friends, acquaintances, colleagues, and parents?” and “Of the calls that you make each day, what percentage of calls are made to the following contacts: romantic partner, close friends, acquaintances, colleagues, and parents?”. A percentage for each target was reported for text messages and for calls.

Attitudes towards call, texts and sexts in romantic relationships. The TQ also explored participant attitudes toward mobile technology use. Participants indicated their agreement with 12 statements about the use of technology in their romantic relationships. TQ items include, “Texting helps me to feel connected to my partner when we are apart” and “I have sent text messages that have left me feeling uncomfortable”. A six point Likert scale from 1 (*strongly disagree*) to 6 (*strongly agree*) captured participant responses to each statement. The calculation of total scores for this inventory was determined after completion of the principle component analysis, as described in Materials.

Procedure

Bond University Human Research Ethics Committee (RO1648) approved the studies reported in this program of research. A participation notice was advertised on the School of Psychology Research Participation notice board. Students received subject credit in return for participation. Interested subjects contacted the researcher via email and received a response with a written explanatory statement (see Appendix E), a unique participant number for research credit allocation, and a link to the online survey hosted on the Survey Monkey platform. Subjects received screen instructions to allow 45 minutes to complete the survey in a single sitting. Participants used a unique three-letter participant number in place of identifying information. A secure Excel file linked participant names and numbers for the purpose of assigning research credit. All survey responses remained confidential and only the principal researcher had access to the file that connected identities with participant numbers.

Results Study 1

Data Screening Study 1

Prior to analysis of the data, variables were examined for accuracy of input, out-of-range values, reasonable means and standard deviations, missing values, and normality. The sample included four relationship status groups with varying numbers of participants in each group. Group frequencies differed significantly for dating ($n = 31$), committed non-cohabitating ($n = 50$), cohabitating unmarried ($n = 20$), and married participants, ($n = 10$), $\chi^2(3, N = 111) = 31.74, p < .001$. Gender differed significantly in the sample with more female ($n = 92$) than male ($n = 19$) participants, $\chi^2(1, N = 111) = 48.01, p < .001$.

The sample consisted of predominately young, female undergraduate psychology students, which is consistent with most undergraduate psychology programs in Australia. Subjects recruited from the participation pool tended to represent a population of adults in romantic or dating relationships, rather than married or cohabitating partnerships. Age,

gender and length of relationship were included as covariates. The G* Power analysis showed that 103 participants were needed to ensure a medium effect size (.15) and statistical power of .80 (Cohen, 1988), suggesting adequate power (Tabachnick & Fidel, 2013).

Frequency distributions with descriptive statistics and histograms were conducted for all variables. Normality was checked via visual inspection of histograms and assessments of skewness and kurtosis. Histograms revealed that relationship satisfaction scores were severely positively skewed, indicating a generally high level of relationship satisfaction for the sample. This result may reflect the influence of social desirability and a tendency for participants to overstate relationship satisfaction in their responses. The halo effect has been identified in previous studies of relationship satisfaction and stability, with satisfied couples exaggerating their relationship satisfaction, and distressed couples overestimating their dissatisfaction on measures of relationship satisfaction and stability (Gottman, 2014). The high level of reported relationship satisfaction is plausible given the relatively brief average relationship duration of the sample ($M = 25.56$ months, $SD = 32.42$ months) and an expectation that satisfaction is high in the limerance stage of romantic relationships, defined as the first 6 to 24 months of a romantic relationship (Crooks & Baur, 2017). Relationship novelty and neurobiological markers of interpersonal attraction including neurotransmitters, phenethylamine, norepinephrine and dopamine, and the hormone oxytocin are thought to contribute to bonding and connection in this limerance stage (Crooks & Baur, 2017). As noted, the relationship satisfaction variable was positively skewed. This variable was square root transformed to reduce skewness and analyses were run on the transformed and untransformed data. As the substantive findings between the tests did not change, and to aid interpretation, the original data were reported. For all other variables, the assumption of normality was met.

Box and whisker plots were used to detect univariate outliers. Two extreme outliers in relationship length were detected as they were more than three standard deviations from the group mean. Four outliers were detected on participant age which was not unexpected as the university sample included a small number of mature age students. As such, data for these participants was retained. Multivariate outliers were identified using Mahalanobis distance ($p < .001$). In order to determine the impact of the outliers on the results, analyses were performed with and without the outlying cases. Across tests, the substantive findings were consistent and the two cases were retained. All tests were considered reliable at the $p < .05$ level using SPSS software version 22.

Preliminary Analyses Study 1

Technology Questionnaire (TQ). Preliminary analyses explored calling and texting frequency, content, response expectations, and targets of contact. Pearson r and Kendall Tau b correlation coefficients assessed the associations between these calling and texting variables, attachment dimensions, and relationship satisfaction. Variables showing statistically significant associations with relationship satisfaction, attachment anxiety or attachment avoidance were entered as predictors in the regression model in the Main analysis. Exploratory factor analysis of the TQ attitude items explored potential domains within this tool, with two factors emerging for Technology Attitudes. Items in the Technology Positive scale referred to the use of texting to express positive sentiments. The Technology Negative scale referred to the use of texting to manage conflict and create problems within the relationship. Correlation coefficients between TQ items, relationship satisfaction, attachment anxiety and attachment avoidance informed the development of TQ items in later studies. Mean scores and standard deviations for relationship satisfaction, attachment anxiety and attachment avoidance are presented in Table 1.

Table 1

Range of Scores for Attachment Anxiety and Attachment Avoidance

	<i>min</i>	<i>max</i>	<i>median</i>	<i>M</i>	<i>SD</i>
RS	13	35.00	29.00	28.22	5.52
AA	1	6.56	2.67	2.96	1.25
AV	1	5.22	2.56	2.70	0.94
TP	11	36.00	27.00	20.07	4.99
TN	6	34.00	15.00	15.78	5.34

Note: $N = 111$. RS = relationship satisfaction, AA = attachment anxiety, AV = attachment avoidance, TP = technology positive, TN = technology negative.

Frequency of calls and texts. Participants indicated the number of mobile calls and texts that were sent and received each day. Subjects identified categories corresponding with estimated frequencies for calling and texting (i.e., 1-10, 11-20, 21-25 or >50). The data reflected a strong trend toward texting as the most prevalent form of mobile communication for the sample. Ninety-one percent of participants recorded making 1-10 mobile calls per day, with 92% receiving between 1-10 mobile calls per day. Reported text frequency was higher than call frequency, with 85% of subjects sending 11 or more texts per day and 31% of subjects sending (and receiving) more than 50 text messages each day, as presented in Table 2. These values are broadly consistent with findings reported elsewhere (Reid & Reid, 2010; Smith, 2012) suggesting weekly text frequencies for young adults are between 100 and 750 messages. Wilcoxon signed ranks test confirmed that participants communicated more frequently by texting than calling, $z = 9.26, p < .001$. Similar results were confirmed for texts received versus calls received, $z = 8.16, p < .001$, with significantly more texts than calls received by participants. Results reflect the adoption of texting as an espoused communication tool, surpassing calling as a way to connect, supporting Hypothesis 1.

Table 2

Frequency of Mobile Calls and Text Messages

Intervals	Calls (made)	Texts (sent)	Calls (received)	Texts (received)
0	1	0	0	0
1-10	101	17	103	20
11-20	5	33	6	30
21-50	3	27	2	23
50+	1	34	0	38

Note. $N = 111$.

Content of calls and texts. Participants classified call and text conversations as informational (i.e., for sharing information) or relational (i.e., for expressing relationship content, feelings and emotions). As calling is considered a more intimate form of interpersonal communication than text messaging (Drouin & Landgraff, 2012), it was hypothesized that participants would classify a higher proportion of calls as relational and a higher proportion of texts as informational. On average, participants classified both calls and texts as slightly more for the communication of information (59.34 % calls, 52.07% texts) than for the expression of emotions (40.66% calls, 47.93% texts) with the balance differing across communication modes. Inconsistent with Hypothesis 2, a greater proportion of texts than calls were identified as relational, ($t(111) = 3.72, p < .001$). There were no statistically significant relationships between relational content and relationship satisfaction, attachment anxiety or attachment avoidance, with correlation coefficients between $r = -.09$ and $r = .16$.

Response expectations for calls and texts. The immediacy of texting was reflected in participant estimations of response times to calls and texts. Response expectations were significantly shorter for texts than for calls, $z = 7.21, p < .001$. For calling, only 4% of participants expected a response in less than five minutes and over 58% of participants

expected to wait more than 30 minutes for a partner to return their call. By contrast, 21.6% of participants expected a reply to a text in less than five minutes and over three quarters of the sample, (76.5%), expected a reply to a text in less than 30 minutes. Data in Table 3 supports expectations of faster responses to texts than to calls. Kendall tau nonparametric correlations were computed for response expectations and relationship satisfaction due to the categorical nature of the response expectations item and the small sample ($N = 111$). Response expectations for calls and for texts were not significantly related to relationship satisfaction. Nor were response expectations related to attachment anxiety or attachment avoidance scores with all correlation coefficients between $-.14$ and $.21$ not supporting Hypothesis 3.

Table 3

Response Expectations for Mobile Calls and Text Messages

	Call (<i>f</i>)	Call (%)	Text (<i>f</i>)	Text (%)
0-5 minutes	5	4.5	24	21.6
5-10 minutes	15	13.5	37	33.3
10-30 minutes	26	23.4	24	21.6
30-60 minutes	32	28.8	16	14.4
1-2 hours	25	22.5	9	8.1
3-6 hours	5	4.5	-	0.0
6 + hours	3	2.7	1	0.9

Note. $N = 111$.

Target of contact for calls and texts. Participants were asked to estimate the percentage of calls made and texts sent to the following targets; romantic partner, close friends, colleagues, acquaintances and parents. Target of contact was assumed to indicate the relative importance of each contact for the participants and it was hypothesized that target of contact would be related to relationship satisfaction. Participants reported calling and texting

the romantic partner significantly more regularly than other contacts, including close friends, parents, colleagues, and acquaintances, as presented in Table 4. Prioritization of the romantic partner was shown for texting (47.19%) and for calling (36.88%).

Deferral to the romantic partner, as demonstrated through a prioritization of calls and texts, supports the presence of texting in young adult romantic relationships. Participants sent romantic partners proportionately more texts than calls, prioritising texting as their preferred mode of contact. A similar preference emerged for contact with close friends. For contact with parents and acquaintances however, participants showed a preference for calls over texts. This may reflect a generational gap in the adoption of texting (for contact with parents) and perceptions of calling as more formal and appropriate for contact with acquaintances. Hypothesis 4 was supported.

Table 4

Mean Scores and Standard Deviations for Percentage of Calls and Percentage of Texts to Romantic Partners, Close Friends, Acquaintances, Colleagues, and Parents

	% Calls		% Texts		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Romantic partner	36.88	26.85	47.19	26.29	4.20***
Close friends	26.03	21.71	34.13	22.66	3.71***
Acquaintances	3.31	5.21	2.61	4.16	n.s.
Colleagues	8.05	14.20	4.77	9.51	2.40*
Parents	25.72	22.49	11.30	13.83	7.03***

Note. $N = 111$.

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

To explore the association between message recipient (i.e., to whom individuals preferentially call and text) and relationship satisfaction, Pearson's r correlation coefficients were computed for target of contact, relationship satisfaction, attachment anxiety, and attachment avoidance (see Table 5). Call and text targets significantly associated with relationship satisfaction were identified as predictors to be included in the regression model in the main analysis. Calls and texts to the romantic partner, over other contacts, were significantly associated with higher relationship satisfaction scores, as expected. Calls to close friends and texts to close friends were inversely related to satisfaction scores, with greater contact with close friends associated with lower relationship satisfaction scores. This finding supports an association between lower relationship satisfaction and wider contact networks. While attachment anxiety was not significantly related to call or text targets, attachment avoidance was related to calls and texts to romantic partners, and calls and texts to close friends. Results suggest that greater attachment avoidance is associated with wider contact networks, lower patterns of preferred contact with romantic partners, and higher patterns of contact with close friends.

Table 5

Correlation Coefficients for Target of Contact, Relationship Satisfaction, Attachment Anxiety, and Attachment Avoidance

	<i>RS</i>	<i>AA</i>	<i>AV</i>
Calls to romantic partner	.22***	-.10	-.23***
Calls to close friends	-.27***	.07	.14*
Calls to acquaintances	-.05	.03	.15*
Calls to colleagues	-.02	-.09	.07
Calls to parents	-.07	.07	.01
Texts to romantic partner	.34***	-.09	-.25***
Texts to close friends	-.30***	.08	.24***
Texts to acquaintances	.01	.01	.01
Texts to colleagues	-.09	-.01	.12
Texts to parents	-.13	.10	.05

Note. $N = 111$. *RS* = relationship satisfaction, *AA* = attachment anxiety, *AV* = attachment avoidance.

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

Technology attitudes. Exploratory factor analysis was performed on the 12 attitude items of the Technology Questionnaire to identify potential domains within this tool. An initial solution confirmed the factorability of the dataset with a Kaiser-Meyer-Olkin value of .67. Based on eigenvalues the results suggested a three -factor solution, whereas Cattell's scree plot identified two main factors. Several solutions using Principal axis factoring and maximum likelihood with oblimin and varimax rotation were conducted. The solution with best fit explained 49.85 % of the variance with two factors and used a maximum likelihood extraction with oblimin rotation. The first factor reflected positive perceptions of technology (factor 1; Technology Positive) and the second factor reflected negative perceptions of technology (factor 2: Technology Negative). Items 1 and 10 presented with split loadings above .30. Item 1 and item 10 had higher loadings on factor 2 and were included in Technology Negative subscale calculations. Items that presented strong cross loadings or did not load onto the two main factors were omitted from the item pool in subsequent versions of the Technology Questionnaire. Table 6 presents factor loadings, communalities, percent of variance and Cronbach's alpha for maximum likelihood extraction with oblimin rotation. Hypothesis 5 was supported. Technology use, as measured by the TQ, captured positive and negative perceptions of the role of technology in romantic relationships.

Table 6

Factor Loadings, Communalities, Percent of Variance, and Cronbach's Alpha values for the Technology Questionnaire (TQ)

Items	TP	TN	Communalities
Q6. Sexting plays a positive role in my relationships.	.83	-.03	.87
Q3. Sexting helps me to feel connected to my partner when we are apart.	.79	.02	.85
Q12. Sexting improves my relationship.	.74	.06	.72
Q5. Text messaging plays a positive role in my romantic relationships.	.70	.09	.68
Q4. Mobile calls play a positive role in my relationships.	.62	-.11	.64
Q2. Texting helps me to feel connected to my partner when we are apart.	.49	-.09	.54
Q7. Mobile phone calls have led to problems in my romantic relationships.	-.08	.82	.80
Q9. Sexting has led to problems in my romantic relationships.	-.13	.79	.65
Q8. Texting has led to problems in my romantic relationships.	-.13	.72	.63
Q11. I have responded to sexts in a way with which I was not entirely comfortable.	.11	.61	.74
Q10. I have sent text messages with which I was not completed comfortable.	.32	.58	.63
Q1. Mobile calls help me to feel connected to my partner when we are apart.	.36	-.40	.63
Variance (%)	27.14	22.71	
Cronbach's Alpha	.80	.65	

Note. $N = 111$. Factor loadings $\geq .40$ are in boldface.

Subjects reported generally positive attitudes towards the use of technology in their romantic relationships. Scores on the Technology Positive subscale of the TQ ranged from 11 to 36 with a mean score of 20.07 and a midpoint of 27.00, very much in the direction of agreement with the Technology Positive items. Scores on the Technology Negative subscale of the TQ ranged from 6 to 34, with a mean score of 15.78 and mode of 15.00, reflecting fewer problems associated with the use of texting in the romantic relationship. Calling and texting were both credited as supporting feelings of connection with the partner when apart, as was texting sexual content, to a lesser degree. Mobile calls and texts were endorsed as having a positive role in romantic relationships. Some participants acknowledged that texting had contributed somewhat to problems in their romantic relationships, a finding supporting the suggestion that text messages may be more open to misinterpretations than calls (Duran et al., 2012), and that text messages may function to regulate conflict as well as connection (Schade et al., 2013). Subjects tended to disagree that sexting “improved” their relationship, but noted sexting as “somewhat helpful” in forging feelings of connection when physically separated from the romantic partner. Table 7 presents the mean, standard deviation and response mode for the 12 TQ attitude items.

Table 7

Mean Scores, Standard Deviations and Mode for Attitudes to Calling, Texting, and Sexting Items

	TQ Attitude Items	<i>M</i>	<i>SD</i>	Mode
1	Mobile calls help me to feel connected to my partner when we are apart	5.30	0.92	Strongly agree
2	Texting helps me to feel connected to my partner when we are apart	5.32	0.73	Strongly agree
4	Mobile calls play a positive role in my romantic relationships	5.11	0.85	Agree
5	Text messaging plays a positive role in my romantic relationships	5.00	0.95	Agree
3	Sexting helps me to feel connected to my partner when we are apart	4.23	1.44	Somewhat agree
6	Sexting plays a positive role in my romantic relationships	4.19	1.39	Somewhat agree
8	Texting has led to problems in my romantic relationships	3.32	1.50	Somewhat agree
12	Sexting improves my relationship.	3.21	1.45	Somewhat disagree
7	Mobile phone calls have led to problems in my romantic relationships	2.91	1.37	Disagree
11	I have responded to sexts in a way that I was not completely comfortable	2.83	1.49	Disagree
10	I have sent text messages with which I was not entirely comfortable	2.69	1.44	Disagree
9	Sexting has led to problems in my romantic relationships	2.33	1.25	Disagree

Note. $N=111$. TQ Scale: Items presented from highest to lowest mean score. 1 = *strongly disagree* to 6 = *strongly agree*.

Attitudes, relationship satisfaction, and attachment orientation. Bivariate correlations were computed to explore the associations between technology subscales, Technology Positive and Technology Negative, relationship satisfaction, attachment anxiety and attachment avoidance. There were no significant relationships between positive technology attitudes and relationship satisfaction, attachment anxiety or attachment avoidance. Technology Negative, however, was significantly related to relationship satisfaction with more negative attitudes toward technology associated with lower relationship satisfaction scores, $r(N = 111) = -.25, p = .01$. Technology Negative was positively associated with attachment anxiety, $r(N = 111) = .20, p = .03$, and attachment avoidance, $r(N = 111) = .24, p = .01$. Participants who identified more problems related to calls and texts in relationships and acknowledged sending and receiving texts that left them feeling uncomfortable, reported significantly higher attachment anxiety and attachment avoidance scores.

Item level analyses of the TQ items, exploring relationships with attachment anxiety, attachment avoidance, relationship status, and relationship satisfaction are presented in the chapter on Scale Development Study 1 (see Appendix F). TQ item level analyses and an evaluation of item response by gender and relationship status informed the construction of new items for revised versions of the TQ in Studies 2, 3, and 4. Supplementary analyses that informed scale development are presented in Appendix F.

Main Analyses Study 1

Regression on relationship satisfaction. After controlling for covariates, texting was predicted to account for unique variance in relationship satisfaction above the contribution of attachment orientation. As can be seen in Table 8, there was no evidence of multicollinearity or singularity. Relationship satisfaction was negatively correlated with attachment anxiety and attachment avoidance, with higher anxiety and avoidance associated with lower

relationship satisfaction scores. Relationship satisfaction was positively associated with percentage of calls to romantic partner and percentage of texts to romantic partner. Negative technology attitudes were related to lower relationship satisfaction, fewer texts and calls to the romantic partner. Relationship satisfaction was positively correlated with age and relationship length, suggesting that satisfaction increased with participant age and the time invested in the relationship.

Age correlated negatively with attachment anxiety and attachment avoidance, as did relationship length. Younger participants and those in newer romantic relationships reported higher attachment anxiety and higher attachment avoidance. Percentage of calls and texts to the romantic partner were positively associated with relationship length, with increased prioritisation of the partner demonstrated for more committed relationships. Two variables, percentage of calls and percentage of texts to the romantic partner were significantly correlated reflecting a strong, positive relationship between patterns of calling and texting for the sample. Consistent with expectations, greater attachment avoidance was associated with a lower percentage of calls and texts sent to the romantic partner. There was a significant positive correlation between attachment avoidance and the negative perception of technology. Individuals higher in attachment avoidance tended to hold more negative views of technology use within the relationship.

Table 8

Correlations Between and Descriptive Statistics for Relationship Satisfaction and Predictor Variables

	RS	Age	RL	AA	AV	CRP	CCF	TRP	TCF	TP	TN
1. RS											
2. Age	.05										
3. RL	.16**	.49***									
4. AA	-.39***	-.25**	-.20*								
5. AV	-.47***	-.23**	-.31**	.43***							
7. CRP	.33**	.16	.28**	-.16	-.31**						
8. CCF	-.30**	-.06	-.15	.14	.26**	-.48***					
9. TRP	.49***	.01	.22*	-.15	-.37***	.53***	-.38***				
10. TCF	-.35***	-.11	-.21*	.12	.30***	-.43***	.47***	-.78***			
11. TP	.10	-.04	-.11	.10	-.08	.19*	-.02	.19*	-.08		
12. TN	-.25**	-.09	-.15	.20*	.24*	-.23**	.14	-.24*	.22*	-.04	
<i>M</i>	28.22	23.08	25.56	2.96	2.70	36.88	26.04	47.19	34.13	27.07	15.78
<i>SD</i>	5.52	7.32	32.42	1.25	.94	26.85	21.71	26.29	22.66	4.99	5.34

Note. $N = 111$. RS = relationship satisfaction, RL = length of relationship, AA = attachment anxiety, AV = attachment avoidance, CRP = percentage of calls to romantic partner, CCF = percentage of calls to close friends, TRP = percentage of texts to romantic partner, TCF = percentage of texts to close friends, TP = positive technology attitudes, TN = negative technology attitudes.

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

Hierarchical multiple regression was performed to examine the unique contribution of relationship status, attachment anxiety, attachment avoidance, percentage of texts, and percentage of calls sent to romantic partner and close friends on relationship satisfaction. In the current study, a forward approach to regression was adopted and the variables of most interest entered in the final step. Theory and research precedents were used to determine the order of entry of predictor variables, as described in Chapter 1.

Predictor variables were entered in five steps and relationship satisfaction was entered as the criterion. At Step 1, gender, age and relationship length were entered as covariates due to an imbalance in gender, and variations in relationship satisfaction in short term and long-term relationships (Amato, 2015). Age was included as a covariate, due to the inclusion of relationship status as a predictor and differences in mean age scores for the three relationship status groups. At Step 2, relationship status, recoded as commitment and cohabitation, was entered into the equation to examine the contribution of commitment and cohabitation to the variance in relationship satisfaction scores. At Step 3, the attachment anxiety and attachment avoidance subscales were entered as predictor variables, acknowledging the relationship between attachment orientation and relationship satisfaction. Continuous scores for attachment anxiety and attachment avoidance were used in the regression analyses. Percentage of calls and texts to romantic partner and percentage of calls and texts to close friends were entered at Step 4, as technology use was the variable of interest. Positive and negative perceptions of texting were entered at Step 5.

At Step 1, the model was not statistically significant, $F(3, 107) = 1.22, p = .305$. Age, gender, and length of relationship did not contribute to the variance in relationship satisfaction for the sample (Table 9). At Step 2, the model was statistically significant, $F(5, 105) = 12.41, p < .001$, with the addition of relationship status explaining 34.1% of the variance in relationship satisfaction scores, $F\Delta(2, 105) = 28.25, p < .001$. Committed non-

cohabitating and committed cohabitating participants reported significantly higher relationship satisfaction scores than did dating participants. Regardless of cohabitation status, self-identification as “committed” as opposed to “dating” was associated with higher relationship satisfaction scores.

At Step 3, the model remained significant, $F(7, 103) = 11.57, p < .001$, with attachment anxiety and attachment avoidance contributing an additional 7% of the variance in relationship satisfaction scores, $F\Delta(2, 103) = 6.33, p = .003$. Only attachment anxiety was a statistically significant predictor of unique variance in relationship satisfaction at this step. As expected, attachment anxiety was negatively associated with relationship satisfaction, suggesting that concerns about the emotional availability and reliability of the romantic partner were related to lower relationship satisfaction scores.

At Step 4, the model remained significant, $F(11, 99) = 8.12, p < .001$, but the incremental variance in relationship satisfaction accounted for by technology use was not statistically significant, $F\Delta(4, 99) = 1.60, p = .179$. Percentage of texts and calls to close friends and the percentage of calls to romantic partners were not statistically significant predictors of unique variance in relationship satisfaction scores. Percentage of texts to romantic partner, however, was a statistically significant predictor of relationship satisfaction. At Step 5, the model remained significant, $F(13, 97) = 6.96, p < .001$, but the incremental variance in relationship satisfaction accounted for by Technology Positive and Technology Negative was not statistically significant, $F\Delta(2, 97) = .77, p = .466$. Hypothesis 6 was partially supported. Texts to the romantic partner accounted for variance in relationship satisfaction above that explained by attachment orientation, but the TQ subscales did not.

TEXTING AND ROMANTIC QUALITY

Table 9

Hierarchical Regression Analyses for Relationship Satisfaction as a function of Attachment Anxiety and Attachment Avoidance, Percentage of Calls to Romantic Partner and Close Friends and Percentage of Texts to Romantic Partner and Close Friends, Technology Positive, and Technology Negative.

Predictors	R	ΔR^2	β	B	SEB	95% CI B
Step 1	.18	.03				
Constant				26.80	2.39	[22.07 – 31.53]
Gender			.08	1.21	1.39	[-1.55 – 3.96]
Age			-.04	-.03	.08	[-1.55 – 3.97]
Relationship length			.17	.03	.02	[-.01 – .06]
Step 2	.61***	.34**				
Constant				28.74***	2.39	[22.07 – 31.53]
Dating			-.61	-7.52***	1.09	[-9.68 – -5.36]
Cohabiting			.08	1.00	1.21	[-1.40 – 3.41]
Step 3	.66***	.07*				
Constant				34.51***	2.53	[29.49 – 39.52]
Attachment anxiety			-.19	-.85*	.37	[-1.59 – -.12]
Attachment avoidance			-.18	-1.06	.56	[-2.17 – 0.43]
Step 4	.69***	.03				
Constant				30.24***	3.45	[23.40 – 37.08]
CRP			-.06	-.01	.02	[-.05 – .03]
CCF			-.01	-.01	.02	[-.05 – .05]
TRP			.31	.06**	.03	[.01 – .12]
TCF			.10	.03	.03	[-.04 – .09]
Step 5	.70***	.01				
Constant				29.51***	4.09	[21.39 – 37.63]
TP			.07	.07	.08	[-.10-.25]
TN			-.07	-.08	.08	[-.24-.09]

Note. $N = 111$. Gender: 0 = females, 1 = males, CRP: percentage of calls to romantic partner, CCF: percentage of calls to close friends, TRP: percentage of texts to romantic partner, TCF: percentage of texts to close friends.

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

Discussion Study 1

Study 1 explored calling and texting in a young adult population and examined relationships between technology use, attachment orientation, and relationship satisfaction. This study expanded the measurement of technology use with parameters not previously examined in the literature, including response expectations, message content, and target of contact.

Text frequency. It was hypothesised that text frequencies would be higher than call frequencies to romantic partners, reflecting the widespread adoption of texting as a communication tool. This hypothesis was supported with 85% of subjects sending 11 or more texts per day and 31% of subjects sending (and receiving) more than 50 text messages each day. These data are broadly consistent with findings reported elsewhere (Reid & Reid, 2010; Smith, 2011) where weekly text frequencies for young adults exceed 100 messages. Consistent with the literature (Nielsen online, 2009, Smith 2011), text frequency was significantly higher than call frequency, supporting the emergence of texting as a favoured mode of interpersonal communication during periods of separation.

Relational vs informational content. Extending Thurlow and Brown's (2013) examination of text content as informational or relational, it was hypothesised that text messages would be favoured for the communication of informational content and calls for relating relational content when conversing with romantic partners. Contrary to perceptions of texts as a less intimate form of relationship communication (Drouin and Landgraff, 2012), a greater proportion of texts than calls were classified as relational and featuring emotional content. This finding is in contrast to previous research (Thurlow & Brown, 2003). It is probable that with increased use and confidence in text communication, the content of messages has evolved towards a more personal, affective tone. This finding supports an extended examination of text message content through an expansion of the Technology

Questionnaire, with a focus on the content and tone of messages exchanged between romantic partners.

Target of contact, calls and texts. It was hypothesised that an examination of contact targets for calls and texts would reveal associations with attachment anxiety, attachment avoidance and relationship satisfaction and that preferential text contact with the romantic partner over other contacts would be associated with higher relationship satisfaction, as in Park et al. (2016). The data supported this hypothesis. Prioritising texts to the romantic partner was associated with positive assessments of relationship satisfaction, while prioritising calls to the romantic partner was not. These findings support the relevance of text communication in romantic dyads and echo a general shift in patterns of interpersonal contact via mobile phone, consistent with increased text usage and relative falling mobile call rates internationally (Coyne et al., 2011; Hertlein & Blumer, 2014). Results suggest that texts, rather than calls, bridge the face-to-face interactions interrupted during periods of separation. Findings here support an examination of text interactions and associations with adult attachment and relationship quality, consistent with previous findings (Jin & Pena, 2010). While a focus on communication with the romantic partner (over other contacts) is not surprising, data in Study 1 suggests that important functional differences exist between calls and texts in romantic relationships, including patterns of contact with romantic partners, friends, and others. An investigation of the qualities of text messages that lead to connection or disconnection across attachment types is supported by the results in Study 1.

Technology attitudes. An exploratory factor analysis of the Technology Questionnaire yielded a two-factor solution representing positive and negative attitudes towards the use of texting in romantic relationship. It was hypothesised that positive attitudes towards texting would be associated with relationship satisfaction and romantic attachment. Contrary to expectations and previous findings by Schade et al. (2013), positive attitudes to

technology were not associated with relationship satisfaction scores, attachment anxiety or attachment avoidance. Despite strong agreement at scale level for Technology Positive items suggesting that texts are “a positive relationship tool” and “help me to feel closer to my partner”, positive technology attitudes overall were not associated with relationship satisfaction. Negative technology attitudes did show a stronger, though inverse association with relationship satisfaction. Negative technology attitudes were associated with significantly higher attachment anxiety and attachment avoidance, and lower relationship satisfaction. Individuals who agreed that “technology had contributed to relationship problems” and disagreed with the “use of texting and calling to enhance connection”, were generally less satisfied with their relationships as compared with those who held less negative attitudes toward technology. Results of Study 1 support a comprehensive and focused examination of text processes that include the tone, content and nature of text exchanges in subsequent studies in this research program.

Response expectations. In Study 1, it was hypothesised that response expectations to sent texts would be related to attachment anxiety, attachment avoidance and relationship satisfaction scores. It was expected that higher attachment anxiety would be associated with shorter wait times and higher attachment avoidance with longer wait times. Further, it was predicted that higher relationship satisfaction would be associated with shorter wait time expectations reflecting an assumption that in happy relationships romantic partners are more responsive to bids for attention or connection from their partner via text (Reis, Clark & Holmes, 2004).

Although response expectations to sent texts has not been previously examined in the literature, this item was included to determine whether participant expectations of partner responsiveness to texts were related to attachment anxiety (hyperactivation) and attachment avoidance (deactivation) as described by Mikulincer & Shaver (2007). It was hypothesised

that shorter response expectations would be associated with higher relationship satisfaction scores, and with perceptions of the partner as receptive and responsive to bids for connection and attention. Higher attachment anxiety was expected to be associated with shorter response expectations and higher attachment avoidance with longer response expectations, reflecting the processes of hyperactivation and deactivation, respectively. Although in Study 1 response expectations were significantly shorter for texts than calls, correlations between response expectations, relationship satisfaction, attachment anxiety and attachment avoidance did not reach statistical significance. Similarly, the hypothesis that response expectations would reveal the participants' experiences with and perceptions of responsiveness of their partner to bids for attention and connection was not supported.

Although response expectations did not predict relationship satisfaction, the inclusion of dating but not committed couples may have contributed to the null result. Dating participants, in a formative relationship stage, are less likely to hold high expectations of response time due to the novelty of the bond and a more forgiving stance towards romantic partners during the limerance phase. In the limerance phase, lovers are more accepting and tend to focus on positive partner behaviours over negative ones (Crooks & Baur, 2017). Further, an examination of correlation coefficients for response expectations and relationship satisfaction revealed greater associations for partners in committed relationships than dating relationships, although the difference was not statistically significant. It is also possible that the wording of this item in the TQ may have interfered with participant comprehension of item content. Participants were asked to record how long they "expected" to wait for their romantic partner to respond to a sent text rather than how long they "actually" tend to wait for a text reply. While subtle, this semantic difference between expected and actual wait times may have influenced participant responses to the item, with more generous wait times

reflecting more forgiving response parameters in this sample of relatively happy, satisfied couples, as reflected in positively skewed relationship satisfaction scores.

Attachment orientation, texting and relationship satisfaction. It was hypothesised that lower attachment anxiety, lower attachment avoidance, more positive attitudes to technology use, and preferential texting to the romantic partner would predict higher relationship satisfaction. As anticipated, higher attachment anxiety and higher attachment avoidance were associated with lower relationship satisfaction scores. A preference for texting the romantic partner over other contacts was also a statistically significant predictor of relationship satisfaction. Contrary to expectations, text attitudes (positive or negative) were not predictive of relationship quality, possibly reflecting deficiencies in the Technology Questionnaire items, the measurement of text frequency and text content or both.

Results in Study 1 also reflected differentiated effects of attachment status on mobile call and text usage in relationships and, consequently, on relationship satisfaction and quality. For example, whereas attachment anxiety emerged as a predictor of unique variance in relationship satisfaction scores, attachment avoidance was related to the selection of recipients for calls and texts. Higher attachment avoidance was associated with a lower proportion of calls and texts to the romantic partner, and a higher proportion of calls and texts to other contacts, specifically close friends. For those higher in attachment avoidance, this finding supports the proposal that texting processes trigger deactivation of the attachment system and engagement with behaviours that restore a preferred and familiar attachment stance (Mikulincer & Shaver, 2007). Consistent with attachment theory, there appears to be a vigilant monitoring of interpersonal closeness and an investment in behaviours that maintain an acceptable level of emotional distance by individuals higher in attachment anxiety or attachment avoidance. Current findings suggest, for example, that at one level, texting may represent one strategy to maintain broader, potentially less intimate contacts as a function of

deactivation for participants high in attachment avoidance. At another level, such strategies may adversely influence relationship satisfaction, implicating partner effects outside the scope of investigation in Study 1.

Relationship status. A significant and unexpected finding emerging from Study 1 was that relationship status and texts to romantic partner were the strongest predictors of unique variance in relationship satisfaction scores. Texts to romantic partner added explanatory power to the model above the contribution of relationship status and attachment anxiety. This finding was not anticipated. Relationship status has not been routinely scrutinized in research in this area, perhaps because of the relatively young age profile of undergraduate research populations. Schade et al. (2013), for example, in their seminal study in this area did not separately account for relationship status.

Results in Study 1 suggest differing dynamics affecting attachment anxiety and attachment avoidance in committed relationships (lower attachment anxiety and lower attachment avoidance with relationship commitment), correlated with a tone of text communications that is consistent with a movement towards contingent communication (greater Technology Positive scores). As relationships reflect a more committed status, the tone of text communications appears to become more affectionate than transactional and less conflictual internally to the individual, as reflected in the attitudinal items expressing text remorse. Shifts in participant self-nominated status from dating to cohabitating appear to be associated with greater closeness, relational exchanges via text, and higher relationship satisfaction, consistent with patterns of contingent communication.

The literature supports a movement towards stronger patterns of contingent communication as relationships increase in commitment and are characterised by lower attachment anxiety and attachment avoidance, and greater attachment security with the romantic partner. Hazan and Zeifman (1994) reported that the majority of adults in romantic

relationships of at least two years specify their romantic partner as the provider of a secure attachment base. Consequently, attachment dynamics are likely to be less pertinent during the initial stages of romantic relationships (Eastwick & Finkel, 2008) and interaction patterns are likely to differ in dating and committed unions. Contingent communication refers to interpersonal communication that is characterised by close attention, emotional attunement, and interest (Siegel, 2015). Patterns of contingent communication in adulthood mirror the important parent-child interactions that form a secure attachment relationship with the parent in early childhood and a secure attachment stance in adulthood (Siegel, 2011). For communication to be contingent, adults need to demonstrate focused attention, attune to their partner's emotional experiences, and respond in a timely way that demonstrates priority (Siegel, 2016). Patterns of contingent communication are associated with secure attachment and with the stimulation of neural activity and growth, behavioural flexibility, and emotional wellbeing (Siegel, 2011). Patterns of contingent communication are more likely to characterise established relationships, where couples have an intimate knowledge of one another, than dating relationships. For this reason, subsequent studies in this research program focused on participants in committed romantic relationships. The examination of response expectations considers whether processes of contingent communication occur via text in committed partnerships.

Although relationship status was originally included as a demographic variable, the impact of making a commitment or being in a committed relationship is implicit in research elsewhere (Amato, 2015; Hepper & Carnelley, 2012; McIntyre, Mattingly, & Lewandowski, 2015). Chopik, Edelstein, and Fraley (2012) in their study of over 86,000 internet respondents found that compared to single individuals, partnered individuals in committed relationships reported lowered levels of attachment anxiety and attachment avoidance, as observed in Study 1. Luke, Sedikides, and Carnelley (2012) reported on the energizing

quality of secure attachment relationships and identified a sense of safety and security reflected in partnered attachment. Individuals with a secure attachment type, consistently report greater relationship satisfaction and stability than individuals with an insecure attachment types

Limitations and directions. There are a number of implications of the Study 1 data. First, as the primary focus of this investigation was to explore the relationship between texting, attachment, and relationship quality, sampling in subsequent studies was restricted to participants in committed romantic relationships. The literature supports a movement toward identification of the romantic partner as an attachment figure as the length of relationship exceeds two calendar years (Hazan & Ziefman, 1994), with the nature of the romantic bond shifting after this time. A subsequent study of attachment processes by Fraley and Davis (1997) also observed that the nomination of peers as attachment figures increased as a function of the duration and quality of the relationship. As relationships are consolidated, there is a shift in attachment security and confidence that the partner is reliable source of support. Together, these findings suggest that investigations of attachment, texting, and relationship quality are best examined in established committed relationships, where the romantic partner is more likely to be identified as an attachment figure of significance. Furthermore, it is likely that text practices in casual, formative relationships vary in frequency and form from practices in committed romantic unions. Text practices may reflect the relationship stage (Coyne et al., 2011) as well as the living circumstances of the couple (i.e., how much time they spend together in close proximity). Study 1 results showed that the dating and non-cohabitating adults sent significantly more texts to romantic partners than did cohabitating couples, mostly likely due to their proximity to the romantic partner. Considerations of text frequency, in isolation from text content, potentially minimise important differences in the tone, content and quality of text interactions. Text content,

response expectations and attitudes were examined in Study 2 with a revised version of the Technology Questionnaire. Results of Study 1 informed the development of questionnaire items in subsequent studies.

Second, to increase the generalisability of findings, a movement beyond the recruitment of graduate students was required to access a larger, more representative sample of males and females. By virtue of the age and lifestyle of typical undergraduate populations, continued sampling in a university cohort may have resulted in adult samples in the single, dating or pre-commitment stages of romantic relationships and outside of the population of interest. A movement to the recruitment of participants in committed romantic relationships, outside a student population, supports an examination of more stable interaction patterns, where the romantic partner is more likely to represent attachment security.

Third, the measurement of technology use in Study 1 reflects some of the challenges associated with obtaining accurate frequency estimates of calling, and texting. The categorical measurement of total daily calls and texts did not permit the examination of frequencies within discrete response intervals. Consequently, calling and texting were operationalized in Study 1 as the percentage of call and text messages sent to the romantic partner compared to other contacts (i.e., close friends, colleagues, acquaintances and parents). This measure captured the extent to which participants' prioritized contacts in their call and text communications, and proved useful in exploring shifts in patterns of contact with partners, close friends and parents, generally and as a function of relationship status, attachment anxiety, and attachment avoidance.

In Study 1, the tendency to favour text contact with the romantic partner, over other contacts in relationships that were more committed (as opposed to dating only), mirrored patterns of attachment transfer. Attachment transfer represents the progressive movement towards the romantic partner for practical and emotional support and away from parents and

friends (Fraley & Davis, 1997). This was especially true with respect to relationship status. Prioritisation of the romantic partner was associated with greater relationship commitment (i.e., comparisons of dating participants and cohabitating participants). Prioritisation of other contacts, close friends and parents especially, was more prominent in dating relationships than in established unions. Prioritisation of the romantic partner via text was associated with attachment avoidance, but not attachment anxiety. Higher attachment avoidance was related to the maintenance of broader contact networks via call and text, that is, lower preferential text contact with the romantic partner and proportionately greater contact with friends, acquaintances and parents.

Consistent with attachment theory, individuals higher in attachment avoidance maintain emotional distance and avoid over reliance on the romantic partner or relationship (Levine & Heller, 2012). For individuals higher in attachment avoidance, texting may represent a deactivating strategy securing emotional distance from the romantic partner by limiting interpersonal contact via text. Maintaining a network of text contacts outside the primary relationship may be a strategy to preserve autonomy and separateness. Conversely, for adults lower in attachment avoidance, text messages may represent an opportunity to build or maintain intimacy through intermittent exchanges. Relationship research supports the notion that intimacy is built in small moments of connection (Gottman, 2014). It is possible that for some individuals, especially those low in attachment avoidance, some of these moments of connection are facilitated via text. Study 2 extended an examination of relationship satisfaction to include a measure of emotional closeness (intimacy) and emotional distance (loneliness) and to develop the Technology Questionnaire. It was anticipated that the refinement of TQ items would support an exploration of text content and motives along with text frequency and response expectations in a committed adult sample.

Chapter 3: Attachment, Texting, and Relationship Quality

In Study 1, attachment orientation, relationship status, and texts to the romantic partner emerged as significant predictors of relationship satisfaction. Although attitudes toward texting suggested general agreement with the positive role of text messages in romantic relationships, positive attitudes to technology were not significantly associated with relationship satisfaction scores. Texts generated closeness between partners during periods of separation, especially for those in committed cohabitating relationships. Negative technology attitudes were significantly and inversely associated with relationship satisfaction scores. Problems resulting from the exchange of texts were identified in dating relationships more than in committed unions and discomfort with the content of texts (sent or received) was associated with attachment anxiety and attachment avoidance.

Emerging from Study 1 was an indication that text messages have the potential to contribute to and detract from the emotional climate of the romantic relationship and to compromise relationship satisfaction. The data reflected a stronger relationship between relationship satisfaction and negative technology attitudes than positive technology attitudes. Negative perceptions of technology use were associated with lower relationship satisfaction scores, as in earlier studies (Schade et al., 2013). Schade and colleagues used exploratory path analysis to identify significant associations among positive and negative technology use, attachment behaviours, and relationship variables in young adults. Participants were asked to consider how frequently they used different technologies (including texts) to connect with a romantic partner, and how often technology was used to send affectionate, hurtful or regulatory messages. Although attachment motives were associated with relationship satisfaction and stability for males and females, higher text frequencies were associated with lower relationship satisfaction and lower stability scores for males, and higher relationship stability scores for females. These data suggest that content may mediate the relationship

between texting frequency and satisfaction, especially for males. Texting to express affection was universally associated with higher reported partner attachment (i.e., lower attachment anxiety and attachment avoidance) for both sexes. Sending hurtful messages was associated with higher attachment anxiety and higher attachment avoidance, and lower relationship satisfaction and stability. Regulatory messages were associated with lower relationship satisfaction scores for females, but not for males. Regulatory messages were measured by asking participants to consider how often technology was used to “to discuss serious issues”, “broach potentially confrontational subjects” and “apologise to the partner”. For males especially, texting appeared to represent a safer form of communication when the relationship was under threat, however, regulatory texting and hurtful messages, in the absence of affectionate ones, increase feelings of detachment for both partners (Schade et al., 2013).

To extend the findings of Study 1 and evaluate the three-factor structure of text content by Schade and colleagues (2013), several changes were made to the TQ and associated measures. The TQ was modified to focus exclusively on text processes (i.e., to omit items relating to calls) and include items consistent with positive (*affectionate*), negative (*hurtful*), and regulatory (*maintenance*) functions. A continuous scale (as opposed to the interval scale used in Study 1) measured text frequency and response expectations. Changes to the TQ between Study 1 and Study 2 reflect efforts to capture text dynamics, as well as the content exchanged by committed romantic partners. Thirteen additional items were added to the original TQ to assess response expectations, text content, text target, and text frequency. In the attachment literature, emotional closeness is reflected in patterns of contingent communication, where the partner’s response resonates strongly with the individual’s emotional experience and people describe feeling seen, heard, and valued (Wallin, 2007). To support an assessment of emotional attunement, measures of intimacy, social and emotional

loneliness were included in Study 2. The objective was to support a more comprehensive assessment of relationship quality than relationship satisfaction alone.

In the literature, loneliness has been correlated with shyness, depression, and social skill deficiencies and is recognised as a major risk factor for morbidity and mortality (Caspi, Harrington, Moffitt, Milne, & Poulton, 2006; Luo, Hawkley, Waite, & Cacioppo, 2012). As members of a social species, humans derive strength from the collective ability to plan, communicate, and collaborate. The brains of social species have evolved to respond to exclusion that is, being pushed to the perimeter of a social system (Cacioppo, Capitanio, & Cacioppo, 2014). When on the outside of connection, feelings of loneliness communicate a need for social contact, just as hunger and thirst activate a drive for food and water. There is evidence to suggest that attachment triggers may mediate responses to cues for social exclusion influencing the pathways used to foster interpersonal connections. Loneliness has been associated with changes in psychological states including increased depressive symptomology (Cacioppo, Hawkley, & Thisted, 2010), lower subjective well-being (VanderWeele, Hawkley, & Cacioppo, 2012), heightened vigilance for social threats (Cacioppo & Hawkley, 2009), and decreased executive functioning (Cacioppo et al., 2000). An association between loneliness and heightened vigilance to social exclusion may be reflected in the use of technology to promote interpersonal connections, a mode that is traditionally perceived as less intimate and threatening (Drouin & Landgraff, 2012). It is proposed that individuals higher in social and emotional loneliness may favour texting as a connection tool, meeting their need for contact while minimising exposure to rejection from more intimate communication modes. Further, it is proposed that strategies of connection, in this research were measured via text frequency and content, may differ for those individuals who report higher social and emotional loneliness as compared with those lower in social and emotional loneliness.

In Study 2, the assessment of relationship quality included measures of relationship satisfaction and intimacy. There are subtle yet important distinctions between relationship satisfaction and relationship quality. Whereas satisfaction reflects general feelings of positivity and attraction to the relationship (Rusbult & Buunk, 1993), quality reflects the emotional closeness experienced in a romantic dyad (Perlman & Ferhr, 1987). Reis and Shaver's (1988) model of intimacy emphasises emotional self-disclosures and demonstrations of partner responsiveness as important contributors to romantic closeness. It was anticipated that the intimacy and loneliness measures would capture aspects of emotional closeness and partner receptiveness not reflected in relationship satisfaction scores or response expectations. It was expected that broadening the assessment of relationship satisfaction would support an understanding of how text messaging contributes to feelings of closeness and connection or disconnection and loneliness in romantic relationships.

In Study 1, there was strong evidence to suggest that texting practices are related to relationship status and attachment orientation, specifically attachment avoidance. For individuals higher in attachment anxiety, hyperactivation of the attachment system was reflected in higher rates of texting and bids for the attention of the romantic partner. For individuals higher in attachment avoidance, deactivation was reflected in lower rates of texting and greater emotional distance. Higher attachment anxiety reflects a striving for reassurance and connection and higher attachment avoidance suggest a desire for greater autonomy and separateness. While this supports an understanding of the text motives of individuals higher in attachment anxiety or attachment avoidance, it reveals little about the relationship drives of individuals who are lower in attachment anxiety and attachment avoidance. In Study 2, the movement from a continuous to categorical measure of attachment supported examinations of text behaviour and motives by attachment type.

The TQ was expanded to capture the motives embedded in text exchanges. TQ2 moved away from attitudinal measures of technology use (i.e., “Is texting a positive relationship tool?”) and toward items that more strongly assessed specific text content and text behaviours, (e.g., “I send messages of love to my partner”). Further, attachment type classifications, using the interaction of attachment anxiety and attachment avoidance (i.e., secure, preoccupied, fearful avoidant, dismissing) permitted an exploration of how individuals lower in both dimensional measures (or higher in both dimensional measures) use texting within their romantic relationships. Study 2 explored relationships between text frequency, texting attitudes, attachment anxiety and attachment avoidance and assessed these variables as predictors of relationship quality, conceptualized as intimacy, relationship satisfaction, and loneliness.

Research Hypotheses Study 2

Hypothesis 1. It was hypothesised that factor analysis of the TQ2 items would support a three factor structure, consistent with Schade et al.’s (2013) positive, negative, and regulatory functions.

Hypothesis 2. It was hypothesised that the use of text messaging would be related to the number of texts sent to the romantic partner, relationship quality, and attachment orientation. It was proposed that texts supporting connection would be related to higher relationship quality and higher attachment anxiety, whereas texts sent to avoid contact with the partner or create distance would be related to lower relationship quality and higher attachment avoidance.

Hypothesis 3. (a) Higher text frequency was expected to be associated with higher attachment anxiety, and lower attachment avoidance scores and lower loneliness scores (b) Higher text frequency was expected to be related to higher relationship satisfaction and intimacy scores.

Hypothesis 4. It was hypothesised that shorter response expectations would be associated with higher intimacy, lower loneliness, higher attachment anxiety and lower attachment avoidance.

Hypothesis 5. It was hypothesised that text messaging would account for unique variance in relationship quality, above the contribution of attachment orientation. Three regression models were tested with relationship satisfaction, intimacy, and loneliness as dependent measures of relationship quality.

Hypothesis 6. It was hypothesised that relationship satisfaction, intimacy and loneliness would vary as a function of attachment type (a) Secure individuals were expected to report significantly higher relationship satisfaction and intimacy scores, and significantly lower loneliness scores than preoccupied or fearful avoidant individuals. (b) Dismissing individuals were expected to report significantly lower levels of intimacy than secure, preoccupied, and fearful avoidant types.

Hypothesis 7. It was hypothesised that text frequency and texting motives would vary as a function of attachment type. (a) It was predicted that secure and preoccupied individuals would report higher text frequencies and higher scores on Turning Towards, than dismissive and fearful types. (b) Preoccupied and fearful avoidant types were expected to report higher scores on Turning Away via text than secure or dismissing attachment types.

Method Study 2

Participants

The sample consisted of 402 participants, 231 females (57%) and 171 males (43%), between the ages of 18-39 years ($M = 26.76$ years; $SD = 4.79$ years). The majority were American (80%) with the remainder reporting their nationality as Asian (3%), Indian (5%), and European (12%). With respect to relationship status, 38% reported that they were in a committed relationship and living separately (CNC, committed non-cohabitating), 37% were married and living together (MC, married and cohabitating) and 25% of the sample were unmarried and cohabitating (UC). Relationship length ranged from one month to 20 years, with a mean relationship length of 54.57 months (approximately 4.5 years).

Materials

Participants completed instruments measuring attachment orientation, technology use, loneliness, intimacy, and relationship satisfaction. The online survey contained a measure of technology use developed specifically for Study 2, the Technology Questionnaire (TQ2), as well as the Experiences in Close Relationships Scale - Revised (ECR-R), Miller Social Intimacy Scale (MSIS), Relationship Assessment Scale (RAS), De Jong Gierveld Loneliness Scale and demographic questions. Measures of attachment orientation (ECR-R) and relationship satisfaction (RAS) used in Study 1 were included in Study 2. Psychometric properties for these instruments are described in Chapter 2.

Demographic questionnaire. The demographic questionnaire gathered information about the participant's age, gender, ethnicity, sexual orientation, relationship status, duration, and cohabitation status. The demographics section was used to confirm that participants met the inclusion and exclusion criteria of the study. Appendix A includes the demographic questionnaires for studies in this program of research.

Relationship intimacy. The MSIS measures intimacy in adult relationships (Miller & Lefcourt, 1982). The scale is comprised of 17-items scored on a 10-point Likert scale ranging from 1 (*very rarely*) to 10 (*almost always*). The scale has two subscales with six items measuring the frequency of intimate contact and 11 items measuring the intensity of intimate contacts. Higher scores on the frequency and intimacy subscales reflect greater feelings of intimacy and interpersonal closeness. Examples MSIS items include “How often do you show your partner affection?”, “How close do you feel to him or her most of the time?” and “How important it is to you that your partner understands your feelings?” Psychometric data indicates high reliability support for convergent, discriminant, and construct validity (Miller & Lefcourt, 1982). A subsequent study that assessed the MSIS reported Cronbach’s alpha coefficients as acceptable to excellent (Cronbach’s $\alpha = .87$ to $.95$) across various administrations (Downs & Hillje, 1991). The range of scores for participants in this study was between 30 and 85 with a Cronbach’s alpha coefficient of $\alpha = .91$. Scale items for the MSIS are presented in Appendix G.

Loneliness. The De Jong Gierveld Loneliness Scale is an 11-item scale measuring general loneliness (as a total score) and comprises two subscales for social and emotional loneliness (De Jong Gierveld & Tilburg, 2006). Participants record their agreement or disagreement with the items using a five-point Likert scale, ranging from *strongly disagree* (1) to *strongly agree* (5). Scores for general loneliness range from 11 to 55, with higher scores indicating greater feelings of emotional, social, and overall loneliness. Positively worded items contribute to the subscale of social loneliness, while negatively worded items contribute to the subscale of emotional loneliness. Items from the social loneliness subscale are reversed scored. Examples items include, “I experience a general sense of emptiness” (emotional loneliness) and “There are enough people I feel close to” (social loneliness).

The social loneliness items have demonstrated a strong correlation with subscales of the UCLA Loneliness Scale, a widely used, comparable measure of loneliness, supporting the convergent validity of this instrument (De Jong-Gierveld & Van Tilburg, 2006). Meta analyses have shown the De Jong-Gierveld Loneliness Scale to be a reliable and valid measure of loneliness overall (Pinquart & Sorensen, 2001), as well as social and emotional loneliness independently. The subscales have adequate internal consistency with Cronbach's alpha values of $\alpha = .88$ for the social and emotional subscales (De Jong Gierveld & Tilburg, 2006). The De Jong Gierveld scale was developed using Rasch modelling, demonstrating sufficient homogeneity with H coefficients ranging from .35 to .52 (Grygiel, Humenny, Rebisz, Switaj, & Sikorska, 2013). The range of scores for participants in the current study was 11 to 55 with a Cronbach's alpha coefficient of $\alpha = .88$. Scale items are presented in Appendix H.

Technology use. The Technology Questionnaire (TQ2) examined technology use in intimate relationships. This measure integrated items from the Technology Questionnaire developed for use in Study 1 and a measure of technology use proposed by Schade et al. (2013). Schade and colleagues used two single item indicators and a three-item combination to measure technology use in three domains. The three domains measured by Schade et al. were *affection*, *hurtful messages*, and *relationship regulation* (to discuss serious issues, broach a confrontational topic, and to apologize). Cronbach's alpha coefficients for the items were Cronbach's $\alpha = .78$ for men and Cronbach's $\alpha = .82$ for women.

Texting frequencies and response time expectations. As in Study 1, participants provided text frequencies, response time expectations for sent texts, noted patterns of contact text targets (i.e., romantic partners, close friends, colleagues and parents), and considered message content. Continuous measures of text frequency and response time expectations

were used to capture parameters of technology use. Participants were asked to provide an estimate of their expected wait time for a reply in minutes.

Target of contact. Patterns of contact were examined by asking participants to estimate the percentage of contacts initiated with romantic partners, close friends, colleagues and parents by text (e.g., “Of the texts that you send each day, what percentage are sent to each of the following contacts: romantic partner, close friends, colleagues, and parents?”). Responses to this item indicated to whom text messages were most commonly sent.

Text content. As in Study 1, participants estimated the proportion of text messages sent for sharing information and the expression of emotions (information vs relational content). A comparison of estimates of relational and information focused texts offered insight into the content of texts sent between romantic partners.

Text attitudes. Participants were asked to rate their agreement or disagreement on 13 items using a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Example items included, “I have sent messages of love and support to my partner” and “I have sent text message to hurt my partner” (see Appendix D). The calculation of total scores for this inventory was determined after the completion of a principle component analysis, as discussed in Results.

Procedure

Participants were recruited from socialsci.com, a participant database offering credit in exchange for research participation. Respondents are paid for their time through a variation of points, tokens, and special offers (e.g., fly buys points, frequent flyer rewards points, grocery vouchers, discounts, and gift cards). The database recruits participants based on specified selection criteria. Inclusion criteria for the present study required that participants (a) be in a committed romantic relationship and living separately or in a committed relationship and living together or married, (b) own and use a mobile phone, (c) be between

the ages of 18 and 40 years, and (d) state their native language as English. Four hundred and two participants were recruited which exceeded the minimum sample size as calculated by the G*Power statistical program (Faul, Erdfelder, Lang, & Buchner, 2007).

Participants received an explanatory statement outlining the inclusion criteria regarding phone ownership and use, committed relationship status, and age suitability. They were advised to allow adequate time to complete the survey in one sitting. Anonymity was assured and participants could exit the survey without penalty. Pilot testing confirmed an anticipated completion time of approximately 45 minutes and onscreen instructions were provided for each section of the questionnaire. To assess the independence of the sample, participants were asked to disclose if their partner had also completed the questionnaire. Of the 402 participants in the sample, 20 participants indicated that their partner had previously completed the questionnaire. Although this represented a violation of the assumption of independence, as the rate of incidence was very low (less than 5% of the sample), the data for the 20 participants was retained.

Results Study 2

Data Screening Study 2

Prior to the analyses, the data were examined for accuracy of input, out-of-range values, reasonable means and standard deviations, missing values and normality. The relationship status group frequencies were significantly different for non-cohabitating (NC, $n = 152$), unmarried and cohabitating (UC, $n = 102$), and married (MC, $n = 148$) participants, $\chi^2(2, N = 402) = 11.52, p = .003$. Gender also differed significantly in the sample with more female ($n = 231$) than male ($n = 171$) participants, $\chi^2(1, N = 402) = 8.96, p = .003$. Age, gender and relationship length were entered as covariates in the main analyses. According to Tabachnick and Fidell (2013), the robustness of regression as a statistical tool allows for the

retention of significantly different population frequencies with an adequate sample size. With a participant sample exceeding 100, adequate power was met.

Frequency distributions with descriptive statistics and histograms were conducted for all variables. Normality, skewness and kurtosis were assessed via visual inspection of histograms. Two variables, relationship satisfaction and number of texts sent to romantic partner were positively skewed, as in Study 1, whereas other variables met the assumption of normality. Generally high mean scores on relationship satisfaction suggest a positive and stable sample of generally happy couples. High scores on this variable may also reflect social desirability and a tendency for participants to exaggerate their satisfaction or dissatisfaction, as noted in studies of relationship quality (Gottman, 2014). The variable text frequency was also positively skewed, representing a sample of participants who text at relatively high frequencies and for whom texting is possibly a primary mode of communication. High rates of texting may reflect participant confidence in communicating with the use of technology, as evidenced by participation in an online study via an online recruitment platform. As noted, the relationship satisfaction and number of texts to the romantic partner variables were highly skewed. These variables were square root transformed to reduce skewness and analyses were run on the transformed and untransformed data. As the substantive findings between the tests did not change, and to aid interpretation, the original data were reported. Distributions of scores for relationship satisfaction and for number of texts to romantic partner were within range and deemed representative of the population of interest. No transformations were conducted.

Univariate outliers were checked using box and whisker plots. Box plots revealed extreme outliers in the use of technology, affecting eight of the 402 cases. Six estimates of total texts sent and seven estimates of total texts received exceeded reasonable response parameters. Additionally, four approximations of texting frequency to and from the romantic

partner were identified as overestimations, representing texting at a very high frequency. The values of concern were identified in eight of the 402 cases. An adjustment for an overestimation of texting was made in the eight cases, reducing the response range for these cases. Value substitutions equal to the mean value plus three times the standard deviation were made for the eight cases of texting frequency, consistent with recommendations from Tabachnick and Fidel (2013). These cases represent a portion of the population who use texting at a very high frequency to connect with their partner. Seventeen multivariate outliers were identified using Mahalanobis distance ($p < .001$). In order to determine the impact of the outliers on the results, analyses were performed including and excluding these cases. No significant differences were observed on the substantive results and a decision was made to retain all cases in the analysis. All tests were considered reliable at the $p < .05$ level using SPSS software version 22.

Exploratory Factor Analysis

Exploratory factor analysis was performed to identify potential domains within the TQ2. An initial solution confirmed the factorability of the dataset with a Kaiser-Meyer-Olkin value of .80. Based on eigenvalues, the results suggested a three-factor solution, whereas Cattell's scree plot identified one main factor. Several solutions using Principal axis factoring and maximum likelihood with oblimin and varimax rotation was conducted. The solution with best fit explained 47.91% of the variance, with two factors and utilizing Maximum likelihood extraction with oblimin rotation. The first factor reflected use of technology for engaging the romantic partner (factor 1; Turning Toward), whereas the second factor reflected the use of technology to hurt or engage in conflict (factor 2; Turning Away). Item 10 of the TQ2 presented with a split loading above .30, "I have sent text messages to my partner to apologise." Although a heavier loading was observed on factor two (Turning Away), a decision to retain this item in factor one (Turning Towards) was made as repair

attempts have been identified as positive behaviours in romantic relationships (Gottman, 2016). Despite a minimal loading on factor two, item 3, “After texting my partner, I expect that they may not respond”, was retained as it contained relevant information regarding response expectations within a relationship.

Table 10 presents factor loadings, communalities, percent of variance and Cronbach’s alpha for maximum likelihood extraction with oblimin rotation and scale items. Hypothesis 1 and the tri-factor structure for technology use proposed by Schade and colleagues (2013) was not supported. Technology use, as measured by the TQ2, captured the use of technology to support or connect with the romantic partner (Turning Towards) and the use of technology to hurt, disconnect or engage in conflict with the romantic partner (Turning Away). Cronbach’s alpha for the Turning Towards and Turning Away subscales were Cronbach’s $\alpha = .77$ and Cronbach’s $\alpha = .71$, respectively.

Table 10

Factor Loadings, Communalities, Percent of Variance and Cronbach Alpha values for the Technology Questionnaire (TQ2)

Items	TT	TA	Communalities
Q2. Texting helps me to feel connected to my partner when we are apart	.84	.03	.70
Q1. I have sent text messages of love and support to my partner	.78	-.74	.60
Q6. After texting my partner, I expect that they will get back to me as soon as they can	.72	-.02	.52
Q9. After texting my partner, I expect that they will respond when they get around to it	.45	.03	.21
Q8. Calling helps me to feel connected to my partner when we are apart	.45	-.11	.20
Q10. I have sent messages to my partner to apologise	.43	.47	.44
Q13. I have sent messages to hurt my partner	-.21	.72	.53
Q5. I have sent messages to my partner to broach a confrontational subject	.24	.66	.53
Q4. Text messages have created problems in my romantic relationships	-.07	.56	.31
Q15. I have sent text messages that have made me feel uncomfortable	-.20	.63	.41
Q7. I have sent messages to my partner to discuss a serious issue	.42	.53	.50
Q12. After texting my partner, I may have to call or text again to get a reply or response	-.09	.45	.20
Q3. After texting my partner, I expect that they may not respond	.04	.11	.15
Variance (%)	27.04	20.87	
Cronbach's Alpha	.77	.71	

Note. $N = 402$. Factor loadings $>.40$ are in boldface.

Preliminary Analyses Study 2

Texting attitudes. Participants responded to the 13-item TQ (see Table 11). They reported positive attitudes toward the use of texting and calling to increase feelings of connection when apart. Participants endorsed the use of texting to send messages of love and support their romantic partners. With respect to response expectations, the majority of participants expected reasonably timely responses to messages sent and generally expected their partners to respond as soon as possible. It was unusual for partners to have to call or text again (i.e., repeat the bid) to receive a response. Apologies via text were made only occasionally and participants tended to avoid the discussion of serious issues over text. Participants were largely comfortable with the content of messages exchanged with their partners and disagreed that text messages were sometimes written to hurt their partner's feelings. For the majority of participants, the content of text exchanges did not contribute to problems in the romantic relationship. Item level analyses including correlations with relationship satisfaction, intimacy, attachment anxiety, attachment avoidance, loneliness, and TQ items were computed to inform construction of new item content. Supplementary analyses and analyses that informed scale development of the TQ items are included in Appendix I.

Table 11

Mean Scores, Mode and Standard Deviations for Technology Attitude Items

		<i>M</i>	<i>SD</i>	Mode
1	I have sent text messages of love and support to my partner	6.00	1.51	Agree
2	Texting helps me to feel connected to my partner when we are apart	5.83	1.35	Agree
3	After texting my partner, I expect that they may not respond	4.14	1.80	Slightly disagree
4	Text messages have created problems in my romantic relationships	2.78	1.63	Somewhat disagree
5	I have sent messages to my partner to broach a confrontational subject	3.82	1.87	Slightly disagree
6	After texting my partner, I expect that they will get back to me as soon as they can	5.47	1.40	Somewhat agree
7	I have sent messages to my partner to discuss a serious issue	4.32	1.81	Slightly disagree
8	Calling helps me to feel connected to my partner when we are apart	5.48	1.60	Agree
9	After texting my partner, I expect that they will respond when they get around to it	5.27	1.45	Somewhat agree
10	I have sent messages to my partner to apologise	4.91	1.77	Somewhat agree
11	After texting my partner, I may have to call or text again to get a reply or response	3.54	1.69	Somewhat disagree
12	I have sent messages to hurt my partner	2.31	1.71	Disagree
13	I have sent text messages that have made me feel uncomfortable	2.23	1.61	Disagree

Note. $N = 402$. Possible item range 1-7.

TQ attitudes, relationship quality and attachment orientation. It was hypothesised that the subscales of the TQ2, Turning Towards and Turning Away, would be associated with text frequency, relationship satisfaction, intimacy, loneliness, attachment anxiety, and attachment avoidance. Pearson's r correlations revealed significant positive correlations between Turning Towards and relationship satisfaction, and texting frequency. Higher scores on Turning Towards were related to higher relationship satisfaction, higher intimacy, and higher text frequencies. Turning Towards was significantly and negatively related to attachment anxiety, attachment avoidance, and social loneliness scores. Turning Away was significantly associated with relationship satisfaction, intimacy, emotional loneliness, attachment anxiety, and attachment avoidance. Higher scores on Turning Away were associated with higher text frequencies, higher attachment anxiety, higher attachment avoidance, and higher emotional loneliness scores. Higher scores on Turning Away were associated with lower relationship satisfaction and lower intimacy scores. Hypothesis 2 was supported.

Main Analyses Study 2

Assumptions were addressed before conducting the first hierarchical regression. The data met the assumption of independent errors as indicated by appropriate Durbin-Watson values. The histogram of standardised residuals indicated that the data contained normally distributed errors, as did the P-P plots of standardised residuals. An inspection of scatterplots of standardised predicted values showed a linear relationship between the variables of interest. The scatterplot of standardised predicted values showed that the data met the assumption of linearity. Pearson's correlations were conducted to assess the relationship between the predictor variables and the criterion, as in Table 12.

Table 12

Correlations between and Descriptive Statistics for Criterion and Predictor Variables

Variable	RL	G	AA	AV	I	LS	EL	SL	RAS	TRP	TT	TA
RL												
Gender	.03											
AA	-.12*	.03										
AV	-.03	-.01	.50***									
I	-.01	-.16**	-.42***	-.78***								
LS	.01	-.05	.46***	.29***	-.21***							
EL	.03	-.01	.50***	.26***	-.22***	.87***						
SL	.15**	-.08	.24***	.21***	-.11*	.79***	.39***					
RS	-.04	-.08	-.50***	-.66***	.81***	-.28***	-.34***	-.01*				
TRP	-.19**	-.02	.03	-.10*	.08	-.09	-.01	-.15**	-.05			
TT	-.14**	-.06	-.15**	-.40***	.49***	-.10*	-.04	-.15**	.35***	.13**		
TA	-.02	.10*	.39***	.22***	-.30***	.15**	.26***	-.05	-.36***	.15*	.21***	
<i>M</i>	54.57		3.07	2.82	133.74	32.51	17.86	14.64	28.05	30.48	32.96	23.15
<i>SD</i>	47.06		1.21	1.08	25.32	6.38	4.25	3.39	5.73	50.60	6.22	7.33

Note = 402. RL = relationship length, G = gender (female = 0, male = 1), AA = attachment anxiety, AV = attachment avoidance, I = intimacy, LS = loneliness, EL = emotional loneliness, SL = social loneliness, RS = relationship satisfaction, TRP = text sent to romantic partner, TA = turning away, TT = turning towards.

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

Assumptions of multicollinearity and singularity were met. Consistent with theoretical expectations and previous research, attachment anxiety was related to relationship satisfaction and intimacy scores, as was attachment avoidance. Patterns of insecure attachment (i.e., high attachment anxiety or high attachment avoidance) were related to lower relationship quality (i.e., relationship satisfaction and intimacy) and to greater feelings of emotional and social loneliness. Consistent with theories of attachment transfer, lower attachment anxiety was associated with longer relationship length, suggesting that relationship insecurity characterised newer relationships more so than established ones. Although males and females did not differ significantly on attachment anxiety, attachment avoidance, loneliness and relationship satisfaction, females rated their relationships as more intimate than did males.

Relationship satisfaction significantly correlated with intimacy, loneliness, Turning Towards, Turning Away, attachment anxiety, and attachment avoidance. Relationship satisfaction was positively associated with intimacy and Turning Towards, and inversely related to loneliness, Turning Away, attachment anxiety, and attachment avoidance. As expected, intimacy was associated with Turning Towards and with Turning Away via text. The exchange of positive sentiments via text message was associated with greater relationship intimacy, whereas the use of texting to exchange criticisms or create emotional distance related to lower relationship intimacy. Intimacy was inversely related to loneliness, attachment anxiety and attachment avoidance scores. Higher scores on intimacy were associated with lower scores on attachment anxiety and attachment avoidance and lower scores on social and emotional loneliness.

Higher scores on the dimensional measures of attachment anxiety and attachment avoidance were associated with higher loneliness scores. Interestingly, loneliness scores related to Turning Towards and Turning Away from the romantic partner. Higher loneliness

scores, in particular emotional loneliness scores, related to higher scores on Turning Away. Participants reporting high emotional loneliness were more likely to engage in negative text interactions with their partner. Further, higher social loneliness was associated with lower Turning Towards. Mean scores and standard deviation values for the variables of interest are presented in Table 13.

Table 13

Mean, Median, Minimum and Maximum Scores and Standard Deviations for Relationship Satisfaction, Intimacy, Loneliness, Emotional Loneliness, Social Loneliness, Turning Toward, Turning Away, Attachment Anxiety, and Attachment Avoidance

	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>	<i>Median</i>
Relationship satisfaction	8.00	35.00	28.05	5.73	29.00
Intimacy	59.00	170.00	133.74	25.32	139.00
Emotional loneliness	10.00	30.00	17.86	4.25	17.00
Social loneliness	8.00	25.00	14.64	3.39	14.00
Loneliness total	20.00	51.00	32.51	6.38	32.00
Turning towards	6.00	42.00	32.96	6.23	34.00
Turning away	7.00	49.00	23.15	7.33	23.00
Attachment anxiety	1.00	5.94	3.07	1.21	3.00
Attachment avoidance	1.00	5.83	2.83	1.08	2.78

Note. $N = 402$.

Text frequency, relationship quality and attachment orientation. To explore relationships between technology use, relationship quality and attachment orientation, means and standard deviations were calculated for relationship satisfaction, relationship intimacy, emotional and social loneliness, attachment anxiety, and attachment avoidance (see Table 12). Pearson r correlation coefficients were computed for text frequency to romantic partner, attachment orientation, and relationship quality measures. Text frequency was inversely related to attachment avoidance ($r(400) = -.10, p = .050$) and social loneliness ($r(400) = -.15, p = .003$) as expected, but not to attachment anxiety ($r(400) = .03, p = .563$), relationship satisfaction ($r(400) = -.05, p = .364$), intimacy ($r(400) = .08, p = .118$) or emotional loneliness ($r(400) = -.01, p = .820$). Participants who reported a preference for greater emotional autonomy sent fewer texts and acknowledged greater social disconnection. Text frequency decreased with increased attachment avoidance and social loneliness. Statistically significant correlations reported here suggest that texting may offer a protective buffer against social loneliness. Exchanging texts with a romantic partner may satisfy a need for connection and acknowledgement. Hypothesis 3(a) was supported for attachment avoidance, but not attachment anxiety. There were no statistically significant correlations between text frequency and relationship satisfaction, intimacy or emotional loneliness scores. Hypothesis 3(b) was not supported.

Response expectations for texts. Participants estimated how long they would expect to wait for their romantic partner to respond to a sent text. Response expectations for text were not significantly associated with attachment anxiety ($r = .01, p = .794$), attachment avoidance ($r = .07, p = .145$), relationship satisfaction, ($r = .00, p = .998$), intimacy ($r = -.05, p = .354$), or loneliness ($r = -.03, p = .561$). It was hypothesised that response expectations would provide a measure of relationship attunement, but this was not supported in the data. Hypothesis 4 was not supported.

Regression on relationship satisfaction. Hierarchical multiple regression was performed to examine the unique contribution of texting to romantic partner and use of technology above the contribution of attachment anxiety, attachment avoidance, social and emotional loneliness and intimacy on relationship satisfaction. In the current study, age, gender and relationship length were entered as covariates at Step 1. At Step 2, relationship status was entered to explore the effects of commitment and cohabitation on relationship satisfaction. Coyne et al. (2011) reported greater relationship commitment to be associated with greater relationship satisfaction and stability. At Step 3, the attachment anxiety and attachment avoidance subscales were entered as predictor variables, consistent with attachment theory and the association between attachment orientation and relationship satisfaction (Jin & Pena, 2010; Weisskirch & Delevi, 2011; Drouin & Landgraff, 2012). In the attachment literature, a secure attachment stance, characterised by low attachment anxiety and low attachment avoidance is associated with relationship satisfaction and stability (Levine & Heller, 2012). Consistent with previous research (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011), adult attachment type was expected to be a statistically significant predictor of relationship quality. At Step 4, intimacy, and social and emotional loneliness were entered to explore the predictive value of emotional closeness (i.e., intimacy) and emotional detachment (i.e., social and emotional loneliness) on relationship quality. Number of texts to romantic partner and the two subscales of the technology questionnaire, Turning Towards and Turning Away, were entered in Step 5, as texting was the key variable of interest.

At Step 1, the model was not statistically significant, $F(3, 398) = 1.63, p = .18$, see Table 14. Age, gender and relationship length were not statistically significant predictors of relationship satisfaction. At Step 2, the model was statistically significant, $F(5, 396) = 2.64, p = .02$, with relationship status explaining an additional 2% of the variance in relationship

satisfaction scores, $F\Delta (2, 396) = 4.13, p = .02$. Married participants reported significantly higher relationship satisfaction scores than did unmarried non-cohabitating participants. There was no statistically significant difference in relationship satisfaction scores for the cohabitating and non-cohabitating participants.

At Step 3, the model remained statistically significant, $F (7, 394) = 53.36, p < .001$, with attachment anxiety and attachment avoidance explaining over 45% additional variance in relationship satisfaction scores, $F\Delta (2, 394) = 174.38, p < .001$. As expected, attachment anxiety and attachment avoidance negatively correlated with relationship satisfaction. At Step 4, the model remained statistically significant, $F (10, 391) = 96.86, p < .001$ and explained over 70% of the variance in relationship satisfaction scores. Higher intimacy, higher social loneliness, and lower emotional loneliness scores, were predictive of greater relationship satisfaction, $F\Delta (3, 391) = 102.31, p < .001$. Relationships characterised by emotional closeness and a focus on interpersonal engagement were reported as more satisfying.

At Step 5, the model remained statistically significant $F (13, 388) = 78.59, p < .001$. Number of texts to partner, Turning Towards and Turning Away resulted in a significant increment of explainable variance in relationship satisfaction scores, $F\Delta (3, 88) = 5.80, p = .001$. Text messaging, as measured by the number of text messages sent to the romantic partner, was a statistically significant predictor of relationship satisfaction. Higher text frequencies were associated with lower relationship satisfaction scores. Findings here support the proposal that texting may be used to enhance or detract from the quality of relationships. The Turning Towards and Turning Away subscales did not contribute significantly to the predictive value of the model. The model did not provide support for Hypothesis 5 for relationship satisfaction.

Table 14

Hierarchical Regression Analyses for Relationship Satisfaction as a function of Attachment Anxiety and Attachment Avoidance, Intimacy, Emotional and Social Loneliness, Texts Sent to Partner, Turning Toward and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.11	.01				
Constant				30.79	1.18	[27.30 - 34.28]
Age			-.76	-.09	.07	[-.24 - .06]
Gender			-.70	-.80	.59	[-1.97 - .35]
Relationship length			.01	-.01	.01	[-.01 - .02]
Step 2	.18**	.02*				
Constant				32.00***	1.84	[29.39 - 35.61]
Marriage			.20	2.41*	.86	[.72 - 4.09]
Cohabitation			.11	1.43	.75	[-.05 - 2.91]
Step 3	.70***	.45***				
Constant				41.45***	1.46	[38.59 - 44.32]
Attachment anxiety			-.24	-1.13***	.20	[.16 - .20]
Attachment avoidance			-.53	-2.80***	.22	[-3.24 - -2.36]
Step 4	.84***	.23***				
Constant				9.55***	2.33	[4.97 - 14.14]
Intimacy Total			.76	.17***	.05	[.15 - .19]
Emotional Loneliness			-.13	-.18***	.05	[-.26 - -.09]
Social Loneliness			.08	.13*	.05	[.03 - .23]
Step 5	.85***	.01**				
Constant				12.52***	2.49	[7.63 - 17.41]
Text to Partner			-.09	-.01**	.01	[-.02 - -.01]
Turning Towards			-.02	-.02	.03	[-.08 - .05]
Turning Away			-.06	-.05	.03	[-.10 - .01]

Note. $N = 402$. Gender: female = 0, male = 1. * $p < .05$ ** $p < .01$ *** $p < .001$.

Regression on relationship intimacy. Hierarchical multiple regression was performed to examine the unique contribution of texting (to the romantic partner) and use of technology above the contribution of attachment anxiety, attachment avoidance, loneliness and relationship satisfaction on intimacy. The order of entry followed the previous regression on relationship satisfaction (see Table 15) with research precedents guiding the order of entry of variables into the regression model, as outlined in Chapter 1.

At Step 1, the model was statistically significant, $F(3, 398) = 3.99, p = .008$, with females reporting higher intimacy ($M = 137.15, SD = 24.93$) than males ($M = 129.15, SD = 25.17$), see Table 15. Age and relationship length were not statistically significant predictors of relationship intimacy. At Step 2, the model remained statistically significant, $F(5, 396) = 3.45, p = .005$, but the incremental variance in intimacy accounted for by relationship status was not significant, $F\Delta(2, 396) = 2.57, p = .08$. Cohabitation status was not a statistically significant predictor of relationship intimacy.

At Step 3, the model was statistically significant, $F(7, 394) = 100.40, p < .001$ accounting for over 60% of the variance in relationship intimacy, and the increment in explainable variance was significant, $\Delta F(2, 394) = 328.53, p < .001$. As expected, attachment anxiety and attachment avoidance were associated with lower intimacy scores, however only attachment avoidance was a statistically significant predictor of unique variance in intimacy. Participants reporting higher attachment avoidance reported lower relationship intimacy, consistent with attachment theory. At Step 4, the model was statistically significant, $F(10, 391) = 148.92, p < .001$. Higher relationship satisfaction was a statistically significant predictor of intimacy, $F\Delta(3, 391) = 94.80, p < .001$. Together relationship satisfaction, emotional and social loneliness accounted for 15% of unique variance in intimacy scores. At Step 5, the model was statistically significant, $F(13, 388) = 134.52, p < .001$ with the model explaining over 81% of the variance in intimacy scores.

Number of texts to romantic partner, Turning Towards and Turning Away were statistically significant predictors of intimacy, $F\Delta(3, 388) = 18.78, p < .001$. The number of text messages sent to the romantic partner was positively correlated with intimacy scores suggesting that the more text messages exchanged, the more positive the assessment of relationship intimacy. The Turning Away subscale was significantly and negatively correlated with intimacy. Text messages sent to express criticisms or manage conflict were associated with greater emotional distance. The Turning Towards subscale was positively associated with intimacy scores with higher scores on Turning Towards associated with stronger feelings of emotional closeness. The model supported Hypothesis 5 for intimacy.

Table 15

Hierarchical Regression Analyses for Intimacy as a function of Attachment Avoidance and Attachment Anxiety, Relationship Satisfaction, Emotional and Social Loneliness, Texts to Romantic Partner, Turning Towards and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.17**	.03				
Constant				147.64	7.77	[132.55 – 162.92]
Age			-.09	-.46	.33	[-1.10- .18]
Gender			-.14	-7.24*	2.58	[-12.32 – -2.16]
Relationship length			.05	.03	.03	[-.04 – .09]
Step 2	.20*	.01				
Constant				152.06***	8.07	[136.20 – 167.92]
Marriage			.16	8.47*	3.76	[1.07- 15.86]
Cohabitation			.08	-17.93	.81	[-2.09 – 10.92]
Step 3	.80***	.60***				
Constant				191.24	5.39	[180.63 – 201.84]
Attachment anxiety			-.04	.73	.73	[-2.20 - .68]
Attachment avoidance			-.76	-17.87***	.83	[-19.49 - -16.25]
Step 4	.89***	.15***				
Constant				86.69	7.79	[71.37 – 102.02]
Relationship satisfaction			.55	2.42***	.15	[2.14 – 2.71]
Emotional loneliness			.05	.34	.17	[-.01 - .67]
Social loneliness			-.01	-.04	.20	[-.42- .35]
Step 5	.91***	.03***				
Constant				66.65	8.56	[49.81 – 83.48]
Texts to partner			.06	.03**	.01	[.01 - .05]
Turning towards			.18	.75***	.11	[.52 – .94]
Turning away			-.11	-.37***	.09	[-.55 - -.18]

Note. N = 402. Gender: female = 0, male = 1. * $p < .05$ ** $p < .01$ *** $p < .001$.

Regression on loneliness. Hierarchical multiple regression was performed to examine relationships between social and emotional loneliness (combined as a total loneliness score), texting frequency and attitudes, attachment anxiety, attachment avoidance, intimacy, and relationship satisfaction. The order of entry for the regression was consistent with previous regression analyses. Data are presented in Table 16.

At Step 1, the model was not statistically significant, $F(3, 398) = 1.83, p = .14$. Age, gender and relationship length were not statistically significant predictors of loneliness. At Step 2, the model was not statistically significant, $F(5, 396) = 1.10, p = .36$. Marital status and cohabitation status were not significantly related to loneliness scores. At Step 3, the model was significant, $F(7, 394) = 18.20, p < .001$, with attachment anxiety and attachment avoidance accounting for an additional 23% of the variance in loneliness scores, $F\Delta(2, 394) = 60.14, p < .001$. Only attachment anxiety was a significant predictor at this step. Higher attachment anxiety was associated with greater emotional and social loneliness. At Step 4, the model remained significant, $F(9, 392) = 14.48, p < .001$, but the incremental variance in loneliness accounted for by relationship satisfaction and intimacy was not significant, $F\Delta(2, 392) = 1.35, p = .26$. At Step 5, the model remained significant, $F(12, 389) = 11.23, p < .001$ explaining over one quarter of the variance in loneliness scores. The incremental variance accounted for by text frequency, Turning Towards, and Turning Away was not statistically significant, $F\Delta(3, 389) = 1.37, p = .25$. The model did not support Hypothesis 5 for loneliness.

Table 16

Hierarchical Regression Analyses for Loneliness as a function of Attachment Anxiety, Attachment Avoidance, Intimacy, Relationship Satisfaction, Texts to Romantic Partner, Turning Towards and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.12	.01				
Constant				33.50	2.0	[29.62 – 37.38]
Age				-.05	.08	[-.23 -.10]
Gender			-.04	-.55	.66	[-1.8 -.74]
Relationship length			.13	-.02	.01	[-.01 -.03]
Step 2	.12	.01				
Constant				33.48	2.06	[29.42 – 37.53]
Marriage			.01	.01	.96	[-1.88 – 1.91]
Cohabitation			.01	.11	.85	[-1.56 – 1.77]
Step 3	.49***	.23***				
Constant				24.95***	1.97	[21.07 – 28.83]
Attachment anxiety			.45	2.32***	.27	[1.80 – 2.85]
Attachment avoidance			.08	.45	.30	[-.15 – 1.04]
Step 4	.49***	.01				
Constant				22.65	4.10	[14.60 – 30.71]
Relationship satisfaction			-.11	-.12	.09	[-.30 – .05]
Intimacy			.15	.04	.02	[-.01 -.09]
Step 5	.51	.01				
Constant				25.09	4.51	[16.22 – 33.96]
Text to partner			-.08	-.10	.01	[-.02 -.02]
Turning towards			.02	.01	.06	[-.11-.12]
Turning away			-.04	-.04	.05	[-.13 -.06]

Note. Gender: female = 0, male = 1. * $p < .05$ ** $p < .01$ *** $p < .001$.

Texting by Attachment Type

A multivariate analysis of variance was performed to investigate the characteristics of attachment orientations. The dependent variables were relationship satisfaction, intimacy, loneliness, text frequency, Turning Towards, and Turning Away subscales. The independent variable was attachment type as measured by the Experiences in Close Relationships Scale-Revised.

Attachment type classifications. Explorations of relationship satisfaction, Turning Towards and Turing Away by attachment type supported an examination of how and why secure, preoccupied, fearful avoidant, and dismissing participants engage with technology. The use of typologies enhances the clinical utility of these research findings and is consistent with approaches reported elsewhere (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011). Classification of attachment type was computed from the attachment anxiety and attachment avoidance subscales of the ECR-R using a median cut-off point strategy (Fraley, 2012). Participant categories were based on median scores for the sample on the two attachment dimensions, thus creating four attachment types, secure, preoccupied, fearful avoidant, and dismissing types. The median values for attachment anxiety and attachment avoidance were 3.00 and 2.78, respectively. Individuals scoring low on attachment anxiety and attachment avoidance were categorised as secure ($n = 150$), while those scoring high on both dimensions were categorised as fearful avoidant ($n = 142$). Participants scoring high on attachment anxiety and low on attachment avoidance were classified as preoccupied ($n = 58$), whereas those scoring low on attachment anxiety and high on attachment avoidance were categorised as dismissing ($n = 52$).

Chi square analysis revealed that the assumption of equal cell size was violated for attachment type. As the weight of groups were significantly different from each other, χ^2 , (3, $N = 402$) = 82.90, $p < .001$, results were read using the Pillai's Trace criterion and caution is

noted in interpretation. Given the nature of the variable analysed, differences in the categorization of subjects across attachment types is somewhat representative of a normal population. In general population samples, 55% of individuals classified as secure, 25% as avoidant (dismissing or fearful) and 20% as anxious (preoccupied or fearful), suggesting a tendency toward attachment avoidance in the participant sample (Cooper, Shaver, & Collins, 1998). As the assumption of homogeneity of variance was violated for the intimacy variable, $F(3, 398) = 20.45, p < .001$, for relationship satisfaction, $F(3, 398) = 8.09, p < .001$, for the number of texts sent to the romantic partner, $F(3, 398) = 5.64, p = .001$, and for Turning Towards, $F(3, 398) = 5.98, p < .001$, results for these variables were based on the more stringent alpha level, $\alpha = .01$. Other results were read using $\alpha = .05$.

MANOVA on attachment type. Analyses revealed a significant effect of attachment type on the combined variables, $F(18, 1185) = 19.79, p < .001, \eta^2 = .23$, power = 1, see Table 17. Univariate analyses showed that participants did not differ on the number of texts sent to the romantic partner based on their attachment orientation, $F(3, 398) = 2.21, p = .09$. However, participants did differ on intimacy, relationship satisfaction, loneliness, Turning Towards, and Turning Away scores. Post Hoc Tukey tests were used to detect significant differences in mean scores at $p < .05$. Participants identified as secure or preoccupied significantly differed from fearful avoidant (MDiff = 36.85, $SE = 2.17, p < .001$; MDiff = 36.04, $SE = 2.88, p < .001$) and from dismissing subjects (MDiff = 27.89, $SE = 2.98, p < .001$; MDiff = 27.08, $SE = 3.54, p < .001$) on intimacy, $F(3, 398) = 117.35, p < .001, \eta^2 = .47$, power = 1. Participants identified as secure or preoccupied also significantly differed from fearful avoidant (MDiff = 7.91, $SE = 0.54, p < .001$; MDiff = 6.20, $SE = 0.71, p < .001$) and from dismissing types (MDiff = 4.65, $SE = 0.74, p < .001$; MDiff = 2.94, $SE = 0.87, p < .001$) on relationship satisfaction, $F(3, 398) = 77.22, p < .001, \eta^2 = .37$, power = 1. Hypothesis 6 (a) and (b) were supported.

Secure and dismissing individuals reported significantly lower loneliness scores than preoccupied ($MDiff = -5.58, SE = .90, p < .001$; $MDiff = -3.51, SE = 1.10, p = .009$) and fearful participants ($MDiff = -.5.90, SE = 0.68, p < .001$; $MDiff = -3.83, SE = 0.94, p < .001$), $F(3, 392) = 29.50, p < .001, \eta^2 = .18, power = 1$. Fearful avoidant subjects differed significantly from dismissing ($MDiff = -2.69, SE = 0.93, p < .001$), preoccupied ($MDiff = -6.45, SE = .90, p < .001$) and secure subjects ($MDiff = -4.65, SE = -.67, p < .001$) and preoccupied differed from dismissing subjects ($MDiff = 3.76, SE = 1.10, p = .004$) on the Turning Towards subscale, $F(3, 398) = 23.99, p < .001, \eta^2 = .15, power = 1$. Preoccupied subjects were more likely than the other attachment orientations to use text messaging to connect positively with their romantic partner. Attachment types showed a significant effect on Turning Away scores, $F(3, 398) = 16.71, p < .001, \eta^2 = .11, power = 1$, such that dismissing participants significantly differed from fearful avoidant ($MDiff = -4.56, SE = 1.12, p < .001$) but not from preoccupied ($MDiff = -2.69, SE = 1.32, p = .178$) and secure subjects ($MDiff = .93, SE = 1.11, p = .837$).

Additionally, secure individuals differed from fearful avoidant ($MDiff = -5.50, SE = 0.81, p < .001$) and preoccupied ($MDiff = -3.62, SE = 1.11, p = .004$) on the Turning Away subscale. Preoccupied and fearful avoidant participants reported the highest scores on the Turning Away subscale, suggesting a stronger tendency for these two attachment types to use texting as a tool of negative communication. Hypothesis 7 (a) and (b) were supported.

Table 17

Mean Scores and Standard Deviations for Number of Texts Sent to Romantic Partner, Intimacy, Relationship Satisfaction, Loneliness, Turning Towards, and Turning Away by Attachment Type

Dependent Variables	Attachment type	<i>M</i>	<i>SD</i>
Texts to Romantic Partner	Secure (<i>n</i> = 150)	29.12	47.60
	Fearful Avoidant (<i>n</i> = 142)	29.37	46.02
	Preoccupied (<i>n</i> = 58)	44.89	74.83
	Dismissing (<i>n</i> = 52)	21.37	32.69
Intimacy	Secure	150.49 ^a	13.36
	Fearful Avoidant	113.64 ^c	22.32
	Preoccupied	149.67 ^b	14.39
	Dismissing	122.60 ^c	23.33
Relationship Satisfaction	Secure	31.69 ^a	3.40
	Fearful Avoidant	23.78 ^c	4.97
	Preoccupied	29.98 ^c	4.52
	Dismissing	27.04 ^b	6.20
Loneliness Total	Secure	29.34 ^a	5.60
	Fearful Avoidant	35.25 ^b	5.53
	Preoccupied	34.93 ^b	6.98
	Dismissing	31.42 ^a	5.60
Turning Toward	Secure	34.59 ^{ab}	5.04
	Fearful Avoidant	29.94 ^c	6.93
	Preoccupied	36.40 ^a	4.09
	Dismissing	32.63 ^b	5.71
Turning Away	Secure	20.57 ^c	6.58
	Fearful Avoidant	26.06 ^a	7.41
	Preoccupied	24.19 ^{ab}	6.66
	Dismissing	21.50 ^{bc}	6.89

Note: *N* = 402. Annotations ^{a, b} and ^c display the statistically significant difference in group means on the variables of interest.

Supplementary Analyses Study 2

The associations between texting, attachment status, and relationship quality in committed relationships are multivalent, multivectorial and complex. While multiple regression analyses help identify the major drivers, these secondary analyses define the relationship context and address gaps in the existing literature.

Text frequency. Participants reported sending and receiving an average of 52 text messages each day (send, $M = 52.62$ $SD = 80.31$; receive, $M = 52.83$ $SD = 77.45$). This is consistent with rates reported elsewhere (Schade et al., 2012) and in Study 1.

Texts to romantic partner. Participants estimated the number of texts sent to the romantic partner each day. On average, subjects reported sending an average of 30 text messages to their romantic partner each day (send, $M = 30.48$, $SD = 50.60$; receive, $M = 30.08$, $SD = 49.67$). One-way ANOVA comparing text frequency (exclusively to the romantic partner) for the three relationship status groups, revealed higher rates of texting to partner for non-cohabitating participants, than for cohabitating participants (married or unmarried), $F(2, 399) = 19.86$, $p < .001$. Consistent with trends established in Study 1, results suggest higher text frequencies between romantic partners when they reside separately, than when they cohabitate (see Table 18).

To determine whether texting practices differed with age an ANCOVA was performed for texts sent to the romantic partner. Age was a statistically significant covariate for texting, $F(1, 398) = 5.29$, $p < .02$. Despite controlling for age, the results for texting remained statistically significant, $F(2, 398) = 10.35$, $p < .001$. Non-cohabitating participants sent significantly more texts to their romantic partners than did cohabitating participants, regardless of age. Non-cohabitating participants sent more than twice as many texts to the romantic partner as the cohabitating participants, again supporting considerations of relationship status in examining the association between texting and relationship quality.

Table 18

Frequency of Texts Exchanged with Romantic Partner by Relationship Status

	<i>M</i>	<i>SD</i>
Non-cohabitating	49.95	71.32
Unmarried cohabitating	19.90	22.68
Married	17.77	27.79

Note. $N = 402$.

Correlates of texting by relationship status. Study 1 revealed variations in texting frequencies as a function of relationship status. To examine differences associated with cohabitation and marital status in this data, Pearson r correlation coefficients were computed for the three status groups.

Non-cohabitating participants. There were statistically significant correlations between texting frequency and attachment avoidance, $r(n = 152) = -.29, p < .001$, intimacy, $r(n = 152) = .24, p = .004$, and social loneliness, $r(n = 152) = -.20, p = .01$. For those living independently of their romantic partner, higher text frequencies were related to lower attachment avoidance and lower social loneliness scores. Participants who expressed preferences for autonomy and emotional distance in relationships tended to text their partners less frequently, as did participants who were socially well connected. Text frequencies and intimacy scores were positively correlated, with higher numbers of daily texts associated with greater relationship intimacy. Interestingly, while intimacy was significantly related to text frequency, relationship satisfaction was not, $r(n = 152) = .09, p = .30$. This finding suggests that texting may feature unique qualities that foster emotional closeness and intimacy, but are not necessarily related to overall assessments of relationship satisfaction. This finding supports the broader assessment of relationship quality over relationship satisfaction.

Unmarried cohabitating participants. There were no statistically significant correlations between texting and attachment anxiety, attachment avoidance, relationship satisfaction, intimacy or loneliness for this status group.

Married cohabitating participants. Texting frequency was inversely related to relationship satisfaction scores for the married sample, $r(n = 148) = -.24, p < .001$, with higher frequencies of daily texting associated with poorer assessments of relationship satisfaction. Emotional loneliness was positively related to text target, $r(n = 148) = .17, p = .04$. Participants who reported feeling emotionally lonely sent proportionally more text messages to their romantic partner, over other contacts. Text frequency was not significantly related to relationship intimacy, emotional or social loneliness for the married status group.

Response expectations for texts. Response expectations for texts did not vary as a function of relationship status, with similar expectations for the three status groups. Response expectations for texts were not significantly associated with attachment anxiety, attachment avoidance or relationship quality.

Target of contact, texts. Participants estimated the percentage of text messages sent to the following contacts: romantic partner, close friends, colleagues and parents. Participants reported texting the romantic partner more regularly than other contacts, with the average percentage of texts sent to the romantic partner over close friends, acquaintances and parents reported as over 57%, as presented in Table 19. Participants described texting their romantic partners more than the other contacts combined, including close friends, acquaintances and parents, replicating trends established in Study 1. This trend was consistent across relationship groups, with no significant differences between non-cohabitating, unmarried cohabitating, and married cohabitating groups.

Table 19

Mean Values and Standard Deviations for Percentage of Texts by Target of Contact

	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>
Romantic partner	57.90	26.67	401	43.52***
Close friends	25.01	20.76	401	24.15***
Acquaintances	7.04	14.41	401	9.89***
Parents	10.69	14.23	401	15.05***

Note. *N* = 402.**p* < .05 ***p* < .01 ****p* < .001

Discussion Study 2

Study 2 considered text messaging as a tool of connection in a sample of young adults in committed romantic relationships. Extending on previous research and the findings of Study 1, the current study examined relationships between texting, relationship satisfaction, intimacy, and loneliness, and considered whether patterns of texting and relationship satisfaction vary as function of attachment orientation and relationship status. One aim of Study 2 was to refine the measurement of technology use and capture positive, negative, and regulatory text messaging in romantic relationships. The three-factor structure of technology use proposed by Schade et al. (2012) was not supported in Study 2. It is possible that the TQ2 items represent texting behaviours that were perceived by participants as either generally positive (constructive to the relationship) or negative (destructive to the relationship). Results of the exploratory factor analysis in Study 2 suggest that few items in the TQ2 captured regulatory relationship behaviours communicated via text. In contrast to the 13-item TQ2, the text measure in the Schade et al. study contained one positive, one negative, and three regulatory statements exploring the use of texting to “discuss serious issues”, “broach confrontational topics” or “apologise to the partner”. Path analysis, as opposed to exploratory

factor analysis and hierarchical regression, was conducted in the Schade et al. study to examine texting and relationship quality. Differences in methodology, item content, and wording may account for the discrepancies in findings. The TQ2 supported a two-factor solution of technology use. The two factors were defined as positive technology use, Turning Towards and negative technology use, Turning Away. Turning Towards and Turning Away characterise opposing behaviours that typify successful and unsuccessful romantic partnerships, consistent with predictors from SRH theory (Gottman, 2014).

Principle 3 in SRH theory, *turning towards the partner rather than away*, represents attunement to partner bids for attention and connection (Gottman, 2014). In a longitudinal study of marital quality, newlyweds who divorced less than six years after the wedding turned towards bids for attention 33% of the time, while newlyweds who stayed married six years after the wedding turned towards bids 86% of the time (Carrere & Gottman, 1999). This finding demonstrates the significance of reliably turning toward the romantic partner and acknowledging bids for attention and connection. In the context of Study 2, Turning Towards via text confirms the first three principles of the SRH theory; *building love maps, nurturing fondness and admiration* and *turning towards the partner*. Romantic partners exchange texts to consolidate feelings of closeness and to maintain intimate connections. Study 2 suggests that texts serve a positive relationship function that is similar to other interpersonal bids.

Timely responses to bids for emotional connection have been identified as important determinants of intimacy and relationship satisfaction (Gottman, 2014). Successful bids for attention and connection increase feelings of intimacy, contribute to the couple's emotional bank account, and support a state of positive sentiment override. In positive sentiment override, couples tend to view their relationships in a positive light and are more likely to interpret problems in the relationship as obstacles to connection that may be negotiated (Gottman, 2015). Failed bids for attention and destructive communication patterns contribute

to negative sentiment override, a state where relationship problems are exacerbated by a climate of general negativity (Gottman, 2011). In negative sentiment override, partners are more likely to attribute difficulties in the relationships to fault in the relationship partner. These negative attributions undermine fondness, admiration and connection (Gottman, 2015). The results of Study 2 provide initial support for the utility of the TQ2 in assessing patterns of positive and negative technology use in romantic relationships.

Relationship satisfaction. In the main analyses, relationship status, attachment orientation, intimacy, and loneliness were predictors of relationship satisfaction. Married participants reported higher relationship satisfaction than unmarried cohabitating and non-cohabitating couples, reflecting the security and safety offered in stable marital relationships (Amato, 2015). Higher scores on attachment anxiety and attachment avoidance were related to lower scores on relationship satisfaction, consistent with the attachment literature (Mikulincer & Shaver, 2007). Securely attached adults consistently report higher relationship satisfaction (Eastwick & Finkel, 2008; Galliher, Welch, Rotosky, & Kawaguchi, 2004) and greater stability (Duemmler & Kobak, 2001) and this was observed in Study 1 with dating and committed couples and Study 2 in committed couples exclusively.

In Study 2, high intimacy, high social loneliness, and low emotional loneliness predicted high relationship satisfaction, supporting the proposal that shared experiences and perceptions of emotional closeness play a role in determining relationship satisfaction, consistent with SRH principles (Gottman, 1999). In Study 2, in relationships described as highly satisfying, partners reported lower emotional loneliness and higher social loneliness, possibly reflecting a movement toward the partner and away from wider networks of friends. Text frequency, Turning Towards, and Turning Away did not add to the prediction of relationship satisfaction scores, although Turning Towards was positively correlated with relationship satisfaction and Turning Away was negatively correlated with relationship

satisfaction, as expected. This finding is consistent with Schade et al. (2012) and an association between hurtful messages and lower relationship quality and affectionate messages and higher relationship quality. Study 2 results support the use of text messages to enhance partner attunement when the content and tone of the text messages is positive. However, as with negative relationship behaviours, texts that feature criticism or hostility are related to lower relationship quality. Text messages, like other interpersonal exchanges, have the potential to build or detract from feelings of closeness, strengthening or weakening interpersonal ties (Hertline & Ancheta, 2014). The findings of Study 2 support the refinement of the TQ2 to assess the demonstration of constructive and destructive relationship behaviours via text.

Intimacy. With respect to intimacy, gender, relationship status, attachment anxiety, attachment avoidance, relationship satisfaction, loneliness, texting frequency, Turning Towards, and Turning Away were predictors of emotional closeness. Gender was a statistically significant predictor of intimacy, with females reporting significantly higher intimacy scores than males. In a 2013 study of communication, intimacy, sexual and relationship satisfaction, Yoo, Bartle-Haring, Day, and Gangamma found that for both men and women a perception that the partner had a positive communication style led to greater feelings of intimacy as well as relationship satisfaction. In their study of romantic dyads, females reported higher intimacy scores than males (Yoo et al., 2013). Further, consistent with empirical literature, married participants reported higher relational intimacy than participants in non-cohabitating or cohabitating defacto relationships (Amato, 2015). Together, these findings support an association between marriage (demonstrations of commitment) and higher relational intimacy as reported elsewhere (Amato, 2015).

In Study 2, attachment anxiety and attachment avoidance were related to intimacy, with higher scores on attachment anxiety or attachment avoidance associated with lower

intimacy scores. In the regression analysis, it was attachment avoidance and not attachment anxiety that emerged as a significant predictor of intimacy. While intimacy was not predicted in the Drouin and Landgraff study (2012), both attachment anxiety and attachment avoidance were significant predictors of relationship satisfaction. The inclusion of intimacy as a variable in Study 2 and the association with attachment avoidance suggests that attachment avoidance and texting relate somewhat differently to intimacy than to relationship satisfaction. It is feasible that the desire for greater autonomy, expressed by individuals with an avoidant attachment stance, is associated with fewer personal disclosures, fewer sent texts, and lower intimacy. As expected, relationship satisfaction was positively related to intimacy.

Participants who described their relationships as emotionally intimate also described relationships as satisfying, consistent with Yoo et al. (2013). Social and emotional loneliness did not contribute to the prediction of intimacy scores and this finding was not expected.

Text frequency, Turning Towards, and Turning Away accounted for unique variance in intimacy scores, above the contribution of status, attachment avoidance, and relationship satisfaction. While text exchanges were not statistically significant predictors of relationship satisfaction, they were predictors of intimacy. Frequent texts to the romantic partner, higher Turning Towards, and lower Turning Away were predictors of higher intimacy scores. Bowlby's (1977) proposal that attachment needs reflect a desire for emotional closeness across the lifespan supports the relevance of intimacy in assessing texts as a tool to increase connection. Emotional closeness in Study 2 appears to be more strongly related to feeling seen and heard than to satisfaction in romantic relationships. Results here support the enhancement of emotional closeness through positive text exchanges and reductions in intimacy through negative exchanges.

While both subscales of the TQ2 were predictors of intimacy scores, a comparison of standardised beta weights suggested that Turning Towards was a stronger predictor of

intimacy than was Turning Away. It is possible that Turning Towards the partner consistently via text, activates positive sentiment override (i.e., the ratio of positive to negative exchanges), providing a buffer from stress and making problems in the relationship seem more manageable. Turning Away, however, in the absence of turning towards, activates a state of negative sentiment override. In negative sentiment override, partners are less forgiving of mistakes, attribute negative behaviours to stable and global partner characteristics, and are less receptive to bids for connection (Gottman, 2015). Findings on Turning Towards and Turning Away support the utility of the TQ2 in exploring the positive and negative text exchanges and their association with relationship quality. Study 2 results support the inclusion of intimacy in subsequent studies.

Social and emotional loneliness. It was hypothesised that attachment dimensions, relationship satisfaction, intimacy, texting frequency and texting behaviour would predict social and emotional loneliness. Loneliness was included as a measure in Study 2 to explore a possible relationship between text frequency and social isolation. Although higher attachment anxiety and higher attachment avoidance were associated with higher social and emotional loneliness, only attachment anxiety was a predictor of loneliness. Text frequency was not significantly correlated with loneliness scores and neither relationship satisfaction nor intimacy, were statistically significant predictors of loneliness and text frequency. Additionally, Turning Towards and Turning Away did not contribute to the variance in loneliness scores. This finding was not anticipated. Loneliness has been associated with social skill deficiencies (Cacioppo et al., 2006) and a reluctance to reach out to others in times of distress. While it was proposed that individuals higher in loneliness might favour texting as a way to connect, lessening their fear of rejection, this was not supported in the data. Correlations between Turning Towards and loneliness, and Turning Away and loneliness were in the expected directions, with Turning Towards associated with lower

loneliness scores and Turning Away with higher loneliness scores, although these relationships did not reach significance. Lower social loneliness was associated with to higher text frequencies, suggesting that text messages may play a role in promoting social connection.

There was a significant positive correlation between emotional loneliness and the use of text messages to Turn Away from the relationship partner. Future research may explore associations between emotional loneliness and conflict management strategies, including via text. In the literature, loneliness is associated with depression, shyness, and social skill deficiencies (Cacioppo et al., 2014) and further examination of these constructs with loneliness and texting may expose patterns of contact that did not emerge in this program of research.

Attachment type. It was hypothesised that scores on texting frequency, Turning Towards, Turning Away, relationship satisfaction, intimacy, and loneliness would vary as a function of attachment type. Scores differed by attachment type for all variables except text frequency. There were no significant differences in the frequency of texts sent by participants in the secure, preoccupied, fearful avoidant, and dismissing groups. However, preoccupied adults did report the highest text frequencies of the four attachment types. Weisskirch and Delevi (2011) as well as Drouin and Landgraff (2012) reported significantly higher sexual text frequencies for participants with high attachment anxiety and low attachment avoidance (consistent with a preoccupied attachment type), suggesting that texting may be an approach used to connect with romantic partners when other avenues of connection have been exhausted.

There were significant differences on other measures as a function of attachment type. Individuals with a secure or dismissing attachment style reported significantly higher relationship satisfaction and higher intimacy than individuals identified as preoccupied or

fearful avoidant. Consistent with the attachment literature, high attachment anxiety and high attachment avoidance were associated with lower relationship satisfaction (Feeney, 2007). Of the four attachment types, preoccupied individuals reported the lowest relationship satisfaction, possibly reflecting feelings of doubt in their self-worth and in the responsiveness of their romantic partner. Fearful avoidant individuals reported the lowest average intimacy scores of the four attachment types. Low intimacy for this attachment type may reflect opposing drives for closeness and separateness in romantic relationships. Erratic patterns of connection and disconnection impede the development of close, intimate and safe disclosures (Siegel, 2011) and these patterns are especially prominent for individuals with a fearful avoidant attachment style.

Fearful avoidant and preoccupied individuals reported the strongest expressions of social and emotional loneliness, significantly higher than dismissive and securely attached individuals. This finding is consistent with a fundamental human drive for connection and a desire to be seen and understood in relationships, especially romantic relationships (Siegel, 2011). The ability to remain present, attuned, and responsive to a romantic partner reflects the essence of contingent communication. However, for preoccupied and fearful avoidant individuals, processes of hyperactivation or deactivation appear to interfere with this process. Preoccupied and fearful avoidant individuals both strongly desire emotional intimacy in relationships and fear that others will not desire them (consistent with a preoccupied attachment stance) or alternately, fear that they will become too closely attached or dependent (consistent with a fearful avoidant attachment stance). Fears reflecting these attachment anxieties or avoidant tendencies may translate into feelings of disconnection and loneliness.

Secure and preoccupied individuals Turned Towards romantic partners via text more than dismissing and fearful avoidant attachment types. Secure individuals were least likely to engage in Turning Away behaviours, followed by dismissing, preoccupied, and fearful

avoidant individuals. Preoccupied and fearful avoidant types reported the highest scores on Turning Away, possibly reflecting the use of negative texting as hyperactivation of the attachment system and a misguided attempt to regain connection through conflict. This supports the notion that bids for attention in romantic relationships are not always characterised by affectionate or positive behaviours (Johnson, 2008). Criticisms and harsh start-ups may also represent bids for connection and attention. Although these behaviours are more likely to lead to an escalation of conflict than emotional attunement, for adults high in attachment anxiety, engaging the partner in conflict may be favoured over painful feelings of separateness and abandonment. Fearful avoidant individuals reported the lowest scores on Turning Towards of the four attachment types. Fearful avoidant individuals tend to be driven by conflicting patterns of hyperactivation and deactivation of the attachment system and this can manifest in chaotic patterns of approach and withdrawal in romantic relationships (Siegel, 2011). These findings provide support for attachment theory as a framework to explore the motivations that drive texting behaviour in romantic relationships.

Response expectations. It was anticipated that response expectations would be related to relationship status, attachment orientation, and relationship satisfaction. Associations between these variables were not supported in the data and response expectations did not provide an indicator of partner attunement. In the literature, partner responsiveness is an important indicator of partner attunement and a “core organizing principle for the study of personal relationships” (Reis, Clark & Holmes, 2004, p. 203). According to Reis et al. (2004), perceptions of partner responsiveness are central to creating intimacy and are strongly related to couple satisfaction. Demonstrations of responsiveness are perceived as a pathway by which couples develop intimacy and trust that a romantic partner is attuned to their physical and emotional needs. Responsiveness to text messages has been

noted in the literature as an important indicator of partner attentiveness (Reis et al., 2004) and was expected to be reflected in response expectations to texts.

In Study 2, the amount of time participants expected to wait for a response to a text was not related to attachment anxiety, attachment avoidance, relationship satisfaction or intimacy. This finding was not anticipated. There are three plausible explanations for this null result. Firstly, it is possible that the rejection of a face-to face bid is more personal and hurtful than rejection from an unheeded text. This is consistent with a general perception that text communication represents a less personal form of contact than mobile calls, or face-to-face interactions. Secondly, due to the nature of text communications, individuals may generate a myriad of possible explanations as to why the partner has not responded to a text. These rationalisations may soften the rejection that would otherwise accompany an awareness of being overlooked. In face-to-face interactions, there are fewer conceivable explanations for the rebuff of an interpersonal bid for connection, due to the presence of verbal and nonverbal indicators of attunement. Restricted access to attunement cues in text exchanges may help explain these findings. Thirdly, the importance of response expectations may be related to the sentiment override. In a state of positive sentiment override, partners searching for explanations for a missed bid via text may be more generous in their assessments of their partner's motives. An unanswered text may be attributed to external or environmental factors (e.g., a partner is in a meeting, away from the phone or phone is without charge), as opposed to internal factors. In a state of negative sentiment override, however, assumptions of partner intent in not responding to a text may adopt a more negative tone. Response delays may be attributed to a deliberate rebuke, reflecting stable, negative and global characteristics of the partner (Collins et al., 2006). Although this proposal is beyond the scope of Study 2, response expectations and sentiment override (positive and negative) are explored in Study 4, in

association with the SRH scales. An examination of partner attributions provides a promising direction for future research, but is beyond the scope of this program of research.

Limitations. Several limitations are noted in the interpretation of the Study 2 results. First, while ECR-R classifications by type illustrated important differences in Turning Towards, Turning Away, relationship quality, and text frequency, the use of ECR-R classifications by type is cautioned against in much of the attachment literature (Fraley, 2012). The author of the ECR-R outlines an approach for the creation of attachment types, but is cautionary regarding interpretations by type when median scores are used to assign participants to categories for secure, preoccupied, fearful avoidant, and dismissing attachment categories. ECR-R types are criticized for reducing the precision of the instrument and exaggerating differences in participants scores by creating arbitrary cut offs for high and low attachment anxiety and attachment avoidance. An examination of types may exaggerate differences in dependent variables and support overgeneralizations of difference by type (Fraley, 2012). Consequently, responses attributed to a particular attachment type may not accurately reflect the attitudes and behaviours of individuals within this group.

Second, it was expected that the inclusion of a loneliness measure would support an examination of the association between texting and relationship quality. It was anticipated that greater loneliness (both social and emotional) would be associated with sending more texts to the romantic partner, representing a desire for connection. Higher text frequencies were associated with lower social loneliness, but not lower emotional loneliness. Although greater emotional and social loneliness was associated with lower relationship satisfaction and intimacy scores, these correlations were significantly lower than anticipated. It is possible that the loneliness scale selected for inclusion in Study 2 was not suitable for the population of interest and of minimal use in explaining relationship quality.

Emerging from Studies 1 and 2 was the use of texts to manage conflict as well as to seek connection. In recognition of the use of texts to manage relational conflict, as reflected in Turning Away scores, explorations of relationship quality were extended in Study 3 to include the Relationships Dynamics Scale, a measure of destructive conflict. While it follows that individuals who regularly engage in patterns of destructive communication would also be more likely to engage in conflict via text, this proposal had not been tested in the literature. Additionally, the Intimate Bond Measure, a measure of partner care (positive expressions of concern) and partner control (efforts to monitor or control partner behaviour), was added in Study 3 to explore partner motives and their association with attachment, texting and relationship quality. It was anticipated that scores on partner care and control may shed light on the motives for sending texts through associations with Turning Towards and Turning Away (as measured by the TQ).

Duran, Kelly, and Rotaru (2011) found that mobile contact was a source of conflict and rule-making in romantic relationships, revealing that mobile phones created an autonomy-connection conflict in romantic relationships. Higher availability expectations, (i.e., expectations of perpetual contact via text) from the partner were associated with lower satisfaction ratings regarding time with the partner, feelings of restricted freedom, and greater desire to control the partner. Higher relationship tensions were reflected in increased conflict over mobile phone interactions, conflicts over insufficient calling or texting, and conflicts over differences in expectations for calling or texting (Duran et al., 2011). It was anticipated that the addition of measures of destructive conflict and partner control would identify the negative as well as positive interactions that occur in romantic relationships, including via text contact.

Third, although text frequency, Turning Towards and Turning Away were predictors of intimacy, they did not account for unique variance in relationship satisfaction scores. This

finding reflects either inadequacies in the item content of the Turning Towards and Turning Away subscales to assess aspects of relationship satisfaction and dissatisfaction, the absence of a relationship between texting and relationship satisfaction, or the unsuitability of the RAS for this research purpose. To test the latter proposal, the Couple Satisfaction Index (Funk & Rogge, 2007) was used as an alternate measure of relationship satisfaction in Study 3. The CSI is a more comprehensive measure of satisfaction with directional items that capture relationship dissatisfaction and regret, as well as satisfaction that is assessed in the seven-item RAS (Funk & Rogge, 2007). Data for the RAS and the CSI were collected in Study 3 to aid the selection of a relationship satisfaction measure for Study 4.

Fourth, refinement of the TQ was required to improve predictions of relationship satisfaction, intimacy, and destructive conflict using TQ items. To enhance the psychometric properties of this technology measure, a questionnaire development study captured broader content and motives for texting beyond the items in the existing TQ2. It was anticipated that improvements in the TQ measure would support an examination of the qualities that characterise text exchanges.

Questionnaire Development TQ3

The Technology Questionnaire explored patterns of mobile telephone use in romantic relationships and was developed and refined during the program of research (TQ). In Study 2, the 13 item questionnaire revealed a two factor structure, with texting behaviour representing Turning Towards and Turning Away from the romantic partner. Turning Away was a stronger predictor of relationship satisfaction and of relationship intimacy than was Turning Towards. Turning Away behaviours, including delays in responsiveness and the management of conflict via text, were more strongly related to lower relationship satisfaction, than were Turning Towards behaviours related to higher relationship satisfaction. This finding warranted further examination of the use of texting for the management of conflict and

expression of hostility in romantic relationships. It was of interest to determine whether the presence of destructive conflict in a romantic relationship was also reflected in Turning Away scores.

A questionnaire development study was conducted to refine and test a new version of the technology questionnaire, the TQ3. The development study was conducted in three stages. In stage one, focus groups convened to discuss the role of texting in romantic relationships and provided information on text content and text processes to shape the development of new items for the TQ3. Guided by a literature review and consideration of the item content in the SRH scales, 70 potential items were constructed (see Appendix D). Face validity and the acceptability of wording was assessed with two independent examiners and minor changes were made to the phrasing of nine of the 70 items. In stage two, a sample of university students provided responses to the potential items and exploratory factor analysis was used to evaluate potential domains in the tool. In stage three, the two-factor structure that emerged from the exploratory analysis was tested with seven independent raters, who were asked to sort the 38 TQ3 items from the factor analysis into two categories (Turning Towards and Turning Away consistent with Study 2). Raters then repeated the TQ3 item sort with four categories, representing four of the seven SRH principles most relevant to text communications: build love maps, nurture fondness and admiration, turn towards, and manage conflict. This approach is consistent with recommendations from Gwet (2014).

Research Hypotheses Questionnaire Development TQ3

Hypothesis 1: It was hypothesised that factor analysis of the 70 TQ items would reveal two factors consistent with texting as a tool of connection (Turning Towards) and disconnection (Turning Away).

Hypothesis 2: It was hypothesised the classification of TQ items by independent raters would support inter-rater reliability for the measure and support two factors, Turning Towards and Turning Away via text (as in Hypothesis 1).

Hypothesis 3: Alternately, it was hypothesised that the TQ3 items would be classified into four categories, consistent with four of the SRH principles: build love maps, nurture fondness and admiration, turn towards bids, and manage conflict. These four principles guided the development of new TQ items.

Method TQ3 Development

Focus Group on TQ3 items

A focus group explored the circumstances under which young adults send and respond to text messages. Twelve undergraduate students (eight females and four males) aged between 18 and 30 years ($M = 21.42$, $SD = 3.37$) volunteered for the discussion on texting and romantic relationships that was advertised on a university notice board. Participants were presented with a series of questions relating to the use of texts to connect with a romantic partner. These questions related to the content of text messages sent and received, the response expectations of partners, response patterns of recipients, and the use of emoticons to convey feelings via text. Facilitator questions are included in Appendix D. Participants were encouraged to share their positive and negative text experiences and to contribute to the discussion on whether texting supports or detracts from relationship closeness. Participants were presented with an explanation of SRH theory and were asked to consider their text experiences in line with behavioural predictors of success or distress. For example, they were asked to comment on whether they believe that text sent to their romantic partner contribute to *the building of love maps*, principle 1 in SRH theory. Contributions of group members were recorded and these notes, together with the item level analyses from the TQ1 and TQ2, informed the development of items for the pilot questionnaire.

TQ3 Development

A study assessed the utility of the existing and new Technology Questionnaire items that emerged from the focus group discussion. Fifty-seven new and 13 existing TQ items were combined to form the 70-item questionnaire. A Clinical and Research Psychologist, familiar with SRH theory and attachment theory, reviewed the 70 items for comprehensibility. Minor semantic changes were made to three of the 70 items (see Appendix D).

Participants

Subjects were recruited from undergraduate psychology classes and on campus at Bond University. Seventy-five participants aged between 18 and 44 years ($M = 27.2$. $SD = 7.53$ years) completed the online pilot questionnaire hosted by Qualtrics. Gender differed significantly in the sample with more female ($n = 50$) than male ($n = 25$) participants, $\chi^2(1, N = 75) = 8.33, p = .004$. As this convenience sample did not permit the recruitment of equal number of male and female participants, questionnaire responses reflect the views of a predominately female population. This limitation is noted in the interpretation of TQ findings.

Materials

As with previous versions of the TQ, a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) was used to assess participant responses to the 70 items. Visual inspection of histograms revealed patterns that guided the inclusion and exclusion of items in the TQ. Items that offered response variability were retained while items that represented a duplication of content (i.e., correlations between items $> r = .80$) with existing items were deleted, as were items with a range less than three. Thirty-eight of the 70 items in the pilot questionnaire were retained for use in the TQ3. The 38-item version is presented in Appendix D.

Procedure

A brief explanatory statement outlined the purpose of the study and participant confidentiality. Anonymity was assured and participants could exit the survey without penalty. Participants volunteered their time and completed the survey in one sitting.

Results TQ3 Development

Exploratory factor analysis of the 38 TQ items was performed to identify potential domains within this tool. An initial solution confirmed the factorability of the dataset with a Kaiser-Meyer-Olkin value of .96. Based on eigenvalues, the results suggested a four-factor solution, whereas Cattell's scree plot identified two main factors. Several solutions using Principal axis factoring and maximum likelihood with oblimin and varimax rotation were conducted. The solution with best fit explained 56.90 % of the variance with two factors and used a maximum likelihood extraction with oblimin rotation, obtained with five iterations. The first factor reflected use of technology for engaging the romantic partner (Turning Towards). The second factor reflected the use of technology to engage in conflict or avoid connection with the partner (Turning Away). Items 31 and 28 presented split loadings over .30. Although heavier loadings for both items were observed on factor two, the items were retained in factor one as repair attempts are identified as positive behaviours in romantic relationships (Gottman, 2014). Scores for the 17 item Turning Towards subscale ranged from 21 to 126 ($M = 64.59$, $SD = 26.88$). Total scores for the 21 item Turning Away subscale ranged from 17 to 102 ($M = 75.04$, $SD = 18.22$). Table 20 presents factor loadings, communalities, percent of variance for maximum likelihood extraction with oblimin rotation. Cronbach's alpha for the Turning Toward scale was $\alpha = .94$ and $\alpha = .96$ for Turning Away, indicating high internal consistency and scale reliability. Exploratory factor analysis supported a two-factor solution for the TQ3 consistent with Hypothesis 1.

Table 20

Factor Loadings, Communalities, Percent of Variance, and Cronbach's Alpha values for the Technology Questionnaire (TQ3)

Items	Factor		
	TA	TT	Communalities
TQ 29 I have responded defensively to text messages from my partner	.88	-.05	.74
TQ30 Text messages between us have sometimes led to an argument	.88	-.11	.72
TQ24 I text my partner to communicate my annoyance with him or her	.84	-.03	.70
TQ27 We sometimes continue disagreements via text	.84	.02	.72
TQ28 I have sent text messages to my partner that I have later regretted sending	.80	-.04	.63
TQ5 I have sent text messages that have hurt my partner's feelings	.80	-.10	.60
TQ33 I have sent text messages to discuss a problem in our relationship	.78	.15	.71
TQ13 I sometimes text my partner to communicate my anger towards him or her	.77	.01	.53
TQ20 Sometimes I intentionally ignore my partner's text messages	.75	-.19	.50
TQ8 Texting creates problems in my relationship	.74	-.18	.49
TQ7 The text messages that I send to my partner are sometimes misinterpreted	.72	-.01	.51
TQ32 Texting helps me avoid saying things in the heat of the moment	.70	.17	.60

TQ15	My partner's reliance on their phone has caused problems in our relationship	.69	-.16	.43
TQ14	I sometimes check my partner's phone to see who he or she is texting	.69	.10	.44
TQ35	Sometimes I am surprised by my partner's emotional response to a text message that I have sent	.68	.22	.61
TQ9	Sometimes when things are tense in the relationships I use text messaging to break the ice	.65	.16	.51
TQ19	Sometimes I have to send a second text to get a response from my partner	.63	-.03	.39
TQ34	We have resolved disagreements effectively via text	.61	.31	.60
TQ39	I sometimes show text messages from my partner to others (e.g. close friends)	.61	.06	.40
TQ31	I sometimes text my partner to apologise for something that I have done or said	.58	.29	.53
TQ26	Sometimes I am surprised at my emotional response to a text that I have received	.57	.22	.46
TQ23	Sometimes my partner's texts reveal things about them that surprise me.	.57	.19	.43
TQ2	When very upset, I sometimes send a long text message to communicate how I am feeling	.54	.27	.46
TQ36	I try to think about how I use text messaging in our relationship	.51	.34	.50
TQ17	I send text messages to tell my partner that I appreciate them	.03	.83	.70
TQ3	I text my partner just to tell them that I am thinking of them	-.01	.80	.63
TQ1	I text message of love to my partner	.01	.79	.63

TQ16	I say I love you via text message	-.01	.78	.61
TQ21	Texting helps me to feel closer to my partner when we are apart	.01	.77	.60
TQ10	Text messages from my partner make me feel loved and appreciated	-.06	.76	.56
TQ11	I text my partner to tell them how attractive they are to me	.10	.75	.62
TQ12	My partner sends me romantic text messages	.07	.74	.58
TQ18	My partner is responsive to my text messages	-.15	.70	.44
TQ4	I text my partner to let them know what I am doing	.11	.64	.47
TQ40	Text messages are a positive communication tool in our relationship	.01	.63	.40
TQ25	I respond to my partners text messages promptly	-.09	.61	.34
TQ22	I use text messages to continue conversations with my partner	.26	.60	.52
TQ38	If I do save text messages, they tend to be of love and affection	.10	.58	.39
TQ6	I text my partner to ask for their opinion	.07	.55	.33
Variance %		40.87	16.33	
Cronbach's Alpha		.96	.94	

Note. $N = 75$

Inter-Rater Reliability

Seven participants, familiar with SRH theory volunteered to review and categorise the 38 items. Raters included three undergraduate psychology students, three practicing Clinical Psychologists, and an Associate Professor of Psychology. All seven participants had completed level 1 training (or equivalent) in Gottman Method Couple therapy and were familiar with the SRH principles. The sample included three male and four female raters with a mean age of 31.86 years ($SD = 12.00$ years).

In Task 1, raters received written task instructions and standardised definitions of Turning Away and Turning Towards. Turning Towards was defined as the use of texting with the intention to connect with the partner, express fondness, and support relationship maintenance. Turning Away was defined as the use of text messages to criticize, complain or express negativity toward the partner, to engage in conflict or use text messages to create emotional distance within the relationship. Participants received 38 cards printed with a single TQ item and a recording sheet with two column headings, Turning Towards and Turning Away. Raters were instructed to assign each item to one of two columns, representing Turning Towards and Turning Away on an assessment of best fit. Item numbers for the Turning Towards and Turning Away columns were transferred to a recording sheet at the completion of the task.

In Task 2, the process was repeated using four categories consistent with the first four SRH principles; build love maps, nurture fondness and admiration, turning towards, manage conflict. Raters received written task instructions and definitions of the four categories, assembled for the purpose of this task. Raters received the following categories and descriptions. (a) build love maps: maintain a roadmap of the partner's inner psychological world and understand their interests, feelings, concerns, and values; (b) nurture fondness and admiration: cultivate an environment of respect, affection, and appreciation; (c) turn toward

your partner: acknowledge and respond to bids for attention, affection, and intimacy in a warm and responsive way; (d) manage conflict: engage in destructive communication featuring criticism, contempt, defensiveness, stonewalling, failed repair attempts, deceptive or controlling partner behaviour.

Rater familiarity with SRH theory was expected to support the classification of items into four categories, representing four of the SRH principles considered most relevant to text content: building love maps, nurture fondness and admiration, turn towards, and manage conflict. Participants used the 38 cards from Task 1 and new recording sheet with four column headings (i.e., build love maps, nurture fondness and admiration, turn towards, manage conflict). Participants assigned each item to one of the four columns on an assessment of best fit. Items numbers were transferred to a recording sheet at the completion of the task. Inter-rater reliability analysis using Fleiss's Kappa statistic was performed to determine consistency among raters for each task. For Task 1, the inter-rater reliability for the seven raters was found to be Fleiss's Kappa = 0.56 ($p < .001$), 95% CI (0.49 - 0.62), SE = 0.04, reflecting moderate agreement among the raters (Kaplan & Saccuzzo, 2013). Inter rater reliability ratings were highest for items 1, 3, 4, 6, 10, 11, 12, 16, 17, 18, 21, 22, 23, 25, 27, 29, 34, 36, 37 (all raters unanimous in their classification of items) and lowest for items 15, 24, 28 (three or more raters differed on these items). For items 2, 5, 7, 13, 19, 26, 30, 32, 35 six of the seven raters were unanimous in their ratings of TQ items.

For Task 2, the interrater reliability for the seven raters was found to be lower than anticipated, Fleiss's Kappa = .37 ($p < .001$), 95% CI (0.32 - 0.95), SE = 0.02. Inter rater reliability ratings were highest for items 22, 27, 29 and 34 (all raters unanimous in their classification of items) and lowest for items 38, 24, 21, 8, 28 (three or more raters differed on these items). For items 2, 5, 7, 10, 16, 19, 25, 30, 32, 36 six of the seven raters were unanimous in their ratings of TQ items. For items 1, 4, 11, 13, 17, 18, 20, 31, 36 and 32 five

of the seven raters were unanimous in their ratings of the TQ items. Comparisons of Fleiss's Kappa for Task 1 and Task 2 showed support for the two-factor structure of the TQ3, rather than a four-factor structure. These results support Hypothesis 2 and are consistent with the two-factor solution of the exploratory factor analysis. Hypothesis 3 for the factor structure was not supported and the two-factor solution was retained. The 38-item TQ3 was included in Study 3 with analyses for Turning Towards and Turning Away (see Appendix D). The refinement of the TQ supported an examination of texting behaviours, attitudes and motives and their associations with romantic attachment, relationship satisfaction, intimacy and destructive conflict in Study 3.

Chapter 4: Text Messaging, Relationship Quality, and Destructive Conflict

Study 2 explored attachment theory as a framework for understanding texting, adult attachment, and relationship quality in romantic relationships. Two additional measures of relationship quality were introduced (intimacy and loneliness) and an examination of texting behaviour was extended to include measures of texting frequency (the number of daily texts sent to the romantic partner) and texting behaviour (Turning Towards, Turning Away). Relationship satisfaction was predicted by relationship status, attachment anxiety, attachment avoidance, intimacy, and text frequency. Relationship intimacy was predicted by relationship status, attachment, satisfaction, loneliness, text frequency, Turning Towards, and Turning Away. Attachment types were calculated on ECR-R scores to enable comparisons on intimacy, relationship satisfaction, loneliness, texting frequency, Turning Towards, and Turning Away by attachment type. Emerging from Study 2 was recognition of the use of text messages to manage conflict in romantic relationships, as reflected in high Turning Away scores and negative correlations between Turning Away and relationship satisfaction and intimacy.

A development study refined the Technology Questionnaire for use in Study 3. Exploratory factor analysis revealed a two-factor structure for the TQ3, representing Turning Towards and Turning Away via text. This structure was supported by an inter rater reliability assessment in task 2. Study 3 used the TQ3, together with estimations of text frequency (to partner), response expectations to sent texts, and target of contact to explore texting in a sample of young adults in committed romantic relationships. Study 3 included measures of attachment anxiety, attachment avoidance, couple satisfaction, and intimacy and measures of destructive conflict, partner care and control. A measure of destructive conflict was included in study 3 to explore the association between Turning Away via text and the presence of criticism, contempt, stonewalling, and defensiveness in couple interactions. These four

behaviours, identified as the *four horsemen* in SRH theory, are among the strongest predictors of relationship distress and contribute to negative sentiment override (Gottman, 1999; Gottman, 2015). Patterns of insecure attachment have been associated with the presence of destructive conflict management strategies in romantic relationships (Fowler & Dillow, 2011; Sierau & Hertzberg, 2012). The TQ3 included items that emulate destructive approaches to conflict when communicated via text. The refinement of the TQ to include items that reflect text content, rather than attitudes towards texting is consistent with the identification of relationship behaviours shown in the empirical literature to promote connection or disconnection (as in SRH; Gottman, 1999).

Similarly, a measure of partner care and control was included to explore associations between behavioural expressions of care and positive relationship behaviours that represent the SRH principle *turning towards* (e.g., building love maps, expressing fondness and admiration), rather than turning away) and negative relationship behaviours that represent the SRH principle *turning away*. In the literature, the presence of emotional support from an attentive spouse produces a significant protective effect against depression and other emotional difficulties (Quinton, Rutter & Liddle, 1984), while the presence of controlling partner behaviour is associated with higher anxiety, poorer relationship security, confidence, and well-being. Refinement of the TQ3 and the addition of behavioural measures of partner care and control were expected to add to the prediction of relationship intimacy, satisfaction, and destructive conflict and to examine the prevalence of these behaviours in text exchanges.

Research Hypotheses Study 3

Hypothesis 1: It was hypothesised that attachment anxiety, attachment avoidance, partner care and partner control, destructive conflict, and text frequency, Turning Towards, and Turning Away would be statistically significant predictors of relationship quality. It was

anticipated that texting would explain variance in intimacy and couple satisfaction above the contribution of attachment orientation.

Hypothesis 2: It was hypothesised that attachment anxiety, attachment avoidance, partner care, partner control, and texting would predict destructive conflict. Turning Towards and Turning Away were expected to explain variance in destructive conflict scores above the contribution of intimacy and satisfaction.

Hypothesis 3: It was hypothesised that attachment anxiety, attachment avoidance, intimacy, couple satisfaction, destructive conflict, partner care and control would be statistically significant predictors of Turning Towards and Turning Away.

Method Study 3

Participants

A total of 365 participants were recruited, exceeding the minimum sample size for power as calculated by the G*Power statistical program (Faul et al., 2007). The sample consisted of 190 female participants (52%), and 175 male participants (48%) between the ages of 18-39, with a mean age of 31.16 years ($SD = 5.50$). Inclusion criteria required that participants were to (a) be in a committed romantic relationship and living separately, or in a committed relationship and living together or married, (b) own and use a mobile phone, (c) be between the ages of 18 and 40, and (d) identify native language as English. All participants stated their country of citizenship as the USA. Sixteen percent reported that they were in a committed relationship and living separately, 18.5% reported that they were cohabitating but unmarried and 65.5% reported that they were married and living together. Relationship length ranged from six months to 22 years, with a mean relationship length of 8.11 years ($SD = 5.33$ years). Sexual orientation was reported as heterosexual (90%), bisexual (6%), homosexual (3.5%), or asexual (0.5%).

Materials

Participants completed the online survey that contained a measure of technology use developed specifically for Study 3, the Technology Questionnaire (TQ3) as well as the Experiences in Close Relationships Scale-Revised (ECR-R), Miller Social Intimacy Scale (MSIS), Relationship Assessment Scale (RAS), Couple Satisfaction Index (CSI), Relationship Distress Scale (RDS), Intimate Partner Bond (IBM), and demographic questions. Measures of attachment orientation (ECR-R), relationship satisfaction (RAS), and intimacy (MSIS) that were included in Study 2 were repeated in Study 3. Psychometric properties for the ECR-R, RAS, and MSIS are described in the Materials sections in Chapters 2 and 3.

Demographic questionnaire. The demographic questionnaire gathered information about the participant's age, gender, ethnicity, relationship length, and relationship status (see Appendix A). Demographic information was collected to confirm that participants met the inclusion and exclusion criteria.

Technology use. The Technology Questionnaire (TQ3) explored patterns of technology use in intimate relationships with a focus on text messaging. The TQ3 measure integrated items from the Technology Questionnaire developed in Studies 1 and 2, revised above (see Appendix D).

Texting frequencies and response time expectations. As in Study 2, participants provided text frequencies, response time expectations for sent texts, noted patterns of contact text targets (i.e., romantic partners, close friends, colleagues, and parents), and considered message content. Continuous measures of text frequency and response time expectations were used to capture parameters of technology use. Patterns of contact were examined by asking participants to estimate the percentage of contact initiated with romantic partners, close friends, colleagues and parents by text (e.g., "Of the texts that you send each day, what

percentage are sent to each of the following contacts: romantic partner, close friends, colleagues and parents?”

Text attitudes. Participants were asked to rate their agreement or disagreement on 38 items using a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A development study, described in Chapter 4, tested 70 items to determine suitability for inclusion in the TQ3 scale. Thirty-eight attitude items were included in the final TQ3, representing the use of texting to Turn Towards and Turn Away from the romantic partner. An aim of Study 3 was to test the Technology Questionnaire in a sample of adults in committed romantic relationships.

Relationship satisfaction. The Couple Satisfaction Index (CSI) is a 32-item measure of relationship satisfaction (Funk & Rogge, 2007). Participants note their agreement or disagreement with 32 items with different response formats including rating scales (0-35) and seven point Likert scales (*strongly disagree to strongly agree*). Example items include, “Please indicate your degree of happiness in your relationship” and “How often do you wish you hadn’t gotten into this relationship?” A total score is calculated from the 32 items with higher total scores representing greater relationship satisfaction. The CSI was developed using items from eight well-validated self-report measures of relationship satisfaction, including the Marital Adjustment Test and Dyadic Adjustment Scale. Principal components analysis and item response theory applied to the larger item pool were used to develop the CSI scales. In comparisons with the MAT and DAS, the CSI showed a higher precision of measurement and greater power for detecting satisfaction. The CSI scale demonstrated strong convergent validity with other measures of satisfaction and excellent construct validity, suggesting that CSI assesses the same theoretical constructs as other scales (Funk & Rogge, 2007). CSI items are presented in Appendix J.

Destructive conflict. The Relational Dynamics Scale (RDS) is an 8-item measure of destructive relational conflict (Stanley & Markman, 1997). Participants report their level of agreement or disagreement with eight items using a seven point Likert Scale (*strongly disagree to strongly agree*). Higher total scores on the RDS represent the presence of more destructive relationship conflict. The measure was developed to assess prominent danger signs in interpersonal interactions and thought processes (Stanley & Markman, 1997). Predictors of distress evaluated in the scale include patterns of conflict escalation, invalidation, withdrawal, and monitoring for partner alternatives (see Appendix K). In scale studies, the RDS has demonstrated good content validity and internal consistency, Cronbach's $\alpha = .73$ (Stanley et al., 2001).

Positive and negative partner behaviour. The Intimate Bond Measure (IBM) is a 24-item measure to assess dimensions of care and control between partners in a romantic relationship (Wilhelm & Parker, 1988). The care dimension reflects the expression of physical and emotional care with warmth, consideration, affection, and companionship. The control dimension suggests domination, intrusiveness, criticism, and the expression of authoritarian attitudes within the romantic relationship (Wilhelm & Parker, 1998). A four point Likert scale from 0, *not true at all* to 4, *very true*, is used to capture participant responses. Example items include, "My partner is very considerate of me" and "My partner tends to criticise me over small issues". Total scores are calculated for the care and control subscales with higher scores indicating higher perceptions of care or control. Scores on the subscales range from 0 to 36. Content validity was assessed using inter-rater reliability in order to validate the subjective aspect of the measure. The care factor reached an inter-rater reliability of $r = .66$, whilst the control scale was $r = .70$. Construct validity was found to be satisfactory with the two factor structure providing the best interpretability. Criterion validity with demographics variables (age, gender and SES) was not established, supposing that the

scale does not vary on this basis. The IBM presented with excellent internal reliability with $r = .89$ and $r = .94$ for care and control respectively. Similarly, test-retest reliability was shown to be very high $r = .89$ for the care factor and $r = .80$ for the control factor, with presentation varying from three to six weeks (Wilhelm & Parker, 1988). Scale items for the Intimate Bond Measure are presented in Appendix L.

Procedure

Participants were recruited through the Qualtrics database and received an explanatory statement outlining the inclusion criteria regarding mobile phone ownership and use, committed relationship status, and age suitability (see Appendix E). Participants were advised to allow adequate time to complete the survey in one sitting. Pilot testing confirmed an anticipated completion time for the questionnaires of 35 minutes. Onscreen instructions were provided for each section and upon completion, subjects were thanked for their participation. Anonymity was assured and participants were advised that they could exit the survey at any time without penalty. Four attention filters were included in the online questionnaire to screen for randomized or careless responding. All cases were retained within the data set for analysis.

Results Study 3

Data Screening Study 3

Variables were examined for accuracy of input, out-of-range values, reasonable means and standard deviations, missing values, and normality. Gender did not differ significantly in the sample with similar numbers of female ($n = 190$) and male participants, ($n = 175$), $\chi^2(1, N = 365) = .62, p = .432$. Frequency distributions with descriptive statistics and histograms were conducted for all variables. Normality was checked via visual inspection of histograms and assessment of skewness and kurtosis. Histograms revealed that relationship satisfaction scores (on the RAS and CSI) and intimacy scores (on the MSI) were positively

skewed and conflict scores on the RDS were negatively skewed, indicating a generally high level of relationship satisfaction and low level of destructive conflict for the sample. This may reflect the influence of social desirability and a tendency for participants to overstate their level of relationship satisfaction in their responses. This halo effect has been identified in previous studies of relationship satisfaction and stability, with gratified couples exaggerating their relationship satisfaction, and distressed couples overestimating their dissatisfaction on measures of relationship satisfaction and stability (Gottman, 2014). All values were within range. As noted, three relationship quality variables, (RAS, CSI and RDS) were highly skewed. These variables were square root transformed to reduce skewness and analyses were run on the transformed and untransformed data. As the substantive findings between the tests did not change, and to aid interpretation, the original data were reported. For other variables, the assumption of normality was met. Univariate outliers were checked using box and whisker plots. Twenty multivariate outliers were identified using Mahalanobis distance ($p < .001$). In order to determine whether the outliers affected the results, analyses were performed including and excluding the outlying cases. No significant difference was observed on the results and the cases were retained. Attention filters showed consistent patterns of responding within expected parameters. Statistical tests were considered reliable at the $p < .05$ level using SPSS software version 22.

Main Analyses Study 3

Assumptions were addressed before conducting the hierarchical regressions in the main analyses. Durban-Watson values showed that the data met the assumption of independent errors. To investigate the distribution of errors in the dataset, histograms of standardised residuals indicated normally distributed errors, as did the P-P plots of standardised residuals. An inspection of scatterplots of standardised predicted values

indicated that the data met the assumption of linearity showing linear relationships between the variables of interest. Multicollinearity and singularity were not violated.

Mean scores and standard deviations for text frequency, Turning Towards and Turning Away, relationship satisfaction, intimacy, destructive conflict, care, control, attachment anxiety, and attachment avoidance are presented in Table 21. Pearson's r correlations were computed to assess the relationship between the variables of interest (see Table 22).

Table 21

Mean, Median, Minimum and Maximum Scores and Standard Deviations for Demographic, Texting, Attachment, and Relationship Variables

	<i>Minimum</i>	<i>Maximum</i>	<i>M</i>	<i>SD</i>	<i>Median</i>
Age	18	40	31.16	5.50	32.00
Relationship length	0	38	8.16	5.53	7.00
Relationship satisfaction	7	35	29.49	5.38	31.00
Couple satisfaction	23	155	112.51	22.96	118.00
Intimacy	74	170	139.35	21.87	142.00
Destructive conflict	8	24	12.96	4.22	12.00
Care	3	36	28.45	7.62	31.00
Control	0	36	13.68	9.44	12.00
Text to romantic partner	0	100	24.31	27.40	12.00
Turning towards	1	6	4.43	1.06	4.65
Turning away	1	6	3.06	1.29	3.05
Attachment anxiety	1	6	3.01	1.42	2.83
Attachment avoidance	1	5	2.49	1.03	2.44

Note. $N = 365$.

Table 22

Correlation Coefficients for Criterion and Predictor Variables Study 3

	RL	Age	AA	AV	RS	CSI	I	RDS	CA	CO	TP	TT	TA	RE
RL														
Age	.57***													
AA	.01	.04												
AV	.06	.11*	.66***											
RS	-.13*	-.14**	-.50***	-.63***										
CSI	-.10*	-.15**	-.50***	-.68***	.80***									
MSIS	-.17**	-.22***	-.43**	-.69***	.58***	.67***								
RDS	.11*	.07	.69***	.65**	-.59**	-.61***	-.48**							
CA	-.14**	-.16**	-.43**	-.56***	.59***	.73***	.68***	-.53***						
CO	.13*	.13*	.45***	.38***	-.31***	-.29***	-.34***	.52***	-.25***					
TP	-.17**	-.20***	.25***	.01	.06	.09	.12*	.16**	.11*	.27***				
TT	-.15**	-.20***	-.07	-.27***	.26***	.31***	-.26**	-.05	.31***	.08	.42***			
TA	.01	-.09	.60***	.34***	-.27***	-.25***	.40**	.53***	-.22***	.54***	.42***	.47***		
RE	.07	.04	.37***	.24***	-.22***	-.21***	-.19***	.36***	-.19***	.26***	.32***	.04	.31***	

Note. $N = 365$. AA = attachment anxiety, AV = attachment avoidance, RS = relationship satisfaction, CSI = couple satisfaction, MSIS = intimacy, RDS = destructive conflict, CA = care, CO = control, TP = daily frequency of texts to partner, TT = turning towards, TA = turning away, RE = response expectations for reply text.

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

Relationship satisfaction. Relationship satisfaction was related to attachment anxiety and attachment avoidance, with higher levels of attachment anxiety or attachment avoidance associated with lower relationship satisfaction scores, as expected. Higher relationship satisfaction and couple satisfaction was associated with greater Turning Towards and lower Turning Away. Conversely, higher destructive conflict was associated with greater Turning Away and lower Turning Towards.

Intimacy. Intimacy was positively correlated with texting frequency, relationship satisfaction and Turning Towards, and negatively correlated with Turning Away and destructive conflict. Couples who reported higher intimacy were more satisfied in their relationships, attended to bids for attention and connection from their partners, and focused on behaviour that enhanced friendship rather than engage in destructive communication. Adults who reported stronger emotional connections to partners, tended to text more frequently and send text messages that were supportive and affectionate.

Age. Age correlated positively and significantly with attachment avoidance, suggesting that the older the participant, the greater the tendency to maintain emotional distance in the relationship. Age was not significantly related to attachment anxiety. Older participants sent fewer daily text messages to their partner, and were significantly less likely to Turn Towards or Turn Away from their partner using technology.

Relationship conflict. Greater destructive conflict was associated with lower intimacy and lower relationship satisfaction, as predicted by SRH theory (Gottman, 1994). Attachment anxiety and attachment avoidance were positively correlated with destructive conflict and partner control, consistent with the attachment literature. Destructive conflict was associated with Turning Toward and Turning Away, as well as with text frequency. Greater destructive relationship conflict was associated with the use of texting to manage relationship difficulties and to express negativity and hostility, as shown in higher Turning Away scores. Conversely,

the use of texting to remain emotionally connected, express care, concern and affection for the partner (Turning Towards) was associated with lower destructive conflict and lower partner control.

Text frequency. Text frequency correlated positively with attachment anxiety, intimacy, destructive conflict, partner control, Turning Towards, and Turning Away and negatively with age. Higher text frequencies were associated with greater attachment anxiety, higher intimacy, greater destructive conflict, greater partner control, greater Turning Towards, and greater Turning Away. These associations suggest a more complex, nonlinear relationship between texting frequency and relationship quality than initially conceptualized at the commencement of this research program. Texting is associated with greater intimacy as well as stronger patterns of destructive conflict. Text frequency was not significantly associated with either measure of relationship satisfaction, the RAS or the CSI, although it approached significance with the CSI measure. Consistent with the reported prevalence of texting in a young demographic, text frequency was positively associated with lower age.

Attachment anxiety. Attachment anxiety was positively correlated with text frequency, suggesting that the higher the attachment anxiety, the more texts sent to the romantic partner each day. This relationship infers that texting may be a mechanism for seeking reassurance in relationships, particularly for participants who tend to feel insecure about their romantic union. No statistically significant relationship was observed between text frequency and attachment avoidance.

Examinations of Relationship Quality

Regression on intimacy. A hierarchical multiple regression was performed to examine the unique contribution of texting frequency and texting behaviour on intimacy, above the contributions of attachment anxiety, attachment avoidance, relationship satisfaction, and destructive conflict. In previous studies, text frequency and texting attitudes

were stronger predictors of intimacy scores than relationship satisfaction scores. The order of entry of predictor variables was determined on precedents in previous studies, as described in Chapter 1. In Studies 1 and 2, relationship status was statistically controlled. In Study 3 and Study 4, relationship status was blocked to include only individuals who confirmed they were in a committed relationship. A design blocked on status and restricted to committed relationship couples was preferred over statistical control as the use of homogenous groups eliminates the need to statistically remove nuisance variance from the modelling (Mitchell & Jolley, 2012). Following Study 1 and Study 2, gender and relationship length were entered at Step 1 and the attachment anxiety and attachment avoidance subscales were entered at Step 2. At Step 3, couple satisfaction (CSI), destructive conflict, care and control were entered. The inclusion of relationship quality variables at Step 3 permitted the most stringent test of texting as a predictor of intimacy. Text frequency was entered in Step 4, together with Turning Towards and Turning Away, as text messaging was of particular interest in this analysis.

At Step 1, the model was statistically significant, $F(2, 362) = 6.79, p = .001$. Gender and relationship length together accounted for 3.6% of the variance in relationship intimacy (see Table 23). Only relationship length contributed to unique variance in intimacy, with more established relationships associated with lower intimacy scores. At Step 2, the model was statistically significant, $F(4, 360) = 86.53, p < .001$, with attachment avoidance and attachment anxiety together accounting for over 45% of the variance in intimacy scores, $F\Delta(2, 360) = 160.29, p < .001$. At this step, only attachment avoidance was a significant predictor of intimacy; as attachment avoidance increases, relationship intimacy decreases. At Step 3, the model was statistically significant, $F(8, 356) = 74.57, p < .001$. Relationship satisfaction, destructive conflict, partner care and control, accounted for an additional 13.6% of the variance in intimacy, $F\Delta(4, 356) = 32.42, p < .001$. Higher relationship satisfaction, higher demonstrations of care, lower efforts to control partner behaviour and lower

destructive conflict were reflected in higher relational intimacy. At Step 4, the model was statistically significant, $F(11, 353) = 64.65, p < .001$, and explained over 66% of the variance in intimacy scores. Text frequency, Turning Towards, and Turning Away explained an additional 4% of variance in intimacy scores at this step which was significant, $F\Delta(3, 353) = 14.90, p < .001$. Texting messages of support, love and affection by Turning Towards, was associated with higher levels of intimacy, whereas engagement in destructive conflict and controlling behaviour via text was associated with lower levels of intimacy, as hypothesized. Texting behaviours were statistically significant predictors of intimacy, above the contribution of attachment orientation, partner care and control, and destructive conflict supporting Hypothesis 1.

Table 23

Hierarchical Regression Analyses for Intimacy as a function of Attachment Anxiety and Attachment Avoidance, Couple Satisfaction, Destructive Conflict, Partner Care and Control, , Frequency of Daily Texts to Partner, Turning Towards, and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.19***	.04				
Constant				146.48***	2.24	[142.07 – 150.90]
Gender			-.09	-3.81	2.26	[-8.25 - .63]
Relationship length			-.16	-.65**	.21	[-1.05 - -.25]
Step 2	.70***	.44***				
Constant				179.77***	2.56	[174.73 – 184.81]
Attachment Anxiety			.05	.74	.78	[-.80 – 2.27]
Attachment Avoidance			-.71	-15.05***	1.07	[-17.16 - -12.94]
Step 3	.79***	.14***				
Constant				112.77***	7.77	[97.48 – 128.05]
Couple satisfaction			.14	.13*	.05	[.02 - .24]
Destructive conflict			.13	.65*	.27	[.11 – 1.19]
Care			.38	1.09***	.14	[.82 – 1.36]
Control			-.12	-.27**	.09	[-.45 - -.08]
Step 4	.82***	.04***				
Constant				99.68***	7.82	[84.30 – 115.06]
Text to romantic partner			.04	.04	.03	[-.02 - .09]
Turning toward			.78	5.63***	.91	[3.88 - - 7.42]
Turning away			-.25	-4.23***	.90	[-5.98 - -2.46]

Note. N = 365. Gender: 0 = female, 1 = male.

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

Regression on satisfaction. A hierarchical multiple regression was performed to examine the unique contribution of texting frequency and texting behaviour on relationship satisfaction after accounting for the contributions of attachment anxiety, attachment avoidance, intimacy, and conflict. The order of entry for the regression was consistent with previous analyses.

At Step 1, the model was not significant, $F(2, 362) = 1.91, p = .150$ (see Table 24). Gender and relationship length did not explain significant variance in relationship satisfaction scores. At Step 2, the model was statistically significant, $F(4, 360) = 81.29, p < .001$, with attachment anxiety and attachment avoidance explaining over 46% of the variance in relationship satisfaction scores, $F\Delta(2, 360) = 159.00, p < .001$. Attachment avoidance was a statistically significant predictor of relationship satisfaction scores and higher attachment avoidance was associated with lower relationship satisfaction. Attachment anxiety was not a statistically significant predictor of relationship satisfaction. At Step 3, the model was statistically significant, $F(8, 356) = 88.43, p < .001$. Greater intimacy, lower destructive conflict and greater care, were predictive of high relationship satisfaction, $F\Delta(4, 356) = 50.70, p < .001$. At Step 3, the model explained over 66% of the variance in relationship satisfaction scores. At Step 4, the model remained statistically significant, $F(11, 353) = 65.07, p < .001$, but the incremental variance contributed by the three predictors at Step 4, was not significant, $F\Delta(3, 353) = .19, p = .192$. Text frequency, Turning Towards and Turning Away were not statistically significant predictors of unique variance in relationship satisfaction, thereby not supporting Hypothesis 1 for relationship satisfaction.

Table 24

Hierarchical Regression Analyses for Couple Satisfaction as a function of Attachment Avoidance and Attachment Anxiety, Intimacy, Destructive Conflict, Care, Control, Text Frequency, Turning Towards, and Turning Away

Predictors	R	ΔR^2	β	<i>B</i>	<i>SEB</i>	95% CI for <i>B</i>
Step 1	.10	.01				
Constant				116.26	2.39	[111.57 – 120.95]
Gender			-.02	-.77	2.40	[-5.50 – 3.96]
Relationship length			-.10	-.42	.22	[-.84 - .01]
Step 2	.69***	.46***				
Constant				153.09***	2.73	[147.72 – 158.64]
Attachment avoidance			-.62	-13.85***	1.15	[-16.10 – 11.59]
Attachment anxiety			-.09	-1.49	.83	[-3.13 - .15]
Step 3	.82***	.19***				
Constant				84.72***	8.64	[67.72 – 101.72]
Intimacy			.12	.13*	.05	[.03 - .23]
Destructive conflict			-.22	-1.12***	.27	[-1.65 - -.59]
Care			.42	1.25***	.13	[.99 – 1.51]
Control			.05	.12	.09	[-.06 - .31]
Step 4	.82***	.01				
Constant				84.64***	8.81	[67.31 – 101.97]
Text to partner			.05	.04	.03	[-.02 - .10]
Turning towards			.04	.87	1.00	[-1.11 – 2.84]
Turning away			.02	.28	.97	[-1.62 – 2.18]

Note. *N* = 365. Gender: 0 = female, 1 = male.

p* < .05 *p* < .01 ****p* < .001.

Regression on destructive conflict. Hierarchical multiple regression was performed to examine the relationships between texting frequency, texting behaviour, attachment anxiety, attachment avoidance, intimacy, and destructive conflict. The order of entry for the regression was consistent with previous analyses.

At Step 1, the model was significant, $F(2, 362) = 3.62, p = .029$ (see Table 25). Gender and relationship length together accounted for significant shared variance in destructive conflict. Females reported greater destructive conflict within their relationships than did males and relationship length was positively correlated with conflict scores. The more established the relationship, the more likely individuals were to report destructive patterns of relationship conflict.

At Step 2, the model remained statistically significant, $F(4, 360) = 108.72, p < .001$, with attachment anxiety, and attachment avoidance, significantly contributing 54.2% of the variance in conflict scores, $F\Delta(2, 360) = 209.65, p < .001$. Higher attachment anxiety and attachment avoidance scores were associated with greater destructive conflict within the relationship.

At Step 3, the model was statistically significant, $F(8, 356) = 75.74, p < .001$, with relationship satisfaction, intimacy, partner care and control, explaining an additional 8% of the variance in destructive conflict. Lower relationship satisfaction, lower partner care and more controlling behaviours were predictive of greater destructive conflict, as was higher intimacy, $F\Delta(4, 356) = 19.92, p < .001$. At Step 4, the model remained statistically significant, $F(11, 353) = 58.13, p < .001$, with Turning Away, emerging as a significant predictor of relationship conflict, ($F\Delta(3, 353) = 4.79, p = .003$) supporting Hypothesis 2. Turning Towards and text frequency, did not significantly contribute to the predictive value of the model at this step.

Table 25

Hierarchical Regression Analyses for Destructive Conflict as a function of Attachment Anxiety, Attachment Avoidance, Intimacy, Couple Satisfaction, Texting Frequency, Turning Towards, and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.14**	.02				
Constant				11.96***	.44	[11.10 – 12.82]
Gender			-.09	.76	.44	[-.10- 1.63]
Relationship length			.10	.08	.04	[0.00 - .16]
Step 2	.74***	.53***				
Constant				4.75***	.68	[3.84 – 5.67]
Attachment avoidance			.35	1.43***	.20	[1.04 – 1.81]
Attachment anxiety			.45	1.35***	.14	[1.07 – 1.63]
Step 3	.79***	.08***				
Constant				9.67***	1.81	[6.12 – 13.23]
Intimacy			.12	.02***	.01	[.01 - .04]
Couple satisfaction			-.23	-.04*	.01	[-.06 - .02]
Care			-.13	-.07*	.03	[-.13 - -.01]
Control			.23	.11***	.02	[.07 - .14]
Step 4	.80***	.01**				
Constant				9.36***	1.82	[5.78 – 12.93]
Text to partner			.03	.01	.01	[-.01 - .02]
Turning towards			-.07	-.26	.19	[-.64 - .12]
Turning away			.19	.62**	.18	[.26 - .97]

Note. $N = 365$. Gender: 0 = female, 1 = male.

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

Regression on Turning Towards. Hierarchical multiple regression was performed to examine the unique contribution of relationship satisfaction, intimacy and conflict above the contribution of attachment anxiety, attachment avoidance on Turning Towards. Variables that explained the positive use of text messaging in relationships were entered in four steps and the variable, Turning Towards, was entered as the criterion. At Step 1, gender and relationship length were entered as control variables as in previous analyses. At Step 2, the ECR-R attachment anxiety and attachment avoidance subscales were entered as predictor variables in line with the literature. At Step 3, intimacy, conflict, couple satisfaction, care and control measures were entered into the model. Texting frequency was entered at Step 4.

At Step 1, the model was statistically significant, $F(2, 362) = 4.33, p = .014$, with gender and relationship length accounting for 2% of the variance in daily texting to romantic partner (Table 26). Relationship length was a statistically significant predictor of Turning Towards with individuals in newer relationships connecting with partners via text more than adults in established unions. Gender did not account for unique variance in Turning Towards with female participants no more likely than males to Turn Towards partners via text. At Step 2, the model remained statistically significant $F(4, 360) = 20.04, p < .001$, with attachment anxiety and attachment avoidance contributing to the variance in Turning Towards, $F\Delta(4, 360) = 22.04, p < .001$. Higher attachment anxiety and lower attachment avoidance were associated with greater use of text messages to connect with the romantic partner. At Step 3, the model was statistically significant, $F(9, 355) = 17.79, p < .001$, and contributed 11% of unique variance in Turning Towards scores. Intimacy, relationship satisfaction and partner control emerged as significant predictors of Turning Towards, $F\Delta(5, 355) = 11.76, p < .001$. Higher scores on intimacy, relationship satisfaction, and partner control were predictive of greater Turning Towards via text. At Step 4, the model remained statistically significant $F(10, 354) = 20.54, p < .001$, with text frequency accounting for an additional 6% of variance

in Turning Towards. The model accounted for 34.9% of variance in Turning Towards with higher attachment anxiety, lower attachment avoidance, greater relationship satisfaction and greater intimacy associated with the use of texts to connect in a positive way with a romantic partner. Hypothesis 3 was supported for Turning Towards.

Table 26

Hierarchical Regression Analyses for Turning Towards as a function of Attachment Anxiety and Attachment Avoidance, Intimacy, Conflict, Couple Satisfaction, Partner Care, Control, and Text Frequency

Predictors	R	ΔR^2	β	B	SEB	95% CI B
Step 1	.15*	.02				
Constant				4.68***	.11	[4.46 – 4.89]
Gender			-.01	-.01	.11	[-.22 - .21]
Relationship length			-.15	-.15**	.01	[-.05 - -.1]
Step 2	.44***	.17***				
Constant				5.09***	.16	[4.77 – 5.39]
Attachment anxiety			.43	.33***	.05	[.23 - .42]
Attachment avoidance			-.55	-.57***	.07	[-.70 - -.44]
Step 3	.56***	.11***				
Constant				.84	.65	[-.44 – 2.11]
Couple satisfaction			.13	.01***	.01	[-.01 - .02]
Intimacy			.33	.02***	.01	[.01 - .02]
Destructive conflict			.08	.20	.02	[-.02 - .06]
Care			.06	.01	.01	[-.01 - .03]
Control			.17	.02**	.01	[.01 - .03]
Step 4	.61***	.06***				
Constant				1.36*	.63	[.12 – 2.60]
Text to partner			.27	.01***	.01	[.01 - .02]

Note. N = 365. Gender: 0 = female, 1 = male. * $p < .05$ ** $p < .01$ *** $p < .001$.

Regression on Turning Away. A hierarchical multiple regression was performed to examine the relationships between couple satisfaction, intimacy, conflict, attachment anxiety, attachment avoidance, texting frequency and the negative subscale of technology use, Turning Away. Variables that explained the destructive use of text messaging were entered in four steps and the variable Turning Away was entered as the criterion. The order of entry for the regression was consistent with the previous analysis and the results are shown in Table 27.

At Step 1, the model was not statistically significant, $F(2, 362) = 1.21, p = .300$. Gender and relationship length did not account for the variance in Turning Away scores. At Step 2, the model was statistically significant, $F(4, 360) = 53.29, p < .001$, with attachment anxiety and attachment avoidance contributing to the variance in Turning Away, $F\Delta(2, 360) = 104.69, p < .001$. Only attachment anxiety contributed to the unique variance in Turning Away, suggesting that individuals higher in attachment anxiety were more likely to engage in destructive patterns of communication via text. At Step 3, the model remained statistically significant, $F(9, 355) = 37.91, p < .001$. Destructive conflict and partner control emerged as significant predictors of Turning Away, $F\Delta(5, 355) = 16.45, p < .001$. Partner control and destructive conflict were both positively correlated with Turning Away via text. At Step 4, the model remained statistically significant, $F(10, 354) = 40.28, p < .001$. Higher text frequency was a statistically significant predictor of Turning Away, $F\Delta(1, 354) = 31.94, p < .001$. The model accounted for 51.9% of the variance in Turning Away scores, with text frequency accounting for variance in Turning Away above the contribution of attachment anxiety, attachment avoidance, relationship quality, partner care and control. Hypothesis 3 was supported for Turning Away.

Table 27

Hierarchical Regression Analyses for Turning Away as a function of Attachment Anxiety and Attachment Avoidance, Intimacy, Conflict, Couple Satisfaction, Partner Care, Control, and Text Frequency

Predictors	R	ΔR^2	β	B	SEB	95% CI B
Step 1	.08	.01				
Constant				2.97	.13	[2.71 – 3.23]
Gender			.08	.21	.14	[-.06 - .48]
Relationship length			-.01	-.10	.01	[-.03 - .02]
Step 2	.61***	.37***				
Constant				1.48***	.17	[1.15 – 1.80]
Attachment anxiety			.65	.59***	.05	[.49 - .69]
Attachment avoidance			-.07	-.09	.07	[-.22 - .05]
Step 3	.70***	.12***				
Constant				.60	.68	[-.73 – 1.93]
Couple satisfaction			.09	.01	.01	[-.02 - .01]
Intimacy			-.06	-.01	.01	[-.01 - .01]
Destructive conflict			.22	.07**	.02	[.03 - .10]
Care			.06	.01	.01	[-.01 - .03]
Control			.32	.04***	.01	[.03 - .06]
Step 4	.73***	.04***				
Constant				1.15***	.65	[-.14 – 2.44]
Text to romantic partner			.23	.01***	.01	[.01 - .02]

Note. N = 365. Gender: 0 = female, 1 = male. * $p < .05$ ** $p < .01$ *** $p < .001$.

Parameters of Mobile Communication Study 3

Text frequency. Participants estimated the total number of text messages sent and received each day and the number of text messages exchanged with their romantic partner. Participants reported sending ($M = 32.49$, $SD = 29.24$) and receiving ($M = 33.23$, $SD = 29.48$) an average of 32 text messages each day. Over 70% of daily communications via text were conducted with the romantic partner, with a daily average of approximately 24 text messages sent ($M = 24.31$, $SD = 27.40$) and received ($M = 24.87$, $SD = 28.02$) from the romantic partner. Reported text frequencies are consistent with rates reported elsewhere in the literature and represent the use of technology within expected parameters (Nielsen Online, 2011; Smith 2012).

Texting, attachment orientation and relationship quality. Mean scores and standard deviations for text frequency, response time expectations, target of contact, Turning Towards, Turning Away, attachment anxiety, attachment avoidance and relationship quality variables (relationship satisfaction, couple satisfaction, intimacy, destructive conflict, care and control) are presented in Table 28. Table 29 shows the intercorrelations among these variables.

Table 28

Mean, Median, Minimum and Maximum Scores and Standard Deviations for Age, Relationship Length, Relationship Satisfaction, Couple Satisfaction, Intimacy, Destructive Conflict, Care, Control, Attachment Anxiety, Attachment Avoidance, Text Frequency, Turning Towards, and Turning Away

	<i>Minimum</i>	<i>Maximum</i>	<i>M</i>	<i>SD</i>	<i>Median</i>
Age	18	40	31.16	5.50	32.00
Relationship length	0	38	8.16	5.53	7.00
Relationship satisfaction	7	35	29.49	5.38	31.00
Couple satisfaction	23	155	112.51	22.96	118.00
Intimacy	74	170	139.35	21.87	142.00
Destructive conflict	8	24	12.96	4.22	12.00
Care	3	36	28.45	7.62	31.00
Control	0	36	13.68	9.44	12.00
Text to romantic partner	0	100	24.31	27.40	12.00
Turning towards	1	6	4.43	1.06	4.65
Turning away	1	6	3.06	1.29	3.05
Attachment anxiety	1	6	3.01	1.42	2.83
Attachment avoidance	1	5	2.49	1.03	2.44

Note. $N = 365$.

Table 29

Correlation coefficients for Criterion and Predictor Variables Study 3

	RL	Age	AA	AV	RS	CSI	I	RDS	CA	CO	TP	TT	TA	RE
RL														
Age	.57***													
AA	.01	.04												
AV	.06	.11*	.66***											
RS	-.13*	-.14**	-.50***	-.63***										
CSI	-.10*	-.15**	-.50***	-.68***	.80***									
MSIS	-.17**	-.22***	-.43**	-.69***	.58***	.67***								
RDS	.11*	.07	.69***	.65**	-.59**	-.61***	-.48**							
CA	-.14**	-.16**	-.43**	-.56***	.59***	.73***	.68***	-.53***						
CO	.13*	.13*	.45***	.38***	-.31***	-.29***	-.34***	.52***	-.25***					
TP	-.17**	-.20***	.25***	.01	.06	.09	.12*	.16**	.11*	.27***				
TT	-.15**	-.20***	-.07	-.27***	.26***	.31***	-.26**	-.05	.31***	.08	.42***			
TA	.01	-.09	.60***	.34***	-.27***	-.25***	.40**	.53***	-.22***	.54***	.42***	.47***		
RE	.07	.04	.37***	.24***	-.22***	-.21***	-.19***	.36***	-.19***	.26***	.32***	.04	.31***	

Note. $N = 365$. AA = attachment anxiety, AV = attachment avoidance, RS = relationship satisfaction, CSI = couple satisfaction, MSIS = intimacy, RDS = destructive conflict, CA = care, CO = control, TP = daily frequency of texts to partner, TT = turning towards, TA = turning away, RE = response expectations for reply text.

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

Pearson r correlation coefficients were computed for texting variables (texting frequency, response expectations and targets of contact), attachment orientation, relationship behaviours and relationship quality. There was a statistically significant relationship between texting frequency and relationship length indicating that texting frequencies were higher in early stage relationships. Text frequency was positively associated with attachment anxiety scores. Participants who shared concerns for the safety and stability of their romantic relationships, sent more daily texts to the partner. Text frequency was positively correlated with relationship intimacy, destructive conflict, partner care and control, Turning Towards, and Turning Away. Participants who rated relationships as emotionally close and caring, tended to text their romantic partners more frequently, as did those who identified patterns of destructive relationship conflict and higher partner control in their relationships. Text frequency was related to intimacy, but not to relationship satisfaction. Capturing broader measures of texting than frequency supports an examination of how technology is used in romantic relationships.

Response expectations. Participants estimated how long they would expect to wait for their romantic partner to respond to a missed text. The average wait time to receive a reply was 17 minutes ($SD = 22.09$). Response expectations were related to assessments of relationship quality and attachment orientation. Participants who rated their relationships as highly intimate and satisfying reported significantly shorter wait times for a response to a sent text. Higher attachment anxiety and higher attachment avoidance scores were associated with longer wait time expectations, as was the presence of destructive conflict. Participants who felt less secure or more emotionally distant from romantic partners, may have desired shorter, but anticipated significantly longer response times to texts. Participants who identified patterns of destructive relationship conflict in their relationships anticipated longer wait times for a text reply. While this finding was not predicted, a relationship between higher

destructive conflict and longer response expectations suggests reduced confidence in partner responsiveness and lower quality contingent communication. Pearson's r correlations support response expectations as an indicator of relationship attunement.

Target of contact. Participants estimated the percentage of text messages sent to the following contacts: romantic partner, close friends, acquaintances and parents. Participants reported texting the romantic partner more regularly than other contacts, ($M = 50.76$, $SD = 32.99$), including close friends ($M = 26.44$, $SD = 27.30$), acquaintances, ($M = 14.14$, $SD = 22.65$), and parents ($M = 18.12$, $SD = 25.38$). Patterns of texting support the prioritization of the romantic partner for text communication. Percentage of texts to the romantic partner was positively associated with relationship satisfaction, relationship satisfaction, intimacy and Turning Towards, and negatively associated with attachment avoidance, as in Table 30. Consistent with findings in Studies 1 and 2, attachment avoidance was associated with the maintenance of wider contact networks via text. Texts to close friends, parents, and acquaintances were positively associated with attachment anxiety and attachment avoidance, Turning Away, partner control and with the presence of destructive conflict in romantic relationships.

Table 30

Correlation Coefficients for Target of Contact, Relationship Satisfaction, Couple Satisfaction, Intimacy, Partner Care, Partner Control, Attachment Anxiety, Attachment Avoidance, Turning Towards and Turning Away

	RS	CS	I	RDS	TT	TA	CA	C	AA	AV
RP	.13*	.13*	.14**	-.03	.33***	.11***	.07	.03	.05	-.17**
CF	-.03	-.03	-.06	.14**	.06	.24***	-.04	.21***	.21***	.11*
P	-.04	-.07	-.14**	.25***	.15**	.33***	-.12*	.28***	.27***	.13*
A	-.15**	-.16**	-.18**	.35**	.05	.31***	-.15**	.33***	.35***	.23***

Note. $N = 365$. RP = romantic partner, CF = close friends, P = parents, A = acquaintances, RS = relationship satisfaction, CS = relationship satisfaction, I = intimacy, RDS = destructive conflict, TT = turning towards, TA = turning away, CA = care, CO = control, AA = attachment anxiety, AV = attachment avoidance.

Discussion Study 3

The relationship between text messaging, attachment anxiety, attachment avoidance and relationship quality was examined in a sample of young adults in committed romantic relationships. In Study 3, the assessment of relationship quality was extended to include measures of partner care, controlling relationship behaviours, and destructive conflict. The results supported predictions that text messages sent between romantic partners are associated with relationship satisfaction, intimacy, and destructive communication.

Text frequency. Participants sent an average of 34 messages each day and more than 52% of texts were exchanged with the romantic partner. Patterns of preferential texting to the romantic partner support the relevance of text communication in romantic relationships, as in Studies 1 and 2. Males tended to send more daily texts than females and reported higher scores on Turning Away than Turning Towards in Study 3. This finding is in contrast to Studies 1 and 2, but may reflect a preference among males to use texts to deal with conflict in a way that is perceived less confrontational, especially once in an established committed relationship, as reflected in the sampling for Study 3. Daily text frequencies were higher in early stage relationships and lower in more established partnerships, as reflected in relationship length. This finding was independent of participant age, suggesting that relationship stage was of importance in predicting the number of daily texts sent. It is possible that the unique qualities of early stage relationships, the bonding and connectedness of the limerance phase, the associated neurobiological markers and the novelty of the relationship (Crooks & Baur, 2017), motivates partners to connect and share information more freely over text. This finding may also reflect the ease of text exchanges and the ability to express relational content, positive or negative, in a way that is perceived as safer than face-to-face exchanges early in the relationship, when trust and familiarity are being established.

Response expectations. It was hypothesised that response expectations would be related to relationship satisfaction and intimacy and provide an indication of partner attunement (Reis et al., 2014). This hypothesis was supported. Response expectations to sent texts were related to intimacy, relationship satisfaction, attachment anxiety, and attachment avoidance. Participants who described their relationships as emotionally close and intimate were more satisfied overall and reported shorter response expectations than participants with lower intimacy and satisfaction scores. Response expectations to missed texts reflected confidence in the partner's willingness to reply to bids for connection in a timely and responsive way. Attachment anxiety and attachment avoidance, as expected, were positively associated with longer response expectations. This is consistent with working models of attachment and partner attributions (Collins et al., 2006). Participants who expressed doubts about the reliability of romantic partners, or who kept partners at an emotional distance, reported longer wait times for a text response. This finding was in contrast to Studies 1 and 2 where response expectations were not significantly related to attachment anxiety, attachment avoidance, or relationship satisfaction. It is possible that sampling differences, specifically the recruitment of a more committed sample of adults in Study 3, accounts for this finding. Floyd and Wasner (1994) proposed that relationship satisfaction is predictive of commitment and that the stability of marital couples reflects that level of commitment. More committed relationships are likely to feature more stable interactions and clearer partner expectations than early stage relationships allowing for the identification of cognitive biases associated with attachment anxiety and attachment avoidance. As perceived support appears to be a stronger correlate of health and wellbeing than actual support (Collins & Feeney, 2004), expectations of partner behaviour emerge as important.

Differences in response expectations appear to reflect perceptions of partner attunement, and quite probably, experiences with partner attunement. Longer response

expectations may operate as a defense mechanism with individuals adjusting their expectations downwards. As in studies of rejection sensitivity, where adults anxiously expect and overreact to signs of partner abandonment, anxious individuals exhibit self-protective behaviours in anticipation of rejection (Downey & Feldman, 1994). Rather than shield rejection, these self-protective behaviours tend to elicit hostile partner responses and confirm an anticipated lack of support, akin to a self-fulfilling prophecy (Downey & Feldman, 1996). Longer response expectations to sent texts may function similarly, as a protective strategy for participants high in attachment anxiety (or attachment avoidance). For these adults, lowered expectations may be set to reduce feelings of disappointment. Participants who identified patterns of destructive relationship conflict also anticipated longer wait times for a text reply. While this finding was not predicted, a relationship between greater destructive conflict and longer response expectations suggests reduced confidence in partner responsiveness and lower quality contingent communications. The attribution of partner behaviour to negative intent and, in particular, to a lack of love or consideration, has been associated with greater relationship dissatisfaction (Bradbury & Fincham, 1990).

While the findings for response expectations in Study 1 and Study 2 were not statistically significant, the results may reflect insufficient coverage of response expectations in early versions of the TQ. There were no research precedents for the assessment of response expectations via text and early studies suggest possible issues with item comprehension that may have affected the results. There were strong indicators in Study 1 and 2 that response expectations were of significance in examining text communications and relationship quality. Demonstrations of partner responsiveness to texts emerged as an important theme in focus group discussions and positive correlations between TQ items (reflecting partner responsiveness) and relationship quality provided support for response expectations as an indicator of partner attunement. Furthermore, the importance of partner responsiveness is

implicit in the relationship literature and identified as a predictor of relationship satisfaction (Gottman, 1999). As participants demonstrate their interest, availability and care for the romantic partner in action, confidence in the romantic bond is strengthened (Gottman, 1999; Gottman & Silver, 2012). Responsiveness is a temporal reminder that the partner is a source of comfort and support and that together, partners are on the same side against the world (Gottman, 1999).

Target of contact. For the majority of participants, the romantic partner was identified as the preferred contact for sending texts. Patterns of contact, however, differed as a function of attachment avoidance. With higher attachment avoidance, a lower proportion of texts were sent to the romantic partner, as compared with participants who were lower in attachment avoidance and more comfortable with relational closeness. Individuals high in attachment avoidance reported wider contact networks in their patterns of contact. Fewer texts were sent to the romantic partner and proportionately more were spread across other targets (close friends, parents and acquaintances, respectively). A similar, though less pronounced pattern was observed for attachment anxiety. Target of contact for those high in attachment anxiety showed wider networks also, but the movement away from contact with the romantic partner was less pronounced than for adults high in attachment avoidance. Patterns here might reflect a general prioritisation of the romantic partner for adults with secure attachment. Consistent with the relationship literature, a secure attachment stance is associated with feelings of emotional closeness, satisfaction with the quality of the relationship, increased expressions of care and concern, lower engagement in destructive conflict, and fewer controlling behaviours (Gottman, 2015; Johnston, 2008; Wallin, 2007). Adults with a secure attachment orientation tend to send more texts to express love, affection and support, and fewer texts to express hostility or deal with conflict. Text frequency for this

attachment type is high, but reflects the use of texts to enhance rather than detract from the quality of the intimate connection.

Intimacy. Turning Towards and Turning Away via text were statistically significant predictors of relationship intimacy, accounting for additional variance in intimacy not explained by attachment anxiety, attachment avoidance, couple satisfaction, partner care and control or destructive conflict. This is a significant finding, supporting the role of text messaging in romantic relationships and the capacity for texts to contribute to and detract from relational intimacy. Turning Towards was a stronger predictor of intimacy than was Turning Away, supporting the proposal that expressions of love, affection and interest via text, contribute to the emotional climate of the relationship in a positive way. Texting processes captured in the Turning Towards scale reflect some of the behaviours identified in the first four SRH principles - *building love maps, nurturing fondness and admiration, and turning towards*. At an item level, however, the inter rater reliability coefficients between TQ items and the SRH scales were lower than expected. In romantic relationships, behaviours aligned with these three principles have been shown to facilitate emotional attunement (Gottman, 2015). Results here suggest that Turning Towards via text may be aligned with these principles and that the exchange of positive texts may have benefits for partner closeness, as reported elsewhere (Jin & Pena, 2010; Schade et al., 2012).

Turning Away via text was also a predictor of intimacy scores. In SRH theory, negative partner interactions that include criticism, hostility, contemptuous behaviour, defensiveness, and withdrawal are associated with higher destructive conflict and lower relationship satisfaction. Consistent with SRH theory, negative relationship behaviours, captured in the Turning Away scale, were predictive of lower intimacy and higher destructive conflict. Turning Away via text was related to destructive communication patterns, controlling partner behaviours, lower relationship satisfaction, and fewer demonstrations of

partner care. These results suggest that Turning Away behaviours mirror the negative interactions encountered in some romantic relationships. Further, when negative text interactions occur, they are predictive of lower relationship intimacy.

Relationship satisfaction. Despite exchanging the measure of relationship satisfaction from the RAS to the CSI, texting frequency, Turning Towards and Turning Away were not statistically significant predictors of relationship satisfaction, above the contribution of attachment, destructive conflict, partner care and control, as in Study 2. A positive correlation between Turning Towards and relationship satisfaction, and a negative correlation between Turning Away and relationship satisfaction was observed, but there was no association of statistical significance between text frequency and satisfaction. As in Study 2, texting appears to be related to aspects of closeness that are captured in evaluations of intimacy (i.e., feeling seen and understood) more than in evaluations of satisfaction (i.e., the relationship being good enough). While relationship satisfaction suggests a level of acceptance with the status quo, intimacy appears more closely related to processes of contingent communication that occur within the relationship. It is possible that in affecting these contingent processes, texts have a capacity to enhance or detract from the quality of connection.

Turning towards and turning away. Attachment orientation related to the use of texts to enhance and detract from the quality of the romantic relationship. Attachment anxiety was associated with Turning Towards via text and the use of texts to Turn Away. Communication via text was related to attachment anxiety, as in Weisskirch and Delevi's (2011) study and attachment avoidance as in Drouin and Landgraff's (2012) findings. Sending texts was associated with relationship quality and destructive conflict, and these associations were broadly consistent with previous findings of Lincoppe (2004), Jin and Pena (2010), and Schade et al. (2013), despite differences in the measurement of texting behaviour.

Individuals high in attachment anxiety tend to be vigilant to signs of rejection from romantic partners and question the strength and reliability of romantic bonds (Levine & Heller, 2012). Turning Towards and Turning Away were associated with higher attachment anxiety supporting the proposal that reassurance seeking is a possible motive for sending texts. Higher attachment avoidance was associated with less prominent text practices, especially Turning Towards. Text frequency was a predictor of Turning Towards and Turning Away, supporting the proposal that texting can serve both constructive and destructive functions in romantic relationships, as suggested by Hertline and Ancheta (2014). The extent to which participants favour Turning Towards or Turning Away via text appears to relate to attachment anxiety and attachment avoidance. Study 3 provides support for text processes as indicative of hyperactivation, with texting employed as a strategy to manage feelings and fears of disconnection. Further, text processes for individuals higher in attachment avoidance appear to represent deactivation and a preference for greater autonomy. Consistent with expectations, higher satisfaction, higher intimacy, higher partner care and higher control were predictors of greater Turning Towards while higher destructive conflict and higher partner control were predictors of greater Turning Away.

The inclusion of destructive conflict, partner care and control supported an investigation of the use texts to manage negative relationship interactions and their associations with lower intimacy and lower satisfaction. The contribution of the partner care scale, together with intimacy and relationship satisfaction, support the examination of technology as a tool of connection with the capacity to contribute to the positive emotional climate of a romantic relationship, by reflecting text processes that demonstrate partner care and concern. The inclusion of the partner control scale, together with destructive conflict, supports an examination of the use of technology to monitor and restrict behaviours of the relationship partner.

Limitations. Study 3 supports the use of the TQ to capture interaction patterns known to predict relationship distress and relationship success in studies of marital satisfaction and stability. The properties of the TQ3, established in Study 3, support the use of technology measure to capture relationships between texting, relationship behaviours, and relationship quality (measured as intimacy, satisfaction, and destructive conflict). However, aspects of the texting questionnaire warrant improvements in item content. While the factor analysis of the TQ3 suggested content validity and strong reliability, and the first inter-rater task supported two factors, Turning Towards and Turning Away, the second rating task did not support the alignment of texting items with the SRH theory. The first three SRH principles, build love maps, fondness and admiration, turning towards the partner represent the quality of the couple's friendship (Gottman, 1999). The fourth principle represents the general sentiment of the relationship and reflects the ratio of positive to negative interaction during conflict and interactions (Gottman, 1999). The fifth principle, manage conflict, represents the extent to which couple manage conflict in constructive or destructive ways. It was expected that the TQ3 items would align with these four principles, however this was not supported. Low inter rater reliability coefficients on the second rating task, suggested low agreement among raters over the classification of items into SRH categories. Challenges in capturing the subtleties of text dynamics in item wording (e.g., frequency, timing, and response expectations) and in detecting text processes that reflect hyperactivation and deactivation of the attachment system with the TQ3, may be reflected in this finding. Message qualities (e.g., timing, frequency, and response expectations) and attachment primes (hyperactivation and deactivation triggers) through destructive conflict, partner care and control, emerged in Study 3 as characteristics of importance in understanding how and why text messages are exchanged by couples, but are not adequately measured at present in the current texting questionnaire. Items in the partner

care and control scale, the destructive conflict scale, and intimacy scale provided direction for the development of new scale items and the refinement of the Technology Questionnaire.

Questionnaire Development TQ4

The TQ subscales used in Studies 1, 2, and 3 appear to align with behaviours known to predict relationship success. In Study 3, however, the TQ items were not as strongly associated with the four SRH principles as anticipated. Support for a two factor, rather than four factor structure for the TQ was observed in the inter rater reliability coefficients and the exploratory factor analysis. According to SRH theory, SRH principles including the emotional climate of a relationship (i.e., the ratio of positive to negative interactions) differentiate high and low relationship satisfaction (Gottman, 1999; Gottman, 2014; Gottman, 2015). Studies 1, 2 and 3 show that text processes as noteworthy and complex, and significantly related to attachment anxiety, attachment avoidance, intimacy, destructive conflict, partner care and control. A test of these associations through the lens of SRH theory was an objective of Study 4.

To support this objective, the TQ was revised and expanded to reflect broader motives for text messaging. In Study 3, a measure of partner care and control was included to explore associations between text messaging and destructive relationship behaviours. Statistically significant correlations were observed between texting, partner care, control, destructive conflict, attachment anxiety, and attachment avoidance, suggesting that some relationship behaviours were associated with processes of hyperactivation and deactivation. Examination of the TQ3 items revealed that motives for engaging in conflict, expressions of care and partner monitoring were not reflected in the content of texting items. A review of inter-item correlations for Turning Towards, Turning Away, relationship quality, partner care and control, attachment anxiety, and attachment avoidance informed the generation of additional TQ items.

A two-stage, development study was conducted to refine the technology questionnaire, resulting in the TQ4. In Stage 1, a focus group of six undergraduate students reviewed 25 new TQ items for content validity and interpretability. As young adults have been identified as the most frequent users of text messaging (Pew Research Centre, 2012; Schade et al., 2013; Smith, 2011) their insights into text content and text dynamics were valued in this items development phase. Face validity and the acceptability of item wording were assessed with an independent examiner and minor changes were made to the phrasing of two items. In Stage 2, a sample of adults in committed romantic relationships provided responses to the 63 texting items (25 new and 38 TQ3 items). Exploratory factor analysis was used to evaluate potential domains in the tool.

Research Hypothesis Questionnaire Development TQ4

It was hypothesised that factor analysis of the 63 TQ items would reveal two factors consistent with texting as a tool of connection (Turning Towards) and disconnection (Turning Away). It was expected that the solution would reflect a two-factor structure with improved factorability and higher Cronbach's alpha coefficients for Turning Towards and Turning Away.

Method TQ4 Development

Participants

Focus group on TQ4 items. A focus group reviewed the 25 new technology items with content that reflected participant motives for texting. Six students (2 males, 4 females) aged between 22 and 31 years ($M = 25.33$, $SD = 3.67$) volunteered their time to contribute to the discussion. A Clinical Psychologist reviewed the questionnaire development process and the addition of new text items. Focus group questions are included in Appendix E.

Development questionnaire. Twenty-five new and 38 texting items from the TQ3 were combined to create a 63 item TQ4 questionnaire. To explore the utility of the new items,

106 participants aged between 18 and 40 years ($M = 29.18$, $SD = 5.69$ years) completed the online pilot questionnaire, hosted by Qualtrics. Gender did not significantly differ in the sample with similar numbers of female ($n = 54$) and male ($n = 52$) participants.

Materials

As with previous versions of the TQ, a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) was used to assess participant responses to the 63 items. Visual inspection of histograms revealed that the texting items offered response variability, confirming the utility of the statements. No evidence of multicollinearity was observed and all items were retained. The 63-item version of the TQ4 is presented in Appendix D.

Procedure

A brief explanatory statement outlined the purpose of the study and participant confidentiality (see Appendix E). Subjects received credit vouchers for participation, as previous outlined in Study 3. Anonymity was assured and participants could exit the survey without penalty. Participants volunteered their time and completed the survey in one sitting.

Results TQ4 Development

Exploratory factor analysis of the 63 TQ items identified potential domains within this tool. An initial solution confirmed the factorability of the dataset with a Kaiser-Meyer-Olkin value of .86. Based on eigenvalues, the results suggested a twelve-factor solution, whereas Cattell's scree plot identified two main factors. Several solutions using principal axis factoring and maximum likelihood with oblimin and varimax rotation were conducted. The solution with best fit explained 53.92 % of the variance with two factors and used a maximum likelihood extraction with oblimin rotation, obtained with seven iterations. The first factor reflected use of technology for engaging the romantic partner (Turning Towards). The second factor reflected the use of technology to engage in conflict or avoid connection with the

partner (Turning Away). Fourteen items presented split loadings over .30 and this may reflect a smaller than ideal sample of participants. For nine of the items, heavier loadings were observed on factor 1 and for five items heavier loadings were observed on factor 2. Although a heavier loading was observed on factor one (Turning Towards) for item TQ26_110, "I send a text to my partner to vent about an issue", a decision was made to assign the item to factor two (Turning Away). Venting is identified as an indicator of diffuse physiological arousal, referred to as flooding in the SRH theory (Gottman, 2014), consistent with a destructive rather than constructive relationship behaviour. Mean scores for the 37 item Turning Towards subscale ranged from 1 to 6 ($M = 4.14$, $SD = 1.02$). Mean scores for the 26 item Turning Away subscale ranged from 1 to 6 ($M = 3.57$, $SD = 1.06$). Table 31 presents factor loadings, communalities, percent of variance for maximum likelihood extraction with oblimin rotation. Cronbach's alpha for the Turning Towards scale was $\alpha = .98$ and $\alpha = .96$ for Turning Away, indicating high internal consistency and scale reliability. Exploratory factor analysis supported a two-factor solution for the TQ4. The refined TQ4 was used to examine the contribution of text messaging to relationship quality and to destructive conflict. Texting to foster connect and closeness (Turning Towards) and texting to manage conflict in destructive ways or distance from the relationship partner (Turning Away) were examined for contributions to relationship quality. Positive and negative relationship behaviours, as represented by the SRH positive and SRH negative subscales, were tested as predictors of relationship quality and destructive conflict. The contribution of texting and general relationship behaviours to relationship quality and destructive conflict were examined by attachment type. Study 4 examines the extent to which texting explains unique variance in relationship satisfaction and conflict, above the contribution of positive and negative relationship behaviours.

Table 31

Factor Loadings, Communalities, Percent of Variance and Cronbach Alpha values for the Technology Questionnaire (TQ4)

Items	Factor		Communalities	
	TT	TA		
TQ17	I send text messages to tell my partner that I appreciate them	.87	-.03	.73
TQ21	Texting helps me to feel close to my partner when we are apart	.84	-.08	.65
TQ10	Text messages from my partner make me feel loved and appreciated	.82	-.03	.60
TQ129	Texting with my partner is something that creates good feelings between us	.82	-.03	.65
TQ18	My partner is responsive to my text messages	.81	-.26	.55
TQ122	The texts that we exchange enhance our connection	.80	-.09	.58
TQ109	I send a text to feel close to my partner	.79	.08	.67
TQ25	I respond to my partners messages promptly	.78	-.08	.56
TQ127	My partner and I sometimes share a joke over text	.78	-.11	.54
TQ1	I text messages of love to my partner	.78	-.02	.61
TQ22	We (my partner and I) use text message to continue conversations	.74	.11	.63
TQ12	My partner send me romantic text messages	.74	.05	.58
TQ4	I text my partner to let them know what I am doing	.74	-.09	.49
TQ3	I text my partner to tell them that I am thinking of them	.74	-.04	.52
TQ114	My partner's texts to me show me that he/she supports my goals and ideals.	.72	-.03	.50
TQ107	I send a text to my partner when I am feeling lonely	.71	.20	.66
TQ113	My partner's responses to my texts show me that he/she is responsive to my needs	.71	.03	.52
TQ40	Text messages are a positive tool in our relationship	.69	.04	.50
TQ121	I have saved loving texts that my partner has sent me	.69	-.03	.46
TQ6	I text my partner to ask for their opinion	.67	.04	.48
TQ16	I say I love you via text message	.67	.01	.45

Items	Factor		Communalities	
	TT	TA		
TQ106	When my partner is too busy to take a call I will send a text to them	.66	.10	.51
TQ115	My partners texts show that he or she is on my side	.62	-.01	.39
TQ38	If I do save texts from my partner they tend to be messages of love and affection	.62	-.12	.34
TQ2	When very upset, I send long text messages to communicate how I am feeling	.62	.28	.61
TQ9	Sometimes when things are tense in our relationship I use texts to break the ice	.61	.35	.66
TQ11	I text my partner to tell them how attractive they are to me	.60	.28	.57
TQ31	I text my partner to apologise for something that I have said or done	.58	.37	.65
TQ26	I am sometimes surprised by my emotional response to a text I have received	.58	.38	.66
TQ110	I send a text to my partner to vent about an issue	.58	.30	.57
TQ105	I send a text when I want a simple answer not a long conversation	.57	.05	.35
TQ35	Sometimes I am surprised by my partners response to a text that I have sent	.53	.35	.55
TQ33	We have exchanged texts to discuss a problem in our relationship	.52	.44	.66
TQ103	I send a text instead of making a call because it can be easier	.51	.17	.36
TQ34	We have resolved disagreements effectively via text	.50	.49	.69
TQ108	I send a text to smooth things over after a fight	.47	.44	.59
TQ104	I use text messages to continue conversations with my partner	.46	.37	.49
TQ44	I text my partner to ask for their opinion	.44	.45	.55
TQ116	We (my partner and I) text each other more than we used to in our relationship	.40	.39	.45
TQ30	Text messages between us have led to arguments	-.06	.85	.69
TQ126	Text messages sent between us have made arguments worse	-.16	.81	.57
TQ8	Texting creates problems in my relationship	-.18	.80	.55
TQ20	Sometimes I intentionally ignore my partner's text messages	-.24	.78	.51
TQ120	I have saved angry hostile texts that my partner has sent me	-.24	.76	.48
TQ124	The texts we exchange create problems in our relationship	-.10	.76	.52

Item	Factor		Communalities	
	TT	TA		
TQ15	My partners reliance on their phone has created problems in our relationship	-.15	.76	.50
TQ111	I send a text to my partner to have the final word in an argument	-.03	.74	.54
TQ29	I have responded defensively to texts from my partner	.20	.73	.69
TQ27	We sometimes continue disagreements via text	.22	.70	.67
TQ24	I text my partner to communicate my annoyance with him or her	.23	.68	.65
TQ28	I have sent text messages to my partner that I have later regretted sending	.17	.68	.59
TQ112	If we are arguing, I will avoid my partner's text until I have cooled down	.13	.65	.50
TQ14	I sometimes check my partner's phone to see who he or she has been texting	-.01	.62	.38
TQ5	I have sent text messages that have hurt my partner's feelings	.09	.61	.43
TQ13	I sometimes text my partner to communicate my anger to him or her	.24	.60	.54
TQ19	Sometimes I have to send a second text to get my partner to respond to my text	.21	.57	.47
TQ118	Texting is a safer way to deal with negativity than fighting in person	.19	.54	.42
TQ39	I sometimes show my text messages from my partner to others (e.g., close friends)	.16	.53	.38
TQ7	The text messages I send to my partner are sometimes misinterpreted	.28	.52	.46
TQ117	We (my partner and I) text each other less than we used to early in our relationship	.11	.52	.33
TQ23	Sometimes my partners text reveal things about them that surprise me	.36	.50	.53
TQ32	Texting helps me to avoid saying hurtful things in the heat of the moment	.42	.50	.59
TQ119	Texting my partner helps me to avoid saying things that I would regret face to face	.37	.46	.48
Variance %		42.51	10.64	
Cronbach's Alpha		.98	.96	

Chapter 5: An Examination of Text Content by Attachment Type

Study 3 explored the associations between attachment orientation, texting, relationship quality, destructive conflict, and partner care and control. Text messaging explained variance in relationship quality and destructive conflict above the contribution of attachment anxiety and attachment avoidance. Turning Towards via text was associated with higher intimacy scores and lower destructive conflict scores, while Turning Away via text was related to an increase in destructive communication. Higher attachment anxiety was associated with greater use of text messaging to connect with the partner in both positive and negative ways. Texting processes appear to reflect hyperactivation and deactivation of the attachment system and mirror general communication patterns.

To extend this research, the refined TQ4 was tested as a predictor of relationship quality and destructive conflict in Study 4. Throughout this program of research, principles of Sound Relationship House model have guided the inclusion of items in the Technology Questionnaire. Items in the Turning Towards scale depict text messages as a tool of connection, fostering interpersonal closeness, trust, encouragement and support. Items in the Turning Away scale depict texts as a tool of disconnection, communicating criticism, defensiveness or disapproval, and creating distance between relationship partners.

To examine the extent to which there is an overlap between positive and negative relationship behaviours (as identified in the SRH positive and SRH negative scales) and positive and negative texting behaviours, the SRH subscales and TQ4 subscales were examined as predictors of relationship quality and destructive conflict by attachment type. It was anticipated that this examination would support an understanding of how individuals with different attachment orientations, send and respond to texts differentially. Further it was anticipated that the analyses would highlight the associations between texting and relationship quality and destructive conflict.

To evaluate the relevance of texting within the SRH framework, an alternate relationship quality was introduced in Study 4. The Locke Wallace Marital Adjustment Test (MAT) is a comprehensive self-report measure of relationship quality that has been utilised extensively to evaluate the SRH principles. An aim of Study 4 was to determine whether texting accounted for incremental variance in relationship quality and destructive conflict beyond that explained for by the behavioural principles in the SRH positive and SRH negative subscales.

A larger participant sample ($N = 664$) was sought in Study 4 to obtain attachment classifications that reflect the distribution of types in the general population, allowing the smallest cell to be sufficient for analysis. Sampling was noted as a limitation in Study 2 ($N = 402$) with the secure and fearful avoidant attachment types more prevalent than preoccupied and dismissing types in the general population and in this research.

Attachment categories, as used in Study 2, reflect the classification of participants by attachment type (i.e., secure, preoccupied, fearful avoidance and dismissing) utilising a median score cut off for continuous measures of attachment anxiety and attachment avoidance. While in the literature, interpretations of attachment type classifications are approached with caution (Fraley, 2012) and measurement issues have plagued adult attachment research in the last three decades (Scharfe, 2015), their use in Study 4 supports an examination of texting behaviours and relationship quality measures by attachment group (Wongpakaran & Wongpakaran, 2012). The use of attachment type permits transparent examinations of specific relationship behaviours across texting and relationship quality measures. It also permits an exploration of how texting practices differentially affect secure, preoccupied, fearful avoidant and dismissing adults. The use of typologies enhances the clinical utility of the research findings and is consistent with approaches reported elsewhere (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011).

From a clinical standpoint, the use of typologies supports the application of attachment research to enhance the quality of romantic interactions. If text messages prime attachment triggers that translate into relationship behaviours, examining these behaviours by type permits the conversion of research findings into therapeutic tools. Awareness that text motives and response patterns reflect a striving for attachment safety, facilitates understanding and cooperation between partners, rather than reactivity and defensiveness. As adults identify their own and their partner's attachment type, they are afforded insights into activation and deactivation patterns that drive behaviour (Siegel, 2011). With information and understanding adults have an opportunity to recognize and respond, rather than react, to familiar attachment cues in themselves and in their partner (Levine & Heller, 2012).

SRH theory (Gottman, 1999) identifies several predictors of relationship success that have been translated into relationship principles. First, in successful romantic relationships, attunement promotes contingent communication, intimacy is built in moments of connection, and friendship is cultivated by turning towards the partner physically and emotionally. Second, conflict is accepted as a normal process resulting from inevitable differences in perspective. Conflict can be managed effectively without engaging in destructive behaviours known to damage the strength of the couple's union. Third, the emotional climate of the relationship is important and protects the relationship from negativity. A strong positive to negative ratio of interactions (even during conflict discussions) is recognised as an essential feature of successful partnerships.

In SRH theory, *sentiment override* refers to the emotional climate of the romantic relationship. *Positive sentiment override* reflects a higher ratio of positive to negative exchanges whereas *negative sentiment override* reflects a higher ratio of negative to positive exchanges. In the literature, positive sentiment override has been associated with greater relationship satisfaction and intimacy and negative sentiment override has been associated

with greater destructive conflict (Gottman & Silver, 1999, Gottman, 2014, Gottman, 2015). In Study 4, Text Sentiment Override scores were computed by subtracting Turning Away from Turning Towards scores for each attachment type. Comparisons of Text Sentiment Override scores by attachment type test whether the emotional climate of text responses is associated with relationship quality, as is general sentiment override.

Prior to testing the SRH principles, differences between attachment types on measures of relationship quality and destructive conflict were examined. Relationship quality was measured using two relationship satisfaction measures (i.e., RAS, MAT) and one intimacy measure (i.e., MSIS). A test of SRH principles followed, with measures of texting, and positive and negative relationship behaviours used to predict overall relationship quality. Earlier studies in this program of research identify text exchanges as noteworthy and complex, significantly related to attachment anxiety, attachment avoidance, intimacy, conflict, partner care and partner control. While there is evidence to suggest that Turning Towards and Turning Away via text are related to relationship satisfaction, intimacy, destructive conflict, attachment avoidance and attachment anxiety, less is known about the circumstances under which partners turn towards and turn away from partners via text. A test of the associations between texting and relationship quality through the lens of SRH theory was an objective of Study 4. In examining a portion of the SRH model, the TQ4 subscales were used to predict the variance in relationship satisfaction and destructive conflict in a sample of committed adults.

Research Hypotheses Study 4

Hypothesis 1: Consistent with attachment theory, it was hypothesised that relationship satisfaction, intimacy and destructive conflict scores would differ as a function of attachment status. It was anticipated that participants with secure attachment would report higher intimacy and relationship satisfaction, and lower destructive conflict compared to

preoccupied, dismissing and fearful avoidant participants. It was anticipated that fearful avoidant adults would report the highest destructive conflict, lowest intimacy, and lowest relationship satisfaction scores of the sample, reflecting processes of hyperactivation and deactivation of the attachment system.

Hypothesis 2: Consistent with the principles of the SRH model, it was hypothesised that Turning Towards and Turning Away would account for statistically significant variance in relationship satisfaction and destructive conflict, above the contribution of the SRH subscales, when explored by attachment type. It was expected that Turning Towards would account for the largest amount of variance in relationship satisfaction for those with a preoccupied attachment stance, followed by secure, fearful avoidant and dismissing types, respectively. It was expected that Turning Away would be predictive of the largest variance in destructive conflict for fearful avoidant adults, followed by preoccupied, secure and dismissing adults.

Hypothesis 3: It was hypothesised Text Sentiment Override score would be related to relationship quality variables and destructive conflict. Text Sentiment Override scores were expected to be positively correlated with relationship satisfaction, intimacy and relationship quality and be inversely related to destructive conflict. Further, it was expected that Text Sentiment Override scores would differ by attachment type, with secure and preoccupied adults reporting significantly higher Text Sentiment Override scores, as compared with fearful avoidant and dismissing adults.

Method Study 4

Participants

The sample consisted of 355 female participants (53.5%), and 309 male participants (46.5%) between the ages of 18-40 years ($M = 31.11$ years; $SD = 5.42$). Participants stated their country of residence as the USA (57.2%) or Australia (42.8%). Sixteen percent of

subjects reported that they were in a committed relationship and living separately, 18% reported that they were cohabitating but unmarried, and 66% reported that they were married and living together. Relationship length ranged from three months to 20 years, with a mean relationship length of 8.61 years ($SD = 5.37$ years).

Materials

Participants completed instruments measuring attachment orientation, technology use, intimacy, relationship satisfaction, relationship quality and destructive conflict. The online survey contained a measure of technology use modified specifically for Study 4, the Technology Questionnaire (TQ4), as well as the Experiences in Close Relationships Scale - Revised (ECR-R), Miller Social Intimacy Scale (MSIS), Relationship Assessment Scale (RAS), Relationship Distress Scale (RDS), and demographic questions. Psychometric properties for these instruments are described in the Materials sections for Studies 1, 2 and 3. A new measure of relationship quality and measures of positive and negative partner behaviours were added in Study 4 to test a portion of SRH theory; the Locke Wallace Assessment (MAT) and the SRH scales.

Demographic questionnaire. The demographic questionnaire gathered information about the participant's age, gender, ethnicity, relationship status, duration, and cohabitation status (Appendix A). The demographics section was used to confirm that participants met the inclusion criteria of the study.

Technology use. The Technology Questionnaire (TQ4) explored patterns of technology use in intimate relationships with a focus on text messaging. The TQ4 measure-integrated new items developed from the Technology Questionnaire in Studies 1, 2 and 3 (Appendix D).

Technology questionnaire. Exploratory factor analysis of the 63 TQ4 items was performed with a larger sample in Study 4 to identify potential domains within this tool. An

initial solution confirmed the factorability of the dataset with a Kaiser-Meyer-Olkin value of .98. Based on eigenvalues, the results suggested a 5-factor solution, whereas Cattell's scree plot identified two main factors. Several solutions using principal axis factoring and maximum likelihood with oblimin and varimax rotation were conducted. The solution with best fit explained 60.24% of the variance with two factors and used a maximum likelihood extraction with oblimin rotation, obtained with four iterations. There were no split loadings over .30.

The first factor for TQ4 reflected the use of technology for engaging in conflict or avoiding connection with the romantic partner (Turning Away). The second factor reflected the use engaging positively with the partner (Turning Towards). Although heavier loadings were observed on factor 1 for items TQ4_7 and TQ3_31, a decision to assign the two items to factor 2 was made as both items represent repair attempts and efforts to connect with the partner using technology. Mean scores for the 33 item Turning Towards subscale ranged from 1 to 6 ($M = 3.90$, $SD = 0.88$). Mean scores for the 30 item Turning Away subscale ranged from 1 to 6 ($M = 3.22$, $SD = 3.90$). Table 32 presents factor loadings, communalities, and percent of variance for maximum likelihood extraction with oblimin rotation. Cronbach's alpha for the Turning Towards scale was $\alpha = .96$ and $\alpha = .98$ for Turning Away, indicating high internal consistency and scale reliability. Note that in this exploratory factor analysis factor 1 was Turning Away, factor 2 was Turning Towards. In previous exploratory factor analyses, factor 1 was Turning Towards and factor 2 was Turning Away.

In SRH theory, sentiment override refers to the emotional climate of the romantic relationship with positive sentiment override reflecting a higher ratio of positive to negative exchanges and negative sentiment override reflecting a higher ratio of negative to positive exchanges (Gottman & Silver, 1999; Gottman, 2014, Gottman, 2015). Text Sentiment Override was operationalized as the balance of Turning Towards minus Turning Away

scores. Text Sentiment Override was computed for each attachment type by subtracting Turning Away from Turning Towards scores.

Table 32

Factor Loadings, Communalities, Percentage of Variance and Cronbach's Alpha for the Technology Questionnaire (TQ4)

Items	Factor		
	TA	TT	Communalities
TQ3_30	.94	.09	.82
TQ4_23	.93	.09	.78
TQ4_22	.92	.09	.78
TQ3_20	.90	.14	.71
TQ4_10	.89	.03	.77
TQ3_27	.89	.01	.78
TQ3_29	.88	.01	.76
TQ3_15	.88	.17	.66
TQ4_19	.87	.10	.69
TQ3_8	.87	.12	.68
TQ3_24	.87	.01	.74
TQ3_28	.87	.01	.74
TQ3_33	.84	.04	.75
TQ3_13	.84	.02	.73
TQ3_5	.84	.03	.72
TQ3_35	.82	.11	.76
TQ4_17	.81	.04	.69
TQ3_14	.81	.06	.61
TQ3_7	.80	.01	.64
TQ3_19	.78	.03	.59
TQ4_3	.78	.07	.66

Items	Factor			
	TA	TT	Communalities	
TQ4_18	Texting my partner helps me to avoid saying things that I would regret if we were talking face to face	.78	.08	.67
TQ3_37	I sometimes show text messages from my partner to others (close friends)	.77	.03	.62
TQ3_32	Texting helps me avoid saying hurtful things in the heat of the moment	.77	.14	.70
TQ3_34	We have resolved disagreements effectively via text	.76	.15	.70
TQ4_1	I have spent time ruminating over the content of a text my partner has sent to me	.75	.13	.67
TQ3_9	Sometimes when things are tense in the relationship I use text messages to break the ice	.75	.15	.68
TQ3_23	Sometimes my partners texts reveal things about them that surprise me	.72	.18	.67
TQ4_11	If we are arguing I will avoid my partners texts until I have cooled down	.71	.08	.56
TQ4_7	I send a text to smooth things over after a fight	.68	.24	.67
TQ3_26	Sometimes I am surprised by my emotional response to a text that I have received	.67	.24	.65
TQ3_31	I sometimes text my partner to apologise for something I have said or done	.62	.27	.65
TQ4_16	We text each other less than we used to early in our relationship	.53	.05	.27
TQ3_2	When very upset, I send long text messages to communicate how I am feeling	.53	.29	.50
TQ4_9	I text my partner to vent about an issue	.46	.37	.50
TQ4_14	My partners texts to me show me that he or she is on my side	.08	.84	.66
TQ4_13	My partner texts me to show me that he or she supports my goals and ideals	.09	.84	.64
TQ4_25	Texting with my partner is something that creates good feelings between us	.08	.83	.63
TQ4_5	When my partner is too busy to take a call, I will send a text to let them know I am thinking about them	.05	.80	.59
TQ3_17	I send text messages to tell my partner that I appreciate them	.04	.79	.65
TQ4_12	My partners responses to my texts show me that he or she is responsive to my needs	.04	.78	.58
TQ3_21	Texting helps me to feel closer to my partner when we are apart	.05	.78	.58
TQ4_8	I text to feel close to my partner	.08	.77	.66
TQ3_16	I say I love you via text	.08	.75	.52

Items	Factor		
	TA	TT	Communalities
TQ3_38	.01	.74	.54
TQ3_10	.14	.74	.47
TQ4_21	.08	.73	.60
TQ3_1	.10	.71	.57
TQ4_24	.01	.70	.50
TQ3_12	.13	.79	.59
TQ3_3	.16	.70	.61
TQ3_18	.23	.69	.39
TQ3_11	.18	.68	.61
TQ3_22	.15	.66	.55
TQ4_6	.17	.65	.56
TQ3_6	.14	.59	.44
TQ3_4	.14	.59	.44
TQ4_20	.20	.57	.46
TQ3_36	.12	.56	.39
TQ4_15	.27	.55	.51
TQ3_25	.07	.53	.25
TQ4_21	.16	.36	.60
TQ4_4	.22	.31	.20
Variance %	40.41	13.83	
Cronbach's Alpha	.98	.96	

N = 664

Text frequency. As in Study 3, participants reported the frequency of texts sent to the romantic partner. A continuous measure of text frequency was used to record frequency data for the number of text messages sent each day.

Relationship quality. To supplement measures of relationship satisfaction and intimacy in Study 3 and to test SRH theory with Turning Towards and Turning Away, the Locke-Wallace Relationship Adjustment Test and SRH scales were added in Study 4.

Locke-Wallace Relationship Marital Adjustment Test. The Locke-Wallace Marital Adjustment Test (MAT; Locke & Wallace, 1959) is a measure of marital satisfaction that has been used to differentiate well-adjusted couples from distressed couples. The 15 items are answered on a variety of response scales. Participants estimate the degree of overall happiness in their romantic relationship using a six-point Likert scale and report the level of agreement or disagreement with their partner on financial, relationship and social issues. Participation in shared activities and approaches to conflict are explored in the questionnaire items (Appendix N). Scores on the 15 items provide a total score for relationship quality, with scores above 85 representing higher relationship quality. An evaluation of the psychometric properties of the MAT in a 2013 study of caregivers supported the MAT as a multidimensional, reliable, and valid measure of marital adjustment (Jiang, Terhorst, Donovan, Weimer, Choi, Schulz, Given, & Sherwood, 2013).

Sound Relationship House scales. The SRH scales (Gottman, 1999) consist of subscales representing 16 theoretical constructs. While the scales were designed to provide profiles of couples' relationships rather than overall global satisfaction scores, the scales represent predictors of relationship satisfaction and distress in romantic partnerships. Variables assembled in the SRH scales were obtained from oral history interviews, measurements of autonomic physiology during conflict, and affect coding data. The SRH scales require participants to provide true or false responses to a series of five statements for

each relationship principle and a subscale score is calculated for each principle. The SRH scales also include a questionnaire on the quality of sex, romance and passion in the relationship. This subscale was not included in the analysis in Study 4.

In Study 4, positive SRH behaviours were represented by scores on love maps, fondness, turning towards, shared influence, repair, and compromise. Negative SRH behaviours were represented by scores on harsh start up, four horsemen, gridlock, emotional distancing, negative sentiment override, and flooding. The shared meaning scales (shared meaning rituals, roles, goals, and symbols) were not included in the analyses as the scales represent relationship values, rather than relationship behaviours that may align with text processes. Reported Cronbach's alpha reliabilities for the SRH scales range from $\alpha = .67$ to $\alpha = .93$ (Gottman, 1999). In Study 4, Cronbach's alpha for the SRH positive and for the SRH negative were $\alpha = .87$ and $\alpha = .92$, respectively. The SRH scales are presented in Appendix O.

Procedure

Participants were recruited from Qualtrics.com, and were offered credit vouchers in exchange for research participation. The database recruits participants based on specified selection criteria as outlined in the Study 3. The present study required participants to (a) be in a committed romantic relationship and living separately, in a committed relationship and living together or married, (b) own and use a mobile phone, (c) be between the ages of 18 and 40, and (d) state the native language as English. A total of 664 participants were recruited, exceeding the minimum sample size for power as calculated by the G*Power statistical program (Faul et al., 2007). Participants registered their interest to access to the online questionnaire and were advised to allow adequate time to complete the survey in one sitting. Pilot testing confirmed an anticipated completion time for the questionnaires of 45 minutes. Onscreen instructions were provided for each section and upon completion, subjects were thanked for their participation. Participants were assured of the anonymity of their responses

and could exit the survey at any time without penalty (see Appendix E). Five attention filters were included to screen for randomized or careless responding. A speed check, measured as one-third the median survey completion time (established as 45 minutes in a survey trial), excluded participants completing the questionnaire in less than 13 minutes. Although these measures were included to support data quality, no participants were excluded.

Results Study 4

Data Screening Study 4

Variables were examined for accuracy of input, out-of-range values, reasonable means and standard deviations, missing values, and normality. The sample included three relationship status groups with varying numbers of participants in each group. Group frequencies were significantly different for committed non-cohabitating ($n = 104$), unmarried cohabitating ($n = 119$) and married participants, ($n = 441$), $\chi^2(2, N = 664) = 327.53, p < .001$. Gender did not differ significantly in the sample with similar numbers of female ($n = 355$) and male participants, ($n = 309$), $\chi^2(1, N = 664) = 3.19, p = .074$. All participants represented couples in committed romantic relationships, and as such, relationship length, rather than status, was included as a covariate.

Frequency distributions with descriptive statistics and histograms were conducted for all variables. Normality, skewness and kurtosis were checked via visual inspection of histograms. Histograms revealed that relationship satisfaction scores on the MAT and intimacy scores on the MSIS were positively skewed, and RDS scores negatively skewed, indicating a generally high level of relationship satisfaction for the sample. The relationship satisfaction, intimacy and destructive conflict variables were square root transformed to reduce skewness and analyses were run on the transformed and untransformed data. As the substantive findings between the tests did not change, and to aid interpretation, the original data were reported. For the remaining variables, the assumption of normality was met.

Univariate outliers were checked using box and whisker plots and no univariate or multivariate outliers were detected. Statistical analyses were considered reliable at the $p < .05$ level using SPSS software version 22.

Assumptions were addressed before conducting the hierarchical regressions in the main analyses. Durban-Watson values showed that the data met the assumption of independent errors. To investigate the distribution of errors in the dataset, histograms of standardised residuals indicated normally distributed errors, as did the P-P plots of standardised residuals. An inspection of scatterplots of standardised predicted values indicated that the data met the assumption of linearity showing linear relationships between the variables of interest. Multicollinearity and singularity were not violated.

Main Analyses Study 4

Means and standard deviations for texting frequency, Turning Towards, Turning Away, relationship satisfaction (RAS, MAT), intimacy, and destructive conflict are presented in Table 33. Pearson's r correlations were computed to assess the relationship between the variables of interest (see Table 34).

Relationship satisfaction. Relationship satisfaction (RAS and MAT) was associated with attachment avoidance, attachment anxiety, intimacy, Turning Towards, SRH scales, destructive conflict, and age. Higher relationship satisfaction was associated with higher intimacy, greater use of Turning Towards via text, and the presence of positive SRH behaviours. Higher attachment anxiety and higher attachment avoidance, greater destructive conflict, greater Turning Away, and the presence of negative SRH behaviours were associated with lower relationship satisfaction. Younger participants reported significantly higher relationship satisfaction scores than did older participants. Relationship length was not associated with relationship satisfaction scores.

Intimacy. Intimacy correlated with relationship satisfaction, attachment anxiety, attachment avoidance, Turning Towards, Turning Away, SRH scales, and age. Higher intimacy scores were associated with lower attachment anxiety and attachment avoidance scores, lower destructive conflict scores, fewer negative SRH behaviours, lower Turning Away and lower participant age. Higher intimacy scores were associated with the presence of positive SRH behaviours, greater relationship satisfaction, and higher Turning Towards.

Destructive conflict. Destructive conflict was associated with SRH scales, relationship satisfaction, intimacy, attachment anxiety and attachment avoidance, Turning Away, relationship length, and age. Higher destructive conflict was associated with the presence of negative SRH behaviours, higher attachment anxiety and attachment avoidance, greater use of texts to manage conflict, higher text frequencies, longer relationship length and greater participant age. More positive SRH behaviours and greater Turning Towards via text were associated with lower destructive conflict.

Texting. Text frequency was associated with relationship length, participant age, relationship satisfaction, Turning Towards, and Turning Away. Younger participants sent more texts to the romantic partner each day, as did participants higher in attachment anxiety and attachment avoidance. Higher text frequencies were associated with greater use of Turning Towards and Turning Away, greater attachment anxiety and attachment avoidance, increased destructive conflict, and more negative and fewer positive SRH behaviours.

Attachment orientation. Higher attachment anxiety and attachment avoidance scores were associated with lower relationship satisfaction and intimacy scores, fewer positive relationship behaviours and more negative relationship behaviours. Higher attachment anxiety was associated with increased Turning Towards the partner, increased Turning Away from the romantic partner via text and higher text frequencies. These associations suggest the use of texts to ease attachment anxieties, to bid for partner reassurance and manage conflict in

less direct ways for anxiously attached participants. Higher attachment avoidance was associated with lower Turning Towards and higher Turning Away from the romantic partner via text, as well as higher text frequency. It is possible that texting represents a safer, more indirect communication channel, especially for the management of conflict that appeals to individuals higher in attachment avoidance.

Table 33

Descriptive Statistics for Age, Relationship Length, Relationship Quality Variables, Destructive Conflict, Attachment Anxiety, Attachment Avoidance, and Texting

	<i>Minimum</i>	<i>Maximum</i>	<i>M</i>	<i>SD</i>	<i>Median</i>
Age	18	40	31.15	5.43	32.00
RL	0	20	8.61	5.37	8.20
RAS	7	35	28.26	5.17	28.00
MSIS	35	170	132.02	24.84	136.00
RDS	8	24	13.23	4.44	12.00
MAT	7	145	107.75	23.59	111.00
TP	0	150	28.60	32.86	15.00
TT4 mean	1	6	3.22	1.34	3.06
TA4 mean	1	6	3.90	0.88	4.03
AA	1	6	3.28	1.58	3.17
AV	1	6	2.78	1.05	3.00
SRHP	0	600	486.90	116.59	520.00
SRHN	0	600	193.49	180.87	140.00
TSO	-1.91	3.48	0.68	1.07	0.55

Note. $N = 664$. RL = relationship length, RAS = relationship satisfaction, MSIS = intimacy, RDS = destructive conflict, MAT = relationship satisfaction, TP = number of texts to romantic partner, TT4 mean = average turning towards by text, TA4 mean = average turning, away by text, AA = attachment anxiety, AV = attachment avoidance, SRHP = SRH positive, SRHN = SRH negative. TSO = text sentiment override.

Table 34

Correlations between Criterion and Predictor Variables

	RL	Age	AA	AV	RAS	MAT	MSIS	RDS	SRHP	SRHN	TP	TT4	TA4
RL													
Age	.58***												
AA	.01	.04											
AV	.05	.01	.58***										
RAS	-.07	-.01*	-.56***	-.69***									
MAT	-.01	-.01	-.47***	-.63***	.80***								
MSIS	-.03	-.03	-.32***	-.67***	.62***	.63***							
RDS	.16***	.06	.65***	.50***	-.62***	-.59***	-.37***						
SRHP	-.09*	-.01	-.36**	-.40***	.52***	.58***	.40***	-.53***					
SRHN	.09*	.06	.57***	.45***	-.58**	-.57***	-.33***	.73***	-.39***				
TP	-.05	-.10**	.38***	.16***	-.07	-.07	-.04	.27***	.13**	.22***			
TT4	.02	-.06	.24***	-.11**	.24***	.26***	.30***	.08*	.12**	.04	.39***		
TA4	.12**	.01	.69***	.44***	-.36***	-.26***	-.21***	.52***	-.26***	.43***	.47***	.60***	
TSO	-.14***	-.07	-.67***	-.64***	.65***	.54***	.50***	-.59***	.42***	-.50***	.27***	.07	-.76***

Note. $N = 664$. RL = relationship length, AA = attachment anxiety, AV = attachment avoidance, RAS = relationship satisfaction, MAT = relationship satisfaction, MSIS = intimacy, RDS = destructive conflict, SRHP = SRH positive, SRHN = SRH negative, TP = number of daily texts to partner, TT4 = turning towards (mean), TA4 = turning away (mean), TSO = text sentiment override.

Examination of Relationship Quality and Texting by Attachment Type

A multivariate analysis of variance was performed to investigate the characteristics of attachment orientations. The dependent variables were relationship satisfaction, intimacy, and destructive conflict. The independent variable was attachment type as measured by the Experiences in Close Relationships Scale-Revised.

Attachment type classifications. Attachment type was computed from the attachment anxiety and attachment avoidance subscales of the ECR-R using a median cut off point strategy (Fraley, 2012). Consistent with Drouin and Landgraff (2012) and Weisskirch and Delevi (2011), participant categories were based on median scores for the sample on the two attachment dimensions, thus creating four attachment types - secure, preoccupied, fearful avoidant, and dismissing. The median values for attachment anxiety and attachment avoidance were 3.17 and 3.00, respectively. Individuals scoring low on both attachment dimensions (attachment anxiety and attachment avoidance) were categorised as secure ($n = 267$), whereas those scoring high on both dimensions were categorised as fearful avoidant ($n = 250$). Participants scoring high on attachment anxiety and low on attachment avoidance were classified as preoccupied ($n = 79$), and those who scored low on attachment anxiety and high on attachment avoidance were categorised as dismissing ($n = 68$).

Chi square analysis revealed that the assumption of equal cell size was violated for attachment type. As the weight of groups were significantly different from each other, χ^2 , (3, $N = 664$) = 207.41, $p < .001$, results were interpreted using the Pillai's Trace criterion and caution is noted for interpretation. In general population samples, 55% of individuals classified as secure, 25% as avoidant (dismissing or fearful) and 20% as anxious (preoccupied or fearful), suggesting a greater representation of attachment avoidance in the current sample.

MANOVA on attachment type. Analyses revealed a significant effect of attachment type on the combined variables, $F(18, 1971) = 31.50, p < .001, \eta^2 = .22, \text{power} = 1$, see Table 35. Univariate analyses showed that participants differed on intimacy and destructive conflict (relationship satisfaction), based on their attachment type. Post Hoc Tukey tests were used to identify where the meaningful significant differences presented between the groups ($p < .05$). Participants identified as secure, obtained significantly higher intimacy and relationship quality scores than did preoccupied (MDiff = 11.56, $SE = 2.66, p < .001$; MDiff = 16.95, $SE = 2.50, p < .001$), fearful avoidant (MDiff = 28.09, $SE = 1.83, p < .001$; MDiff = 29.50, $SE = 1.71, p < .001$), and dismissing subjects (MDiff = 32.73, $SE = 2.82, p < .001$; MDiff = 24.28, $SE = 2.65, p < .001$), $F(3, 660) = 96.95, p < .001, \eta^2 = .31, \text{power} = 1$ and $F(3, 660) = 104.18, p < .001, \eta^2 = .32, \text{power} = 1$, respectively.

On the RAS, secure participants reported the highest relationship satisfaction scores, followed by preoccupied (MDiff = 3.47, $SE = 0.51, p < .001$), dismissing (MDiff = 5.69, $SE = 0.54, p < .001$), and fearful avoidant types (MDiff = 7.37, $SE = 0.35, p < .001$), $F(3, 660) = 154.03, p < .001, \eta^2 = .41, \text{power} = 1$. Univariate analyses showed significant differences in destructive conflict, text frequency and text sentiment override scores. For destructive conflict, participants with a secure attachment style reported the lowest destructive conflict scores, compared to the dismissive (MDiff = -2.20, $SE = 0.48, p < .001$) and preoccupied types (MDiff = -3.18, $SE = 0.46, p < .001$). Fearful avoidant types reported the highest destructive conflict scores of the four attachment types, significantly higher than the preoccupied (MDiff = 2.80, $SE = .46, p < .001$), dismissing (MDiff = 3.79, $SE = 0.49, p < .001$) and secure types (MDiff = 5.99, $SE = 0.31, p < .001$), $F(3, 660) = 122.27, p < .001, \eta^2 = .36, \text{power} = 1$. Fearful avoidant adults reported higher text frequencies than preoccupied (MDiff = 10.78, $SE = 4.02, p = .038$), dismissing (MDiff = 24.21, $SE = 4.27, p < .001$) and

securely attached participants ($MDiff = 21.99, SE = 2.75, p < .001, F(3, 660) = 24.87, p < .001, \eta^2 = .10, power = 1$).

With respect to Text Sentiment Override, secure adults reported significantly higher and more positive sentiment override scores than preoccupied ($MDiff = 0.80, SE = 0.10, p < .001$), dismissing ($MDiff = 0.99, SE = 0.11, p < .001$) and fearful avoidant adults ($MDiff = 1.66, SE = 0.07, p < .001, F(3, 660) = 194.12, p < .001, \eta^2 = .47, power = 1$). Fearful avoidant subjects reported the lowest Text Sentiment Override scores and were the only attachment type to report negative Text Sentiment Override, reflecting a higher ratio of negative to positive exchanges via text. Hypothesis 1 was supported, with secure participants reporting the highest relationship satisfaction and lowest destructive conflict, followed by preoccupied, dismissing and fearful avoidant types.

Table 35

Mean Scores and Standard Deviations for Intimacy, Relationship Satisfaction, Destructive Conflict, Text Frequency, and Text Sentiment Override Scores by Attachment Type

Dependent variables	Attachment type	<i>M</i>	<i>SD</i>
Relationship Satisfaction (RAS)	Secure (<i>n</i> = 267)	32.03 ^a	3.30
	Preoccupied (<i>n</i> = 79)	28.56 ^b	5.21
	Fearful Avoidant (<i>n</i> = 250)	24.66 ^d	3.78
	Dismissing (<i>n</i> = 68)	26.34 ^c	5.28
Intimacy (MSIS)	Secure	147.32 ^a	18.80
	Preoccupied	135.76 ^b	18.55
	Fearful Avoidant	119.23 ^c	21.79
	Dismissing	114.59 ^c	25.90
Relationship Satisfaction (MAT)	Secure	123.36 ^a	14.68
	Preoccupied	106.42 ^b	21.43
	Fearful Avoidant	93.86 ^c	20.93
	Dismissing	99.07 ^c	26.85
Destructive Conflict (RDS)	Secure	10.38 ^c	2.44
	Preoccupied	13.56 ^b	4.08
	Fearful Avoidant	16.36 ^a	4.21
	Dismissing	12.57 ^b	4.04
Texts (sent to partner)	Secure	19.21 ^c	25.09
	Preoccupied	30.43 ^b	35.41
	Fearful Avoidant	41.21 ^a	36.70
	Dismissing	17.00 ^c	25.19
Text Sentiment Override (TSO)	Secure	1.50 ^a	0.87
	Preoccupied	0.70 ^b	0.94
	Fearful Avoidant	-0.16 ^c	0.60
	Dismissing	0.52 ^b	0.85

Note: *N* = 402. Annotations ^{a, b} and ^c display the statistically significant difference in group means on the variables of interest.

Relationship Quality by Attachment Type

Regression on relationship quality. Four hierarchical multiple regressions were performed to examine the unique contribution of texting on relationship quality, above the contributions of the SRH scales by relationship type. The order of entry of predictor variables was determined on research precedents and in consideration of the research hypotheses (Weisskirch & Delevi, 2011; Drouin & Landgraff, 2012) as established in Chapter 1. In each regression, age and relationship length were entered at Step 1. At Step 2, the composite of positive and negative SRH subscales were entered as predictors. In the literature, scores on these measures have been shown to predict relationship satisfaction and relationship distress in committed romantic couples. At Step 3, Turning Towards and Turning Away were entered as text messaging was the variable of most interest.

Secure type. Participants with a secure attachment classification, characterised by low attachment anxiety and low attachment avoidance were included in the first regression on relationship satisfaction. At Step 1, the model was not statistically significant, $F(2, 264) = 2.77, p = .065$. Gender and relationship length did not account for variance in relationship satisfaction on the MAT (see Table 36). At Step 2, the model was statistically significant, $F(4, 262) = 16.80, p < .001$, with the positive and negative SRH scales accounting for 19% of the variance in relationship satisfaction scores, $F\Delta(2, 262) = 30.23, p < .001$. Positive and negative SRH behaviours were predictors of relationship satisfaction at this step. Positive relationships behaviours including stronger love maps, greater expressions of fondness and admiration, greater turning towards behaviours and greater acceptance of partner influence were associated with higher relationship satisfaction scores. Greater negative relationship behaviours including destructive communication tactics (e.g., Four Horsemen, harsh start-ups, flooding, and greater emotional disengagement) were associated with lower relationship satisfaction scores. At Step 3, the model remained statistically significant, $F(6, 260) = 16.13,$

$p < .001$. Turning Towards and Turning Away from the romantic partner via text were both significant predictors and accounted for an additional 6% of the variance in relationship satisfaction, $F\Delta(2, 260) = 11.97, p < .001$. SRH positive and SRH negative subscales remained significant at this step. Greater use of texts to turn towards the partner was associated with higher relationship satisfaction, while the greater use of texts to turn away was associated with lower relationship satisfaction for those with a secure attachment stance. A comparison of standardised beta weights revealed that Turning Towards the partner via text was a stronger predictor of relationship satisfaction, than Turning Away at this step. Texting behaviours were significant predictors of intimacy, above the contribution of the predictors of relationship satisfaction entered in previous steps.

Table 36

Hierarchical Regression Analyses for Relationship Quality for Secure Type as a function of Age, Relationship Length, SRH Scales, Turning Towards, and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.14	.01				
Constant				133.95	5.16	[123.81 – 144.08]
Age			-.13	-.32	.19	[-.69 - .05]
Relationship length			-.02	-.06	.20	[-.46 - .33]
Step 2	.45***	.19***				
Constant				112.29***	9.65	[93.29 – 131.28]
SRH positive			.19	.05**	.02	[.02 - .07]
SRH negative			-.30	-.04***	.01	[-.06 - -.03]
Step 3	.52***	.25***				
Constant				102.50***	9.87	[83.05 – 121.93]
TT4			.32	5.66***	1.16	[3.38 – 7.94]
TA4			-.19	-2.97**	1.07	[-5.07 - -.87]

Note. ($n = 267$). SRH positive = sound relationship house scales positive, SRH negative = sound relationship house scales negative, T4 = turning towards via text, TA4 = turning away via text.

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

Preoccupied type. Participants with a preoccupied attachment classification, characterised by low attachment avoidance and high attachment anxiety were included in the second regression. At Step 1, the model was not statistically significant, $F(2, 76) = 0.67, p = .515$. Gender and relationship length did not account for variance in relationship satisfaction on the MAT for the preoccupied type (see Table 37). At Step 2, the model was statistically significant, $F(4, 74) = 13.65, p < .001$, with the positive and negative SRH scales accounting for over 40% of the variance in relationship satisfaction scores, $F\Delta(2, 74) = 26.18, p < .001$. Positive and negative SRH behaviours were predictors of relationship satisfaction at this step. Higher levels of positive relationship behaviours were associated with higher relationship satisfaction scores, whereas higher reports of destructive communication were associated with lower relationship satisfaction scores. As for secure types, negative relationship behaviours were stronger predictors of relationship satisfaction than were positive behaviours. At Step 3, the model remained statistically significant, $F(6, 72) = 14.04, p < .001$. Turning Towards and Turning Away from the romantic partner via text accounted for an additional 12% of the variance in relationship satisfaction, $F\Delta(2, 72) = 8.96, p < .001$ which was significant. While Turning Towards and Turning Away were significant contributors to the variance in relationship quality at Step 3, the SRH positive subscale was not. The standardised beta value for SRH positive changed from .283 to -.143 from Step 2 to Step 3, providing evidence for mediation. Turning Towards, but not Turning Away, was a statistically significant predictor of relationship satisfaction. For adults classified as preoccupied, greater texting to express care, concern and affection was associated with higher relationship satisfaction scores.

Table 37

Hierarchical Regression Analyses for Relationship Quality for Preoccupied Type as a function of Age, Relationship Length, SRH Scales, Turning Towards and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.13	.02				
Constant				119.14	15.93	[87.41 – 150.86]
Age			-.14	-.56	.58	[-1.72 - .60]
Relationship length			-.15	.61	.56	[-.51 – 1.72]
Step 2	.65***	.41***				
Constant				88.09***	17.24	[53.73 – 122.45]
SRH positive			.28	.06**	.02	[.02 - .10]
SRH negative			-.46	-.05***	.01	[-.08 - -.03]
Step 3	.73***	.12***				
Constant				72.22***	16.45	[39.43 – 105.01]
TT4			.46	10.80***	2.76	[5.31 – 16.30]
TA4			-.20	-3.48	2.24	[-7.94 - .98]

Note. ($n = 79$). SRH positive = sound relationship house scales positive, SRH negative = sound relationship house scales negative, TT4 = turning towards via text, TA4 = turning away via text.

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

Fearful avoidant type. Participants with a fearful avoidant classification, characterised by high attachment anxiety and high attachment avoidance were included in the third regression. At Step 1, the model was statistically significant, $F(2, 247) = 4.350, p = .014$. Gender and relationship accounted for 3% of the variance in relationship satisfaction for the fearful avoidant type (see Table 38). Relationship length, but not age, was a significantly predictor of relationship satisfaction; longer relationships were characterised by higher satisfaction. At Step 2, the model was statistically significant, $F(4, 245) = 27.73, p < .001$, with the positive and negative SRH scales accounting for approximately 28% of the variance in relationship satisfaction scores, $F\Delta(2, 245) = 49.41, p < .001$. More positive relationship behaviours were associated with higher relationship satisfaction scores and more destructive conflict was associated with lower relationship satisfaction scores. Positive relationship behaviours were stronger predictors of relationship satisfaction than were negative behaviours for subjects with a fearful avoidant attachment stance. At Step 3, the model remained statistically significant, $F(6, 243) = 37.08, p < .001$. Turning Towards and Turning Away from the romantic partner via text accounted for an additional 17% of the variance in relationship satisfaction, $F\Delta(2, 243) = 38.70, p < .001$, which was significant. Turning Towards was a statistically significant predictor of unique variance in relationship satisfaction. Turning Away was not significant. SRH positive and SRH negative subscales continued to be significant. For participants with a fearful avoidant attachment stance, sending texts to express care, concern and affection was associated with higher relationship satisfaction scores.

Table 38

Hierarchical Regression Analyses for Relationship Quality for Fearful Avoidant Type as a function of Age, Relationship Length, SRH Scales, Turning Towards, and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.18*	.03*				
Constant				81.62*	8.63	[64.61 – 98.62]
Age			-.05	.21	.31	[-.41 - .83]
Relationship length			.15	.61*	.30	[.10 – 1.20]
Step 2	.56***	.28***				
Constant				68.93***	8.07	[53.04 – 84.83]
SRH positive			.43	.07***	.01	[.05 - .08]
SRH negative			-.30	-.04***	.01	[-.05 - -.02]
Step 3	.69***	.17***				
Constant				29.27***	8.38	[12.78 – 45.77]
TT4			.55	14.15***	2.25	[9.71 – 18.58]
TA4			-.17	-3.23	1.68	[-6.54 - .08]

Note. ($n = 250$). SRH positive = sound relationship house scales positive, SRH negative = sound relationship house scales negative, TT4 = turning towards via text, TA4 = turning away via text.

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

Dismissing type. Participants with a dismissing attachment classification, characterised by low attachment anxiety and high attachment avoidance were included in the fourth regression. At Step 1, the model was not statistically significant, $F(2, 65) = 2.438, p = .095$. (see Table 39). At Step 2, the model was statistically significant, $F(4, 63) = 26.85, p < .001$, with the positive and negative SRH scales accounting for over 56% of the variance in relationship satisfaction scores, $F\Delta(2, 63) = 47.76, p < .001$. More positive relationship behaviours were associated with higher relationship satisfaction scores, whereas more negative relationship behaviours were associated with lower relationship satisfaction scores. A comparison of standardised beta weights showed that positive relationship behaviours were stronger predictors of relationship satisfaction than were negative behaviours. At Step 3, the model was statistically significant, $F(6, 61) = 18.54, p < .001$, but the unique variance accounted for by Turning Towards and Turning Away via text was not statistically significant, $F\Delta(2, 61) = 1.34, p = .269$. SRH positive and SRH negative subscales remained significant at this step. For those with a dismissing attachment stance, the use of text messaging did not contribute to incremental variance in relationship satisfaction scores above the contribution of positive and negative relationship behaviours.

Table 39

Hierarchical Regression Analyses for Relationship Quality for Dismissing Type as a function of Age, Relationship Length, SRH Scales, Turning Towards and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.26	.07				
Constant				141.37	21.20	[99.03 – 183.71]
Age			-.29	-1.42	.81	[-3.04 - .19]
Relationship length			.04	.19	.83	[-1.47 – 1.86]
Step 2	.79***	.56***				
Constant				79.34***	8.07	[44.95 – 113.74]
SRH positive			.58	.12***	.02	[.08 - .16]
SRH negative			-.27	-.04**	.02	[-.07 - -.01]
Step 3	.80***	.02***				
Constant				64.96***	19.94	[25.09 – 104.83]
TT4			.22	5.45	3.34	[-1.23 – 12.12]
TA4			-.15	-3.21	-.15	[-8.58 – 2.17]

Note. ($n = 68$). SRH positive = sound relationship house scales positive, SRH negative = sound relationship house scales negative, TT4 = turning towards via text, TA4 = turning away via text.

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

Destructive Conflict by Attachment Type

Regression on destructive conflict. Four hierarchical multiple regressions were performed to examine the unique contributions of texting on destructive conflict, above the contributions of the SRH scales, by relationship type. The order of entry of predictor variables was consistent with the analyses reported above.

Secure type. At Step 1, the model was statistically significant, $F(2, 264) = 3.20, p = .042$ (see Table 40), but neither age nor relationship length were statistically significant predictors of destructive conflict. At Step 2, the model was statistically significant, $F(4, 262) = 70.47, p < .001$, with the positive and negative scales accounting for 50% of the variance in destructive conflict scores, $F\Delta(2, 262) = 134.50, p < .001$. Greater reports of negative behaviour (Four Horsemen, frequent harsh start-ups, flooding and emotional disengagement) were predictive of with higher destructive conflict scores. More positive relationships behaviours (stronger love maps, expressions of fondness and admiration, greater turning towards behaviours and greater acceptance of partner influence) were associated with lower destructive conflict scores. Negative relationship behaviours were stronger predictors of destructive conflict than positive behaviours. At Step 3, the model was statistically significant, $F(6, 260) = 47.92, p < .001$ but the increment in explainable variance was not, $F\Delta(2, 260) = 1.87, p = .156$. Texting behaviours did not account for variance in destructive conflict above the contribution of the SRH scales.

Table 40

Hierarchical Regression Analyses for Destructive Conflict for Secure Type as a function of Age, Relationship Length, SRH Scales, Turning Towards and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.15*	.02*				
Constant				9.193	.85	[7.51 – 10.87]
Age			.06	.02	.03	[-.04 - .09]
Relationship length			.12	.05	.03	[-.02 - .12]
Step 2	.72***	.50***				
Constant				11.27***	1.25	[8.82 – 13.73]
SRH positive			-.15	-.01*	.01	[-.01 - -.01]
SRH negative			.62	.02***	.01	[.01 - .02]
Step 3	.73	.01				
Constant				10.93***	1.32	[8.32 – 13.54]
TT4			-.05	-.15	.16	[-.46 - .15]
TA4			.11	.28	.14	[-.01 - .56]

Note. ($n = 267$). SRH positive = sound relationship house scales positive, SRH negative = sound relationship house scales negative, TT4 = turning towards via text, TA4 = turning away via text.

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

Preoccupied type. At Step 1, the model was not statistically significant, $F(2, 76) = 1.64, p = .200$ (see Table 41). At Step 2, the model was significant, $F(4, 74) = 27.57, p < .001$, with the SRH scales accounting for 56% of the variance in destructive conflict, $F\Delta(2, 74) = 51.32, p < .001$. Negative SRH behaviours, but not positive SRH behaviours, predicted destructive conflict at this step. Greater negative relationship behaviour was associated with higher destructive conflict scores. At Step 3, the model remained statistically significant, $F(6, 72) = 24.07, p < .001$. Turning Towards and Turning Away from the romantic partner via text accounted for an additional 7% of the variance in destructive conflict, $F\Delta(2, 260) = 7.45, p = .001$, which was significant. Greater Turning Towards was associated with lower destructive conflict scores, whereas greater Turning Away was associated with higher destructive conflict scores. Texting behaviours were statistically significant predictors of destructive conflict, above the contribution of negative relationship behaviours.

Table 41

Hierarchical Regression Analyses for Destructive Conflict for Preoccupied Type as a function of Age, Relationship Length, SRH Scales, Turning Towards and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.20	.04				
Constant				9.58	3.00	[3.60 – 15.55]
Age			.15	.12	.11	[-.10 - .33]
Relationship length			.08	.06	.11	[-.15 - .27]
Step 2	.77***	.56***				
Constant				9.88*	2.75	[4.41 – 15.35]
SRH positive			-.04	-.01	.01	[-.01 - .01]
SRH negative			.75	.02***	.02	[.01 - .02]
Step 3	.82***	.07***				
Constant				10.09***	2.66	[4.78 – 15.40]
TT4			-.36	-1.60**	.45	[-2.49 - -.71]
TA4			.37	1.20**	.36	[.55 – 1.99]

Note. ($n = 79$). SRH positive = sound relationship house scales positive, SRH negative = sound relationship house scales negative, TT4 = turning towards via text, TA4 = turning away via text.

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

Fearful avoidant type. At Step 1, the model was statistically significant, $F(2, 247) = 4.12, p = .017$. Relationship length predicted destructive conflict. Participants who reported longer relationship length also reported higher destructive conflict scores (see Table 42). At Step 2, the model was statistically significant, $F(4, 245) = 41.69, p < .001$, with the positive and negative SRH scales accounting for 37% of the variance in destructive conflict scores, $F\Delta(2, 245) = 76.73, p < .001$. Positive relationship behaviour was associated with lower destructive conflict, whereas negative relationship behaviour was associated with greater destructive conflict. At Step 3, the model remained statistically significant, $F(6, 243) = 33.67, p < .001$. Turning Towards and Turning Away from the romantic partner via text accounted for an additional 5% of the variance destructive conflict, $F\Delta(2, 243) = 10.90, p < .001$ and the increment was reliable. Of the TQ subscales, only Turning Away was a statistically significant predictor of unique variance in destructive conflict at this step. Greater Turning Away was associated with higher destructive conflict.

Table 42

Hierarchical Regression Analyses for Destructive Conflict for Fearful Avoidant Type as a function of Age, Relationship Length, SRH Scales, Turning Towards and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.18*	.03*				
Constant				18.34	1.74	[14.91- 21.77]
Age			-.14	-.12	.06	[-.24 - .01]
Relationship length			.22	.17*	.06	[.05 - .29]
Step 2	.64***	.37***				
Constant				18.34***	1.51	[15.36 – 21.31]
SRH positive			-.32	-.01***	.01	[-.01 - .01]
SRH negative			.51	.01***	.01	[.01 - .01]
Step 3	.67***	.05***				
Constant				15.46***	1.72	[12.07 – 18.86]
TT4			-.04	-.19	.46	[-1.10 - .72]
TA4			.26	.99**	.35	[.31 – 1.68]

Note. ($n = 250$). SRH positive = sound relationship house scales positive, SRH negative = sound relationship house scales negative, TT4 = turning towards via text, TA4 = turning away via text.

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

Dismissing type. At Step 1, the model was not statistically significant, $F(2, 65) = 2.01, p = .143$ (see Table 43). At Step 2, the model was significant, $F(4, 63) = 20.71, p < .001$, with the positive and negative SRH scales accounting for 51% of the variance in destructive conflict scores, $F\Delta(2, 63) = 37.19, p < .001$. More positive relationship behaviours were associated with lower conflict scores. Greater reports of destructive communication were associated with more destructive conflict. Negative partner behaviour was a stronger predictor of destructive conflict than positive partner behaviour. At Step 3, the model remained statistically significant, $F(6, 61) = 13.96, p < .001$. The incremental variance in destructive conflict explained by Turning Towards and Turning Away was not statistically significant, $F\Delta(2, 61) = 0.76, p = .47$. Texting behaviours did not account for variance in destructive behaviour above the contribution of relationship behaviours for this attachment type.

Table 43

Hierarchical Regression Analyses for Destructive Conflict for Dismissing Type as a function of Age, Relationship Length, SRH Scales, Turning Towards and Turning Away

Predictors	R	ΔR^2	β	B	SEB	95% CI for B
Step 1	.24	.06				
Constant				7.50	3.21	[1.09 – 13.90]
Age			.21	.15	.12	[-.09 - .40]
Relationship length			.04	.03	.13	[-.22 - .28]
Step 2	.75***	.51***				
Constant				11.77***	2.80	[6.17 – 17.36]
SRH positive			-.27	-.01*	.01	[-.02 - -.01]
SRH negative			.54	.01***	.01	[.01 - .02]
Step 3	.76***	.01***				
Constant				10.37***	3.27	[3.83 – 16.92]
TT4			.02	.08	.55	[-1.02 – 1.17]
TA4			.09	.28	.44	[-.60 – 1.17]

Note. ($n = 68$). SRH positive = sound relationship house scales positive, SRH negative = sound relationship house scales negative, TT4 = turning towards via text, TA4 = turning away via text.

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

Comparison of Turning Towards and Turning Away by Attachment Type

Multivariate analysis of variance was performed to investigate differences in texting behaviours by attachment type. The dependent variables were Turning Towards and Turning Away scores and the independent variable was attachment type. Analyses revealed a significant effect of attachment type on the combined variables, $F(6, 1320) = 78.00, p < .001, \eta^2 = .26, \text{power} = 1$, see Table 44. Univariate analyses showed that the attachment groups differed on the Turning Towards, $F(3, 660) = 10.49, p < .001, \eta^2 = .05, \text{power} = 1$. and Turning Away, $F(3, 660) = 129.99, p < .001, \eta^2 = .37, \text{power} = 1$, measures. Dismissing participants reported significantly lower scores on Turning Towards than preoccupied (MDiff = $-.70, SE = 1.42, p < .001$), fearful avoidant (MDiff = $-.59, SE = 0.14, p < .001$), and secure participants (MDiff = $-.43, SE = 0.12, p < .001$), $F(3, 660) = 10.49, p < .001, \eta^2 = .05, \text{power} = 1$. Participants identified as fearful avoidant reported the highest Turning Away scores, significantly higher than the preoccupied (MDiff = $.75, SE = 0.14, p < .001$), dismissing (MDiff = $1.27, SE = 0.15, p < .001$), and secure types (MDiff = $1.83, SE = 0.09, p < .001$), $F(3, 660) = 129.99, p < .001, \eta^2 = .37, \text{power} = 1$.

Table 44

Mean Scores and Standard Deviations for Turning Towards and Turning Away by Attachment Type

Dependent Variables	Attachment type	<i>M</i>	<i>SD</i>
Turning Towards 4 (TT4)	Secure	3.85 ^a	.82
	Preoccupied	4.13 ^a	.91
	Fearful Avoidant	4.02 ^a	.81
	Dismissing	3.43 ^b	1.09
Turning Away 4 (TA4)	Secure	2.35 ^d	.94
	Preoccupied	3.43 ^b	1.19
	Fearful Avoidant	4.18 ^a	1.08
	Dismissing	2.91 ^c	1.29

Note: $N = 402$. Annotations ^{a, b} and ^c display the statistically significant differences in group means on Turning Towards and Turning Away.

Text Sentiment Override by Attachment Type

Text Sentiment Override was operationalized as the balance of Turning Towards minus Turning Away scores. In SRH theory, sentiment override refers to the emotional climate of the romantic relationship with positive sentiment override reflecting a higher ratio of positive to negative exchanges and negative sentiment override reflecting a higher ratio of negative to positive exchanges (Gottman, 1999).

Text Sentiment Override was computed for each attachment type. Analysis of variance showed that secure adults reported significantly higher and more positive sentiment override scores than preoccupied ($MDiff = 0.80, p < .001$), dismissing ($MDiff = 0.99, p < .001$) and fearful avoidant adults ($MDiff = 1.66, p < .001$), $F(3, 660) = 194.12, p < .001, \eta^2 = .47, power = 1$. Fearful avoidant subjects reported the lowest Text Sentiment Override scores and were the only attachment type to report negative Text Sentiment Override, reflecting a higher ratio of negative to positive exchanges via text. Hypothesis 3 was

supported. Fearful avoidant adults reported the lowest sentiment override scores that were significantly lower than for the dismissing, preoccupied, and secure types, as presented in Table 45. Further, the Text Sentiment Override for fearful avoidant adults was the only ratio indicating that Turning Away outweighed Turning Towards via text. That is, for participants high in attachment anxiety and attachment avoidance, Turning Away scores were higher than Turning Towards.

Table 45

Comparison of Text Sentiment Override Scores by Attachment Type

	Attachment Type	<i>M</i>	<i>SD</i>
Text Sentiment Override	Secure	1.50 ^a	0.87
	Preoccupied	0.70 ^b	0.94
	Fearful Avoidant	-0.16 ^c	0.60
	Dismissing	0.52 ^b	0.85

Note: $N = 402$. Annotations ^{a, b} and ^c display the statistically significant difference in group means on the variables of interest at $p < .05$.

Discussion Study 4

In Study 4, Turning Towards, Turning Away, and the SRH scales were evaluated as predictors of relationship quality and destructive conflict. The current study used the revised Technology Questionnaire (TQ4) to examine differences in relationship quality and destructive conflict by attachment type. Sending text messages of love and affection were associated with higher relationship quality, higher intimacy, and lower destructive conflict. Failing to respond to partner texts and managing conflict via text was associated with more negative conflict strategies overall and lower relationship quality, replicating findings from Study 3.

Attachment, relationship quality and destructive conflict. It was hypothesised that the four attachment types would differ on measures of relationship quality and destructive conflict. As predicted, securely attached adults reported the highest relationship satisfaction and intimacy scores and adults higher in attachment avoidance (fearful avoidant and dismissing adults) reported the lowest relationship satisfaction and intimacy scores, consistent with previous findings (Feeney, 1999). Securely attached adults engage in more self-disclosure and more direct communication than insecurely attached adults (Johnson, 2008) and these differences reflect an inherent confidence in the romantic partner to meet physical and emotional needs. Conversely, attachment avoidance has been associated with fewer personal disclosures and greater emotional autonomy (Mikulincer & Shaver, 2007), as suggested in the Study 4 results. Hypothesis 1 for relationship quality was supported.

Participants with a fearful avoidant attachment stance reported the highest destructive conflict scores, followed by preoccupied and dismissing adults, as hypothesised. Securely attached adults reported the lowest destructive conflict scores, significantly lower than the other three attachment types and consistent with the attachment literature (Dominique & Mollen, 2009; Du Plessis, Wooley, & Clarke, 2011). According to Dominique and Mollen (2009), insecure adults are more likely than secure adults to cling, make demands, stonewall and withdraw during conflict because they fear rejection or abandonment or are protesting the unresponsiveness of the partner. Levine & Heller (2012) suggest that the emergence of protest behaviours in the form of destructive conflict indicates compromised attachment safety and this proposal is supported by the findings in Study 4. A willingness to confide in the partner about relationship insecurities and to clearly express needs is required for a romantic relationship to be a secure base (Johnson, 2008). The presence of attachment anxiety and attachment avoidance, however, hinders the communication of intimacy needs and the expression of relationships concerns.

Texting and relationship quality. Study 4 examined the extent to which text processes parallel the positive and negative behavioural correlates of relationship quality outlined in SRH theory (Gottman, 1999; Gottman 2015). It was hypothesised that Turning Towards and Turning Away via text would account for unique variance in relationship quality above the contribution of the SRH scales. This hypothesis was supported for adults with a secure attachment type. Texting to express affection and to manage conflict predicted relationship quality above the SRH positive and negative predictors. Secure types were as likely as preoccupied and fearful avoidant types to Turn Towards the romantic partner via text, but were least likely of the attachment types to Turn Away via text.

In the relationship literature, securely attached adults demonstrate *availability* (i.e., sensitive attunement and timely responses to partner distress), *non-interference* (i.e., empowering the partner to solve their own issues), and *encouragement* (i.e., general acceptance and support of the partner's life goals) in their communications with romantic partners (Feeney & Thrush, 2010). The attachment systems of secure adults are not over-activated in response to attachment triggers (as for preoccupied or fearful avoidant adults) with excessive anxiety or deactivated (as for fearful avoidant or dismissing adults) with withdrawal behaviours (Levine & Heller, 2012). For securely attached adults, demonstrations of partner availability are made consistently (Feeney & Thrush, 2010), including via text, as shown in this program of research in Studies 2 and 4.

Perceptions of the romantic partner as supportive and encouraging were reflected in the endorsement of the Turning Towards items and in positive associations between Turning Towards and relationship quality, and negative associations between Turning Away and relationship quality. Secure adults are less affected by hyperactivation and deactivation cues (Mikulincer & Shaver 2007) and are more likely to recognise and respond to the emotional need that underlies the partner's protest behaviours than react in a way that exacerbates

conflict or increases emotional distance (Levine & Heller, 2012). As reflected in Text Sentiment Override Scores, secure participants showed a stronger ratio of positive to negative text exchanges. Text Sentiment Override scores were significantly higher for secure participants than for preoccupied, fearful avoidant, and dismissing adults. The association between a positive emotional climate and higher relationship quality that is reported in the literature (Hawkins, Carrere & Gottman, 1994) is mirrored in Text Sentiment Override scores in Study 4.

Turning Towards, but not Turning Away, was a predictor of unique variance in relationship quality for preoccupied and fearful avoidant adults. For preoccupied and fearful avoidant adults, sending affectionate texts predicted relationship quality above the contribution of the SRH scales. Sending texts to express affection and provide encouragement, predicted higher relationship quality, and these data are consistent with Schade et al. (2013). Fearful avoidant adults reported the highest text frequencies, which were twice that of the dismissing group and one third higher than the preoccupied group. Although fearful avoidant, preoccupied, and secure participants were equally likely to Turn Towards the relationship partner via text, fearful avoidant subjects reported the highest Turning Away, highest destructive conflict, and lowest relationship quality scores of the four attachment types. Drouin & Landgraff (2011) proposed that high frequency texting might represent an activation of the attachment system and the emergence of protest behaviours to restore attachment safety. As preoccupied and fearful avoidant typologies are characterised by higher attachment anxiety, greater reliance on text communication and higher text frequencies may reflect hyperactivation of the attachment system and the use of texts to bid for attention, affection, and reassurance from the romantic partner. Other protest behaviours that reflect hyperactivation include (a) making empty threats to leave the relationship, (b) sending repeated texts, calls or emails, (c) provoking arguments or (d) inciting partner

jealousy (Howe, 2011; Levine & Heller, 2012; Siegel, 2011). Protest behaviours representing hyperactivation and deactivation were captured in Turning Towards and Turning Away items and are reflected in higher scores on the TQ subscales.

For fearful avoidant adults, text communications may equally reflect deactivation processes. Protest behaviours representing deactivation include (a) assertions of a need for space, (b) projections of excessive partner neediness, and (c) ignoring bids for connection (Levine & Heller, 2012). In Study 4, there is evidence to suggest that fearful avoidant adults use texts to seek reassurance as well as to create relationship distance, with withdrawal strategies conveyed via text and reflected in the endorsement of Turning Away items.

For dismissing participants, Turning Towards and Turning Away via text did not contribute to an explanation of relationship quality above the contribution of the SRH scales. Dismissing participants reported significantly lower text frequencies than secure, preoccupied, and fearful avoidant adults, which was consistent with the findings of Drouin and Landgraff (2012). Lower text frequencies among dismissing adults is consistent with attachment theory principles and tendencies for adults with an avoidant attachment style to be more autonomous, to bid for the attention of the partner less frequently, and to maintain emotional distance in close relationships (Levine & Heller, 2012; Mikulincer & Shaver, 2007). Dismissing participants also reported the lowest Turning Towards scores. Positive SRH relationship behaviours were the strongest predictors of relationship quality for this group, followed by negative SRH behaviours in the expected directions.

Texting and destructive conflict. SRH theory set the framework to examine whether text processes parallel the positive and negative behavioural correlates of destructive conflict. It was hypothesised that Turning Away would account for unique variance in destructive conflict, above the contribution of the SRH scales. Turning Away accounted for unique variance in destructive conflict for preoccupied and fearful avoidant types, above the

contribution of the SRH scales. For preoccupied adults, both Turning Away and Turning Towards were predictors of unique variance in destructive conflict. The data highlights a likely association between text messaging and destructive conflict, especially in adults who are higher in attachment anxiety or attachment avoidance.

Gottman (1999) found *negative affect reciprocity*, the increased probability that a person's emotions will be negative and display anger, belligerence, sadness or contempt after a partner has expressed negativity, a reliable negative predictor of relationship quality. Further, the presence of the *four horsemen* (i.e., criticism, contempt, defensiveness, and stonewalling) are reliable predictors of couple distress (Gottman, 1999; Gottman & Silver, 1999). Item content in the Turning Away subscale captured the use of text messages to express negative affect and behaviours consistent with these negative behaviours. Texts to express hostility, voice criticisms, continue arguments, and evade face-to-face discussions were associated with destructive communication for the four attachment groups, supporting Hypothesis 2.

Results in Study 4 show response patterns to conflict discussions via text that mirror the response tendencies proposed by Pietromonaco et al. (2004). Preoccupied and fearful avoidant adults engaged in texting to manage conflict in destructive ways. The endorsement of Turning Away items for these two attachment types suggests the emergence of protest behaviours in response to the activation (for preoccupied and fearful avoidant adults) and deactivation (for fearful avoidant adults) of the attachment system. Dismissing participants displayed a general avoidance of texting (positive or negative) as reflected in overall lower text frequencies, lower (although still positive) Text Sentiment Override, and lower Turning Away and Turning Towards scores, as compared with other attachment types. Secure participants did not show an avoidance of destructive conflict via text. However, they did engage in lower rates of texting, and reported a balance positive and negative relationship

exchanges in favour of positive exchanges, especially via text. This was demonstrated in the comparison of standardised beta weights for Turning Towards and Turning Away and in high positive Text Sentiment Override scores. Text messages offer greater response flexibility and control than face to face or voice call conversations, although they may also be associated with more indirect, less effective approaches to the management of relationship conflict. This was reflected in positive associations between text frequency and destructive relationship conflict.

For participants with a fearful avoidant attachment stance, greater Turning Away was associated with higher destructive conflict scores and accounted for unique variance in destructive conflict not explained by the SRH scales. Turning Towards was not a predictor of destructive conflict scores for this attachment type. For participants with a preoccupied attachment stance, both Turning Towards and Turning Away were related to destructive conflict, above the contribution of the SRH scales. Turning Towards was associated with lower destructive conflict scores, and Turning Away with higher destructive conflict scores. Associations between texting and destructive conflict suggest that Turning Towards promotes connection, affection, and understanding that may moderate the damaging effects of Turning Away, as suggested in SRH theory (Gottman, 1999; Gottman, 2015). The effectiveness of this as a relationship strategy for preoccupied participants is questionable in the context of destructive conflict scores. Preoccupied participants reported associations between destructive conflict, Turning Towards and Turning Away that may have supported this proposition, if destructive conflict scores for this group had not been so high. If Turning Towards does shield the effects of Turning Away for preoccupied adults, this was not shown in the conflict scores reported in Study 4.

Findings here suggest that the presence of high attachment anxiety and high attachment avoidance (i.e., fearful avoidant) is associated with greater destructive conflict

and lower relationship quality. Stressful situations activate attachment behaviour making attachment style differences more pronounced (Simpson & Rholes, 1994). Results in Study 4 suggest that some individuals possess an attachment style that contributes to the management of conflict in destructive ways, as in Study 3. In Study 4, sending negative texts to manage conflict was observed more prominently for preoccupied and fearful avoidant participants than for secure or dismissing participants and was related to higher destructive conflict and lower relationship satisfaction scores overall.

Sentiment override. Text Sentiment Override scores reflected the ratio of positive to negative text exchanges. As hypothesised, Text Sentiment Override scores were highest and most positive for the secure adults, indicating a more positive emotional climate based on the exchange of texts. For securely attached adults, the principles that guide effective face-to-face interactions appear to mirror text communications, with positive exchanges outweighing negative exchanges (Gottman, 2014). Text Sentiment Override scores were lowest for fearful avoidant adults, supporting Hypothesis 3. Fearful avoidant participants showed a tendency to send texts for the communication of negative, rather than positive sentiments. Turning Away scores were higher than Turning Towards for fearful avoidant adults, suggesting a generally negative climate with respect to text exchanges. Fearful avoidant participants also reported the highest text frequencies, highest destructive conflict and lowest relationship quality scores of the sample. From an attachment perspective, the use of texts for fearful avoidant adults may reflect a general strategy to manage hyperactivation and deactivation cues relating to attachment security and safety (as suggested by Mikulincer & Shaver, 2007), but in ways that compromise relationship quality and increase destructive conflict. Preoccupied and dismissing participants reported Text Sentiment Override scores that suggested a generally positive emotional climate, though less positive than for the secure participants.

Emerging from Study 4 is the observation that associations between text messaging and relationship quality are complex and related to attachment anxiety and attachment avoidance. The use of texts to bid for the attention and affection of the partner, express love and offer support, is associated with greater relationship quality and lower destructive conflict. Further, the use of texts to manage conflict by avoiding face-to-face discussions, to vent, express anger and hostility or distance from the partner, is associated with increases in destructive conflict and lower relationship quality. The management of conflict, including the management of conflict via text, appears to reflect early attachment experiences and internal models of partner availability that are reflected in an individual's attachment stance. There is evidence to support the hyperactivation and deactivation of attachment triggers in response to text messages sent and received in romantic relationships and an association with the balance of positive and negative exchanges and overall relationship quality.

Limitations. Several limitations are noted in the interpretation of the results for Study 4. Firstly, the classification of attachment type using median values resulted in unequal group sizes. Uneven distributions of adults across the four attachment types are observed in general population estimates, with over half of the population considered securely attached and the balance distributed across other attachment types (Levine & Hartnett, 2012). In this sample however, the number of participants categorised as fearful avoidant was proportionately larger than expected. It is possible that the sample in Study 4 reflects a group who tend to seek more reassurance in romantic relationships (higher attachment anxiety) and who value greater emotional autonomy (higher attachment avoidance).

Secondly, the categorization of participants into attachment types, using a dimensional measure of attachment is cautioned against in the attachment literature, with attachment anxiety and attachment avoidance viewed as dimensional constructs (Feeney, 2007). The use of attachment types supports an examination of general response patterns

(Wongpakaran & Wongpakaran, 2012) but compromises the sensitivity and precision of the instrument (Feeney 2007; Fraley, 2012). While dimensional measures of attachment anxiety and attachment avoidance were used in Studies 1, 2, and 3, the use of attachment types in Study 2 and Study 4 (Study 2 used both categorical and continuous measures of attachment) supported the translation of statistically significant findings into observations with clinical utility (as in Scharfe et al., 2015). The categorization of attachment typologies reflects the clinical value of exploring text responses by attachment type (Weisskirch & Delevi, 2011; Drouin & Landgraff, 2012). The classification of participants by attachment types support an examination of how text messages may prime attachment responses and be associated with relationship quality and destructive conflict.

Thirdly, in each study in this program of research tables with non-independent correlations are presented. Although the evidence is clear on the need to control for Type I errors in hypothesis testing involving mean comparisons, there is considerable debate in the literature on the need to control for family-wise errors in correlation and regression tests. Importantly, a recent paper by Knudson and Lindsay (2014) also confirmed that correlation tests are less likely to be affected by Type I and Type II errors when large samples, as compared to smaller samples as employed. Although large samples were employed in each of the studies reported here (Study 1, $N = 111$, Study 2, $N = 402$, Study 3, $N = 365$, Study 4, $N = 355$) some caution in interpreting the results may be needed.

Finally, the results presented in this program of research across Studies 1, 2, 3 and 4 report the behaviours, motives, and attitudes of one individual within the romantic dyad and relies on self-report data from cross sectional research. Although this approach supports an examination of text messaging and relationship quality, it does not capture the dynamic nature of text conversations that occur within a romantic dyad nor control for subject bias. Texting, relationship behaviours, and attachment triggers occur in the context of a romantic

relationship, in a complex and interactive process. Relationship quality is shaped by both romantic partners (Hazan & Shaver, 1987) and the dyadic nature of attachment is recognised within the attachment literature (Feeney, 2007). The replication of Study 4 with access to data from both relationship partners (i.e., an analysis of romantic dyads) would facilitate the examination of partner effects and aid the interpretation of findings across this program of research. The actor partner interaction model (Kashy & Kenny, 1999) is noted as a possible future direction for further examination of the associations between texting and relationship quality. The actor partner interaction model is a model of dyadic relationships that integrates a conceptual view of interdependence in two person relationships (Cook & Kenny, 2005). Revised testing of key hypotheses in this program of research would permit greater explication of the overall findings.

Chapter 6: General Discussion, Clinical Applications and Research Directions

Mobile technologies have changed the way that couples interact, manage friendships, and maintain intimate relationships (Coyne et al., 2011). Texting has emerged as an important mode of interpersonal communication, surpassing voice calls as a pathway to connect with romantic partners during periods of separation. The benefits afforded by texting, including ease of use, privacy, discretion, and frequency of contact, support the adoption of this technology as an adjunct to other communication channels (Coyne et al., 2011). Text messaging has transformed couple communications and the associations between texting and relationship quality are of relevance in promoting healthy, well-attuned patterns of relationship contact.

Previous literature emphasises the importance of contingent communication in promoting supportive, intimate relationships where individuals have a felt sense that romantic partners attune to their emotional needs (Meeks, Hendrick, & Hendrick, 1998; Siegel, 2011). Partner attunement reflects both the attachment stance of the couple and the presence of relationship behaviours and rituals that promote and sustain connections over time. The capacity to respond to bids for the attention and affection of a romantic partner is a predictor of relationship success (Gottman, 1999; Gottman & Silver, 1999). Other predictors of relationship quality include an intimate knowledge of the partner, expressions of fondness and admiration, a positive emotional climate, the effective management of conflict, respectful honoring of partner dreams, and the establishment of rituals of connection (Gottman & Silver, 1999; Gottman, 2015). The attachment style of an individual affects the ease at which these relationship principles are translated into action.

Attachment theory purports that the quality of parent-child attachment bonds in infancy influences the nature of close, intimate connections in adulthood, shaping response proclivities, partner expectations of love and support, and comfort with emotional closeness

(Hazan & Shaver, 1987). These tendencies are observed in adult romantic interactions and reflect genetic influences, early attachment models, personality characteristics, and relationship experiences (Howe, 2011; Levine & Heller, 2012; Siegel, 2011). Together, these characteristics contribute to an attachment narrative that shapes expectations of the romantic partner, a willingness to disclose intimacy needs, and personal feelings of worthiness of love and affection (Mikulincer & Shaver, 2007).

Attachment patterns in adulthood are described as stable and plastic (Fraley, 2002). Fraley's description suggests that while generally consistent over time, patterns of attachment shift with life experiences and changing romantic partners. Between 65 and 75 percent of adults demonstrate a stable attachment stance over time, with one in four adults reporting a shift in attachment across a four-year period (Levine & Heller, 2012). Emerging research suggests that the qualities of secure attachment relationships can be cultivated (Siegel, 2011). Powerful attachment experiences in adulthood can create profound shifts in attachment behaviour, either towards or away from attachment security. Recognition of this attachment flexibility invites change and presents a window for intervention. There is evidence to suggest that insecure attachment types may shift towards attachment security when paired with a relationship partner capable of establishing a safe base (Levine & Heller, 2012). Shifts towards attachment security may be encouraged by the adoption of secure attachment principles that are echoed in patterns of attuned, contingent communication (Siegel, 2011).

New research in the attachment field supports neural priming as successful in shifting relationships toward attachment security (Mikulincer, Shaver, & Rom, 2011). Using a process called *secure base priming*, Mikulincer and Shaver (2001) were able to shift the attachment stance of an insecure adult temporarily towards security. In neural priming, the subliminal presentation of words (e.g., love, hug) and images (e.g., parents and children, connected couples) or the recollection of memories of attachment safety (e.g., mental

representations of a safe person, an admired relationship, or the unconditional love of a pet) primed feelings of connection and suppressed the activation of attachment triggers. It is plausible that text messaging may operate in a similar vein, providing an alternate pathway for the presentation of priming cues in future research. Secure base priming has been associated with positive outcomes including increased compassion, empathy, altruism, and positivity (Gillath et al., 2008), increased self-esteem (Carnelley & Rowe, 2007), and reduced anxiety and anger (Dutton, Lane, Koren & Bartholomew, 2016). Success with neural priming to shift attachment tendencies toward security and increase wellbeing provides direction for future research with priming cues potentially delivered via text.

According to previous literature, a secure attachment style is associated with higher relationship satisfaction and stability as compared with an insecure attachment style (Dominique & Mollen, 2009; Du Plessis, Wooley, & Clarke, 2011; Feeney, 1999). A secure relationship base promotes wellbeing through consistent demonstrations of affection, care and concern, effective communication, and the constructive management of relationship conflict (Howe, 2011; Pietromonaco et al., 2004). Less secure relationship communication is characterised by protest behaviours, an avoidance of conflict or hostile engagements in ongoing arguments. Relationship pairings that assemble anxious with avoidant partners generally trigger attachment injuries that result in patterns of destructive conflict and feelings of emotional isolation (Simpson & Rholes, 1998).

Mobile technologies have been shown to support stable patterns of interpersonal communication in close relationships (Lincoppe, 2004). Positive communication patterns, short, frequent phone calls, and affectionate text messages affirm confidence in partner availability, connectedness, and intimacy in romantic relationships. Critical or contemptuous messages or demonstrations of emotional disengagement with erratic response patterns, exacerbate feelings of disconnection between romantic partners. Attachment theory has been

offered as a lens through which to view text interactions (Weisskirch & Delevi, 2011), with the quality and nature of text exchanges reflecting attachment orientations, intimacy, and relationship satisfaction.

Summary of Research Findings

From an attachment perspective, this program of research explored text messaging, attachment processes, and relationship quality in committed, romantic unions. Across four independent studies and a combined sample of 1648 participants, examinations of text dynamics, content, and response expectations informed the development of a Technology Questionnaire. The Technology Questionnaire (TQ) assessed the use of text messages to Turn Towards and to Turn Away from the romantic partner, consistent with behaviours shown to predict relationship satisfaction or distress. The scale used across this program of research to test key hypotheses about texting in relationships, the Technology Questionnaire, is new and has limited information on its reliability or validity. Analyses identified support for the factor structure, internal consistency, test content validity, and convergent validity with relationship quality. Further research is warranted to extend knowledge of the instruments psychometric properties. This program of research represents an extension of research in the area and an examination of the associations between text messaging and relationship quality, while controlling for predisposing relationship characteristics.

In Study 1, participants reported relatively high text frequencies, broad contact networks (involving the exchange of texts with friends, colleagues and parents as well as partners), general perceptions of texting as a positive relationship tool, and agreement that text messages supported feelings of connection and closeness. Texts were sent to exchange sentiments of love and affection, offer encouragement and advice, and moderate feelings of social loneliness and isolation. Study 2 results indicated that texting was strongly related to intimacy and to the presence of patterns of destructive relationship communication reflected

in the content of sent messages. Examinations of text content showed that text messages were utilised for sharing informational and emotional content, with a tendency for the emotional content of texts to be associated with relationship intimacy. Text content also revealed that in some romantic dyads texts were exchanged to express dissatisfaction or disapproval, vent, criticise, argue, and continue conflict discussions. For some participants, higher text frequencies were associated with increased relationship conflict and less favourable perceptions of texts as a positive relationship tool, as in previous research (Hertline & Ancheta, 2014; Schade et al., 2013).

In Study 2, higher attachment anxiety was associated with higher text frequencies and the use of texts to Turn Towards and Turn Away from the romantic partner. Attachment anxiety was associated with a prioritisation of texts to the romantic partner over other targets. These associations supported high frequency texting as protest behaviour, with bids for connection reflected in negative and in positive text exchanges. Attempts to connect with the partner through conflict may represent misguided efforts to restore attachment safety (a finding that was reported in Study 3). For those high in attachment anxiety, connection of some kind is preferred to emotional detachment even if the connection is a negative one (Johnson, 2008; Levine & Heller, 2012). Although motives for texting may be to reduce attachment insecurity, the strategies employed may exacerbate destructive conflict and compromise relationship quality. If one partner is high in attachment anxiety and the other partner is high in attachment avoidance, this dynamic is likely to incite patterns of demand and withdrawal, with both partners activating the attachment systems of each other, as described in Chapter 1 (Lavy et al., 2009; Mikulincer & Shaver, 2007).

Higher attachment avoidance was associated with lower text frequencies and the use of texts to Turn Away from the relationship partner in Studies 2, 3, and 4. Participants higher in attachment avoidance were less likely to prioritise romantic partners as the recipient of text

messages and tended to distribute text contact across friends, colleagues and parents, as noted in Studies 1 and 2. This deactivating strategy is akin to shifting attention away from the romantic partner to another person or activity. The use of deactivating strategies and protest behaviours (e.g., withdrawal and stonewalling) to retain a safe emotional distance in intimate relationships is consistent with research precedents for adults high in attachment avoidance (Drouin & Landgraff, 2011; Feeney, 2007; Feeney & Thrush, 2010).

Relationship status emerged as a variable of interest with respect to text frequency and target of contact in Studies 1 and 2. Participants in more committed relationships showed greater prioritisation of the romantic partner (via text contact), as did participants who were higher in attachment anxiety and lower in attachment avoidance. Although causality cannot be ascertained, these findings suggest that the transition from dating to cohabiting (i.e., greater relationship commitment) might be associated with lower attachment anxiety and lower attachment avoidance. In satisfying, committed relationships, partners feel more secure and this safety is reflected in the quality of partner interactions, including those occurring via text. Attachment principles suggest that partners are as needy for affection as their unmet needs (Levine & Heller, 2012), with text bids potentially reflecting a demonstration of needs and desire for connection. Paradoxically, as individuals demonstrate a willingness to meet their partner's attachment needs, independence and creativity increases (Feeney, 2007). A subsequent study of romantic dyads would test this proposition with respect to texts.

Romantic attachment creates a dependency relationship where partners regulate one another's emotional and physiological processes (Siegel, 2011). Dependent relationships characterise connections across the lifespan, well beyond infancy, and the qualities of close relationships are reflected in reports of general health and happiness (Siegel, 2011).

Increasing attunement to partner bids, via text and otherwise, supports and enhances physical and psychological wellbeing. In Study 3, higher attachment anxiety and higher attachment

avoidance were both associated with lower relationship satisfaction, lower intimacy, and greater destructive conflict, as in the literature (Holland, Fraley, & Roisman, 2012; Bonache, Gonzalez-Mendez, & Krahe, 2016). Higher attachment anxiety was also associated with higher partner care and higher partner control and these associations were observed in correlations between TQ items, partner attunement (care) and partner monitoring (control). Participants who reported higher relationship satisfaction, higher intimacy, and lower destructive conflict also reported higher rates of Turning Towards the partner via text, consistent with SRH theory (Gottman, 1999). Conversely, participants who reported lower relationship satisfaction, lower intimacy and higher destructive conflict, were more likely to use texts to manage conflict in destructive ways, to communicate displeasure and create distance from the relationship partner. Texting was a statistically significant predictor of intimacy and destructive conflict, above the contribution of attachment anxiety and attachment avoidance. Turning Towards and Turning Away were significant predictors of unique variance in intimacy. Furthermore, Turning Away was as a predictor of unique variance in destructive conflict. Response expectations were related to assessments of relationship quality and attachment orientation. Participants who rated their relationships as highly intimate and satisfying reported significantly shorter wait times for a response to a sent text. Higher attachment anxiety and higher attachment avoidance scores were associated with longer wait time expectations, as was the presence of destructive conflict. Response expectations provided an indicator of partner attunement in Study 3 and represent a variable to be explored in future research.

In Study 4, the SRH scales and texting subscales predicted differences in relationship quality and in destructive conflict by attachment type. As expected, secure participants reported the highest relationship quality scores followed by dismissing, preoccupied, and fearful avoidant participants. For secure participants, Turning Towards and Turning Away

accounted for variance in relationship quality above the contribution of the SRH scales. For preoccupied and fearful avoidant participants, Turning Towards, but not Turning Away, accounted for unique variance in relationship quality above the contribution of the SRH scales. For secure participants, texting the romantic partner was associated with relationship satisfaction, even at low text frequencies. The relationships of securely attached participants reflected a stronger ratio of positive to negative interactions compared to other types, even via text. SRH theory emphasises this positive emotional climate to offset the negativity that emerges from inevitable relationship conflict (Gottman, 1999). Findings for securely attached participants suggests that they do sometimes engage in negative text interactions, but for these participants there seems an awareness of the importance of balancing these negative exchanges with positive ones. This was supported in stronger associations between relationship satisfaction and Turning Towards, than Turning Away and positive Text Sentiment Override scores.

For the dismissing participants, the texting subscales did not contribute to an explanation of variance in relationship quality, possibly reflecting low text frequencies, which were the lowest of the four attachment groups. Lower text frequencies among participants with a dismissive attachment stance are consistent with attachment theory. Dismissing participants prioritise emotional autonomy in close relationships and do not trust others to adequately meet their emotional needs (Simpson & Rholes 1998). Dismissing participants are more likely to interpret emotional bids from the relationship partner as expressions of neediness, activating patterns of withdrawal (Mikulincer & Shaver, 2007). Interpretations of partner behaviours as needy and demanding reinforce the dismissing attachment stance and desire for separateness (Levine & Heller, 2012; Siegel, 2011). Drouin and Landgraff (2012) suggested that dismissing participants might show a preference for text communication as it is less intimate and more transactional than voice calls. This premise,

however, was not supported in the current research. As illustrated in Study 4, texting did not explain unique variance in relationship satisfaction or destructive conflict above the relationship variables for dismissing participants.

A different pattern emerged for the prediction of destructive conflict, for preoccupied and fearful avoidant types. For the preoccupied group, both Turning Towards and Turning Away were statically significant predictors of destructive conflict above the contribution of the SRH scales. For this attachment stance, texting messages of love and affection was associated with lower destructive conflict and texting to express criticism or hostility was associated with higher destructive conflict. For the preoccupied group, texting positive sentiments appear to shield the effects of negative texts, as reflected in positive Text Sentiment Override. Turning Away via text may reflect protest behaviours and the activation of the attachment system. In response to this activation, engagement in negative conflict patterns may reflect misguided attempts to reconnect and restore attachment safety.

For the fearful avoidant group, only Turning Away was associated with destructive conflict. Of the four attachment groups, participants with a fearful avoidant stance reported the highest destructive conflict and the lowest relationship quality scores, as well as the lowest (and only negative) Text Sentiment Override score, suggesting that negative interactions via text, outweighed positive interactions. These findings issue a cautionary message regarding the sending of texts to manage or avoid relationship conflict, especially for participants with a fearful avoidant or preoccupied attachment stance.

The management of conflict, rather than the presence of conflict, is predictive of relationship quality (Gottman & Silver, 1999; Gottman & Levenson, 2000). Markers of destructive conflict including criticism, contempt, defensiveness and stonewalling, diffuse physiological arousal, harsh start-ups and emotional disengagement are obstacles to contingent communication whether they emerge in face-to-face interactions or in exchanges

via text (Gottman, 2015). Equally, empirical research supports positive expressions of fondness and appreciation, attunement to partner bids for attention and affection, and the cultivation of a rich emotional climate in supporting relationship quality (Gottman, 2012). Studies 1 to 4 support the use of texts to communicate positive sentiment in a romantic relationship, with caveats on the use of texts to avoid or regularly manage conflict.

Clinical Applications and Future Research Directions

The ability to store exchanges via text is generally recognised as a potential hazard in romantic communications, especially with respect to negative content (Schade et al., 2013). When texts are exchanged in anger and feature criticisms, expressions of contempt, and defensiveness, the intensity of the exchange and heightened arousal may lead to an escalation of conflict (Gottman & Levenson, 2000) and text remorse, where the sender later regrets what is communicated in the moment. For couples experiencing negative sentiment override, the preservation of undesirable texts promotes cognitive rumination and perpetuates attachment biases, often in favour of the partner's perceived shortcomings, especially if the emotional climate of the relationship is negative (Hawkins et al., 2002). Although secure adults tend to make generous attributions and appraisals of partner behaviours, adults with an insecure attachment stance are more likely to make attributions that reinforce their relationship expectations (Levine & Heller, 2012; Pietromonaco, Greenwood & Barrett, 2004). For this reason, the management of conflict via text is generally discouraged, although data in this research program suggests that these warnings are often disregarded.

Pietromonaco et al. (2004) proposed that the beliefs and expectations that are held about the availability of a romantic partner dictate the approach adopted for the management of relationship conflict. Secure participants, who hold beliefs of partner availability and reliability, perceive conflict discussions as an opportunity to adjust to the other's needs and increase intimacy. Consequently, their engagement in constructive conflict discussions

reflects their pursuit of goals to increase intimacy. Preoccupied participants, who fear that partners will abandon them, are likely to perceive conflict discussions as a threat to personal safety and attachment security. Highly anxious adults are attuned to indicators of relationship distress and report more relationship conflict, which is often driven by basic insecurities about love and loss (Feeney, 2016). Highly anxious adults tend to respond to conflict with intense emotional reactions, coercion and negative escalation, behaviours that tend to alienate romantic partners (Feeney, 2016). Flooding and emotional reactivity are associated with patterns of destructive conflict, including escalations of criticism, defensiveness, and contempt (Gottman, 1994). When flooded with emotion, the ability to sustain a focused conflict discussion, demonstrate empathy, and appreciate the perspective of the romantic partner are compromised (Gottman, 2015). Reactive comments made in a heightened emotional state may irreparably damage the romantic bond.

Pietromonaco et al. (2004) asserts that dismissing adults are also likely to perceive conflict as a threat, but for different reasons to preoccupied adults. For dismissing participants, conflict discussions generate a fear that they may be pressured to engage in excessive self-disclosure, which is incompatible with their desire for emotional autonomy. In response, dismissing individuals are likely to display patterns of disengagement or withdrawal (Pietromonaco et al., 2004). These withdrawal behaviours, akin to stonewalling, create relationship distance between partners. Paradoxically, while destructive to the quality of the intimate bond, to trust and intimacy, these distancing behaviours may actually represent an attempt to avoid an escalation of conflict and to ease the situation (Gottman, 2015). Fearful avoidant participants are likely to display a mix of behaviours associated with preoccupied and dismissing attachment styles, representing the conflict between approach and avoidance strategies (Mikulincer & Shaver, 2007). Reactive, emotional responses, followed by emotional distancing reflect activation and deactivation processes. Erratic

shifting from engagement to disconnection by one partner is very likely to provoke an attachment response in the other partner, leading to an escalation of conflict or emotional distancing. The identification of these dynamics may provide a window for clinical intervention.

A constructive application emerging from this program of research is that text communication may support partner attunement. One advantage of text communication is that it slows the pace of conflict discussions. While the nature of text communication limits access to attunement cues, partners do have the ability to edit and review texts for content, clarity, and interpretation. An important predictor of escalations in destructive conflict is diffuse physiological arousal (Gottman, 1994), where excessive autonomic arousal compromises focused attention, shifts in perspective, demonstrations of empathy, and conversation tracking. Texting offers a temporal window to read and reflect on text messages, to draft and edit content, and reconsider a poorly timed or insensitive text response. Adults are usually geographically separate from the partner during text exchanges. Partners may use this separation to their advantage, taking time to regulate their level of arousal and avoid escalations of conflict by applying effective text communication principles. In essence, difficult discussions managed via text, may slow the interaction and help couples to avoid pitfalls that may characterise their interactions when stressed and overwhelmed.

Texting also offers benefits for couples when exchanging positive sentiments, expressing thanks and sharing affection, especially for couples who find intimate face-to-face disclosures difficult. Text communication, if aligned with principles of effective communication texts can support emotional attunement. The structured nature of text exchanges means that adults may use text messages to intentionally cultivate fondness and affection in their romantic relationships. For dismissing and fearful avoidant adults especially, supportive texts may promote connection by shifting the emotional climate

towards a more positive state. Experimental studies examining the structured use of texts to enhance positive sentiment override in romantic relationships present opportunities for future research.

It is probable that associations between texting and relationship quality vary within as well as among romantic dyads. The nature of hyperactivation and deactivation suggests that attachment processes are dynamic (Hazen & Shaver, 1987; Fraley, 2002). The reactions of one romantic partner influence the responses of the other, creating interaction patterns that accompany shifts in relationship quality and in the quality of contingent communication, including the management of conflict. In a cycle referred to as the anxious-avoidant trap (Levine & Heller, 2012), dyads representing the pairing of an anxious adult and an avoidant adult engage in repeated interactions that activate each partner's attachment insecurities. Disagreements regarding closeness and intimacy tend to infiltrate the couple's dialogue when there is an anxious and avoidant attachment pairing (Heller & Levine, 2012). Conflict, for the anxious and avoidant dyad, may reflect the presence of gridlocked issues about meaning and belonging that become embedded in trivial conflicts (Gottman, 2015). Consistent with the dependency paradox, attachment research shows that when needs for intimacy are met and reciprocated by partners, relationship satisfaction rises and attachment anxiety decreases (Feeney, 2007). When intimacy needs are met, security is reflected in positive sentiment override and higher relationship quality. Conversely, when intimacy needs remain unmet, lower intimacy is associated with lower relationship satisfaction and a more negative emotional climate. An analysis of text exchanges under controlled research conditions would support an exploration of these relationship dynamics and attachment pairings.

Experimental research studies, where partners are separated geographically and then send and respond to texts, may provide access to important partner dynamics. Self-report measures, text transcripts, and affect coding would support an examination of the

relationships between text content and attachment triggers. Further, the recruitment of partner dyads representing different attachment pairings (secure/secure, anxious/avoidant, anxious/secure and avoidant/secure) would support an examination of the text interactions that precede activations of the attachment system and the associated partner reactions. Incorporating physiological indicators of participant arousal would shed light on patterns of activation and deactivation that contribute to sentiments exchanged via text. Qualitative assessments of and emotional reactions to text content would extend this area of research.

Concluding Comments

An examination of text communications in this program of research suggests that text interactions mirror the exchanges that occur in face-to-face encounters. Text communications are personalised within a romantic dyad and vary with the attachment orientations of each partner. Text messaging predicted overall perceptions of intimacy and relationship satisfaction and unique approaches to the management of relationship conflict. This research program supported the examination of texting through an attachment lens (Weisskirch & Delevi, 2011), with attachment anxiety and attachment avoidance related to the frequency of texts exchanged, the content of messages, response expectations, and target of contact. Texting corresponded with relationship behaviours that support romantic attunement, foster the development of an intimate friendship, cultivate a rich emotional climate, and manage conflict without compromising relationship quality (Gottman, 1999). Text practices also featured some of the characteristics known to predict relationship distress (Gottman, 2015) and were related to the presence of destructive relationship conflict.

Across four studies of mobile communication, text messaging was associated with attachment anxiety, attachment avoidance, relationship satisfaction, intimacy, and destructive conflict. Emerging from this program of research is an awareness of text communications in romantic relationships as a representation of partner attunement or misattunement. Reactions

and responses to text messages reflect the priming of early learning experiences, feelings of worthiness of love and affection, and a willingness to remain emotionally attuned to a romantic partner. Text processes, therefore, mirror the complexities of face-to-face interpersonal communications. Making and responding to bids via text is associated with attachment anxiety, attachment avoidance, and feelings of relational safety.

The extent to which partners attune to bids via text appears to echo the quality of contingent communication in the relationship, that is, the degree to which each partner feels seen and heard by the other. This is not to suggest that text exchanges need be excessively long or profoundly crafted. Rather, emerging from this program of research is an understanding of the versatility of texts to express a range of emotions, to exchange information, and to remain updated. The significance of texts appears to lie in demonstrations of partner availability and attunement to message content. With text communications, *feeling seen* appears to be related to response expectations and message content, and the balance of Turning Towards and Turning Away. Partner attunement is reflected strongly in behavioural expressions of partner care, in perceptions of intimacy and, to a lesser extent, relationship satisfaction. Partner misattunement is reflected in attempts to control partner behaviour and in destructive conflict and these patterns appear to feature in interpersonal and text communications. This program of research supports further examination of the attachment principles and dyadic processes that underlie text communications. If these findings can be translated into accessible, therapeutic tools, partners may learn to soothe and respond, rather than react to attachment triggers in each other.

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Appendix A

Demographics Questionnaire Study 1

RO 1648

Technology Use in Romantic Relationships

Demographic Questionnaire

1. Participant number _____
2. Age _____
3. Gender Male Female
4. Relationship status Single, not dating
 Single, dating
 In a relationship (not cohabitating)
 Married and living together
 Defacto and living together
5. Length of time in current relationship: _____ months or _____ years
6. Nationality _____
7. Do you own and use a mobile phone yes no

Demographics Questionnaire Study 2

RO 1648

Technology and Intimacy in Romantic Relationships

Demographic Questionnaire

1. Age _____
2. Gender Male Female
3. Relationship status
 - Single, not in a relationship
 - In a relationship (not cohabitating)
 - Married and living together
 - Defacto and living together
4. Length of time in current relationship: _____ months or _____ years
5. Nationality _____
6. Do you own and use a mobile phone?
7. To your knowledge, has your romantic partner completed this questionnaire?

Demographics Questionnaire Study 3

RO 1648

Text Messaging in Romantic Relationships

Demographic Questionnaire

1. Gender Male Female
2. What is your age? _____
3. What is your partner's age? _____
4. Which best describes your relationship status?
 - Dating, not living together
 - Living together and not married
 - Living together and married
 - Not currently in a relationship
5. Do you use a mobile to call and text yes no
6. What is your country of residence? _____
7. How many years and months have you been in this romantic relationship? _____

Demographics Questionnaire Study 4

RO 1648

Text Messaging in Romantic Relationships

Demographic Questionnaire

1. Gender Male Female
2. What is your age? _____
3. What is your partner's age? _____
4. Which best describes your relationship status?
 - Dating, not living together
 - Living together and not married
 - Living together and married
5. Do you use a mobile to call and text yes no
6. What is your country of residence? _____
7. How long have you been in this romantic relationship? _____

Appendix B

Experiences in Close Relationships Scale (ECR-R)

The statements below concern how you feel in emotionally intimate relationships. We are interested in how you generally experience relationships, not just how you feel in your current relationship. Response to each statement by selecting the number to indicates how much you agree or disagree with each statement. A seven point Likert scale is used where 1=strongly disagree and 7=strongly agree.

1. I'm afraid that I will lose my partner's love
2. I often worry that my partner will not want to stay with me
3. I often worry that my partner does not really love me
4. I worry that romantic partners won't care about me as much as I care about them
5. I often wish that my partners feelings for me were as strong as my feelings for him or her
6. I worry a lot about my relationships
7. When my partner is out of sight, I worry that he or she might become interested in someone else
8. When I show my feelings for my romantic partner, I'm afraid they will not feel the same about me
9. I rarely worry about my partner leaving me *
10. My romantic partner makes me doubt myself
11. I do not often worry about being abandoned *
12. I find that my partner(s) don't want to get as close as I would like
13. Sometimes romantic partners change their feelings about me for no apparent reason
14. My desire to be very close sometimes scares people away
15. I'm afraid that once a romantic partner gets to know me, he or she will not like who I really am
16. It makes me mad that I don't get the affection and support I need from my partner
17. I worry that I won't measure up to other people
18. My partner only seems to notice me when I am angry
19. I prefer not to show my partner how I feel deep down
20. I feel comfortable sharing my private thoughts and feelings with my partner *
21. I find it difficult to allow myself to depend on romantic partners
22. I am very comfortable being close to romantic partners *
23. I don't feel comfortable opening up to romantic partners
24. I prefer not to be too close to romantic partners
25. I get uncomfortable when a romantic partner wants to be very close
26. I find it relatively easy to get close to my partner *
27. It's not difficult for me to get close to my partner *
28. I usually discuss my problems and concerns with my partner *
29. It helps to turn to my romantic partner in times of need *
30. I tell my partner just about everything *
31. I talk things over with my partner *
32. I am nervous when partners get too close to me

- 33. I feel comfortable depending on romantic partners *
- 34. I find it easy to depend on romantic partners *
- 35. It's easy for me to be affectionate with my partner *
- 36. My partner really understands me and my needs *

*Items are reversed scored before calculating a total score. Items are randomized for presentation.

Appendix C

Relationship Assessment Scale (RAS)

Please answer the items using the five point Likert scale, 1, strongly *disagree* to 5, *strongly agree*. Select the response that indicates your agreement or disagreement with each item.

1. My partner meets my relationship needs well
2. In general, I am satisfied with my romantic relationship
3. Compared to most, my relationship is very good
4. I sometimes wish I had not entered this relationship *
5. My relationship has met my original expectations
6. I love my partner a great deal
7. There are many problems in my relationship *

*Items are reversed scored before calculating a total score.

Appendix D

Technology Use Questionnaire Study 1

This questionnaire assesses the extent to which people use text and sext messaging in their romantic relationships. Please answer the following questions as accurately as you can.

1. How many text messages do you send each day?
 0 1-10 11-20 21-50 > 50
2. How many text messages do you receive each day?
 0 1-10 11-20 21-50 > 50
3. Of the text messages that you send each day, what percentage of calls are made to each of the following contacts: romantic partner, close friends, acquaintances, colleagues, parents.
4. Of the text messages that receive each day, what percentage of calls is received from each of the following contacts: romantic partner, close friends, acquaintances, colleagues, parents
5. When texting with your romantic partner, does the content tend to be mostly informational (e.g., "What time will you be home?") or mostly relational (e.g., "I miss you")

Using the six point Likert scale 1, *strongly disagree* to 6, *strongly agree*, please identify your agreement or disagreement with the statements below.

1. Mobile calls help me to feel connected to my partner when we are apart
2. Texting helps me to feel connected to my partner when we are apart
3. Sexting helps me to feel connected to my partner when we are apart
4. Mobile calls play a positive role in my romantic relationships
5. Text messaging plays a positive role in my romantic relationships
6. Sexting plays a positive role in my romantic relationships
7. Mobile phone calls have led to problems in my romantic relationships
8. Texting has led to problems in my romantic relationships
9. Sexting has led to problems in my romantic relationships
10. I have sent text messages with which I was not entirely comfortable
11. I have responded to sexts in a way that I was not completely comfortable
12. My romantic partner expects me to send sexually suggestive texts

Technology Use Questionnaire Study 2

This questionnaire assesses the extent to which people use text and sext messaging in their romantic relationships. Please answer the following questions as accurately as you can.

How many text messages (in total) do you send each day? _____

How many text messages (in total) do you receive each day? _____

How many text messages do you send to your romantic partner each day? _____

How many text messages do you receive from your romantic partner each day? _____

Of the text messages that you send each day, what percentage of calls are made to each of the following; romantic partner, close friends, colleagues, parents?

Of the text messages that receive each day, what percentage of calls is received from each of the following; romantic partner, close friends, colleagues, parents?

When texting with your romantic partner, does the content tend to be mostly informational (e.g., “what time will you be home?”) or mostly relational e.g., “I miss you”)

If you text your partner, how long do you expect to wait to receive a reply?

How long after sending a text message and receiving no reply, will you send another text to your partner?

0-5 minutes-10 minutes

10-30 minutes

30-60 minutes

>1 hour

>3 hours

I will not text a second time if I do not receive a reply

Using a point Likert scale, 0, *strongly disagree* to 6 *strongly agree*, please identify your agreement or disagreement with the statements below.

1. I have sent text messages of love and support to my partner
2. Texting helps me to be connected to my partner when we are apart
3. After texting my partner, I expect that they may not respond
4. Text messages have created problems in my romantic relationships
5. I have sent text messages to my partner to address a confrontational topic in our relationship
6. After texting my partner, I expect that they will get back to me as soon as they can
7. I have sent text messages to my partner to discuss a serious issue
8. After texting my partner, I expect that they will get back to me when they get around to it
9. I have sent text messages to my partner to apologize
10. I prefer texting to calling
11. I prefer calling to texting
12. After texting my partner, I may have to call or text again to get a response
13. I have sent text messages to hurt my partner
14. I have sent text messages that have made me uncomfortable
15. I have received sext messages that have made me uncomfortable

Focus Group TQ3 Development

Focus Group discussions followed the recommendations of Kruger (2002).

Focus Group Outline

Focus Group Topic: *To discuss the use of text messaging in romantic relationships.*

Guidelines: no right or wrong answers, note taker to capture differing point of view, respectfully welcome all opinions, all on a first name basis during discussion.

Questions

How is text messaging used in romantic relationships?

How has the rise in text messaging changed the way couples communicate?

In what ways does texting add to or detract from intimacy?

In what ways does texting support emotional closeness?

In what ways does texting lead to emotional distance?

What topics/expressions would partner is text about?

How often are partners likely to text each other?

Under what circumstances are partners likely to text each other?

Is there such as things as “too many texts” and how would you know?

Are there differences in who does and doesn't use texts to communicate?

What are the qualities of texting that are important? Content? Response time?

In what ways is texting different to calling?

Are text messages often misinterpreted and why?

To what extent of texting communications is positive? What kind of positive exchanges occur via text?

To what extent are text communications negative? What kind of negative exchanges occur via text?

Does the response time of the partner matter? If so, why?

Is the length of the message important? If so, why?

If you have had experiences where the exchange of texts has led to conflict, what has contributed to this outcome?

What are some the reasons that you would have to send a text to you partner. Please consider both positive and negative relationship functions.

How do you know when the text conversation is over?

How do you feel about the use of emoticons in texts?

How do you feel about the use of abbreviations in text?

Would you text to (a) expression love and affection?

Would you text to (b) say thank you or I appreciate what you did?

Would you text to (c) reach out and share a bad day or a good day?

Would you text to (d) share something that annoys you about your partner?

Would you text to (e) make a joke/share a joke?

Would you text to (f) say I miss you or I'm lonely?

Would you text to (g) flirt or hook up?

Would you text to (h) ask for a favour?

Would you text to (i) continue an argument?

Would you text to (j) make a point?

Would you text to (k) have the last word?

Would you text to (l) apologise for something that you have done or said?

Would you text to (m) break the ice?

Would you text to (n) provide support?

Would you text to (o) share good news?

Would you text to (p) share bad news?

Would you text your partner to (q) to fill in time/because you are bored?

Would you text your partner to (r) say I love you?

Would you text your partner to say (s) good night or good morning?

Other reasons to text?

How can you tell if your partner is attuned to the text messages (i.e. is focussed and attentive)?

What are some of the benefits of texting?

What are some of the disadvantages?

Have text messages led to conflict in your relationships? Why and how?

Does your partner's use of their mobile create problems? Over use or lack of use?

In what ways do texts enhance romantic relationships?

In what ways do they detract from romantic relationships?

How do couples negotiate privacy with respect to phones?

How would you feel about your partner checking your phone?

Under what circumstances would you check your partner's phone?

How often do messages shared with your partner include pictures or video content?

Beside the romantic partner, who are the other people most commonly connected by text?

Seventy Texting Items from Focus Group Discussion

1. I text messages of love to my partner
2. I text my partner just to tell them that I am thinking of them
3. I text my partner when I am bored
4. I text my partner to let them know what I am doing
5. I have sent text messages to hurt my partner
6. I text my partner to ask for their opinion
7. I send selfies to share what is happening in my world
8. I text my partner to share joke (make them laugh)
9. My partner gets irritated when I text too frequently
10. I use texting to connect more frequently than my partner does
11. I would like my partner to text more frequently than he/she does
12. The text messages I send to my partner are sometimes misinterpreted
13. I find it easier to communicate how I am feeling via, text than in a call or face to face
14. Texting enhances my relationship
15. My partners use of emoji's annoys me
16. I send pictures to show my partner where I am
17. I send pictures to show my partner how I look
18. Texting creates problems in my relationship
19. Texting helps my partner understand the stressors in my day
20. Texting help me understand the stressors in my partner's day
21. I have sent critical text messages to my partner
22. Text messages from my partner make me feel loved and appreciated
23. I wish my partner would send more complimentary text messages
24. I text my partner to remind them how attractive they are to me
25. My partner sends me romantic text messages
26. I text my partner to communicate my anger towards him/her
27. I check my partner's phone to see who he/she is text messaging
28. I read the text messages my partner has sent to other people
29. My partner's reliance on his/her phone has created problems in our relationship
30. I say I love you via text message
31. I send text messages to show my partner that I understand how she/he thinks and feels
32. I send text messages to tell my partner that I appreciate them

33. I send text messages to show my support for my partner
34. When we are apart, texting helps me feel closer to my partner
35. When I text my partner, I expect them to reply promptly
36. I text my partner when I am feeling down
37. I text my partner to receive support
38. I use text messages to communicate my disappointment with my partner
39. I use text messages to continue conversations with my partner
40. When my partner doesn't respond to my text messages, I feel irritated
41. Sometimes I intentionally ignore my partner's text messages
42. My partner is responsive to my text messages
43. I text my partner to communicate my annoyance with him/her
44. I text my partner to say that I am sorry
45. I respond to my partner's text messages promptly
46. I wait longer for my partner to respond to my text messages than I would like
47. Texting helps me feel connected to what I happening in my partner's day
48. Sometimes I have to send a second text to get a response from my partner
49. I text my partner when I am unable to call
50. We sometime continue arguments/disagreements via text
51. We use text messages to address problems in our relationship
52. I address urgent issues with my partner via text message
53. I have sent text messages to my partner that I have later regretted sending
54. I have responded defensively to text messages from my partner
55. I have ended a romantic relationship via text message
56. Text messages between us have sometimes led to an argument
57. When I am very angry with my partner, I have sometimes send several text messages at once
58. When my partner has been very angry with me, he/she has refused to respond to my text messages
59. My partner and I solve problems more effectively via text
60. I text my partner to apologize
61. Text message helps me avoid saying hurtful things in the heat of the moment
62. I have drafted unkind text messages to my partner that I have later deleted (and not sent)
63. I text my partner to explain how I feel about a problem in our relationship

64. I text my partner to discuss serious issues in our relationship
65. I have threatened to end a relationship via text
66. I text my partner when I don't feel like talking on the phone
67. I use emoji's in text messages to convey how I am feeling
68. I text my partner to share good news
69. I sent text messages to feel connected to my partner
70. Text messages play a positive role in our relationship

Technology Questionnaire TQ3 Development

1. I text messages of love to my partner
2. I text my partner just to tell them that I am thinking of them
3. I text my partner when I am bored
4. I text my partner to let them know what I am doing
5. I have sent text messages to hurt my partner
6. I text my partner to ask for their opinion
7. I send selfies to share what is happening in my world
8. I text my partner to share joke (make them laugh)
9. My partner gets irritated when I text too frequently
10. I use texting to connect more frequently than my partner does
11. I would like my partner to text more frequently than he/she does
12. The text messages I send to my partner are sometimes misinterpreted
13. I find it easier to communicate how I am feeling via, text than in a call or face to face
14. Texting enhances my relationship
15. My partners use of emoji's annoys me
16. I send pictures to show my partner where I am
17. I send pictures to show my partner how I look
18. Texting creates problems in my relationship
19. Texting helps my partner understand the stressors in my day
20. Texting help me understand the stressors in my partner's day
21. I have sent critical text messages to my partner
22. Text messages from my partner make me feel loved and appreciated
23. I wish my partner would send more complimentary text messages
24. I text my partner to remind them how attractive they are to me
25. My partner sends me romantic text messages
26. I text my partner to communicate my anger towards him/her
27. I check my partner's phone to see who he/she is text messaging
28. I read the text messages my partner has sent to other people
29. My partner's reliance on his/her phone has created problems in our relationship
30. I say I love you via text message
31. I send text messages to show my partner that I understand how she/he thinks and feels
32. I send text messages to tell my partner that I appreciate them

33. I send text messages to show my support for my partner
34. When we are apart, texting helps me feel closer to my partner
35. When I text my partner, I expect them to reply promptly
36. I text my partner when I am feeling down
37. I text my partner to receive support
38. I use text messages to communicate my disappointment with my partner
39. I use text messages to continue conversations with my partner
40. When my partner doesn't respond to my text messages, I feel irritated
41. Sometimes I intentionally ignore my partner's text messages
42. My partner is responsive to my text messages
43. I text my partner to communicate my annoyance with him/her
44. I text my partner to say that I am sorry
45. I respond to my partner's text messages promptly
46. I wait longer for my partner to respond to my text messages than I would like
47. Texting helps me feel connected to what I happening in my partner's day
48. Sometimes I have to send a second text to get a response from my partner
49. I text my partner when I am unable to call
50. We sometime continue arguments/disagreements via text
51. We use text messages to address problems in our relationship
52. I address urgent issues with my partner via text message
53. I have sent text messages to my partner that I have later regretted sending
54. I have responded defensively to text messages from my partner
55. I have ended a romantic relationship via text message
56. Text messages between us have sometimes led to an argument
57. When I am very angry with my partner, I have sometimes send several text messages at once
58. When my partner has been very angry with me, he/she has refused to respond to my text messages
59. My partner and I solve problems more effectively via text
60. I text my partner to apologize
61. Text message helps me avoid saying hurtful things in the heat of the moment
62. I have drafted unkind text messages to my partner that I have later deleted (and not sent)
63. I text my partner to explain how I feel about a problem in our relationship

64. I text my partner to discuss serious issues in our relationship
65. I have threatened to end a relationship via text
66. I text my partner when I don't feel like talking on the phone
67. I use emoji's in text messages to convey how I am feeling
68. I text my partner to share good news
69. I sent text messages to feel connected to my partner
70. Text messages play a positive role in our relationship

Technology Questionnaire TQ3 Parameters

This questionnaire assesses the extent to which people use text and sext messaging in their romantic relationships. Please answer the following questions as accurately as you can.

1. How many text messages do you send each day? _____
2. How many text messages do you receive each day? _____
3. How many text messages do you send to your romantic partner each day? _____
4. How many text messages do you receive from your romantic partner each day?

5. Of the text messages that you send each day, what percentage of calls are made to each of the following?
6. Of the text messages that receive each day, what percentage of calls is received from each of the following? (
7. If you text your partner, how long do you expect to wait to receive a reply? _____
minutes
8. How long after sending a text message and receiving no reply will you send another text to your partner?
 - 0-10 minutes
 - 10-30 minutes
 - 30-60 minutes
 - >1 hour
 - I will not text a second time if I do not receive a reply

Technology Questionnaire TQ3 Items

1. I text messages of love to my partner
2. When very upset, I sometimes send long text messages to communicate how I am feeling
3. I text my partner to tell them that I am thinking of them
4. I text my partner to let them know what I am doing
5. I have sent text messages that have hurt my partner's feelings *
6. I text my partner to ask for their opinion
7. The text messages I send to my partner are sometimes misinterpreted *
8. Texting creates problems in my relationship *
9. Text messages from my partner make me feel loved and appreciated
10. I text my partner to tell them how attractive they are to me
11. My partner sends me romantic text messages
12. I sometimes text my partner to communicate my anger toward him/her *
13. I sometimes check my partner's phone to see who he/she has been texting *
14. My partner's reliance on their phone has caused problems in our relationship *
15. I say, I love you, via text message
16. I send text message to tell my partner that I appreciate them
17. Sometimes I have to send a second text to get a response from my partner *
18. Sometimes I intentionally ignore my partner's text messages *
19. My partner is responsive to my text messages
20. Texting helps me to feel close to my partner when we are apart.
21. I use text messages to continue conversations with my partner
22. I text my partner to communicate my annoyance with him/her *
23. I respond to my partner's text messages promptly
24. We sometimes continue disagreements via text *
25. I have sent text messages to my partner that I have later regretted sending *
26. I have responded defensively to text messages from my partner *
27. Text messages between us have sometimes led to an argument *
28. I sometimes text my partner to apologise for something I have said or done
29. Texting helps me to avoid saying hurtful things in the heat of the moment *
30. I have sent text messages to discuss a problem in our relationship *
31. We have resolved disagreements effectively via text

32. Text messages are a positive tool in our relationship.
33. Sometimes when things are tense, I use texting to break the ice *
34. Sometimes my partner's texts reveal things about them that surprise me.
35. Sometimes I am surprised by an emotional response to a text that I have received *
36. Sometimes I am surprised by my partner's response to a text that I have sent *
37. I try to think about how I use texting in our relationship (O)
38. I sometimes save text messages from my partner to read back over at another time (O)
39. If I do save text messages from my partner, they tend to be messages of love and affection, rather than messages that we sent in anger
40. I sometimes show text messages from my partner to others (e.g. close friends) *

*Denotes turning away (TA) subscale items

Scoring TQ3

(O) Items deleted from TQ total score calculations in Study 3 [37, 38]

TA = 21 items [27, 26, 22, 24, 5, 25, 30, 18, 8, 12, 7, 14, 13, 36, 29, 33, 17, 34, 35, 40, 31]

TT = 17 items [28, 2, 16, 20, 3, 15, 9, 1, 10, 11, 19, 4, 32, 23, 21, 39, 6]

Technology Questionnaire TQ4 Development A**Texting Parameters**

1. How many text messages do you send each day?
2. How many text messages do you receive each day?
3. How many text messages do you send to your romantic partner each day?
4. How many text messages do you receive from your romantic partner each day?
5. Of the text messages that you send each day, what percentage of calls are made to each of the following? (Percentage should sum to 100%)
6. Of the text messages that receive each day, what percentage of calls is received from each of the following? (Percentage should sum to 100%)
7. If you text your partner, how long do you expect to wait to receive a reply?
8. If you text your partner after you have had a fight, how long do you expect to wait to receive a reply?
9. If you text your partner when things are tense between the two of you, how long do you expect to wait to receive a reply?
10. If you text your partner when things are going very well between the two of you, how long do you expect to wait to receive a reply?

Technology Questionnaire TQ4 Development B**Existing TQ3 Items: Block 1**

1. I text messages of love to my partner.
2. When very upset, I send long text messages to communication how I am feeling.
3. I text my partner to tell them that I am thinking of them.
4. I text my partner to let them know what I am doing.
5. I have sent text messages that have hurt my partner's feelings.
6. I text my partner to ask for their opinion.
7. The text messages I send to my partner are sometimes misinterpreted.
8. Texting creates problems in my relationships.
9. Text message from my partner make me feel loved. (changed from study 3)
10. I text my partner to tell them how attractive they are to me.
11. My partner sends me romantic text messages.
12. I sometimes text my partner to communicate my anger towards him/her.
13. I sometimes check my partner's phone to see who he/she has been texting.
14. My partner's reliance on their phone has created problems in our relationship.
15. I say, "I love you", via text.
16. I send text messages to tell my partner that I appreciate them.
17. Sometimes I have to send a second text to get my partner to response to my text message.
18. Sometimes I intentionally ignore my partner's text messages.
19. My partner is responsive to my text messages.
20. Texting helps me to feel closer to my partner when we are apart.
21. We (my partner and I) use text messages to continue conversations.
22. I text my partner to communicate my annoyance with him/her.
23. I respond to my partner's text messages promptly.
24. We sometimes continue disagreements via text.
25. I have sent text messages to my partner that I have later regretted sending.
26. I have responded defensively to text messages from my partner.
27. Text messages sent between us have led to arguments.
28. I text my partner to apologise for something I have done or said.
29. Texting helps me to avoid saying hurtful things in the heat of the moment.
30. We have exchanged text messages to discuss a problem in our relationship.
31. We have resolved disagreements effectively via text.

32. Text messages are a positive tool in our relationship.
33. Sometimes when things are tense in our relationship, I send a text message to my partner to break the ice.
34. Sometimes my partner's texts reveal things about them that surprise me.
35. I am sometimes surprised at my emotional response to a text that I have received.
36. I am sometimes surprised at my partner's emotional response to a text that I have sent.
37. I think carefully about how we use texting in our relationship. (o)
38. I save text messages from my partner to read back over at another time. (o)
39. If I do save text messages from my partner, they tend to be messages of love and affection rather than messages that were sent in anger.
40. I sometimes show text messages from my partner to others (e.g. close friends).

(O) Items deleted from TQ total score calculations in Study 3 [37, 38]

New TQ4 Items: Block 2

1. Texts from my partner make me feel appreciated.
2. I have spent time ruminating over the content of a text my partner has sent to me.
3. I send a text instead of making a call because it can be easier.
4. I sometimes send a text to avoid a difficult conversation.
5. I send a text when I want a simple answer (not a long conversation).
6. When my partner is too busy to take a call, I will send a text to let them know I am thinking of them.
7. I send a text to my partner when I am feeling lonely.
8. I send a text to smooth things over after a fight.
9. I send a text to feel close to my partner.
10. I send a text to vent about an issue.
11. I send a text to my partner to have the final word in an argument.
12. If we are arguing, I will avoid my partner's texts until I have cooled down.
13. My partner's responses to texts show me that he/she is responsive to my needs.
14. My partner's texts show me that he/she supports my goals and ideals.
15. My partner's texts to me show me that he/she is on my side.
16. We (my partner and I) text each other more than we used to early in our relationship.
17. We (my partner and I) text each other less than we used to early in our relationship.
18. Texting is a safer way to deal with negativity than a face-to-face conversation or phone call.
19. Texting my partner helps me to avoid saying things that I would regret, if we were talking face to face.
20. I have saved angry/hostile texts that my partner has sent me.
21. I have saved loving texts that my partner has sent me.
22. The texts we exchange enhance our connection.
23. The texts we exchange create problems in our relationship.
24. Text message exchanged between us have made arguments worse.
25. My partner and I sometimes share a joke over text.
26. Texting with my partner is something that creates good feelings between us.

Technology Questionnaire TQ4

1. I text messages of love to my partner.
2. When very upset, I send long text messages to communicate how I am feeling.
3. I text my partner to tell them that I am thinking of them.
4. I text my partner to let them know what I am doing.
5. I have sent text messages that have hurt my partner's feelings.
6. I text my partner to ask for their opinion.
7. The text messages I send to my partner are sometimes misinterpreted.
8. Texting creates problems in my relationships.
9. Text message from my partner make me feel loved. (changed from study 3)
10. I text my partner to tell them how attractive they are to me.
11. My partner sends me romantic text messages.
12. I sometimes text my partner to communicate my anger towards him/her.
13. I sometimes check my partner's phone to see who he/she has been texting.
14. My partner's reliance on their phone has created problems in our relationship.
15. I say, "I love you", via text.
16. I send text messages to tell my partner that I appreciate them.
17. Sometimes I have to send a second text to get my partner to response to my text message.
18. Sometimes I intentionally ignore my partner's text messages.
19. My partner is responsive to my text messages.
20. Texting helps me to feel closer to my partner when we are apart.
21. We (my partner and I) use text messages to continue conversations.
22. I text my partner to communicate my annoyance with him/her.
23. I respond to my partner's text messages promptly.
24. We sometimes continue disagreements via text.
25. I have sent text messages to my partner that I have later regretted sending.
26. I have responded defensively to text messages from my partner.
27. Text messages sent between us have led to arguments.
28. I text my partner to apologise for something I have done or said.
29. Texting helps me to avoid saying hurtful things in the heat of the moment.
30. We have exchanged text messages to discuss a problem in our relationship.
31. We have resolved disagreements effectively via text.

32. Text messages are a positive tool in our relationship.
33. Sometimes when things are tense in our relationship, I send a text message to my partner to break the ice.
34. Sometimes my partner's texts reveal things about them that surprise me.
35. I am sometimes surprised at my emotional response to a text that I have received.
36. I am sometimes surprised at my partner's emotional response to a text that I have sent.
37. If I do save text messages from my partner, they tend to be messages of love and affection rather than messages sent in anger.
38. I sometimes show text messages from my partner to others (e.g. close friends).
39. I have spent time ruminating over the content of a text my partner has sent to me.
40. I send a text instead of making a call because it can be easier.
41. I sometimes send a text to avoid a difficult conversation.
42. I send a text when I want a simple answer (not a long conversation).
43. When my partner is too busy to take a call, I will send a text to let them know I am thinking of them.
44. I send a text to my partner when I am feeling lonely.
45. I send a text to smooth things over after a fight.
46. I send a text to feel close to my partner.
47. I send a text to vent about an issue.
48. I send a text to my partner to have the final word in an argument.
49. If we are arguing, I will avoid my partner's texts until I have cooled down.
50. My partner's responses to texts show me that he/she is responsive to my needs.
51. My partner's texts show me that he/she supports my goals and ideals.
52. My partner's texts to me show me that he/she is on my side.
53. We (my partner and I) text each other more than we used to early in our relationship.
54. We (my partner and I) text each other less than we used to early in our relationship.
55. Texting is a safer way to deal with negativity than a face-to-face conversation or phone call.
56. Texting my partner helps me to avoid saying things that I would regret, if we were talking face to face.
57. I have saved angry/hostile texts that my partner has sent me.
58. I have saved loving texts that my partner has sent me.
59. The texts we exchange enhance our connection.
60. The texts we exchange create problems in our relationship.

61. Text message exchanged between us have made arguments worse.
62. My partner and I sometimes share a joke over text.
63. Texting with my partner is something that creates good feelings between us.

Appendix E

Explanatory Statement Study 1

PROJECT RO 1648

Technology Use in Romantic Relationships

Purpose of the research

The aim of the study is to explore the role that mobile phone technologies (voice calls, text and sext messages) play in romantic relationships.

What you will be asked to do

Participants will be asked to complete an online questionnaire during the research study. The questionnaire will assess mobile phone use (voice calls, texting and sexting), adult romantic attachment style, relationship satisfaction, impulsivity, alexithymia and self-esteem. It is anticipated that it will take approximately 45 minutes to complete the online questionnaire. Please allow sufficient time to complete the questionnaire in one sitting.

Your participation is voluntary

Participation in this study is voluntary and you do not have to answer any questions unless you wish to do so. You have the right to withdraw from this study at any time, without consequence and all data complete prior to your withdrawal will be destroyed.

Your confidentiality

All information you provide in this research will remain confidential. Participants will be assigned with a numeric code that will be used to ensure the confidentiality of your responses. The data will be reported in a general, group manner and no information that could identify any individual participant will be published. All information will be securely stored by Bond University in accordance with Bond University policy and destroyed after five years. To be eligible to participate in this study, you must be aged over 18 years and be a student of Bond University.

Risks associated with participation

It is unlikely that you will be adversely affected by participating in this study. However, if at any time you experience feelings of distress or discomfort, you may wish to talk to a mental health professional. Please contact *Lifeline* 131314 or *Beyond Blue*, 1300 224 636 for confidential support and assistance.

The ethical conduct of this research

Any research that is performed at Bond University is conducted in accordance with the National Statement on Ethical Conduct in Human Research (2007). Should you have any complaints concerning the manner in which this research (RO-1648) is being conducted, please do not hesitate to contact the Bond University Research Ethics Complaints Officer buhrec@bond.edu.au Thank you for your participation.

Explanatory Statement Study 2

PROJECT RO 1648

Technology Use in Romantic Relationships

Purpose of the research

The aim of the study is to explore the role of text messaging in romantic relationships.

Participation

Participants will be asked to complete an online questionnaire. The questionnaire assesses text messaging, adult romantic attachment style, relationship satisfaction, relationship intimacy and loneliness. It is anticipated that it will take approximately 45 minutes to complete the online questionnaire. Please allow sufficient time to complete the questionnaire in one sitting.

Your participation is voluntary

Participation in this study is voluntary and you do not have to answer any questions unless you wish to do so. You have the right to withdraw from this study at any time, without consequence and all data completed prior to your withdrawal will be destroyed.

Your responses

All responses to this questionnaire will remain strictly confidential. Data will be reported in a general, group manner and no information that could identify any individual participant will be published. All information will be securely stored by Bond University in accordance with Bond University policy and destroyed after five years. To be eligible to participate in this study, you must be aged over 18 years, be currently in a romantic relationship and own and use a mobile phone with the capacity to call and text.

Risks associated with participation

It is unlikely that you will be adversely affected by participating in this study. However, if at any time you experience feelings of distress or discomfort, you may wish to talk to a mental health professional. Please contact *Lifeline* 131314 or *Beyond Blue*, 1300 224 636 for confidential support and assistance.

The ethical conduct of this research

Any research that is performed at Bond University is conducted in accordance with the National Statement on Ethical Conduct in Human Research (2007). Should you have any complaints concerning the manner in which this research (RO-1648) is being conducted, please do not hesitate to contact the Bond University Research Ethics Complaints Officer buhrec@bond.edu.au

Thank you for your participation.

Explanatory Statement Development Study TQ3**PROJECT RO 1648****Texting in Romantic Relationships**

The Faculty of Society and Design at Bond University, Australia are conducting this program of research. This study explores the use of text messaging in romantic relationships.

To participate you must be (a) aged between 18 and 40 years, (b) currently in a committed romantic relationship, and (c) own and use a mobile phone. The findings of this study will support an understanding of the use of texting as a communication tool in romantic relationships. The questionnaire will take approximately 15 minutes to complete.

Data collected will be stored by Bond University in accordance with Bond University policy and destroyed after five years. The research is conducted in accordance with the National Statement on Ethical Conduct in Human Research (2007).

Should you have any complaints concerning the matter in which this research is conducted, please contact the Bond University Research Ethics Complaints Officer
buhrec@bond.edu.au

Thank you for your participation.

Explanatory Statement Study 3

PROJECT RO 1648

Texting and Romantic Relationships

Purpose of the research

The aim of the study is to explore the role of text messaging in romantic relationships.

What you will be asked to do

Participants will be asked to complete an online questionnaire during the research study. The questionnaire will assess text messaging, adult romantic attachment style, relationship quality, and relationship behaviours. It is anticipated that it will take approximately 45 minutes to complete the online questionnaire. Please allow sufficient time to complete the questionnaire in one sitting.

Your participation is voluntary

Participation in this study is voluntary and you do not have to answer any questions unless you wish to do so. You have the right to withdraw from this study at any time, without consequence and all data completed prior to your withdrawal will be destroyed.

Your responses

All responses to this questionnaire will remain strictly confidential. The data will be reported in a general, group manner and no information that could identify any individual participant will be published. All information will be securely stored by Bond University in accordance with Bond University policy and destroyed after five years. To be eligible to participate in this study, you must be aged over 18 years, be currently in a romantic relationship and own and use a mobile phone with the capacity to call and text.

Risks associated with participation

It is unlikely that you will be adversely affected by participating in this study. However, if at any time you experience feelings of distress or discomfort, you may wish to talk to a mental health professional. Please contact *Lifeline* 131314 or *Beyond Blue*, 1300 224 636 for confidential support and assistance.

The ethical conduct of this research

Any research that is performed at Bond University is conducted in accordance with the National Statement on Ethical Conduct in Human Research (2007). Should you have any complaints concerning the manner in which this research (RO-1648) is being conducted, please do not hesitate to contact the Bond University Research Ethics Complaints Officer buhrec@bond.edu.au

Thank you for your participation.

Explanatory Statement Development Study TQ4**PROJECT RO 1648****Texting and Romantic Relationships**

This program of research is being conducted by the Faculty of Society and Design at Bond University, Australia. This study explores the use of text messaging in romantic relationships.

To participate you must be (a) aged between 18 and 40 years, (b) currently in a committed romantic relationship, and (c) own and use a mobile phone. The findings of this study will support an understanding of the use of texting as a communication tool in romantic relationships.

Data collected will be stored by Bond University in accordance with Bond University policy and destroyed after five years. The research is conducted in accordance with the National Statement on Ethical Conduct in Human Research (2007).

Should you have any complaints concerning the matter in which this research is conducted, please contact the Bond University Research Ethics Complaints Officer buhrec@bond.edu.au

Thank you for your participation.

Explanatory Statement Study 4**PROJECT RO 1648****Texting and Romantic Relationships**

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Thank you for your participation.

Appendix F

Scale Development Following Study 1

In Study 1, subjects reported generally positive attitudes towards the use of technology in their romantic relationships. Scores on the Technology Positive subscale of the TQ1 ranged from 6 to 32 with mean score of 27.13 and midpoint of 19-20, very much in the direction of agreement with the Technology Positive items. Calling and texting were both credited as supporting feelings of connection with the partner when apart, as was texting sexual content, to a lesser degree. Mobile calls and texts were endorsed as having a positive role in romantic relationships. Some participants acknowledged that texting had contributed somewhat to problems in their romantic relationships, a finding supporting the suggestion that text messages may be subject open to misinterpretations more than calls (Duran et al., 2012), and that text messages may function to regulate conflict as well as connection (Schade et al., 2013). Subjects tended to disagree that sexting “improved” their relationship, but noted sexting as “somewhat helpful” in forging feelings of connection when physically separated from the romantic partner. Table 46 presents the mean, standard deviation and response mode for the 12 TQ attitude items.

Table 46

Mean Score, Standard Deviation and Mode for Attitudes to Calling, Texting and Sexting Items

	TQ Attitude Items	<i>M</i>	<i>SD</i>	Mode
1	Mobile calls help me to feel connected to my partner when we are apart	5.30	0.92	Strongly agree
2	Texting helps me to feel connected to my partner when we are apart	5.32	0.73	Strongly agree
3	Sexting helps me to feel connected to my partner when we are apart	4.23	1.44	Somewhat agree
4	Mobile calls play a positive role in my romantic relationships	5.11	0.85	Agree
5	Text messaging plays a positive role in my romantic relationships	5.00	0.95	Agree
6	Sexting plays a positive role in my romantic relationships	4.19	1.39	Somewhat agree
7	Mobile phone calls have led to problems in my romantic relationships	2.91	1.37	Disagree
8	Texting has led to problems in my romantic relationships	3.32	1.50	Somewhat agree
9	Sexting has led to problems in my romantic relationships	2.33	1.25	Disagree
10	I have sent text messages with which I was not entirely comfortable	2.69	1.44	Disagree
11	I have responded to sexts in a way that I was not completely comfortable	2.83	1.49	Disagree
12	Sexting improves my relationship.	3.21	1.45	Somewhat disagree

Note. *N* = 111. TQ Scale: 1 = *strongly disagree* to 6 = *strongly agree*.

Table 47 presents correlation coefficients for attitudes to calling and texting items, relationship satisfaction, attachment anxiety and attachment avoidance. Correlations between TQ items and relationship satisfaction, attachment anxiety and attachment avoidance were computed to inform the construction of new items in subsequent studies. Subjects endorsed the contribution of calling and texting in maintaining satisfying relationships. While subjects valued technology use (calling and texting) as a means of feeling connected to partners while apart, agreement with items 1, 2, and 3 were not significantly associated with relationship satisfaction scores. This finding seems counterintuitive and may be an artefact of the strong endorsement (and restricted variance) of subject responses and general agreement with the proposition that calling and texting do support feelings of connection between partners when apart.

The perception of mobile calls as having a positive role in romantic relationships was positively correlated with relationship satisfaction scores. Similarly, agreement with the positive role of text messaging in romantic relationships was positively associated with relationship satisfaction scores. Individuals, who describe their relationships as highly satisfying, appear to use texting and calling to connect with romantic partners and recognize the role of both technologies in enhancing connection. Complications arising from texting were related to relationship satisfaction and attachment avoidance. Participants, who acknowledged that texts had contributed to relationship problems, reported significantly lower relationship satisfaction scores than participants who had not experienced problems emerging from text communications. “Problematic” texting had a stronger association with relationship satisfaction than did “positive” texting. Participants higher in attachment avoidance were more likely to acknowledge the contribution of texts to problems within their romantic relationship. The extent to which texting fosters connection appears to be related to assessment of relationship quality, and the manner in which the technology is used. The

nature of texts that create problems in romantic relationships are likely to differ significantly in content and tone from texts that contribute to feelings of intimacy and connection, however an exploration of these relationships is beyond the parameters of measures in the current study.

Table 47

Correlation Coefficients for TQ1 items, Relationship Satisfaction, Attachment Anxiety and Attachment Avoidance

Technology Questionnaire Items	RS	AA	AV
1 Mobile calls help me to feel connected to my partner when we are apart	.13	.05	-.10
2 Texting helps me to feel connected to my partner when we are apart	.12	.10	-.07
3 Sexting helps me to feel connected to my partner when we are apart	.01	.04	-.04
4 Mobile calls play a positive role in my romantic relationships	.26**	.07	-.12
5 Text messaging plays a positive role in my romantic relationships	.26**	.07	-.15
6 Sexting plays a positive role in my romantic relationships	.03	.04	.40
7 Mobile phone calls have led to problems in my romantic relationships	-.11	.09	.17
8 Texting has led to problems in my romantic relationships	-.31**	.18	.20*
9 Sexting has led to problems in my romantic relationships	-.27**	.07	.14
10 I have sent sext messages with which I was not entirely comfortable	-.36	.21*	.19*
11 I have responded to sexts in a way that I was not completely comfortable	-.14	.24*	.13
12 Sexting improves my relationship.	-.08	.14	-.05

Note. $N=111$. RS = relationship satisfaction, AA=attachment anxiety, AV= attachment avoidance.

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

Supplementary Analyses Study 1

An examination of beta weights in the Main Regression analysis, showed the significance of relationship status, attachment anxiety, and texts to romantic partners as predictors of unique variance in relationship satisfaction scores. Relationship status was the strongest contributor of unique variance, with dating participants reporting significantly lower relationship satisfaction scores than committed and cohabitating groups. Texts to romantic partner was the second largest predictor of unique variance in relationship satisfaction scores. Based on the important contribution of relationship status to the use of texting in romantic relationships, further examinations of the influence of this variable were conducted. These findings supported the refinement of existing TQ items and development of new items for subsequent versions of the TQ.

Relationship status and call and text frequency. Kruskal Wallis rank analyses of variance revealed few differences by relationship status across the broad ordinal measures of calling and texting frequency, aside of text frequency and call response expectations. Text frequencies (sent and received) were lower for the cohabitating group, than for the dating and committed non-cohabitating groups, $H(2, N = 111) = 9.98, p < .01$ and $H(2, N = 111) = 14.81, p < .01$, respectively, as in Table 48. This is not surprising given that cohabitating partners, who are living together, presumably rely on face-to-face communication when they are together at home. There are fewer opportunities for face-to-face connection and additional opportunities for text contact in non-cohabitating partnerships.

Table 48

Comparisons of Mean Rank Text Frequencies by Relationship Status

Group	<i>n</i>	Sent mean rank	Received mean rank
Dating	31	62.73	62.97
Non-cohabitating	50	62.89	62.83
Cohabitating	30	37.57	37.42

Note. $N = 111$.

Relationship status and target of contact. Data in Table 49 reflects a distinct shift in the target of mobile contact resulting from relationship commitment. One-way analysis of variance revealed a marked increase in the proportion of mobile calls directed to the romantic partner for the committed relationship groups, as compared to the dating group, $F(2, 108) = 26.57, p < .001$. This was combined with a marked drop in the proportion of calls directed to close friends and acquaintances, $F(2, 108) = 18.10, p < .001$ and $F(2, 208) = 3.99, p < .05$, respectively. The same dynamic is evident with the proportion of texts directed to the romantic partner versus close friends and colleagues. One-way analysis of variance confirmed a marked increase in the proportion of texts directed to the romantic partner for the committed relationship groups as compared to the dating group, $F(2, 108) = 26.57, p < .001$. This combined with a marked drop in the proportion of calls directed to close friends and acquaintances, $F(2, 108) = 18.10, p < .001$ and $F(2, 208) = 3.99, p < .05$, respectively. For both calling and texting, results suggest a progressive shift away from parents and close friends, and towards the romantic partner as the level of commitment increases. Data supports the use of technology, calls and texts, to observe processes of attachment transfer in romantic relationships.

Table 49

Mean Values and Standard Deviations for Target of Calls and Texts by Relationship Status

	Dating		Non-cohabitating		Cohabiting	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
CRP***	12.93	(5.91)	46.18	(23.12)	46.13	(26.79)
CCF***	43.87	(25.35)	20.76	(15.30)	16.40	(15.58)
TRP***	23.33	(15.89)	58.16	(23.54)	53.67	(23.67)
TCF***	52.26	(20.69)	27.62	(20.09)	26.23	(18.28)

Note. $N=111$. CRP = percentage of calls to romantic partner, CCF = percentage of calls to close friends, TRP = percentage of texts to romantic partner, TCF = percentage of texts to close friends.

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

Relationship satisfaction and target of contact. The effect of a shift in target of contact on relationship satisfaction is primarily evident during the commitment forming stages of relationships, as reflected in Table 50. Relationship satisfaction rises for committed non-cohabiting subjects with a decline in the proportion of calls to close friends. For this same group relationship satisfaction rises with increased text contact with the romantic partner and decreased text contact with close friends. Although not statistically significant, the correlation coefficients suggest changes in patterns of calling and texting and relationship satisfaction by relationship status. For dating participants, relationship satisfaction declines with an increase in the proportion of calls to the romantic partner. The same is not true for texting, with a greater proportion of texts to the romantic partner associated with higher relationship satisfaction scores. As text messages are perceived as less personal than calling, texting may represent a more casual, less intimate form of connection, at least in this formative relationship stage. For dating participants, texting may be a safer way to

communicate as parameters of contingent communication are established. For dating participants, the communication of sentiment via text may be safer (i.e., more predictable and requiring less vulnerability) than voice calls or face-to-face interactions.

For committed non-cohabitating participants, both calling and texting the romantic partner were positively associated with relationship satisfaction scores. These correlations support an amplified focus on the romantic partner as an attachment figure as the relationship shifts from a casual to more committed status. Higher percentages of texts and calls to close friends for this status group were associated with lower relationship satisfaction scores, supporting a possible shift in primary attachment. For the committed cohabiting participants, calling the romantic partner was negatively associated with relationship satisfaction, while texting was not. Percentage of texts to the romantic partner and relationship satisfaction were positively correlated, but did not reach significance. It is probable that for the committed non-cohabitating subjects who are residing separately, opportunities to discuss issues over the phone as they arise remain important for building trust and safety. However, as the relationships mature and a home is shared (i.e., for committed cohabitating participants) higher proportions of calls to the romantic partner shifts from relationship enhancing to deleterious.

Table 50

Correlation Coefficients for Target of Calls and Texts and Relationship Satisfaction by Relationship Status

	Dating <i>r</i> (n = 31)	Non-cohabitating <i>r</i> (n = 50)	Cohabiting <i>r</i> (n = 30)
Calls			
Romantic partner	-.08 (<i>p</i> = .67)	.23 (<i>p</i> = .10)	-.21 (<i>p</i> = .27)
Close friends	.22 (<i>p</i> = .25)	-.34* (<i>p</i> = .02)	.01 (<i>p</i> = .99)
Texts			
Romantic partner	.30 (<i>p</i> = .11)	.32* (<i>p</i> = .02)	.11 (<i>p</i> = .55)
Close friends	.17 (<i>p</i> = .36)	-.29* (<i>p</i> = .04)	-.16 (<i>p</i> = .41)

Note. *N* = 111.

p* < .05 *p* < .01 ****p* < .001

Target of contact and attachment orientation. There were no statistically significant correlations between attachment anxiety and targets of contact for calls or texts. There were however, significant correlations (Pearson's *r*, *N* = 111) for attachment avoidance and the proportion of calls and texts directed to the romantic partner and to close friends, as opposed to other targets, as presented in Table 51. Results suggest that higher attachment avoidance was associated with proportionately fewer calls to the romantic partner and proportionately more calls to close friends. Interestingly, the direction of this relationship was the opposite to that noted earlier for the group overall (see Table 50, previously). Results indicate that attachment avoidance is associated with the preservation of wider calling and texting connections with close friends, despite the presence of a romantic partner. There were no statistically significant correlations between attachment anxiety and call or text targets.

Table 51

Relationships between Call and Text Targets, Attachment Anxiety and Attachment Avoidance

	<i>M</i>	AA	AV
Calls to romantic partner	36.88 (26.85)	-.16	-.31**
Calls to close friends	26.04 (21.71)	.14	.26**
Texts to romantic partner	47.19 (26.29)	-.15	-.37***
Texts to close friends	34.13 (22.66)	.12	.30***

Note. $N = 111$. AA = attachment anxiety, AV = attachment avoidance.

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

Relationship status and attachment orientation. The association between attachment orientation and relationship status was evident in the data. There was a significant, apparently linear drop in attachment anxiety as relationship status shifted from dating to committed non-cohabitating, to committed cohabitating, $F(2, 108) = 8.33, p < .001$, as presented in Table 52. A somewhat similar pattern was observed with respect to attachment avoidance, also presented in Table 52, with higher mean attachment avoidance scores for the dating group than for both committed groups, $F(2, 108) = 23.89, p < .001$.

Table 52

Mean Scores and Standard Deviation for Attachment Anxiety and Attachment Avoidance by Relationship Status

	Dating		Non-cohabitating		Cohabitating	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attachment anxiety	3.57 ^{ab}	(1.29)	2.94 ^{bc}	(1.25)	2.34 ^c	(0.88)
Attachment avoidance	3.53 ^{ab}	(0.82)	2.43 ^{bc}	(0.76)	2.30 ^c	(0.79)

Note. $N = 111$. Annotations ^{a b c} display group means shown to be significantly different from each other.

Dating participants. A focus on texting the romantic partner, at the expense of broader contact with close friends, appears to be not fully established in the dating group, $r(n=31) = -.33, p < .07$. There were no statistically significant correlations between texts to romantic partner or close friends and relationship satisfaction for dating participants. Nor were there statistically significant correlations between measures of relationship satisfaction and attachment anxiety or attachment avoidance in this group. For this group of dating participants, attachment anxiety and attachment avoidance appear relatively orthogonal, $r(n=31) = .08, n.s.$

Committed non-cohabitating participants. For the committed non-cohabitating group, a pattern directing texts toward the romantic partner and away from broader contacts with close friends is strongest, $r(n=50) = .89, p < .001$. Further, relationship satisfaction increased with the proportion of text sent to the romantic partner, $r(n=50) = .32, p < .05$ and decreased with the proportion of texts sent to close friends, $r(n=50) = -.29, p < .05$. For the committed cohabitating group, relationship satisfaction was associated with a decline in attachment anxiety, $r(n=50) = -.38, p < .01$, but not necessarily attachment avoidance, although the measures for attachment anxiety and attachment avoidance were significantly and positively correlated for this sample, $r(n=50) = .38, p < .01$.

Committed cohabitating participants. For the committed cohabitating group, there was a strong tendency to text the romantic partner more than close friends, $r(n=30) = -.71, p < .001$, but this focus on the partner was not significantly associated with relationship satisfaction. For committed cohabitating participants, relationship satisfaction was independent of the impact of attachment anxiety, $r(n=31) = .00$, but relationship satisfaction increased with a decline in attachment avoidance, $r(n=30) = -.46, p < .05$. There was a significant correlation between attachment anxiety and attachment avoidance, $r(n=31) = .55, p < .01$.

Taken together, the overall patterns of results in Study 1 suggest that the move from dating to a committed relationship represents a significant developmental shift. The shift is accompanied by a significant drop in attachment anxiety and attachment avoidance and focus on the romantic partner (i.e., in this study captured as texting contact) at the expense of other relationships (i.e., close friends). This does not necessarily imply that the prioritisation of the romantic partner via text is causal in this context. However, it is consistent with associations between texts, intimacy and satisfaction.

There were significant differences in relationship satisfaction mean scores for the dating ($M = 23.06$, $SD = 5.84$) and committed non-cohabitating ($M = 30.00$, $SD = 3.66$) and committed cohabitating relationship groups ($M = 30.60$, $SD = 4.21$), $F(2, 108) = 28.37$, $p < .001$). On reflection, and independently of the particular variables under review in this study, this finding is not surprising. Committed cohabitating were most satisfied and dating participants least satisfied of the relationship status groups. It would appear that forming a committed relationship either allows for, or is facilitated by, a fall in attachment anxiety (and attachment avoidance). As commitment increases (i.e., where commitment is operationally defined by a move to a committed, cohabitating status), there is a fall in attachment anxiety and attachment avoidance that is associated with perceptions of increased safety, emotional security and relationship satisfaction. This awareness becomes important with respect to text processes. Transitions in relationship status represent shifts in contingent communication and are accompanied by changes in text content, from an informational to a relational tone. Decreases in attachment anxiety and attachment avoidance (i.e., a shift towards attachment security) suggest potentially important differences in way messages are communicated and the importance of text dynamics, such as response expectations, message length or timing.

Appendix G

Miller Social Intimacy Scale (MSIS)

Please use the following ten point Likert scale to indicate your agreement with the following items, 0 = *not much* to 10 = *a great deal*.

1. When you have leisure time, how often do you choose to spend it with your partner alone?
2. How often do you keep very personal information to yourself and not share it with him or her?
3. How often do you show him/her affection?
4. How often do you confide very important personal information to him/her?
5. How often are you able to understand his/her feelings?
6. How often do you feel close to him/her?
7. How much time do you like to spend alone with your partner?
8. How much do you feel like being encouraging and supportive when he/she is unhappy?
9. How close do you feel to him/her most of the time?
10. How important is it to you to listen to his/her important disclosures?
11. How satisfying is your relationship with your partner?
12. How affectionate do you feel toward your partner?
13. How important is it to you that he/she understands your feelings?
14. How much damage is done by a typical disagreement with your partner?
15. How important is it to you that he/she be encouraging to you when you are unhappy?
16. How important is it to you that he/she shows you affection?
17. How important is your relationship with your partner in your life?

*Items are reversed scored before calculating a total score.

Appendix H

DeJong Gierveld Loneliness Scale (LS)

Please respond to the following statements using the five point Likert scale from 1, *strongly agree* to 5, *strongly disagree*.

1. There is always someone I can talk to about my day to day problems *
2. I wish I had a very close friend
3. I experience a general sense of emptiness
4. There are plenty of people that I can rely on when I have problems *
5. I miss the pleasure of the company of others
6. I find my circle of friends and acquaintances too limited
7. There are many people I can trust completely *
8. There are enough people I feel close to *
9. I miss having people around me
10. I often feel rejected
11. I can call on my friends whenever I need them *

*Items are reversed scored before calculating a total score. High scores on the scale represent low social and emotional loneliness. Low scores on the scale represent social and emotional disconnection.

Appendix I

Scale Development Following Study 2

Texting attitudes and relationship status. A comparison of responses to the texting attitudes items revealed differences as a function of relationship status for item 9, $F(2, 399) = 4.44, p < .01$, and item 12, $F(2, 399) = 3.45, p < .03$. Post Hoc testing with Tukey HSD confirmed that non-cohabitating participants indicated stronger agreement with both statements ($M = 5.39, SD = 1.37, M = 3.27, SD = 1.69$), as compared with married participants ($M = 5.00, SD = 1.60, M = 3.77, SD = 1.71$). Stronger agreement with item 9, “After texting my partner, I expect that they will respond when they get around to it”, suggests greater accommodation and relaxed expectations around responses to text message (or to bids for connection via text) for participants in non-cohabitating relationships. Stronger agreement with item 12, “After texting my partner I may have to call or text again to get a reply or response”, suggests lower expectations of response efficiency and a more casual approach to relationship bidding via text for participants in non-cohabitating relationships.

Texting attitudes and attachment orientation. To explore the relationship between attachment orientation and texting attitudes, Pearson r correlation coefficients were calculated for the attitude items, attachment anxiety and attachment avoidance. Correlation coefficients are presented in Table 53. Coefficients suggest that participants higher in attachment anxiety and attachment avoidance were less likely to send messages of love and support to partners. They were also less likely to endorse texting to increase feelings of connection when apart and less likely to expect timely responses to texts than subjects lower in attachment anxiety and avoidance. In general, responses by participants with an insecure attachment orientation, suggest very low response expectations, low levels of emotional attunement and unfavourable assessments of partner reliability. Whereas, by contrast, securely attached participants tended to expect partners to respond to messages promptly, “as

soon as they can” or “when they get around to it”. Participants low on attachment anxiety and attachment avoidance (i.e., more secure), strongly disagreed with item 3, “After sending a text, I expect that my partner may not respond”. This response mode suggests participant confidence in their partner’s willingness and ability to attune to their needs.

Participants high in attachment anxiety and/or attachment avoidance were more likely than securely attached subjects to admit sending texts to hurt the romantic partner. Subjects high in attachment anxiety were also more likely to send texts to raise serious issues about confrontational topics and to send texts to apologise. These findings together, indicate that the use of texting to manage conflict and express negative sentiment (as well as positive sentiment) may be a function of attachment anxiety and attachment avoidance.

Acknowledgement of texting to raise confrontational topics, send hurtful messages and later apologise are behaviours consistent with hyperactivation of the attachment system in response to conflict. For individuals higher in attachment anxiety, conflict generally insights a tendency to want to “make things right”. Consistent with this proposal, participants higher in attachment anxiety were more likely than those lower in attachment anxiety to re-bid for the partner’s attention (i.e., to send a subsequent text after receiving no response). Repeat bidding in this context, by participants high in attachment anxiety, is consistent with attempts to ease feelings of disconnection and isolation from partners (e.g., as in after an argument). Making repairs, re-bidding and addressing confrontational topics via text were not significantly related to attachment avoidance, only anxiety. This is consistent with findings reported elsewhere in the attachment and relationship literature.

Table 53

Correlation Coefficients for TQ2 Attitude Items and Attachment Anxiety, and Attachment Avoidance

		Attachment anxiety	Attachment avoidance
1	I have sent text messages of love and support to my partner	-.20***	-.38***
2	Texting helps me to feel connected to my partner when we are apart	-.09	-.31***
3	After texting my partner, I expect that they may not respond	.10*	.11*
4	Text messages have created problems in my romantic relationships	.30***	.19***
5	I have sent messages to my partner to broach a confrontational subject	.26***	.09
6	After texting my partner, I expect that they will get back to me as soon as they can	-.18***	-.33***
7	I have sent messages to my partner to discuss a serious issue	.09	-.08
8	Calling helps me to feel connected to my partner when we are apart	-.20***	-.44***
9	After texting my partner, I expect that they will respond when they get around to it	-.16**	-.13**
10	I have sent messages to my partner to apologise	.14**	-.09
11	After texting my partner, I may have to call or text again to get a reply or response	.24***	.08
12	I have sent messages to hurt my partner	.32***	.27***
13	I have sent text messages that have made me feel uncomfortable	.40***	.31***

Note. $N=402$.* $p < .05$ ** $p < .01$ *** $p < .001$.

Texting attitudes and relationship quality. To explore the association between relationship quality and texting attitudes, Pearson r correlation coefficients were calculated for the attitude items and relationship satisfaction, intimacy emotional and social loneliness. Correlation coefficients are presented below in Table 54. Sending messages of love and support was positively correlated with relationship satisfaction and with intimacy, as was using texts and calls to create feelings of closeness with the romantic partner. These results endorse the use of text messages and phone calls to bid for attention and emotional connection. For the socially lonely however, texting and calling were not associated with enhancing attunement and for the emotionally lonely, texting seems to be associated with disconnection rather than connection.

Loneliness and relationship quality were related to partner responsiveness to text messages, with longer wait times expected by the socially lonely and shorter wait times expected in relationships rated as intimate and highly satisfying. Emotional loneliness was related to the use of texting to raise serious issues, to broach confrontational topics, to hurt the partner, and to later apologise. Regrets over the content of texts sent were expressed by participants high in emotional loneliness, suggesting the emotional lonely may be more likely to bid for attention in ways that are destructive to the relationship and create conflict rather than connection. Relationship satisfaction and intimacy were both inversely related to feelings of regret over the content of text messages sent, the use of texts to deal with confrontational topics or serious issues and the need to send multiple texts before receiving a response.

Results here support the notion of Positive Sentiment Override (Gottman, 2015), the protective value of relationship satisfaction and intimacy on relationship maintenance. In the data, as relationship satisfaction and intimacy scores increase, anticipated response times shorten, expectations of emotional attunement increase, texting is increasingly endorsed to

support interpersonal connection, and partners are given more latitude in responding to the partner. Further, with high satisfaction and intimacy, text messages are perceived as supporting connection, are less likely to be used to address confrontational and serious issues and are less likely to be associated with remorse over content sent.

Table 54

Correlations between TQ2 Attitude Items and Relationship Satisfaction, Intimacy, and Loneliness

		RS	I	EL	SL
1	I have sent text messages of love and support to my partner	.40***	.50***	-.10	-.08
2	Texting helps me to feel connected to my partner when we are apart	.32***	.50***	-.04	-.06
3	After texting my partner, I expect that they may not respond	-.07	-.09	.05	-.06
4	Text messages have created problems in my romantic relationships	-.29***	-.24***	.21***	-.01
5	I have sent messages to my partner to broach a confrontational subject	-.19***	-.13*	.19***	-.01
6	After texting my partner, I expect that they will get back to me as soon as they can	.29***	.40***	-.04	-.10*
7	I have sent messages to my partner to discuss a serious issue	-.06	.07	.11*	-.04
8	Calling helps me to feel connected to my partner when we are apart	.36***	.42***	-.10*	-.13**
9	After texting my partner, I expect that they will respond when they get around to it	.17**	.19***	-.01	-.18***
10	I have sent messages to my partner to apologise	-.03	.09	.12*	-.08
12	After texting my partner, I may have to call or text again to get a reply or response	-.19***	-.15*	.16**	-.02
13	I have sent messages to hurt my partner	-.43***	-.41***	.22***	-.03
15	I have sent text messages that have made me feel uncomfortable	-.35***	-.36***	.17***	-.04

Note. $N=402$. RS = relationship satisfaction, I = relationship intimacy, EL= emotional loneliness, SL= social loneliness.

Appendix J

Couple Satisfaction Index (CSI)

Please indicate your degree of happiness, all things considered, for your relationship.

Extremely unhappy	Fairly unhappy	A little unhappy	Happy	Very Happy	Extremely Happy	Perfect
0	1	2	3	4	5	6

Most people have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each on the following list.

	Always agree	Almost always agree	Occasionally disagree	Frequently disagree	Almost always disagree	Always disagree
1. Time spent together	5	4	3	2	1	0
2. Making major decisions	5	4	3	2	1	0
3. Demonstrating affection	5	4	3	2	1	0

Please use the scale to respond the items below.

	All the time	Most of the time	More often than not	Occasionally	Rarely	Never
4. In general, how often do you think that things between you and your partner are going well?	5	4	3	2	1	0
5. How often do you wish you hadn't entered this relationship?	0	1	2	3	4	5

Please use the scale to respond the items below.

	Not true at all	A little true	Somewhat true	Mostly true	Almost completely true	Completely true
6. I still feel a strong connection with my partner.	0	1	2	3	4	5
7. If I had my life over, I would marry (live with/date) the same person.	0	1	2	3	4	5
8. Our relationship is strong	0	1	2	3	4	5
9. I sometimes wonder if there is someone else out there for me.	5	4	3	2	1	0
10. My relationship with my partner makes me happy.	0	1	2	3	4	5
11. I have a warm and comfortable relationship with my partner.	0	1	2	3	4	5
12. I can't imagine ending my relationship with my partner.	0	1	2	3	4	5
13. I feel that I can confide in my partner about virtually anything.	0	1	2	3	4	5
14. I have had second thoughts about this relationship recently	5	4	3	2	1	0
15. For me, my partner is the perfect romantic partner.	0	1	2	3	4	5
16. I really feel like part of a team with my partner.	0	1	2	3	4	5
17. I cannot imagine another person making me as happy as my partner does.	0	1	2	3	4	5

Please use the scale to respond the items below.

	Not at all	A little	Somewhat	Mostly	Almost completely	Completely
18. How rewarding is your relationship with your partner?	0	1	2	3	4	5
19. How well does your partner meet your needs?	0	1	2	3	4	5
20. To what extent has your relationship met your original expectations?	0	1	2	3	4	5
21. In general, how satisfied are you with your relationship?	0	1	2	3	4	5

Please use the scale to respond the items below.

	Worse than all others (extremely bad)					Better than all others (extremely good)
22. How good is your relationship compared to most?	0	1	2	3	4	5

Please use the scale to respond the items below.

	All the time	Most of the time	More often than not	Occasionally	Rarely	Never
23. Do you enjoy your partner's company?	0	1	2	3	4	5
24. How often do you and your partner have fun together?	0	1	2	3	4	5

For each of the following items, select the answer that best describes how you feel about your relationship. Base your responses on the first impressions and immediate feelings about the item.

26.	Interesting	5	4	3	2	1	0	Boring
27.	Bad	0	1	2	3	4	5	Good
28.	Full	5	4	3	2	1	0	Empty
29.	Lonely	0	1	2	3	4	5	Friendly
30.	Sturdy	5	4	3	2	1	0	Fragile
31.	Discouraging	0	1	2	3	4	5	Hopeful
32.	Enjoyable	5	4	3	2	1	0	Miserable

Appendix K**Relationships Dynamics Scale (RDS)**

Please answer each of the following questions about your relationship with your partner.

Please use the three-point scale to rate how often you and your partner experience the following.

- 1 = almost never
- 2 = once in a while
- 3 = frequently

1. Little arguments escalate into ugly fights with accusations, criticisms, name calling or bringing up past hurts.
2. My partner criticizes or belittles my opinions, feelings or desires.
3. My partner seems to view my words or actions more negatively than I mean them to be.
4. When we have a problem to solve, it is like we are on opposite teams.
5. I hold back from telling my partner what I really think and feel.
6. I think seriously about what it would be like to date or marry someone else.
7. I feel lonely in this relationship.
8. When we argue, one of us withdraws...that is, doesn't want to talk about it anymore or leaves the scene.

Appendix L**Intimate Bond Measure (IBM)**

This questionnaire lists some attitudes and behaviours that people reveal in their close relationships. Please judge your partner's attitudes and behaviours towards you in recent times and tick the most appropriate box for each item.

- 0 = not true at all
- 1 = somewhat true
- 2 = moderately true
- 3 = very true

My partner is...

1. Very considerate of me
2. Wants me to take his/her side in an argument
3. Wants to know exactly what I am doing and where I am
4. Is a good companion
5. Is affectionate to me
6. Is clearly hurt if I don't accept his/her views
7. Tends to try and change me
8. Confides closely in me
9. Tends to criticize me over small issues
10. Understands my problems and worries
11. Tends to order me about
12. Insists that I do exactly as I am told
13. Is physically gentle and considerate
14. Makes me feel needed
15. Wants to change me in small ways
16. Is very loving to me
17. Seeks to dominate me
18. Is fun to be with
19. Wants to change me in big ways
20. Tends to control everything I do
21. Shows his or her appreciation of everything I do
22. Is critical of me in private
23. Is gentle and kind to me
24. Speaks to me in a warm and friendly voice

Appendix M

Supplementary Analyses Study 3

Text frequency. Participants estimated the total number of text messages sent and received each day and the number of text messages exchanges with their romantic partner. Participants reported sending ($M = 32.49$, $SD = 29.24$) and receiving ($M = 33.23$, $SD = 29.48$) an average of 32 text messages each day. Over 70% of daily communications via text were conducted with the romantic partner, with a daily average of approximately 24 text messages sent ($M = 24.31$ $SD = 27.40$) and received ($M = 24.87$, $SD = 28.02$) from the romantic partner. Texting frequencies reported here are consistent with rates reported elsewhere in the literature and represent the use of technology within expected parameters (Nielsen online, 2011, Smith 2012).

Text frequency and relationship status. As identified in Study 1 and Study 2, texting frequencies and texting attitudes varied with relationship status. One-way analysis of variance comparing texting frequency (to the romantic partner) for the three relationship status groups, revealed significant differences in sending, F , (2, 362) = 9.42, $p < .001$, and receiving, F , (2, 362) = 9.34, $p < .001$. Participants in non-cohabitating romantic relationships sent significantly more texts messages to and received significantly more text messages from their romantic partner than cohabitating participants, regardless of marital status. Texting appears to hold greater value as a tool of connection, as reflected in text regularity (frequency), for couples who reside separately. Mean scores and standard deviations for texts exchanged with the romantic partner are presented in Table 55 below.

Text frequency and gender. Text communication with romantic partners differed by gender. Male participants reported sending, F , (1, 363) = 7.40, $p = .01$ and receiving, F , (1, 363) = 10.45, $p = .001$, significantly more text messages to the partner each day than did female subjects. With respect to gender differences in text frequency, males reported higher

overall texting frequencies than did females, as well as higher levels of destructive conflict.

In Study 2, females reported sending and receiving more texts to romantic partners than males, but this difference was not statistically significant.

Table 55

Mean Scores for Texts with Romantic Partners by Gender and Relationship Status

	Relationship Status	Text to partner	Text from partner
		<i>M</i>	<i>M</i>
Female	Non-cohabitating (<i>n</i> = 31)	35.35	36.51
	Unmarried cohabitating (<i>n</i> = 45)	23.02	22.20
	Married cohabitating (<i>n</i> = 114)	15.52	16.26
Male	Non-cohabitating (<i>n</i> = 28)	41.11	41.68
	Unmarried cohabitating (<i>n</i> = 22)	22.96	24.09
	Married cohabitating (<i>n</i> = 125)	26.86	28.06
Total	Non-cohabitating (<i>n</i> = 59)	38.08	38.97
	Unmarried cohabitating (<i>n</i> = 67)	23.00	22.82
	Married cohabitating (<i>n</i> = 239)	21.27	21.96

Note. *N* = 365. Text to partner = number of texts sent to romantic partner, Text from partner = number of texts received from romantic partner.

Texting, attachment orientation and relationship quality. To examine relationships between texting variables (frequency, response time expectations, and target of contact), and relationship quality, mean scores and standard deviations were calculated for relationship satisfaction, couple satisfaction, intimacy, destructive conflict, care and control, attachment anxiety, attachment avoidance, Turning Towards and turning against, were computed along with correlation coefficients for the variables of interest. Table 56 presents the range of scores, mean values and standard deviations for measures of relationship quality,

attachment orientation and relationship behaviours and Table 57 repeats the intercorrelations for these variables (presented previously in Study 3).

Table 56

Mean, Median, Minimum and Maximum Scores and Standard Deviations for Age, Relationship Length, Relationship Satisfaction, Couple Satisfaction, Intimacy, Destructive Conflict, Care, Control, Attachment Anxiety, Attachment Avoidance, Texting Frequency, Turning Toward and Turning Away

	<i>Minimum</i>	<i>Maximum</i>	<i>M</i>	<i>SD</i>	<i>Median</i>
Age	18	40	31.16	5.50	32.00
Relationship length	0	38	8.16	5.53	7.00
Relationship satisfaction	7	35	29.49	5.38	31.00
Couple satisfaction	23	155	112.51	22.96	118.00
Intimacy	74	170	139.35	21.87	142.00
Destructive conflict	8	24	12.96	4.22	12.00
Care	3	36	28.45	7.62	31.00
Control	0	36	13.68	9.44	12.00
Text to romantic partner	0	100	24.31	27.40	12.00
Turning towards	1	6	4.43	1.06	4.65
Turning away	1	6	3.06	1.29	3.05
Attachment anxiety	1	6	3.01	1.42	2.83
Attachment avoidance	1	5	2.49	1.03	2.44

Note. $N = 365$.

Table 57

Correlations between Attachment, Texting and Relationship Quality Variables

	RL	Age	AA	AV	RS	CSI	I	RDS	CA	CO	TP	TT	TA	RE
RL														
Age	.57***													
AA	.01	.04												
AV	.06	.11*	.66***											
RS	-.13*	-.14**	-.50***	-.63***										
CSI	-.10*	-.15**	-.50***	-.68***	.80***									
MSIS	-.17**	-.22***	-.43**	-.69***	.58***	.67***								
RDS	.11*	.07	.69***	.65**	-.59**	-.61***	-.48**							
CA	-.14**	-.16**	-.43**	-.56***	.59***	.73***	.68***	-.53***						
CO	.13*	.13*	.45***	.38***	-.31***	-.29***	-.34***	.52***	-.25***					
TP	-.17**	-.20***	.25***	.01	.06	.09	.12*	.16**	.11*	.27***				
TT	-.15**	-.20***	-.07	-.27***	.26***	.31***	-.26**	-.05	.31***	.08	.42***			
TA	.01	-.09	.60***	.34***	-.27***	-.25***	.40**	.53***	-.22***	.54***	.42***	.47***		
RE	.07	.04	.37***	.24***	-.22***	-.21***	-.19***	.36***	-.19***	.26***	.32***	.04	.31***	
<i>M</i>	8.16	31.16	3.01	2.49	29.49	112.51	139.35	12.96	28.45	13.68	24.31	4.43	3.06	17.57
<i>SD</i>	5.53	5.50	1.41	1.03	5.38	22.96	21.87	4.22	7.62	9.44	27.40	1.07	1.29	22.09

Note. $N = 365$. AA = attachment anxiety, AV = attachment avoidance, RS = relationship satisfaction, CSI = couple satisfaction, MSIS = intimacy, RDS = destructive conflict, CA = care, CO = control, TP = daily frequency of texts to partner, TT = turning towards, TA = turning away, RE = response expectations for reply text.

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

Pearson r correlation coefficients were computed for texting variables (texting frequency, response expectations and targets of contact), attachment orientation, relationship behaviours and relationship quality. There was a statistically significant relationship between texting frequency indicating that texting frequencies are higher in early stage relationships than in more established unions and decrease with length of relationship. Texting frequency was positively associated with attachment anxiety scores. Participants, who shared concerns for the safety and stability of their romantic relationships, sent more daily texts to the partner. Texting frequency was positively correlated with relationship intimacy, destructive conflict, care, control, Turning Towards and Turning Away. Participants, who rated relationships as emotionally close and caring, tended to text their romantic partners more frequently, as did participants who identified patterns of destructive relationship conflict and partner control in their relationships. Text frequency was related to intimacy, but not to relationship satisfaction or couple satisfaction. This finding emphasises the importance of capturing broader measures of texting than frequency in accurately assessing the role of technology use in romantic relationships.

Response expectations. Participants estimated how long they would expect to wait for their romantic partner to respond to a missed text. The average wait time to receive a reply was 17 minutes ($SD = 22.09$). Response expectations for texts did not vary as a function of relationship status with similar expectations reported for the three relationship status groups, $F(2, 362) = 2.54, p = .08$. Response expectations were related to assessments of relationship quality and attachment orientation. Participants, who rated their relationships as highly intimate and satisfying, reported significantly shorter wait times for a response to a sent text, than participants reporting lower relationship satisfaction, couple satisfaction, and intimacy scores. Higher attachment anxiety and higher attachment avoidance scores were associated with longer wait time expectations, as was the presence of destructive conflict.

Participants, who felt less secure and/or more emotionally distant from romantic partners, anticipated significantly longer response times to texts, suggesting lower perceptions of partner attunement. Participants who identified patterns of destructive relationship conflict in their relationships also anticipated longer anticipated wait times. While this finding was not predicted, a relationship between destructive conflict and response expectations may reflect reduced confidence in partner responsiveness and lower quality contingent communication. Pearson's r correlations support response expectations as an indicator of relationship attunement.

Target of contact. Participants estimated the percentage of text messages sent to the following contacts: romantic partner, close friends, acquaintances and parents. Participants reported texting the romantic partner more regularly than other contacts, ($M = 50.76$, $SD = 32.99$), including close friends ($M = 26.44$, $SD = 27.30$), acquaintances, ($M = 14.14$, $SD = 22.65$) and parents ($M = 18.12$, $SD = 25.38$). Patterns of texting support the prioritization of the romantic partner for text communication. Percentage of texts to the romantic partner was associated with relationship satisfaction, couple satisfaction, intimacy, control, attachment avoidance, Turning Towards, and Turning Away, as in Table 58 below. Consistent with findings in Studies 1 and 2, attachment avoidance was associated with the maintenance of wider contact networks via text. Texts to close friends, parents and acquaintances were positively associated with attachment anxiety and attachment avoidance and to the presence of destructive conflict in romantic relationships.

Table 58

Correlation coefficients for Target of Contact, Relationship Quality, Relationship Behaviours, Attachment Orientation and Technology

Subscales

	RS	CS	I	RDS	TT	TA	CA	C	AA	AV
RP	.13*	.13*	.14**	-.03	.33***	.11***	.07	.03	.05	-.17**
CF	-.03	-.03	-.06	.14**	.06	.24***	-.04	.21***	.21***	.11*
P	-.04	-.07	-.14**	.25***	.15**	.33***	-.12*	.28***	.27***	.13*
A	-.15**	-.16**	-.18**	.35**	.05	.31***	-.15**	.33***	.35***	.23***

Note. $N = 365$. RE = romantic partner, CF = close friends, P = parents, A = acquaintances, RS = relationship satisfaction, CS = couple

satisfaction, I = intimacy, RDS = destructive conflict, TT = turning towards, TA = turning away, CA = care, CO = control, AA = attachment

anxiety, AV = attachment avoidance.

Appendix N

Sound Relationship House Scales (SRH)

Love Maps

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
I can tell you some of my partners life dreams		
I can list the relatives that my partner likes the least.		
My partner is familiar with what my current stressors are		
I can list my partner's major aspirations and hopes for life.		
I know my partners major current worries		

Fondness and Admiration System

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
My partner really respects me.		
I feel loved and cared for in this relationship.		
Romance is something that our relationship definitely still has in it		
When I come into a room, my partner is glad to see me.		
My partner appreciated the things I do in this relationship.		

Turning Towards or Turning Away

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
I really enjoy discussing things with my partner		
We always have a lot to say to each other		
We have a lot of fun together in our everyday lives		
We really have a lot of interests in common		
We like to do a lot of the same things		

Negative Sentiment Override

Fill out these items about your immediate past (last 2 to 4 weeks) or a recent discussion of an existing issue.

Read each statement and place a check mark in the appropriate TRUE or FALSE box.

	True	False
I felt innocent of blame for this problem		
I felt unjustly accused		
I felt personally attacked		
I felt unjustly criticised		
I wanted the negativity to just stop		

Harsh Start Ups

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
Arguments seem to come out of nowhere		
I seem to always get blamed for issues		
My partner criticises my personality		
Our calm is suddenly shattered		
I find my partner's negativity unnerving and unsettling		

Accepting Influence

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
I generally want my partner to feel influential in this relationship		
I can listen to my partner but only up to a point		
My partner has a lot of basic common sense		
I don't reject my partners opinions out of hand		
My partner is basically a great help as a problem solver		

Repair Attempts

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
We are good at taking breaks when we need them		
When arguing, we can maintain a sense of humour		
We are pretty good listeners even when we have different positions on things		
If things get heated we can usually put out of it and change things		
My partner is good at soothing me when I get upset		

Compromise

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
We are usually good at resolving our differences		
We both believe in meeting half way when we disagree		
In discussing issues we can usually find our common ground of agreement		
Yielding power is not difficult for me		
Give and take in making decisions is not a problem in this relationship		

Gridlock on Perpetual Issues

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
We keep hurting each other when we discuss our core issues		
My partner has a long list of basically unreasonable demands		
I don't feel respected when we disagree		
My partner often acts in a selfish manner		
When we discuss our issues, my partner acts as if I am totally wrong and he or she is totally right		

The Four Horsemen

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
I have to defend myself because the charges against me are so unfair		
I often feel unappreciated by my partner		
My partner doesn't face issues responsibly and maturely		
I am just not guilty of many of the things that my partner accuses me of		
My partner has a lot of trouble being rational and logical		

Flooding

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
Our discussions get too heated		
I have a hard time calming down		
One of us is going to say something that we regret		
I think to myself , “why can’t we talk more logically?”		
My partner has a long list of unreasonable demands		

Emotional Disengagement

Read each statement and place a check mark in the appropriate TRUE or FALSE box

	True	False
I often find myself disappointed in this relationship		
I will at times find myself quite lonely in this relationship		
It is hard for my deepest feelings to get much attention in this relationship		
There is not enough closeness between us		
I have adapted to a lot in this relationship and I am not so sure that it is a good idea.		

Appendix O

Locke Wallace Relationship Adjustment Test (MAT)

Please use the sliding scale to identify the position on the scale line that best describes the degree of happiness, everything considered, of your present relationship. The middle point "happy" represents the degree of happiness that most people get from their relationship, and the scale gradually ranges on one side to those few who are very unhappy and, on the other, to those few who experience extreme joy in their relationship.

Very unhappy
Happy
Perfectly happy

State the appropriate extent of agreement or disagreement between you and your partner on the following items.

Please check each column.

	Always disagree	Almost always disagree	Occasionally disagree	Frequently disagree	Almost always agree	Always agree
Handling family finances						
Matters of Recreation						
Demonstrations of affection						
Friends						
Sexual relations						
Conventions						
Philosophy of life						
Dealing with in laws						

For each item, please check one response

When disagreements arise, they usually result in:

- (a) me giving in (b) my partner giving in (c) agreement by mutual give and take

Do you and your partner engage in outside interests together?

- (a) All of them (b) some of them (c) very few of them (d) none of them

In leisure time, do you generally prefer to?

- (a) Be on the go (b) stay at home

Does your partner generally prefer?

- (a) To be on the go (b) to stay at home

Do you ever wish you hadn't committed to this relationship?

- (a) Frequently (b) occasionally (c) rarely (d) never

If you had to live your life over again, do you think that you would?

- (a) Commit to the same person (b) commit to a different person (c) not commit at all

Do you ever confide in your partner?

- (a) Almost never (b) rarely (c) in most things (d) in everything