Together yet Apart: Using Video Mediated Technology to Stay Connected in Long-Distance Relationships

by

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ABSTRACT

TOGETHER YET APART: USING VIDEO MEDIATED TECHNOLOGY TO STAY CONNECTED IN LONG-DISTANCE RELATIONSHIPS

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This study examined the use of video-mediated communication (VMC) among individuals in romantic relationship, specifically looking at VCM use in long-distance relationships (LDR) compared to geographically close relationship (GCR). Participants were recruited from two first year classes at a university in southwestern Ontario. Three-hundred and ninety-six participants completed the survey online. Long-distance participants were more likely to use video chat/webcam than GC participants and individuals that reported more communication with their partner also reported higher levels of relationship satisfaction, intimacy, and self-disclosure and lower levels of relational uncertainty and conflict avoidance. Lastly, high and low VMC users did not differ on the relationship quality measures; however, when broken down by LDR or GCR, high and low VMC users differed on communication, emotional and sexual intimacy, but only for LD participants, not GC participants. These findings can be used to make recommendations for couples and therapists working with couples in LDRs.
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Introduction

Individuals have a strong need to feel connected with others especially on an interpersonal level (Kjeldskov et al., 2005; Mauss et al., 2011). Being connected creates a sense of intimacy between individuals which allows for feelings of safety and certainty (Davila & Kashy, 2009). Within the context of romantic relationships, physical intimacy has been associated as a factor that helps maintain physical and emotional well-being within an individual (Sneed, Whitbourne, Schwartz, & Huang, 2012). However, today’s modern and career-oriented culture has contributed to a growing number of long-distance relationships (LDRs) (Armour, 1998). Many couples may be forced to live apart due to career opportunities and advancements (e.g., military, oil field workers, and researchers pursuing fieldwork), crises (e.g., illness of a family member), and the pursuit of higher education (Stafford & Canary, 1991). As a result, many couples in LDRs are faced with fewer opportunities for physical intimacy and face-to-face (ftf) communication. This may seem problematic to the success of a relationship since both scholarly and lay assumptions about relationship satisfaction assume that both physical proximity and frequent face-to-face communication are essential (Litzinger & Gordon, 2005; Stafford, 2005). Nevertheless, researchers studying LDRs have found that long-distance couples report that their relationships are as fulfilling and committed as those of geographically close couples, but little research has looked into the factors that facilitate relationship satisfaction in long-distance couples. One such factor could be the use of technology, more specifically, video-mediated communication (VMC), as it allows for face-to-face communication and potentially for more intimate communication between couples. Therefore, the proposed study seeks to examine the use of VMC among those in long-distance relationships compared to those in geographically
close relationships (GCRs) and to compare these individuals on high and low VMC use in terms of relationship characteristics and satisfaction (i.e., intimacy, relationship certainty, and communication).

**Literature Review**

**Defining Long-distance Relationships**

The definition of a LDR has varied across research. Some researchers have chosen to define the relationship by distance via kilometers or miles (Knox, Zusman, Daniels, & Brantley, 2002; Lydon, Pierce and O’Regan, 1997; Schwebel, Dunn, Moss, & Renner, 1992). For example, Schwebel and colleagues (1992) used 50 miles or more to define a LDR while Knox and colleagues (2002) and Lydon and colleagues (1997) used 200 miles. Some have chosen to operationalize long-distance couples by geographical boundaries such as living in a different city or town as their partner (Canary, Stafford, Hause, & Wallace, 1993; Helgeson, 1994). Other researchers have chosen to define a LDR by the following statement, "My partner lives far enough away from me that it would be very difficult or impossible to see him or her every day" (Guldner & Swensen, 1995; Maguire, & Kinney, 2007). However, some researchers have challenged these definitions as participants often do not accurately report miles and others believe that putting restrictions on what constitutes a LDR can be limiting and believe that being in a LDR is a subjective reality (Dellman-Jenkins, Bernard-Paolucci, & Rushing, 1994). Therefore, they have allowed their participants to define for themselves whether or not they consider their relationships to be long-distance, as they believe this is a more valid approach (Dainton & Aylor, 2001; Dellman et al., 1994).

When studying relationship satisfaction in long-distance couples, researcher often use
geographically close couples as a comparison group. However, within this area of study, research findings on relationship satisfaction of LDRs and GCRs have been contradictory. Studies have found that lower levels of relationship satisfaction have been reported by some individuals in LDRs compared to GCRs (Cameron and Ross, 2007; Van Horn et al., 1997). Van Horn et al. (1997) studied a sample of 162 undergraduate students ranging in age from 18 to 22 who were currently involved in either LDRs or GCRs. They predicted that intimacy would be restricted due to limited ftf interaction in LDRs. The researchers found that individuals in LDRs felt more uncertainty about whether or not the relationships would last and they reported less companionship, and less relationship satisfaction than those in GCRs. However, within the same study, couples in LDRs did not significantly differ from GCRs on fundamental measures of romantic relationships such as intimate self-disclosure, affection, enhancement of worth, nurturance, instrumental health, and partner's perspective taking. They also found no significant differences in breakups between individuals in LDRs and individuals in GCRs at their three month follow up. Therefore, individuals in LDRs were not any more likely to break up than individuals in GCRs. Other studies have also reported that relationship satisfaction does not differ between LDRs and GCRs (Guldner & Swensen, 1995; Kirkpatrick, 2007; Roberts & Pistole, 2009).

In contrast, some recent research has demonstrated that individuals in LDRs report higher levels of relationship satisfaction than those in GCRs (Jiang & Hancock, 2013; Kelmer, Rhoades, Stanley, & Markman, 2013). Kelmer and colleagues (2013) surveyed 870 individuals in both LDRs and GCRs and found that individuals in LDRs significantly differed from GCRs on several variables of relationship quality. Individuals in LDRs reported higher levels of dedication to their partner, love for partner, and having fun with their partner. Individuals in LDRs were
also found to have lower levels of problematic communication (aggression, escalation, withdrawal) as well as feelings of constraint (feeling trapped within the relationship). In addition, couples in LDRs overall reported higher levels of intimacy compared to those in GCRs (Jiang & Hancock, 2013).

Researchers have speculated that long-distance couples may report significantly higher levels of dedication to one's partner in order to reduce cognitive dissonance due to relational uncertainty (Kelmer et al., 2013). By declaring higher levels of dedication to one's partner, long-distance couples may be able to decrease the amount of uncertainty they feel when away from their partner thus leading to a greater belief that the relationship is more stable. More recent research has suggested that long-distance couples report more intimacy compared to geographically close couples because they engage in more intimacy-enhancing behaviours such as more self-disclosure (Jiang & Hancock, 2013) which has been suggested to be associated with reduced face-to-face communication (Stafford & Merolla, 2007).

In LDRs, there are a number of relational domains that have been found to facilitate relationship satisfaction such as levels of dedication to one's partner, love for one's partner, and affection towards one's partner. What follows is an exploration of relational domains relevant to long-distance couples; specifically: intimacy and communication. Following this, the role of technology in association with these domains as facilitators of relationship satisfaction will be described. As a theoretical framework, Relational Uncertainty will be presented to provide a context for the relationships between these variables. Finally, limitations of research conducted to date will be discussed and the current study presented.

**Intimacy**

Intimacy plays an important role in maintaining successful romantic relationships. In fact,
Intimacy is included as a major component in a hierarchy of human needs by many developmental theorists (Erikson, 1950; Maslow, 1954), and intimacy is a basic component of love according to Sternberg (1986). Intimacy allows couples to feel comfortable sharing their innermost thoughts and allows couples to see their partner as a secure base in which they can self-disclose and receive emotional support. Intimacy is "a process and an experience which is the outcome of the disclosure of intimate topics and sharing intimate experiences" (Schafer & Olson, 1981, p. 51). Intimacy, therefore, has been defined as feelings of closeness, connectedness, and bondedness experienced within a close relationship and is often associated with emotional investment in their romantic relationship. Also important to the definition of intimacy is partner's responsiveness. According to Reis and Shaver's (1988) interpersonal process model, an individual's partner (in this case the listener) must have positive regard for their partner by being responsive and receptive when the other partner (e.g., the discloser) self-discloses important information. Intimacy is then created when the discloser feels valued, understood, and validated by their partner's responsiveness (Reis & Patrick, 1996; Reis & Shaver, 1988). Further, in order for romantic relationships to develop intimacy, intimate experiences must continue to occur within the relationship specifically over several areas (Schafer & Olson, 1981). The areas of intimacy have been described as: emotional, social, sexual, intellectual, and recreational (Schafer & Olson, 1981). Emotional intimacy includes shared feelings and closeness; social intimacy includes having common friends and social networks; sexual intimacy involves sharing affection, touching, and sexual closeness/activity; intellectual intimacy involves sharing ideas about life and work; and recreational intimacy includes sharing past and present experiences and activities (Schafer & Olson, 1981).

According to Marston, Hecht, Manke, McDaniel and Reeder (1998), emotional intimacy
(i.e., openness and refers to self-disclosure) and sexual intimacy (i.e., sex and affection) are the two most important ways couples experience intimacy. Within romantic relationships, emotional intimacy has been associated with a healthy relationship, sexual satisfaction, and psychological well-being, and acts as a buffer for daily stressors (Miller & Lefcourt, 1982; Prager, 1995; Stulhofer, Ferreira, & Landripet, 2014). In addition, it may offer nurturing opportunities and provide a sense of belongingness and reassure self-worth when experienced by one's partner (Sinclair & Dowdy, 2005). Emotional intimacy encompasses the true definition of intimacy by looking specifically at emotional closeness and connectedness of a relationship and involves sharing one's innermost thoughts with their significant other. It is important to understand that emotional intimacy can be experienced within close friendships and with family members and, therefore, is not unique to romantic relationships; one can be more emotionally intimate with a close friend than with a romantic partner.

Sexual intimacy, on the other hand, is unique to romantic relationships; however, it is proposed to develop from emotional intimacy. In fact, Armstrong (2006) stated that, “emotional intimacy is the ideal foundation for intimate sexuality” (p. 282). Sexual intimacy involves sharing sexual closeness and affection with one's partner. Birnie-Porter and Lydon (2013) argue that "sexual intimacy is not simply sexual activity but instead, at its core, sexual intimacy is an experience of intimacy" (p. 238). Therefore, sexual intimacy is simply not just sexual behaviour and arousal but is instead associated with many psychological components of intimacy. Thus, not all sexual experiences are sexually intimate. In order for a sexual experience to be considered intimate, it must be consensual and be a “bodily experience that appeals to the senses” (Birnie-Porter & Lydon, 2013, p. 256). Therefore, sexual intimacy is a strong predictor of sexual satisfaction, while both emotional intimacy and sexual intimacy are strong predictors of
relationship satisfaction (Birnie-Porter & Lydon, 2013).

One commonly held belief about the development of close intimate relationships is that geographic proximity is necessary for developing shared meaning, understanding, and emotional attachment (Sahlstein, 2010; Stafford, 2005); therefore, it can be hypothesized that individuals in LDRs often find it difficult to maintain intimacy in their relationship. However, previous research suggests that long-distance couples often report equal or greater relationship satisfaction, trust, and even intimacy when compared to geographically close couples (Guldner & Swensen, 1995; Jiang & Hancock, 2013; Kelmer, et al., 2013; Stafford, 2010). Thus, it seems unlikely that geographic proximity is necessary for the development of intimacy in close relationships. Previous research on intimacy and long-distance couples has found that individuals in LDRs are motivated to change difficult situations (e.g., constraints placed on the relationship due to distance) and often engage in adaptive behaviours and cognitions in order to increase intimacy in their relationship (Jiang & Hancock, 2013; Reis & Shaver, 1988). For example, when individuals desire closeness in their relationship, they may begin to engage in more self-disclosing behaviour. They are then validated by their partner's reciprocal disclosure and responsiveness which is seen as an expression of intimacy (Reis & Shaver, 1988). In addition to behavioural adaption (engaging in more self-disclosure), long-distance couples also engage in conflict avoidance behaviours such as unexpressed annoyance and argument avoidance which is thought to increase intimacy while separated (Stafford, 2010).

Communication

As seen above, intimacy is closely tied to communication and it is therefore seen as another central factor associated with relationship satisfaction. Frequent communication has been found to promote relationship development, intimacy, and relational satisfaction (Egeci &
Gencoz, 2006; Parks, 1982; Stafford & Reske, 1990). Further, quality of communication has been found to be an important factor in relationship functioning as intimate partners place emphasis on positive communication to establish closeness within their relationship. (Rehman & Holtzworth-Munroe, 2007; Sastry, 1999). To test the association between communication and relationship satisfaction, Egeci and Gencoz (2006) explored communication and relationship satisfaction in 142 undergraduate and graduate students who varied in age from 18 to 43. After controlling for both attachment style and problem-solving skills, communication was significantly associated with relationship satisfaction such that individuals that reported lower communication problems reported higher rates of relationship satisfaction.

Additionally, when comparing the ways couples in LDRs and GCRs communicate, researchers have found that long-distance couples engage in communication styles that differ from geographically close couples (Kelmer et al., 2013; Stafford, 2010). These unique communication styles may be used by long-distance couples to facilitate relationship satisfaction. Kelmer and colleagues (2013) found that long-distance couples report lower levels of problematic communication such as aggression and negative interpretation when compared to geographically close couples. Stephen (1986) found that, when communicating, long-distance couples tended to focus their conversations mainly around intimacy, love, and relational issues. Research has also shown that long-distance couples use more rewarding communication styles such as engaging in more intimate and positive talk and avoid conflicting talk when compared to GCRs (Stafford, 2010). Stafford (2010) studied long-distance partners’ communication styles throughout their courtship. A total of 340 heterosexual undergraduate students (172 GCRs and 168 LDRs) currently involved in dating relationships were recruited for the study. After accounting for relationship length, long-distance couples engaged in significantly more intimacy
talk and avoided talk about conflicting issues when compared to geographically close couples. Stafford proposed that the rewarding communication style observed within long-distance couples occurs in order to compensate for limited face-to-face communication and physical intimacy opportunities.

Frequency of face-to-face (ftf) communication has also been raised as an important predictor of intimacy and satisfaction in relationships. According to popular media, many believe that LDRs do not succeed due to challenges such as reduced ftf communication. According to Stafford (2005), one strongly held assumption of close relationships is that frequent ftf communication is required as it provides a richness of interpersonal cues such as awareness of social presence and nonverbal cues (Rice, 1993; Weinberg, 1996). Face-to-face communication allows couples to develop a greater intimate and emotional connection that is harder to obtain through other communication methods (Scott, Mottarella, & Lavooy, 2006). Face-to-face communication has also been found to be associated with greater levels of trust with LDRs (Dainton & Aylor, 2001). It is important to note that, although long-distance couples have less ftf communication, they still report equal or greater relationship satisfaction compared to geographically close couples (Guldner & Swensen, 1995; Jiang & Hancock, 2013; Kelmer, et al., 2013; Kirkpatrick, 2007; Roberts & Pistole, 2009).

In summary, both frequency of ftf communication and quality of communication are important for relationship satisfaction; however, within LDRs, ftf communication is limited. Long-distance couples, may therefore, develop unique communication styles to facilitate relationship satisfaction such as engaging in more conflict avoidance in order to compensate for less time spent in ftf communication. It may be that using technology that can mimic ftf communication (e.g., visually mediated communication) can foster intimacy in long-distance
couples, leading to increases in relationship satisfaction.

**Technology**

With the ever-changing improvements in technology and widespread access to the internet, videotelephony, a form of communication technology that combines both audio and video signals, has allowed individuals in different locations to communicate face-to-face in real-time (Angiolillo, Blanchard, & Israelski, 1993). Videotelephony, known within the literature as a form of video-mediated communication, differs from other forms of communication in that it creates a sense of immediacy. The level of immediacy gained through this real-time, face-to-face communication has been said to enhance closeness, as well as allow individuals access to non-verbal communication cues not otherwise provided by other forms of non-visual communication such as the telephone (Manstead, Lea, & Goh, 2011). There is great emphasis placed on non-verbal cues such as facial behaviour, posture, and eye gaze, when communicating as non-verbal cues contribute to impression formation, and building rapport between individuals. More specifically, within relationships, non-verbal cues are important for communicating emotional intimacy and increasing self-disclosure (Argyle & Dean 1963; Patterson, 1973; Reis & Shaver, 1988).

Further, the use of video-mediated technology (VMT) for communication is said to create a sense of being together without being physically present (Angiolillo, et al., 1993). To demonstrate this, van der Kleij, Schraagen, Werkhoven, and De Dreu (2009) studied communication patterns and task performance in group communication environments through face-to-face communication and video-teleconferencing communication. They found that individuals in the video-teleconferencing group scored high on a measure of manipulation check, meaning that the group perceived physical distance to be low when interacting with one another.
through video-mediated communication. Thus, the use of video-mediated communication created a sense of shared space between participants who were physically distant from one another. Further, this sense of shared space created by the use of video-mediated communication was also found in couples who were geographically separated (Neustaedter & Greenberg, 2011).

Communication technologies have made it increasingly easier for individuals to stay connected while apart. More specifically, communication technologies have changed the way long-distance couples have access to one another while separated by finding multiple ways for partners to be connected in more cost-effective and faster ways (e.g., long-distance plans being included in telephone packages, Skype, Facetime, or Google Hangouts). Some companies have even gone as far as to create prototypes designed to help long-distance couples maintain their relationship while separated. For example, Kissenger is an interactive device used to transmit and mimic a kiss between two individuals while separated (Saadatian et al., 2014). Another device, Pillow Talk, is also used to maintain intimacy and connect long-distance couples by allowing individuals to hear their partner's heartbeat in real time ("Pillow Talk Connects," 2010).

Recently, researchers have begun to explore technology and its impact on close relationships (Greenberg & Neustaedter, 2013; Jiang & Hancock, 2013; Neustaedter & Greenberg, 2011; Schade, Sandberg, Bean, Busby, & Coyne, 2013; Schiffrin, Edelman, Falkenstern, & Stewart, 2010); however, only a few studies to date have looked at the use of video-mediated technology and LDRs (e.g., Greenberg & Neustaedter, 2012; Neustaedter & Greenberg, 2011). Neustaedter and Greenberg (2011) explored how long-distance couples maintain intimacy using video-mediated communication. Fourteen couples aged 19 to 35 participated in the study. Couples ranged in geographic distance from a two-hour drive to being separated by a 10-12 hour time zone. Through this qualitative study, Neustaedter and Greenberg
found that couples experienced intimacy over video-mediated technology through a variety of activities such as watching television or movies together, sharing meals (when time zones permitted), and playing video games which is said to be equivalent to "hanging out". Greenberg and Neustaedter (2012) further explored the "hanging out" process, by providing in-depth narratives of how two couples used video-mediated technology to stay connected and maintain intimacy. The researchers found that these couples often left their video chat running for extended periods of time. For example, couples left their video chat with the partner open while doing other activities around the house such as cooking or cleaning. Greenberg and Neustaedter argue that, by doing this, couples created a shared sense of living and connectedness without being physically present. Further, researchers have reported that couples in LDRs have been taking advantage of new technological developments in order to maintain sexual intimacy while geographically separated. This ranged from virtual hugging and kissing to online sex (Greenberg and Neustaedter, 2012; Neustaedter and Greenberg, 2011).

In sum, couples in Greenberg and Neustaedter’s (2012) study experienced more realistic face-to-face experience over video chat that couldn’t be obtained using any other form of communication technology; partners were able to engage in shared activities, independent activities, and/or converse with one another. Further, when engaging in conversation with each other, couples were able to perceive their partners non-verbal cues, such as facial expressions through the face-to-face interactions offered by video chat. As previously noted, these non-verbal cues are especially important for enhancing intimacy and self-disclosure within couples. Furthermore, Neustaedter and Greenberg (2011) also found that some couples in their study did not avoid conflicting topics and nearly all participants discussed negative topics with their partner over video chat. In spite of being able to discuss negative topics with their partner,
couples did not report being any less satisfied with their relationship when confronting conflict. This could suggest that the video mediated communication allows couples to behave in ways similar to those who have access to face-to-face communication with their partner on a daily basis.

Within previous research, Uncertainty Reduction Theory (URT) was used to assess the ways communication, intimacy, and relational uncertainty might influence relationship satisfaction. Therefore, within the current study, URT was used to guide the research in two ways. It was used to; 1) develop the research questions in terms of the ways the variables may influence relationship satisfaction, and 2) inform the choice of measures (specifically the relational uncertainty scale) and how this measure may relate to relationship satisfaction.

**Uncertainty Reduction Theory**

URT (Berger & Calabrese, 1975) proposes that, within interpersonal relationships, individuals are constantly faced with uncertainties which they find unpleasant and troublesome; this motivates individuals to reduce uncertainties. In order to do this, individuals must gather and exchange information by communicating with the individual about whom they are uncertain. This includes engaging in both verbal and non-verbal communication, self-disclosure, reciprocity, sharing similarities, and seeking new information (Berger & Calabrese, 1975). Berger and Bradac (1982) argue that there are two types of uncertainties: behavioural and cognitive. Behavioural uncertainties are defined as insecurities one has about how they should act in a certain situation, whereas cognitive uncertainties are doubts one has about another individual's thoughts, attitudes, or beliefs.

Although URT is usually applied to developing relationships, as many uncertainties arise when meeting new people, it can also be applied to established relationships (Dainton & Aylor,
Within the context of established relationships, uncertainty emerges from three sources: the self, the partner, and the relationship. Uncertainty about the self represents uncertainty rising from doubts about one's own participation in the relationship; uncertainty about the partner are doubts regarding their partner's participation in the relationship; uncertainty about the relationship, often referred to as relational uncertainty, arises from doubts one has about the future of their relationship or the current state of the relationship (Berger & Bradac, 1982; Knobloch & Solomon, 1999; Knobloch & Solomon, 2002). Within established close relationships, relational uncertainty is an essential component which greatly influences communicative behaviours (Berger & Calabrese, 1975). Relational uncertainty has been found to be negatively associated with facilitators of relationship satisfaction such as intimacy (Berger & Calabrese, 1975; Solomon & Knobloch, 2001) and trust (Dainton & Aylor, 2001). Therefore, within research it has been used a reliable indicator of relationship satisfaction (Knobloch, 2007).

Uncertainty about one's relationship can manifest itself in ways such as conflict (Siegert & Stamp, 1994), and/or jealousy (Afifi & Reichert, 1996). Therefore, in order to maintain certainty about their relationship, partners must constantly update their relational knowledge (Berger & Bradac, 1982), which, similar to developing relationships, involves communicating with their partner. There are however, barriers to communication, especially for those couples who are geographically separated (e.g., time zones, lack of access to modes of communication, scheduling time to talk, not having access to non-verbal communication cues) which may make it difficult for couples to reduce relational uncertainty. In fact, Berger and Bradac stated that, "nowhere is the necessity for uncertainty reduction in ongoing relationships more apparent than in situations where relational partners spend considerable amounts of time away from each
other" (1982, p. 13). Further, Dainton and Ayler (2001) found that long-distance couples with some face-to-face communication did not experience more relational uncertainty when compared to geographically close couples. Yet, long-distance couples with no face-to-face communication reported significantly more relational uncertainty than long-distance couples with some face-to-face communication. Given that long-distance couples are physically separated and therefore spend greater amounts of time away from each other, the findings might suggest that long-distance couples experience more relational uncertainty or engage in more uncertainty-reducing behaviours (e.g., conflict avoidance or self-disclosure). Technology may facilitate uncertainty reduction behaviour by allowing for more positive and/or fulfilling types of communication.

**Rationale for Study**

Researchers studying LDRs have explored many facilitators of relationship satisfaction in long-distance couples, such as, dedication towards one's partner, jealousy, and trust (Dainton & Aylor, 2001; Kelmer et al., 2013). Researchers have also studied predictors of positive relationship outcomes in long-distance couples such as communication and intimacy (Dargie et al., 2015; Stafford, 2010); however, these studies do not take into consideration the use of video-mediated technology as a factor contributing to relationship satisfaction. Although the two studies to-date that have considered video-mediated technology use in long-distance couples gave great insight into intimacy of long-distance couples over video chat (Greenberg & Neustaedter, 2012; Neustaedter & Greenberg, 2011), they did not explore other areas of relationship satisfaction in long-distance couples such as communication. Further, the studies were qualitative, limiting the generalizability of the findings. Exploratory research on factors associated with VMC use in romantic relationships, including long-distance couples as well as geographically close couples, is warranted, in order to determine if those who frequently use
VMC differ from those who use VMC less frequently in terms of relationship satisfaction.

Therefore, the aim of the current study was to investigate intimacy (sexual and emotional), communication (frequency, quality, conflict avoidance, self-disclosure), and relational uncertainty in participants who frequently use video-mediated technology to communicate with their partner as compared to those who use video-mediated communication less frequently to communicate with their partner. A secondary aim was to compare LD participants and GC participants in terms of VMC use and relationship quality. Given that most individuals in LDRs are between the ages of 18 and 30, this study focused on this young adult population. There is much to learn about the use of VMT as a form of communication in LDRs, as there is a possibility that VMT may mimic ftf communication. Given that ftf communication is important in reducing relational uncertainty and allowing individuals’ access to their partner's non-verbal cues, fostering ways of mimicking ftf communication in LDRs may lead to increased emotional intimacy, communication, and satisfaction in these couples. Given that little research has investigated intimacy, communication, and relational uncertainty in LDR relationships, particularly with regard to technology use, the current research used cluster analysis and ANOVA to determine if high and low VMT users differed on this set of variables.

Therefore, the objectives of the current study were:

1. To determine the prevalence and the characteristics of participants in a long-distance relationship.

2. To determine if LD participants differed from GC participants in terms of their VMT use as well as in terms of intimacy, communication, and relational uncertainty.
3. To determine if individuals in both LDRs and GCRs clustered in terms of high and low technology use related to their relationship characteristics (intimacy, communication, relationship satisfaction, uncertainty, self-disclosure and conflict avoidance).

4. a. To determine if participants who frequently used VMT differed from participants who used VMT less frequently in terms of intimacy, communication, relationship satisfaction, uncertainty, self-disclosure, and conflict avoidance.

b. To determine if the relationship between high and low VMT use and indicators of relationship quality were consistent across geographically close and long-distance participants.
Methods

Participants
The sample for the current study consisted of 396 individuals currently involved in a romantic relationship; the final sample included both GC and LD participants. Participants were able to self-define whether or not they considered their relationships to be long-distance as this is believed to be a more valid approach (Aylor, 2003; Dainton & Aylor, 2001) and it has been argued that a LDR is a subjective reality (Stafford, 2005). Participants were between the ages of 17 and 27 and indicated that they were in a committed romantic relationship with their partner. All participants had access to a computer.

Procedure
A total of 552 participants comprised the original data set. Participants were recruited through two sections of a first year Family Relations and Human Development course. Since previous research has found that up to 75% of university students are currently in or have been in a long-distance relationship (Stafford, 2005), participants were recruited from this population. This study obtained Ethics Approval from The University of Guelph Research Ethics Board (Appendix A). The recruitment ad (Appendix B) was sent via email to both first year professors who posted the recruitment ad along with the survey link on the homepage of their CourseLink site (the learning management system for the institution). Students then accessed the survey through the link. Once online, participants were given a letter of informed consent which they read and gave their consent to participate (Appendix C). Once consent was given, participants were asked to fill out demographic information, relationship information, information on current technology use, and several questionnaires measuring intimacy, communication, relationship satisfaction, conflict avoidance and self-disclosure within their current relationship. Once
completed, participants were automatically sent to another webpage where they entered in their contact information to receive course credit for their participation. This was done to ensure survey responses were kept separate from participant information. Participants were then thanked for their time and participation in the study.

**Demographic Variables**

Demographic information was collected; specifically regarding age (participants selected the year they were born from a drop-down menu), gender (Woman, Man, Transwoman, Transman, Gender queer/nonbinary), and sexual orientation (Heterosexual, Gay or Lesbian, Bisexual, Queer, Pansexual, Uncertain or questioning). Participants also indicated the duration of their current relationship in years and months (Appendix D).

**Romantic Relationship Questions**

Information regarding each participant’s current romantic relationship was collected. Participants were first asked whether they were currently involved in a long-distance relationship. If participants respond 'yes' to this question, they were asked in an open-ended question to describe the characteristics they felt made the relationship long-distance. If participants answered 'no', they skipped to the following question "how often do you see your partner in person" (see below). Long-distance participants were also asked if their relationship has always been long-distance or if their relationship has cycled between being both long-distance and geographically close. Participants who indicated they were in a long-distance relationship were also asked how far apart in distance (m/km) they have been from their partner in the last three months, and what the average cost of their travel expenses in the last three months were to see their romantic partner. (Appendix E). All participants were then asked how often they saw their current partner in person. These response options included: regularly,
infrequently, it varies. Participants were also asked to write in a more detailed explanation of their response to this question. Next, participants were asked a series of questions regarding the last month of their relationship, "how many days have you spent face-to-face with your partner", and "how many days have you spent apart from your partner"; responses vary from 0-31, with 31 being every day.

**Long-Distance Relationships**

**Long Distance Relationship Index** (Appendix F; Pistole & Roberts, 2011). The long-distance relationship index is a measure for identifying long-distance couples versus geographically close couples on a continuous scale. The questionnaire is made up of 7-item; sample items include: "My partner does not live in my geographical area" and "My partner and I are unable to see each other face-to-face, on a frequent basis". Items are measured on a 7-point Likert scale ranging from 1 *(strongly agree)* to 7 *(strongly disagree)*. Higher scores indicate a long-distance relationship while lower scores indicate a geographically close relationship.

Although this index has not been validated, the item content has been tested and used in previous studies (Pistole & Roberts, 2011). In addition, each item has been thoroughly examined by a panel of experts with specific experience in the LDR literature (Pistole & Roberts, 2011). Items were examined on their consistency with previous LDR research and the ability to distinguish LDRs from GCRs.

**Relationship Satisfaction**

**Relationship Assessment Scale** (RAS; Appendix G; Hendrick, 1988). Relationship satisfaction was assessed by the Relationship Assessment Scale. The Relationship Assessment Scale is a 7-item questionnaire that measures an individual's general relationship satisfaction within their relationship. Participants are asked to respond to statements such as, "In general,
how satisfied are you with your relationship." Items are measured on a 5-point Likert-type scale ranging from 1 to 5; response options varied. The higher the score, the more satisfied the individual is in their relationship. Hendrick (1988) reported an internal consistency score of .86 for the measure. The scale is highly correlated (.80) with the Dyadic Adjustment Scale, another well respected relationship satisfaction measure, suggesting that there is evidence for convergent validity. The Relationships Assessment scale also shows strong predictive validity as it effectively predicted 91% of couples that stayed together and 86% of couples that broke up in both dating and married relationships (Henrick, 1988).

**Intimacy**

**Personal Assessment Intimacy Relationship Inventory** (PAIR; Appendix H; Schaefer & Olson, 1981). Emotional intimacy and sexual intimacy were measured using PAIR, a 36-item questionnaire comprised of five subscales that measures five types of actual and ideal intimacy in relationships: emotional ("My partner can really understand my hurts and joys"), social ("We enjoy spending time with other couples"), intellectual ("My partner helps me clarify my thoughts"), sexual ("I am satisfied with our sex life"), and recreational ("We seldom find time to do fun things together"). In addition, PAIR also contains a conventionality subscale that assesses idealization in relationships ("My partner has all the qualities I've ever wanted in a mate"). Items are measured on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items can be phrased in terms of how an individual currently perceives their relationship to be or how they would expect their relationship to be depending on the needs of the researcher. Schaefer and Olson (1981) found that all subscales yielded a reliability score of .70. PAIR also demonstrates concurrent validity as it was found to be highly correlated with Locke-Wallace Martial Adjustment scale.
Communication

Enriching and Nurturing Relationship Issues, Communication, and Happiness-

Communication Scale (ENRICH; Appendix I; Olson, Fournier, & Druckman, 1982). The communication subscale of the ENRICH questionnaire consists of 10-items that measure communication within romantic relationships. It is concerned with feelings, beliefs, and attitudes an individual has about the communication in their relationship. Participants are asked to respond to questions such as, "It is very easy for me to express all my true feelings to my partner" and "I wish my partner was more willing to share his/her feelings with me". Items are measured on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate more positive communication quality within the romantic relationship. The communication subscale yielded an internal reliability score of .82 (Fowers and Olson, 1989), with a similar internal reliability score of .84 reported by Tzeng (1993). It also yielded a test-retest reliability score of .90. In addition, the communication subscale significantly correlated with the Locke-Wallace Marital Adjustment Scale which demonstrates concurrent validity; the test also demonstrates predictive validity as the ENRICH scale is able to accurately predict 80%-90% of couples that separate and stay married.

Conflict Avoidance Scale (Appendix J; Stafford, 2010). Conflict avoidance was measured using the conflict avoidance scale which assesses argument avoidance ("When my partner and I disagree, I drop the issues") and unexpressed annoyances ("When my partner does or says something that irritates me, I hesitate to express my irritation with him/her"). This scale consists of five items measured on a 5-point Likert-type scale ranging from 1 (never) to 5 (always) in which participants were asked to rate how often they engage in conflict avoidance behaviours within their relationship. Higher scores indicated more conflict avoidance. Stafford
(2010) found that argument avoidance yielded a coefficient score of .89, while unexpressed annoyances yielded a coefficient score of .69; although low, this is not uncommon for a subscale with only two items (Schmitt, 1996).

**Marital Self-Disclosure Questionnaire** (MSDQ; Appendix K; Waring, Holden, & Wesley, 1998). Participants’ relationship and sexual self-disclosure was measured using the marital self-disclosure questionnaire. The MSQD contains 40 items measured on a true-false scale and measures four aspects of self-disclosure: Relationship, sex, money, and imbalance. Relationship assesses feelings and thoughts one has about their relationship ("I seldom disclose my feelings concerning our relationship with my spouse"), sex reflects how much one discloses their thoughts and feelings regarding sexuality ("I don’t talk to my spouse about my thoughts on our sexual relationship"), money reflects disclosure of financial matters ("I disclose to my spouse my total financial worth"), and imbalance assesses one's nonreciprocal disclosure when disclosure is occurring by one's partner ("I will listen any time if my spouse wants to talk to me"). Selected questions from each facet are counterbalanced using negative and positive wording. Responses to negatively worded questions are reversed scored. Higher scores indicated more self-disclosure and lower scores represent lower amounts of self-disclosure. Coefficient alpha reliabilities ranged between .68 (imbalance) and .91 (relationship) (Warning et al., 1998). Construct validity was demonstrated through group differences such that self-disclosure scores differed between martially distressed and nondistressed individuals. Distressed husbands scored lower on both total self-disclosure and disclosure concerning sex.

**Technology Use**

Data on use of video-mediated technology (time, frequency), as well as use (time, frequency) of phone (either landline phone or cell phone), text messaging, email, and Instant
Messenger/Chat Programs (ex. Facebook chat, WhatsApp) was collected. Participants were asked a series of questions about their use of the different communication mediums. This includes how many days they used the communication medium in the last month, with answers ranging from 1-31; on average how many times per day did they use the communication medium; and how many minutes per instance did they use the communication medium. These items were developed for the current study taking into account the most common forms of technology-mediated communication. (Appendix L)

**Relational Uncertainty**

**Relationship Uncertainty Scale** (Appendix M; Knobloch & Solomon, 1999).

Relationship uncertainty was measured using the Relationships Uncertainty Scale. This scale consists of four subscales containing four items each, for a total of 16 items. Items are measured on a 6-point Likert-type scale ranging from 1 (*completely or almost completely uncertain*) to 6 (*completely or almost completely certain*). Participants answered questions pertaining to how certain they were regarding the four subscales which include: Behavioural norms subscale which measures acceptable /unacceptable behaviours within the relationship ("How certain are you about how you can or cannot behave around your partner?"), Mutuality subscale which measures reciprocal feelings with one's relationship ("How certain are you about whether or not your partner likes you as much as you like him or her?"), Definition subscale which measures certainty about the certain status of the relationship ("How certain are you about the definition of this relationship?"), and Future subscale which measures certainty about the long-term status of the relationship ("How certain are you about whether or not you and your partner will stay together?"). Lower values indicate more relational uncertainty. The overall Cronbach's alpha was .94 (Knobloch & Solomon, 1999).
Results

Data Cleaning Process

Once data collection was complete, the SPSS data file was downloaded from the Qualtrics webpage. The data cleaning process began with the exclusion of participant cases based on missing data (Table 1). First, individuals who didn’t complete the demographic questions (gender, sexual orientation, and relationship status) were excluded ($N = 29$). Following this, individuals that did not complete the relationship questions (length of relationship, etc) were excluded ($N = 23$). Next, individuals that did not complete the technology questions were excluded from the study ($N = 13$). Individuals who failed to complete an entire questionnaire or multiple questionnaires were also excluded from the study ($N = 5$).

The next step of the data cleaning process was to exclude participants who reported "I choose not to answer" on more than half of the whole questionnaire ($N = 4$). Since usable data was not obtained from these participants, they were removed from the final sample. Next, the Relationship Status variable was used to eliminate participants not currently in a relationship. Individuals were able to indicate their current relationship type (i.e., dating, married) and if they indicated "other" they were asked to provide further explanation. Participants who reported that they had since broken up with their partner in response to this question were removed from the sample ($N = 17$) as the inclusion criteria for the study sample was individuals currently in a romantic relationship and the questionnaires were meant to reflect how the individual currently views their current relationship. The next step was to exclude participants whose data looked suspicious or whose responses seemed illogical. This included participants who completed the survey in less than 10 minutes and failed all attention check question which indicated that participants were not paying attention or taking the time to read through the questions making their data less reliable ($N = 9$). The last step of the data cleaning process involved removing
individuals who were missing 10% or more of their responses on multiple scales \((N = 47)\), and missing 10% or more on a single scale \((N = 5)\), resulting in a final sample of 396 cases.

Table 1

*Excluded Cases*

<table>
<thead>
<tr>
<th>Step</th>
<th>Number of Excluded Cases</th>
<th>Reasons for Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>29</td>
<td>Dropped out of survey before reporting gender or sexual orientation.</td>
</tr>
<tr>
<td>2</td>
<td>23</td>
<td>Dropped out of survey before reporting relationship questions</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>Dropped out of survey before reporting technology questions</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Dropped out of survey before completing LDR questionnaire</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Dropped out of survey before completing ENRICH questionnaire</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>Dropped out of survey before completing uncertainty questionnaire</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Dropped out of survey before completing PAIR questionnaire</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>More than half of survey reported as &quot;I choose not to answer&quot;</td>
</tr>
<tr>
<td>9</td>
<td>17</td>
<td>Participants indicated they were no longer dating their partner</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>Data looked suspicious or seemed illogical - Took less than 10 minutes to complete and all attention check questions were wrong. Indicates participants are not taking the time to read through the questions</td>
</tr>
<tr>
<td>11</td>
<td>47</td>
<td>Missing data on multiple scales</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
<td>Missing data on minor scales</td>
</tr>
</tbody>
</table>

**Final sample** \(N=396\)

**Missing Data Analysis**

Individuals who were included in the analytic sample were compared with those who were excluded due to missing data. The 29 individuals who dropped out of the survey after reading the consent form were excluded from the analysis as no demographic information was reported. The aim was to compare those with sufficient data to those excluded in terms of key demographic variables: gender, age, relationship status, sexual orientation, and relationship length (Table 2). Relationship status was recoded into two categories (dating and engaged/cohabitating/married/other) to protect participant anonymity because of low cell sizes. Sexual orientation was also recoded into heterosexual and sexual minority for the same reason. The sexual minority group included individuals who identified as gay or lesbian, bisexual, queer,
pansexual, uncertain, and other. There were no differences found between the included and excluded participants on the demographic and relationship variables except for the relationship status variable, in which there were more individuals in the other group (including engaged, cohabiting, married, or not in a relationship) for those that were excluded from the study versus those that were included in the final sample. This is likely due, in part, to the fact that participants who responded 'other' to the relationship status question were no longer in relationships and this was the reason for their exclusion.

Table 2

Sample Characteristics Between Excluded and Included Participants

<table>
<thead>
<tr>
<th></th>
<th>Total (N=523)</th>
<th>Participants excluded from study (n=127)</th>
<th>Participants included in study (n=396)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean/ % SD</td>
<td>n</td>
<td>Mean/ % SD</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td>.96</td>
</tr>
<tr>
<td>Woman</td>
<td>462</td>
<td>88.30 3.83</td>
<td>111 24.00 7.34</td>
<td>351 76.00 1.46</td>
</tr>
<tr>
<td>Man</td>
<td>59</td>
<td>11.30 3.83</td>
<td>14 23.70 7.34</td>
<td>45 76.30 1.46</td>
</tr>
<tr>
<td>Age</td>
<td>523</td>
<td>19.15 3.83</td>
<td>127 19.57 7.34</td>
<td>396 19.02 1.46</td>
</tr>
<tr>
<td>Relationship Status</td>
<td></td>
<td></td>
<td></td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>Dating</td>
<td>452</td>
<td>92.80 1.87</td>
<td>73 16.20 2.15</td>
<td>379 83.80 1.26</td>
</tr>
<tr>
<td>Engaged/married/cohabiting/other</td>
<td>35</td>
<td>7.20 1.87</td>
<td>23 65.70 2.15</td>
<td>12 34.30 1.26</td>
</tr>
<tr>
<td>Sexual Orientation</td>
<td></td>
<td></td>
<td></td>
<td>.93</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>495</td>
<td>94.60 1.49</td>
<td>120 24.20 2.15</td>
<td>375 75.80 1.26</td>
</tr>
<tr>
<td>Sexual Minority</td>
<td>28</td>
<td>5.40 1.49</td>
<td>7 25.00 2.15</td>
<td>21 75.00 1.26</td>
</tr>
<tr>
<td>Relationship Length</td>
<td></td>
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<td></td>
<td>.93</td>
</tr>
<tr>
<td>(Years)</td>
<td>496</td>
<td>1.84 1.49</td>
<td>102 1.87 2.15</td>
<td>394 1.83 1.26</td>
</tr>
</tbody>
</table>

***p ≤ .001.

Note. Significance tests conducted as follows: Independent samples t-tests used for continuous variables and Pearson chi-square difference tests used for categorical variables.

Testing for Normality of the Data:

The Shapiro-Wilk test and skewness and kurtosis statistics were examined to assess normality within the data. The Shapiro-Wilk test results were found to be significant for all items.
(\(p<.05\)), indicating the data were not normally distributed (Field, 2013). Skewness and kurtosis statistics indicated that the data were skewed and/or kurtotic. Since both ANOVA and cluster analysis are robust against violations of normality, the assumption of normality can still be violated and produce valid results (Hair & Black, 1998; One-way ANOVA in SPSS Statistics, Lared Statisitics).

**Reliability and Correlation Analysis**

A summary of means, standard deviations, and Cronbach alpha’s for scales and subscales are presented in Table 3. With the exception of the sexual intimacy scale, reliability scores ranged from .70 to .95, indicating high internal consistency (Field, 2013). Overall, participants were highly satisfied in their relationships and reported high levels of communication quality and were largely certain about their relationship (certainty was assessed based on measures of behavioural norms, mutuality, definition, and future - see methods). Participants reported moderate to high levels of intimacy (sexual and emotional) within their relationship, high levels of self-disclosure, and moderate levels of conflict avoidance. Correlations between study variables are presented in Table 4. All of the study variables were significantly intercorrelated with the exception of the long-distance relationship measure.
Table 3

Means, Standard Deviations, and Cronbach Alpha Reliability Estimates for Study Scales and Sub-scales

<table>
<thead>
<tr>
<th>Scale / sub-scale</th>
<th>n</th>
<th>Number of Items</th>
<th>Response Range</th>
<th>M</th>
<th>SD</th>
<th>Cronbach α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-Distance Ques.</td>
<td>396</td>
<td>7</td>
<td>1-7</td>
<td>4.38</td>
<td>2.13</td>
<td>.88</td>
</tr>
<tr>
<td>Relationship Satisfaction (RAS)</td>
<td>396</td>
<td>7</td>
<td>1-5</td>
<td>4.07</td>
<td>0.65</td>
<td>.95</td>
</tr>
<tr>
<td>Communication (ENRICH)</td>
<td>396</td>
<td>10</td>
<td>1-5</td>
<td>3.75</td>
<td>0.72</td>
<td>.80</td>
</tr>
<tr>
<td>Relational Uncertainty</td>
<td>396</td>
<td>16</td>
<td>1-6</td>
<td>5.10</td>
<td>0.82</td>
<td>.94</td>
</tr>
<tr>
<td>Conflict Avoidance</td>
<td>396</td>
<td>5</td>
<td>1-5</td>
<td>2.59</td>
<td>0.65</td>
<td>.70</td>
</tr>
<tr>
<td>Self-Disclosure (MSDQ)</td>
<td>396</td>
<td>20</td>
<td>True/False</td>
<td>1.2</td>
<td>0.01</td>
<td>.86</td>
</tr>
<tr>
<td>PAIR</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td>396</td>
<td>6</td>
<td>1-5</td>
<td>4.10</td>
<td>0.75</td>
<td>.83</td>
</tr>
<tr>
<td>Sexual</td>
<td>396</td>
<td>6</td>
<td>1-5</td>
<td>4.03</td>
<td>0.61</td>
<td>.64</td>
</tr>
</tbody>
</table>

Table 4

Intercorrelations Among Study Variables

<table>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Long-distance Relationship</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.Relationship Satisfaction (RAS)</td>
<td>-.06</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.Communication (ENRICH)</td>
<td>.01</td>
<td>.66**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.Relational Uncertainty</td>
<td>.05</td>
<td>.67**</td>
<td>.56**</td>
<td>---</td>
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<td></td>
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<tr>
<td>5.Self disclosure</td>
<td>.03</td>
<td>-.46**</td>
<td>-.43**</td>
<td>-.47**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.Conflict avoidance</td>
<td>-.01</td>
<td>-.18**</td>
<td>-.32**</td>
<td>-.27**</td>
<td>.43**</td>
<td>---</td>
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<td></td>
</tr>
<tr>
<td>7.PAIR Emotional</td>
<td>-.01</td>
<td>.70**</td>
<td>.74**</td>
<td>.59**</td>
<td>-.44**</td>
<td>-.24**</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>8.PAIR Sexual</td>
<td>.03</td>
<td>.47**</td>
<td>.40**</td>
<td>.41**</td>
<td>-.46**</td>
<td>-.17**</td>
<td>.44**</td>
<td>---</td>
</tr>
</tbody>
</table>

**p ≤ .01.

Sample

Five-hundred and fifty-two individuals consented to participate in the current study. After missing cases were excluded, the final sample included 396 participants, with 88.60% who identified as women and 11.40% who identified as men. The majority of the sample (95.70%) stated that they were dating their current partner and 84.70% of participants identified as heterosexual. Participants were, on average, 19 years of age (range 17-27). Of the total sample, 45.70% of individuals indicated they were in a long-distance relationship (men = 4.00%, women
= 41.70%) and 54.30% of individuals indicated they were in a geographically close relationship (men = 7.30%, women = 47.00%).

Table 5

| Sample Characteristics Between Long-Distance and Geographically Close Participants |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                             | Total (N= 396 )      | Long-distance relationship (n= 181 ) | Geographically close relationship (n= 215 ) | Sig. |
|                             | n          | Mean/ % | SD | n          | Mean/ % | SD | n          | Mean/ % | SD | p-value/ χ² |
| Gender                      |            |         |    |            |         |    |            |         |    |             |
| Woman                       | 351        | 88.60   | 165 | 47.00    | 186     | 53.00 | .15 |
| Man                         | 45         | 11.40   | 16  | 35.60    | 29      | 64.40 |     |
| Age                         | 19.02      | 1.46    | 18.75 | 1.18 | 19.24 | 1.63 |     |
| Relationship Status         |            |         |    |            |         |    |            |         |    |             |
| Dating                      | 379        | 96.9    | 180 | 47.50    | 199     | 52.50 | p<.001*** |
| Engaged/married/cohabiting/other | 12    | 3.10    | 0  | 0.00     | 12      | 100.00 |     |
| Sexual Orientation          |            |         |    |            |         |    |            |         |    |             |
| Heterosexual                | 375        | 94.70   | 174 | 46.40    | 201     | 53.60 | .42 |
| Sexual Minority             | 21         | 5.30    | 7  | 33.30    | 14      | 66.70 |     |
| Relationship Length (Years) | 394        | 2.10    | 179 | 2.190    | 215     | 2.030 | .27 |

***p ≤ .001.

Note. Significance tests conducted as follows: Independent samples t-tests used for continuous variables and Pearson chi-square difference tests used for categorical variables.

Participants were grouped into long-distance relationships (LDR) vs. geographically close relationships (GCR) based on their response to one item "Would you define your relationship as being long-distance?" Participants who responded 'yes' are described in the manuscript as long distance (LD) participants and the others geographically-close (GC). LD participants and GC participants did not differ in terms of gender, sexual orientation or relationship length; however, there were differences found between the LD participants and GC participants in terms of relationship status and age such that GC participants were more likely to be in a committed relationship (i.e., cohabitating or married) and be older (Table 5).
Research Objective #1: To determine the prevalence and the characteristics of participants in long-distance relationships

Characteristics of Long-Distance Participants

Long-distance participants were asked which description best described their long-distance relationship. 79.60% stated that their relationship had been both geographically close and long-distance, while 17.10% stated that their relationship had always been long-distance. There were six individuals (3.30%) who stated 'other' when asked to describe their relationship. Four of the LD participants stated that they used to be geographically close, but were now long-distance and two individuals stated that although they only lived an hour away from each other, they described their relationship as long-distance because busy schedules meant they didn't always have time to see each other. These individuals were included in the LD group because a priori it was decided that participants would be able to self-identify as long-distance. When LD participants were asked how often they saw their romantic partner, 34.80% stated that they saw their partner on a regular basis, 17.10% stated that they saw their partner infrequently, and 47.50% stated that how often they saw their partner varied.

Research Objective #2: To determine if LD participants differed from GC participants in terms of their VMT use as well as in terms of intimacy, communication, and relational uncertainty.

An independent sample t-test was used to determine if LD participants and GC participants differed on the measures of relationship quality. Long-distance participants and geographically close participants were significantly different on the long-distance relationship measure such that LD participants' mean score was higher ($M=6.28$) when compared to GC participants ($M=2.78$). Since higher scores indicate a long-distance relationship while lower scores indicate a geographically close relationship, the long-distance measure seemed to be
accurate in indentifying long-distance participants from geographically close participants. LD participants and GC participants did not significantly differ on any other scales and subscales (Table 6).

Table 6

*Scale Means and Standard Deviations between LDR and GCR*

<table>
<thead>
<tr>
<th>Scale / sub-scale</th>
<th>Long-distance relationship (n= 181 )</th>
<th>Geographically close relationship (n= 215 )</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Long-Distance Ques. Relationship</td>
<td>181</td>
<td>6.28</td>
<td>0.70</td>
</tr>
<tr>
<td>Relationship Satisfaction (RAS)</td>
<td>181</td>
<td>4.07</td>
<td>0.66</td>
</tr>
<tr>
<td>Communication (ENRICH)</td>
<td>181</td>
<td>3.79</td>
<td>0.75</td>
</tr>
<tr>
<td>Relational Uncertainty</td>
<td>181</td>
<td>5.19</td>
<td>0.71</td>
</tr>
<tr>
<td>Conflict Avoidance</td>
<td>181</td>
<td>2.60</td>
<td>0.64</td>
</tr>
<tr>
<td>Self-Disclosure (MSDQ)</td>
<td>181</td>
<td>1.21</td>
<td>0.22</td>
</tr>
<tr>
<td>PAIR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td>181</td>
<td>4.12</td>
<td>0.76</td>
</tr>
<tr>
<td>Sexual</td>
<td>181</td>
<td>4.08</td>
<td>0.63</td>
</tr>
</tbody>
</table>

*p≤.05, ***p ≤ .001.

**Participants' Technology Use**

Long-distance participants and geographically-close participants were compared in terms of their technology use (Table 7). Using Pearson's chi-square, no differences were found between LD participants and GC participants on telephone use, email, and instant message; however, there was a significant difference ($\chi^2 = 40.17, p≤.001$) between LD participants and GC participants in terms of their use of video chat/webcam, use of text messages, and use of Snap Chat such that LD participants were more likely to use video chat/webcam and Snap Chat compared to GC participants. Further, GC participants were more likely to use text messaging as a way to communicate with their partner when compared to LD participants.
Table 7
Technology Use Within LD and GC Participants as a means of communication with relationship partner

<table>
<thead>
<tr>
<th>Type of Technology</th>
<th>Total (N= 396)</th>
<th>Long-distance relationship (n= 181)</th>
<th>Geographically close relationship (n= 215)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>319</td>
<td>80.60</td>
<td>143</td>
<td>79.00</td>
</tr>
<tr>
<td>Video Chat/Webcam</td>
<td>196</td>
<td>49.50</td>
<td>121</td>
<td>66.90</td>
</tr>
<tr>
<td>Email</td>
<td>30</td>
<td>7.60</td>
<td>11</td>
<td>6.10</td>
</tr>
<tr>
<td>Text Message</td>
<td>377</td>
<td>95.20</td>
<td>168</td>
<td>92.80</td>
</tr>
<tr>
<td>Snap Chat</td>
<td>310</td>
<td>78.30</td>
<td>151</td>
<td>83.40</td>
</tr>
<tr>
<td>Instant Message</td>
<td>164</td>
<td>42.20</td>
<td>67</td>
<td>37.00</td>
</tr>
</tbody>
</table>

Long-distance participants and geographically close participants were compared in terms of technology use, specifically, time (days in a month), frequency (times per day), and length of time (average length of an interaction) (Table 8). This process first included identifying and removing any responses that seemed illogical. For example, when asked how many times per day the individual used the different modes of technology, some individuals gave answers as decimals with values less than 1. Since there was no way to confirm what the correct answer would be and a decimal seemed illogical as an answer, these were coded as missing data (\(N = 68\)). Following this, outliers were identified. A z-score was produced for each method of technology and any response greater 3.29 (three standard deviations away from the mean) was coded as missing and not used in the analysis (\(N = 38\)).

The method of communication most used by participants in this sample was text message (\(M=28.22\) days per month). The form of communication least used by participants was email (\(M=4.90\) days per month). Using an independent sample t-test, significant differences were found between LD participants and GC participants such that LD participants spent, on average, more minutes talking on the telephone as well as talking on video chat per time than GC participants.
### Table 8

**Time, Frequency, Length of Use by Technology Type**

<table>
<thead>
<tr>
<th>Type of Technology</th>
<th>Total (N= 396)</th>
<th>Long-distance relationship (n= 181)</th>
<th>Geographically close relationship (n= 215)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
<td>SD</td>
<td>n</td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days (in month)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time per day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td>297</td>
<td>1.91</td>
<td>2.09</td>
<td>132</td>
</tr>
<tr>
<td>Minutes per time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td>312</td>
<td>34.65</td>
<td>30.46</td>
<td>140</td>
</tr>
<tr>
<td>Video Chat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days (in month)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Chat</td>
<td>195</td>
<td>10.44</td>
<td>8.992</td>
<td>121</td>
</tr>
<tr>
<td>Time per day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Chat</td>
<td>173</td>
<td>1.25</td>
<td>1.00</td>
<td>112</td>
</tr>
<tr>
<td>Minutes per time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Chat</td>
<td>188</td>
<td>63.70</td>
<td>51.00</td>
<td>118</td>
</tr>
<tr>
<td>Email</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days (in month)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td>30</td>
<td>4.90</td>
<td>4.01</td>
<td>11</td>
</tr>
<tr>
<td>Time per day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td>20</td>
<td>1.30</td>
<td>0.57</td>
<td>10</td>
</tr>
<tr>
<td>Words per time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td>27</td>
<td>34.70</td>
<td>37.50</td>
<td>10</td>
</tr>
<tr>
<td>Text Message</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days (in month)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Message</td>
<td>376</td>
<td>28.22</td>
<td>5.67</td>
<td>168</td>
</tr>
<tr>
<td>Time per day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Message</td>
<td>372</td>
<td>51.00</td>
<td>59.21</td>
<td>165</td>
</tr>
<tr>
<td>Words per time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Message</td>
<td>374</td>
<td>16.25</td>
<td>14.85</td>
<td>166</td>
</tr>
<tr>
<td>Snap Chat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days (in month)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snap Chat</td>
<td>310</td>
<td>20.67</td>
<td>8.9</td>
<td>151</td>
</tr>
<tr>
<td>Time per day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snap Chat</td>
<td>298</td>
<td>9.05</td>
<td>10.10</td>
<td>143</td>
</tr>
<tr>
<td>Instant Message</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days (in month)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instant Message</td>
<td>166</td>
<td>14.24</td>
<td>10.10</td>
<td>67</td>
</tr>
<tr>
<td>Time per day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instant Message</td>
<td>158</td>
<td>10.56</td>
<td>19.13</td>
<td>65</td>
</tr>
<tr>
<td>Words per time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instant Message</td>
<td>161</td>
<td>13.02</td>
<td>10.53</td>
<td>64</td>
</tr>
</tbody>
</table>

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

Note: N varies due to missing data
Research Objective #3: To determine if individuals in both LDRs and GCRs clustered in terms of high and low technology use related to their relationship characteristics (intimacy, communication, relationship satisfaction, uncertainty, self-disclosure and conflict avoidance).

Cluster Analysis

Cluster analysis was used to explore and compare individuals along a spectrum of VMC use in terms of relationship satisfaction, communication (quality, self-disclosure, conflict avoidance), intimacy, and relationship uncertainty. With cluster analysis, groups are created based on a clustering variate(s) which is "a set of variables representing the characteristics used to compare objects in the cluster analysis" (Hair & Black, 1998, p. 147). Based on the clustering variate(s), cluster analysis classifies a set of subjects (or objects) into groups based on similarity of responses in order to maximize similarities within groups and minimize similarities between groups. Therefore, the goal of cluster analysis is to create a profile in order to identify individuals with similarities. It is important to note that cluster analysis does not involve hypothesis testing or significance values. It is exploratory in nature and therefore it is up to the researchers to determine what is the best fit for their needs (Gore, 2000; Hair & Black, 1998, p.144).

A two-step cluster analysis was chosen as the appropriate method for clustering as the sample size was greater than 200 (hierarchical clustering) and it was desirable that the number of clusters be formed based on the data itself rather than being determined beforehand (in which case k-means clustering would have been appropriate). The Bayesian Information Criterion (BIC) was used to select the optimal number of clusters and to assess the measure of fit within the model with lower numbers indicating better outcomes (Field, 2013, p. 826; Johnson, 1998, p.157).

Two clusters were found which comprised the eight variables that were included in the analysis (relational uncertainty, communication, relationship satisfaction, intimacy (sexual and
emotional), self-disclosure, conflict avoidance, video chat (number of days in the last month)).

The cluster-quality chart measures the overall goodness-of-fit for the analysis and indicated that the overall quality of the model for this analysis is 'Fair" (cluster quality ranges on a scale from -1 to +1; poor quality is a measure of less than .20, fair is a measure from .20 to .50, and good quality is a measure greater than .50). The cluster analysis produced two clusters; 51.80% (100) of cases were assigned to the first cluster and 48.20% (93) of cases were assigned to the second cluster (Table 9). Clusters were named based on relationship quality. Cluster 1 indicated lower relationship quality and cluster two indicated higher relationship quality. It is important to note that although individuals in cluster 1 have been identified as lower relationship quality, these individuals aren’t unhappy/unsatisfied in their relationship, they are just less so than those in the higher relationship quality cluster.

Table 9

*Cluster Means and Importance*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Lower Relationship Quality (51.80%, n=100)</th>
<th>Higher Relationship Quality (48.20%, n=93)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M Importance</td>
<td>M Importance</td>
<td>p-value</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------</td>
<td>--------------</td>
<td>---------</td>
</tr>
<tr>
<td>Relational Uncertainty</td>
<td>4.61</td>
<td>5.68</td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>Communication (ENRICH)</td>
<td>3.28</td>
<td>4.24</td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>PAIR - Emotional</td>
<td>3.65</td>
<td>4.61</td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>Relationship Satisfaction (RAS)</td>
<td>3.67</td>
<td>4.50</td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>PAIR - Sexual</td>
<td>3.71</td>
<td>4.40</td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>Self-Disclosure (MSDQ)</td>
<td>1.27</td>
<td>1.10</td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>Conflict Avoidance</td>
<td>2.86</td>
<td>2.34</td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>Video Chat - How many days</td>
<td>7.79</td>
<td>12.71</td>
<td>p&lt;.001***</td>
</tr>
<tr>
<td>(in the last month)</td>
<td>.14</td>
<td>.14</td>
<td></td>
</tr>
</tbody>
</table>

***p<.001
Within the cluster analysis, relational uncertainty was the most important predictor in estimating the model and determining cluster membership. This was then followed by communication, emotional intimacy, relationship satisfaction, sexual intimacy, self-disclosure, conflict avoidance, and lastly video chat days per month. Although days per month video chat was included in the analysis as it was thought to be an important clustering variate, it had the least amount of importance in determining cluster membership; however, it was useful in helping to indentify the difference between high and low VMC users.

**Lower Relationship Quality**

When compared to higher relationship quality individuals, lower relationship quality individuals had lower mean scores on relationship satisfaction (M=3.67) and intimacy (emotional (M=3.65), sexual (M=3.71)), indicating less relationship satisfaction and less emotional and sexual intimacy. They also had lower scores on relational uncertainty (M=4.61) indicating they were more uncertain in their relationship and higher mean conflict avoidance scores (M=2.86), indicating they are more likely to avoid conflict in their relationship. Lastly, individuals in the lower relationship quality cluster had higher mean score on self-disclosure (M=1.27), indicating that there was less self-disclosure when compared to individuals in higher relationship quality. Individuals within this cluster were also those who reported less communication with their partner overall; this included both quality of communication (ENRICH; M=3.32) and frequency of communication via video chat (M=7.97) (Table 9).

**Higher Relationship Quality**

When compared to lower relationship quality individuals, higher relationship quality reported being more certain in their relationship (M= 5.68), reported more emotional (M=4.61) and sexual (M=4.40) intimacy, reported being more satisfied in their relationship (M= 4.50), and
reported more self-disclosure \((M=1.10)\). Further, individuals in the higher relationship quality cluster also reported less conflict avoidance. Higher relationship quality individuals reported more communication with their partner overall; this included both quality of communication \((\text{ENRICH}; M=4.24)\) and frequency of communication via video chat \((M=12.71)\) (Table 9).

Table 10

**Demographic Variables By Cluster**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Lower Relationship Quality ((51.8%, n=100))</th>
<th>Higher Relationship Quality ((48.2%, n=93))</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean/ %</td>
<td>Mean/ %</td>
<td>(p)-value/ (\chi^2)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>81.50</td>
<td>94.80</td>
<td>.01**</td>
</tr>
<tr>
<td>Men</td>
<td>18.20</td>
<td>5.20</td>
<td></td>
</tr>
<tr>
<td>Relationship Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dating</td>
<td>100.00</td>
<td>98.00</td>
<td>.18</td>
</tr>
<tr>
<td>Other</td>
<td>0.00</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Sexual Orientation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>98.90</td>
<td>92.20</td>
<td>.03*</td>
</tr>
<tr>
<td>Sexual Minority</td>
<td>1.10</td>
<td>7.80</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>18.87</td>
<td>18.79</td>
<td>.12</td>
</tr>
<tr>
<td>Relationship Length (Years)</td>
<td>2.10</td>
<td>1.93</td>
<td>.37</td>
</tr>
</tbody>
</table>

\(*p \leq .05. **p \leq .01. ***p \leq .001\)

Note. Significance tests conducted as follows: Independent samples t-tests used for continuous variables and Pearson chi-square difference tests used for categorical variables.

Using an independent sample t-test and Chi-square, individuals in the two clusters were compared in terms of their demographics. Significant differences were found in terms of gender, such that there were more males within the lower relationship quality cluster (18.20%) than there were in higher relationship quality cluster (5.20%), and sexual orientation, such that there were more individuals in higher relationship quality cluster (7.80%) that identified as sexual minority than in lower relationship quality cluster (1.10%). No significant differences were found between lower relationship quality and higher relationship quality in terms of age, relationship status, and relationship length (Table 10).
Research Objective #4a: To determine if participants who frequently used VMT differed from participants who used VMT less frequently in terms of intimacy, communication, relationship satisfaction, uncertainty, self-disclosure, and conflict avoidance.

To determine if individuals who frequently used VMC differed from individuals who used VMC less frequently in terms of the relationship quality measures, participants were placed into two groups: high users and low users. To determine a high user from a low user, the mean score on the days per month for video chat in the cluster analysis was used as a guide. Individuals who used video chat 12 or more days in the last month were placed into the high VMC group and individuals who used video chat less than 12 days in the last month were placed into the low VMC group. Using a one-way ANOVA, significant differences were found between high and lower VMC users on communication $F(1, 193) = 5.02, p = .026, \omega^2 = .03$, emotional intimacy $F(1, 193) = 7.78, p = .006, \omega^2 = .04$, and sexual intimacy $F(1, 193) = 7.22, p = .008, \omega^2 = .04$. Therefore higher VMC users had higher mean scores on communication ($M = 3.95$), emotional intimacy ($M = 4.36$), and sexual intimacy ($M = 4.26$) than low VMC users (Table 11).

Table 11

<table>
<thead>
<tr>
<th>Scale / sub-scale</th>
<th>Total (N= 195)</th>
<th>Low (n=135 )</th>
<th>High (n= 60)</th>
<th>Sig. p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Relationship Satisfaction (RAS)</td>
<td>4.06</td>
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<td>4.20</td>
<td>0.65</td>
</tr>
<tr>
<td>Communication (ENRICH)</td>
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<td>0.75</td>
<td>3.95</td>
<td>0.66</td>
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<tr>
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<td>5.32</td>
<td>0.72</td>
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<td>Conflict Avoidance</td>
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<td>2.51</td>
<td>0.16</td>
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<tr>
<td>Self-Disclosure (MSDQ)</td>
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<td>1.15</td>
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<tr>
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<td>4.36</td>
<td>0.54</td>
</tr>
<tr>
<td>PAIR Sexual</td>
<td>4.00</td>
<td>0.67</td>
<td>4.26</td>
<td>0.48</td>
</tr>
</tbody>
</table>

*p \leq .05. **p \leq .01. ***p \leq .001
Research Objective #4b: To determine if the relationship between high and low VMT use and indicators of relationship quality were consistent across geographically close and long-distance participants.

Using a one-way ANOVA, significant differences were found between higher and lower VMC users of LD participants on communication $F(1, 119) = 5.31, p = .023, \omega^2 = .04$, emotional intimacy $F(1, 119) = 9.30, p = .003, \omega^2 = .07$, and sexual intimacy $F(1, 119) = 5.94, p = .016, \omega^2 = .05$; however, significant differences were not found between high and low users of VMC in GC participants. This suggests that high usage of VMC is positively associated with communication, emotional intimacy, and sexual intimacy in LDRs but not GCRs (Table 12).

Table 12

Comparison Between LDR and GCR on High and Low VMC Users

<table>
<thead>
<tr>
<th>Scale / sub-scale</th>
<th>Long-distance relationships ($n=181$)</th>
<th>Geographically close relationships ($n=215$)</th>
<th>Sig.</th>
<th>Long-distance relationships ($n=181$)</th>
<th>Geographically close relationships ($n=215$)</th>
<th>Sig.</th>
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<td>Low ($n=78$)</td>
<td>High ($n=43$)</td>
<td>Sig.</td>
<td>Low ($n=57$)</td>
<td>High ($n=17$)</td>
<td>Sig.</td>
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<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
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<td>Emotional</td>
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<td>4.30</td>
<td>0.48</td>
<td>.02*</td>
<td>4.00</td>
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</tbody>
</table>

*p ≤ .05. **p ≤ .01. ***p ≤ .001
Discussion

Summary of Findings

The aim of the current study was to explore the use and impact of video-mediated communication (VMC) on different aspects of relationship quality. The sample consisted of 396 individuals aged 17-27, currently involved in a romantic relationship who were recruited from two sections of a first year Family Relations and Human Development course. VCM use in long-distance relationships (LDR) was compared to VCM use in geographically close relationships (GCR). Further, the study examined individuals who varied in terms of VMC use and in terms of relationship quality measures (i.e., intimacy, relationship certainty, and communication). Long-distance participants were more likely to use VMC when compared to GC participants and higher usage of VMC was positively associated with communication, emotional intimacy, and sexual intimacy in LDRs but not GCRs. Individuals in long-distance relationships can apply this information and knowledge within their own relationships to help maintain their relationship quality. In addition, the findings can be used to make recommendations for couples and therapists working with couples in LDRs.

The majority of LD participants used VMC to communicate with their partner (66.90%). When used, video-mediated communication was used on average once per day for approximately 70 minutes by LD participants. Individuals in LDRs were also more likely to use VMC than individuals in GCRs and LD participants spent more minutes per time using VMC than GC participants. These findings are similar to Jiang and Hancock (2013) in which individuals in LDR reported using VMC more often and for longer periods of time per use than individuals in GCR. Since VMC has been found to create a sense of togetherness without being physically present (Angiolillo et al., 1998; van der Kleij, 2009), these findings suggest that LD
participants may be using VMC as a replacement for face-to-face communication as it provides face-to-face interaction (e.g., sense of togetherness) without physically being in the same space. Previous research has also found that VMC enhances closeness (Manstead et al., 2011) and creates a sense of shared space (Kleij, 2009) all of which may not be readily available to individuals in LDRs. In Kolozsvári’s (2015) study of 20 heterosexual couples (20 men and 20 women), previously and currently in LDRs, participants’ created a joint space through Skype (a form of VMC). Although the couples did not have a shared physical space (e.g., a house), Skype acted as a proxy by allowing couples to create a space where they could be together. Therefore, LD participants may be using VMC more often and for longer periods per use to be able to create their own shared space when apart.

Findings have varied in terms of whether LD individuals differ from or are similar to GC individuals on measures of relationship quality. In the current study, LD participants did not significantly differ from GC participants on the seven relationship quality measures (intimacy (emotional and sexual), communication, satisfaction, self-disclosure, conflict avoidance and relational uncertainty). Similarly, Kirkpatrick (2007) and Roberts and Pistole (2009) also found that relationship satisfaction did not differ between LD individuals and GC individuals. In contrast, Van Horn and colleagues (1997) found that, in comparison to GC individuals, LD individuals were less satisfied and felt more uncertain in their relationship. However, in the current study, GC participants and LD participants did not significantly differ on measures of uncertainty or relationship satisfaction. In fact, LD and GC participants reported feeling both certain and satisfied in their relationship. Uncertainty has been found to be negatively associated with relationship satisfaction (Berger & Calabrese, 1975; Solomon & Knobloch, 2001) and individuals in Van Horn and colleagues’ study were less satisfied overall in their relationship.
than individuals in the current study. Perhaps the lower levels of relationship satisfaction are associated with more uncertainty or vice versa accounting for the differences found between studies. In addition, shifts in technology from 1997 to present day could be influencing LD individuals' relationship satisfaction and certainty. Specifically, it is possible that free and easily accessible communicative technologies that allow for face-to-face (ftf) interaction that did not exist prior to 2000 (e.g., Skype, Facetime, Google Hangouts) can foster intimacy and connection to a greater degree than was possible with previous technologies. Since ftf interaction is positively associated with greater intimacy and communication quality (Scott et al., 2006), both of which have been found to be facilitators of relationship satisfaction (Gottman, 1999) and negatively associated with relational uncertainty, it can be hypothesized that the ftf interaction provided by VMC is also associated with decreases in relational uncertainty.

In some cases, LDs also report higher levels of relationship quality. For example, both Jiang and Hancock (2013) and Kelmer and colleagues (2013) found that, when compared to GC individuals, LD individuals reported higher levels of intimacy and lower levels of problematic communication. Since previous studies have shown that individuals in LDRs have been found to idealize their relationship (e.g., reporting more relationship satisfaction) when compared to GC participants (Stafford & Merolla, 2007; Stafford & Reske, 1990), perhaps participants in Jiang and Hancock (2013) and Kelmer and colleagues (2013) engaged in more idealization of their partner and relationship which led to greater relationship satisfaction. In Jiang and Hancock’s study, LD individuals reported greater intimacy which was thought to be driven by; a) increases in self-disclosure, and b) idealized perceptions of their partner. Since both LD and GC participants did not differ in terms of self-disclosure in the current study and previous research has found that idealization is associated with higher levels of relationship quality (Murray,
Holmes, & Griffin, 1996; Stafford & Reske, 1990), perhaps the presence of idealization, which may occur when less ftf time is spent with a partner, could help explain the difference in findings between the previous studies and the current study.

The current study used cluster analysis to determine if participants would cluster in terms of high and low technology use, and if clusters would reflect differences in relationship quality. Although the groups did not cluster in terms of technology use, as it was the least important predictor in determining the clusters, it did help in determining a higher user from a lower user on VMC. The cluster analysis produced two clusters, providing evidence for a higher relationship quality group and a lower relationship quality group. Those who were in the higher relationship quality group reported higher levels of relationship satisfaction, intimacy, communication, and self-disclosure. Also, within the cluster analysis, relational uncertainty was the most important predictor in determining cluster membership. Since relational uncertainty has been negatively associated with measures of relationship quality (Berger & Calabrese, 1975; Dainton & Aylor, 2001; Knobloch, 2007; Solomon & Knobloch, 2001), it seems likely that those who reported higher levels of relational uncertainty would be also likely to report lower levels of relationship quality, as is the case in the current study.

These findings also provide evidence to support the uncertainty reduction theory in that, in order to reduce uncertainty in a relationship, partners must consistently update their knowledge about each other (Berger & Bradac, 1982). For many individuals this involves engaging in more self-disclosure and communication (Berger & Calabrese, 1975) as better communication quality is associated with less uncertainty (Berger & Bradac, 1982; Berger & Calabrese, 1975). Within the higher relationship quality group, higher levels of both communication and self-disclosure and lower levels of relational uncertainty were reported when
compared to the lower relationship quality group; thus providing evidence to support the idea that greater communication and more self-disclosure might be associated with decreases in relational uncertainty.

Importantly, good communication involves having access to both verbal and non-verbal cues which is often associated with increases in self-disclosure and decreases in relational uncertainty (Argyle & Dean 1963; Patterson, 1973; Reis & Shaver, 1988). Since it is known that individuals in LDRs have limited access to non-verbal cues because of reduced ftf interaction, it might be hypothesized that the higher relationship quality group was comprised of mostly GC individuals. Yet, within the higher relationship quality group there were approximately equal numbers of LD and GC participants. Since individuals in the higher relationship quality group also report using VMC more days than those in the lower relationship quality group, perhaps VMC may be helping to facilitate access to non-verbal cues in LDR, therefore reducing uncertainty and increasing relationship quality.

Higher VMC users differed from low VMC users in terms of communication, emotional intimacy, and sexual intimacy, however high VMC users did not differ from participants who used VMC less frequently (lower users) on the other relationship quality measures. When analyses were conducted separately for LD and GC participants, high and low LD VMC users significantly differed on communication, emotional, and sexual intimacy, but high and low GC VMC groups did not differ in terms of these relational characteristics. This indicates that high usage of VMC is positively associated with communication, emotional intimacy, and sexual intimacy in LDRs but not GCRs. Moreover, it is important to note that since the current study is cross-sectional, it could also be the case that individuals who are in LDRs and high in emotional and sexual intimacy and in communication are drawn to using VMC more often as a way to
connect with their partner. The findings from this study are similar to those of Greenberg and Neustraedter (2012) and Neustraedter and Greenberg (2011) in that VMC helped to maintain intimacy in LD couples. As previously noted, non-verbal cues are especially important for enhancing intimacy so it can be suggested that VMC is able to provide LD couples with an alternative for having access to non-verbal cues that otherwise would only be provided by ftf interactions.

Although VMC has been found to have a positive association with relationship quality in the current investigation, it is possible that VMC may also reproduce negative relationship patterns present in ftf relationships. For example, since individuals have access to non-verbal cues through the use of VMC, negative facial expressions (e.g. eye rolling) or being inattentive to the conversation are present and more overt when compared to telephone or text message conversations. These non-verbal cues often reveal the real intentions of the speaker when compared to receiving verbal cues only (Kappas & Kramer, 2011). Therefore, having access to negative non-verbal cues may not be beneficial to the relationship as a partner may not be able to hide their negative feelings (e.g. disappointment, angry, or worry) while using VMC; this might negatively impact communication and relationship satisfaction.

**Strengths, Limitation, Future Directions**

There are a number of strengths associated with the current study, the first being the use of an online survey as the method of data collection (Mustanski, 2001). Collecting the data online allowed the survey to be easily accessible to students and also allowed them to be able to complete the survey on their own time. Also, collecting the data online allowed for large amounts of data to be collected quickly and in a cost effective way. Another strength of the current study was that it allowed individuals to self-define whether or not they were in a LDR.
Previous studies that did not allow individuals to self-define their relationship as long-distance (Canary et al., 1993; Helgeson, 1994; Knox et al., 2002; Lydon et al., 1997; Schwebel et al., 1992) would not have captured some of the individuals in the current study as long-distance (e.g., those who lived an hour away from their partner but were unable to see their partner often due to busy lifestyles). This is an important distinction in being able to remain inclusive of all LDR types and being able to capture individuals' subjective realities. Despite these strengths, there are also limitations to the current study.

One limitation of the current study has to do with the generalizability of the sample. The individuals in the current study were young students ranging in age from 17 to 27 with one-half of the participants being 18 years of age; therefore, the sample is not representative of an older population or a non-student population. For example, students in the sample tended to report using technology very often in their relationship regardless of whether or not they were LD or GC. Since students tend to have more flexibility in their schedule, it could be that these individuals have more time to spend using technology to connect with their partner in comparison to individuals who may not be in university. In addition to this, the majority of individuals in the study were currently dating their partner and may not be representative of individuals who are engaged, married, or cohabiting. Also, on average, participants had only been together with their partner for two years. It could be that individuals who are engaged/married/cohabiting or have been dating their partner for a longer period of time may differ on their reports of relationship quality due to different life experiences and/or issues (e.g., having children, financial strain, more committed). Although participants were recruited from a university, the results may not be generalizable to all other university students as participants were only recruited from two first year classes, specifically from a class in Family Relations and
Human Development. It is possible that students who participated already had an interest in relationship studies, making them more likely to participate in the study. As a result, the participants may not be representative of all students in other university classes. Within the current study, there were also very few men who participated when compared to women. Since women make up the majority of social sciences classes when compared to men (Hango, 2013), it may be possible that there were fewer men to recruit from in comparison to classes such as engineering or mathematics. In the current study, men were more likely to be in the lower relationship quality group than were women. Since these men still reported relatively high levels of relationship quality, one cannot suggest that men are less satisfied than women; however, these differences may have impacted the study findings.

Another limitation of the current study was the possibility of volunteer bias. Participants were awarded one bonus mark towards their final grade. This could suggest that participants who did participate may not be representative of individuals who did not participate. It is possible that the students who did complete the study might be students who were worried about their final grade or were under less pressure or stress and therefore had time to complete a half hour questionnaire. A final limitation of the study was the use of recall for some of the survey questions. For example, participants were asked to recall a) how many days in the last month they used a specific method of technology, b) how many times per day they used the method, c) how many words/minutes per time the method was used, and d) how many days they had been apart in the last month from their partner. It is possible that individuals may not have accurately remembered how frequently they engaged in the behaviours in question. Indeed, some participants reported using the telephone for 8 hours in a day or 100 times per day. The inaccuracy in reporting could lead to over- or under-reporting behaviours.
In order to address some of the limited generalizability of the demographics presented in the current study, future research should recruit non-university samples. This may include recruiting individuals who are older or who may be in a more serious/longer-term relationship (engaged, married, cohabiting) to see if findings from the study hold true across different sample groups. For example, within longer term relationships, relational uncertainty may not be as salient a concern; individuals in longer-term relationships may feel very certain about the future or current state of their relationship when compared to those shorter term relationships. Therefore, these individuals may not be using VMC in the same way as those in shorter-term relationships (e.g. using VMC to engage in more self-disclosure and communication as a means of reducing uncertainty). However, VMC may still be playing an important role for individuals in long-term relationships by helping to maintain communication and intimacy while apart from their partner. Future research should investigate the role of VMC in longer term relationships to determine if this is the case.

Since there were very few men in the study overall and the majority of men fell into the lower relationship quality group, future research should recruit more men and participants who vary more in terms of relationship status, to determine if these findings would hold in a more diverse and gender-balanced sample. Future research using dyadic data analytic techniques should also be conducted to determine if both members of a couple experience the use of technology in their relationships the same way, and if gender differences in the relationship between relationship quality and technology use exist.

Future studies should also aim to minimize recall bias by using diary studies. As is seen in previous research, individuals are more likely to have inaccurate recall as the length of time increases (Graham, Catania, Brand, Duong, & Canchola, 2003; Li, Scanlon, & Serdula, 2005).
Therefore using daily diaries or event level reporting (e.g., the last time you used video chat/webcam....) would be the useful to minimize errors in recall.

**Implications**

This study adds to the limited but growing body of literature on technology use and romantic relationships (e.g., Greenberg & Neustaedter, 2012; Jiang & Hancock, 2013; Neustaedter & Greenberg, 2011), specifically video-mediated communication and long-distance relationships. Although previous studies have provided great insight into intimacy of LD couples over video chat (Greenberg & Neustaedter, 2012; Neustaedter & Greenberg, 2011), other aspects of relationship quality such as communication, relationship satisfaction, and relational uncertainty have not been considered. The current study builds upon previous literature by taking into account these other measures of relationship quality.

The current study also expands our knowledge about the prevalence of technology use, specifically video mediated communication use in both LDR and GCRs. It can be used to inform researchers about the differences between couples who frequently use video mediated communication compared to couples who use video mediated communication less frequently in terms of intimacy, communication, self-disclosure, relationship satisfaction, and relational uncertainty. This information is important when trying to understand the success of LDRs in comparison to GCRs as it has been assumed that both physical proximity and frequent face-to-face communication are essential for relationship satisfaction (Litzinger & Gordon, 2005; Stafford, 2005) both of which are limited in LDRs.

The information and knowledge gained from this study has also contributed to our understanding of how romantic relationships are maintained despite close physical proximity by using a variety of communicative technologies. Individuals in long-distance relationships can
apply this information and knowledge within their own relationships to help maintain intimacy and communication while long-distance. In addition, the findings can also be used to make recommendations for therapists working with couples in LDRs by providing individuals with alternatives to stay connected and maintain relationship quality.
References


Armour, S. (1998) Married ... with separation: More couples live apart as careers put miles between them. USA Today, Nov. 23


Appendix A - Certification of Ethical Approval

RESEARCH ETHICS BOARDS
Certification of Ethical Acceptability of Research Involving Human Participants

APPROVAL PERIOD: March 3, 2016
EXPIRY DATE: March 3, 2017
REB: G
REB NUMBER: 16FE023
TYPE OF REVIEW: Delegated Type 1
PRINCIPAL INVESTIGATOR: Milhausen, Robin (rmilhaus@uoguelph.ca)
DEPARTMENT: Family Relations & Applied Nutrition
SPONSOR(S): None
TITLE OF PROJECT: Romantic Couples and Their Use of Technology For Communication

CHANGES:

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<td>Added incentive to compensation for participants. Added information and withdrawing without penalty</td>
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The members of the University of Guelph Research Ethics Board have examined the protocol which describes the participation of the human participants in the above-named research project and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement, 2nd Edition.

The REB requires that researchers:
- Adhere to the protocol as last reviewed and approved by the REB.
- Receive approval from the REB for any modifications before they can be implemented.
- Report any change in the source of funding.
- Report unexpected events or incidental findings to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants, and the continuation of the protocol.
- Are responsible for ascertaining and complying with all applicable legal and regulatory requirements with respect to consent and the protection of privacy of participants in the jurisdiction of the research project.

The Principal Investigator must:
- Ensure that the ethical guidelines and approvals of facilities or institutions involved in the research are obtained and filed with the REB prior to the initiation of any research protocols.

Submit a Status Report to the REB upon completion of the project. If the research is a multi-year project, a status report must be submitted annually prior to the expiry date. Failure to submit an annual status report will lead to your study being suspended and potentially terminated. The approval for this protocol terminates on the EXPIRY DATE, or the term of your appointment or employment at the University of Guelph whichever comes first.

Signature: ___________________________ Date: April 1, 2016

L. Kuczynski - Chair, Research Ethics Board-General
Appendix B - Recruitment Ad

Romantic Relationships and Communication

Are you between the ages of 18-29, currently in a committed romantic relationship or were previously in a romantic relationship of at least 6 months or longer, and use/used technology sometimes to communicate with your romantic partner? If so, we would like to invite you to participate in a study on romantic relationships and communication. We will be asking you questions about your current or past romantic relationship and communication within your romantic relationship. The survey should take approximately 25 minutes to complete and you will receive course credit towards FRHD 1020.

If you are interested in participating, please see the link below.
Appendix C- Consent Form

Department of Family Relations and Applied Nutrition

CONSENT TO PARTICIPATE IN RESEARCH

Romantic Relationships Study

You are asked to participate in a research study conducted by Dr. Robin R. Milhausen and Melissa Goncalves (Masters Student) from the Department of Family Relations and Applied Human Nutrition, at the University of Guelph. If you have any questions or concerns about the research, please feel free to contact Melissa Goncalves at via email at mgonca02@uoguelph.ca, or Dr. Robin Milhausen at (519) 824-4120 ext. 54397 or via email at rmilhaus@uoguelph.ca.

PURPOSE OF THE STUDY
The purpose of this study is to learn more about the factors that contribute to intimacy, communication, and satisfaction in romantic relationships.

PROCEDURES
If you volunteer to participate in this study, you will be asked to complete a series of online questionnaires. These questionnaires can be completed at your convenience, and should take approximately 30 minutes to complete. You may withdraw from this study at any point in time as your participation is entirely voluntary. You are not obliged to answer any questions that make you uncomfortable in any way and if any question makes you uncomfortable, please feel free to select the option 'I Choose Not to Answer'. However, we would greatly appreciate it if all questions are answered as honestly as possible. If you are interested in a summary of the results, please email Melissa Goncalves at mgonca02@uoguelph.ca.

COMPENSATION FOR PARTICIPATION
Upon completion of the study, you will receive one bonus mark as compensation for your participation.

POTENTIAL RISKS AND DISCOMFORTS
There are no known risks for participating in the current study, however some participants may feel embarrassed answering questions related to their intimate relationship. Please note that you do not have to answer any questions that makes you uncomfortable and you may stop the questionnaire at any time.
POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

While there are no direct benefits to you, your participation in this study is important, as it will contribute to the growing body of research on romantic couples and communication.

CONFIDENTIALITY

The survey data will be collected and stored on a password-protected, encrypted website (Qualtrics.com). Qualtrics uses the same encryption type (SSL) that online banking sites use to transmit secure information. We will not be collecting IP addresses or any identifying information. Only the research assistant and the primary researcher will have access to the database where your survey information will be held. The research data from this experiment will be stored in a secure office and your confidentiality will be respected. The data obtained will be used for research purposes only.

PARTICIPATION AND WITHDRAWAL

Your participation in this study is entirely voluntary, therefore at any point in time, you may choose to withdraw your consent from the study without penalty. However, please note that if you wish to withdraw from the study and still receive your bonus credit for FRHD 1020, please select 'I Choose Not to Answer' for all questions through to the end of the survey where you will then enter your contact information to receive bonus credit on the separate website. Please note that once your survey is submitted, your data will not be able to be removed from the study because it is anonymous.

RIGHTS OF RESEARCH PARTICIPANTS

Participation in this research is voluntary, and you may withdraw at any time. You do not waive any legal rights by agreeing to take part in this study. Please note that confidentiality cannot be guaranteed while data are in transit over the internet. This project has been reviewed by the Research Ethics Board for compliance with federal guidelines for research involving human participants. If you have questions regarding your rights and welfare as a research participant in this study (REB#16FE023), contact:

Director, Research Ethics
University of Guelph

Telephone: (519) 824-4120, ext. 56606
E-mail: reb@uoguelph.ca

By clicking "Next" below it means that you have read this form and that all of your questions were answered and you are giving your consent to participate in the study. For a printable copy of this consent information, please click here: Printable copy of consent
Appendix D - Demographic Questions

1. What year were you born? ______ (Drop down menu for years)

2. With what gender do you identify most?

   ___Woman
   ___Man
   ___Transwoman
   ___Transman
   ___Gender queer/nonbinary
   ___My gender identity is not listed above
   If your gender identity is not listed above, please tell us how you identify: ____________
   ___I choose not to answer

3. I would describe myself as:

   ___Heterosexual
   ___Gay or Lesbian
   ___Bisexual
   ___Queer
   ___Pansexual
   ___Uncertain or questioning
   ___Other (please specify) ____________
   ___I choose not to answer

Please answer the following questions about the partner with whom you are in a romantic relationship

1. How long have you been with your romantic relationship partner?
   _____ years _____ months

2. Are you:

   ___Dating
   ___Engaged
   ___Married
   ___Cohabitating
   ___Other (please specify)
   ___I choose not to answer

3. If you have any children living at home, please indicate their age below.

   [ ]   [ ]   [ ]   [ ]   [ ]
Appendix E - Relationship Questions

1. Would you define your relationship as being long-distance?
   ___ Yes
   ___ No

**If participants select "No" they will skip over questions 2 and 3

2. If "Yes", what characteristics make it long-distance?
   Please describe:
   ____________________________________________________________

3. Please indicate which of the following that best describes your long-distance relationship:
   ___ Always have been in a long-distance relationship
   ___ Relationship has been both geographically close and long-distance
   ___ Other (please specify) ____________________________

Please describe any other details you think are relevant (Open ended Question):
   ____________________________________________________________

4. Please describe how often you see your current partner in person (For example, bi-weekly in the summer months, once a month at other times; once a month etc.)
   ___ Regularly
      Please Describe:
   ___ Infrequently
      Please Describe:
   ___ It varies
      Please Describe:
5. Characteristics of Romantic Relationship:
   a) Thinking about the last month, how many days have you had **face-to-face contact** (physically together in the same place) with your romantic partner?
      Responses will be displayed on a drop down menu with options 0-92 (92 being everyday)

   b) Thinking about the last month, how many days have you spent **apart** (not having face-to-face contact) from your romantic partner?________
      Responses will be displayed on a drop down menu with options 0-92 (92 being everyday)

   c) Is this pattern typical? (please explain)

   d) Thinking about the last three months, how far apart in distance (miles / km) have you been from your romantic partner?: __________
      Is this pattern typical? (please explain)

   e) Thinking about the last three months, how much are the cost of travel expenses for a visit to see your romantic partner? (US $ / CD$):________________
Appendix F - Long-Distance Relationship Index (Pistole & Roberts, 2011)

Please indicate how much you agree/disagree with the following statements ranging from "strongly agree" to "strongly disagree".

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Somewhat Agree</th>
<th>Neither Agree Nor Disagree</th>
<th>Somewhat Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>I Choose Not to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
</tbody>
</table>

1. My partner does not live in my close geographical area
2. My partner lives far enough away from me that it would be very difficult or impossible for me to see him/her every day
3. I consider my relationship to be a long-distance/commuter relationship
4. My partner & I live apart (don't sleep in the same location) from each other at least 2 nights each week
5. We are employed/attend college in different cities, and because of this, each maintain a consistent residence in the city in which we are employed/go to school
6. My partner & I are unable to see each other, face-to-face, on a frequent basis
7. I live 25 miles (40 km) or more from my partner
### Appendix G - Relationship Assessment Scale (Hendrick, 1988)

Please mark on the answer sheet the letter for each item which best answers that item for you.

1. How well does your partner meet your needs?
   | 1 | 2 | 3 | 4 | 5 |
   | Poorly | Average | Extremely well |

2. In general, how satisfied are you with your relationship?
   | 1 | 2 | 3 | 4 | 5 |
   | Unsatisfied | Average | Extremely satisfied |

3. How good is your relationship compared to most?
   | 1 | 2 | 3 | 4 | 5 |
   | Poor | Average | Excellent |

4. How often do you wish you hadn’t gotten in this relationship?
   | 1 | 2 | 3 | 4 | 5 |
   | Never | Average | Very often |

5. To what extent has your relationship met your original expectations:
   | 1 | 2 | 3 | 4 | 5 |
   | Hardly at all | Average | Completely |

6. How much do you love your partner?
   | 1 | 2 | 3 | 4 | 5 |
   | Not much | Average | Very much |

7. How many problems are there in your relationship?
   | 1 | 2 | 3 | 4 | 5 |
   | Very few | Average | Very many |

**NOTE:** Items 4 and 7 are reverse scored. Add up the items and divide by 7 to get a mean score.
Appendix H - PAIR

Personal Assessment Intimacy Relationship Inventor (Schaefer & Olson, 1981)

Please indicate how much you agree with the following statements ranging from "strongly disagree" to "strongly agree".

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Moderately disagree</th>
<th>Neither agree nor disagree</th>
<th>Moderately agree</th>
<th>Strongly Agree</th>
<th>I Choose Not to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

1. My partner listens to me when I need someone to talk to.
2. I can state my feelings without him/her getting defensive
3. I often feel distant from my partner
4. My partner can really understand my hurts and joys
5. I feel neglected at times with my partner
6. I sometimes feel lonely when we're together
7. We enjoy spending time with other couples
8. We usually "keep to ourselves"
9. We have very few friends in common
10. Having time together with friends is an important part of our shared activities
11. Many of my partner's closest friends are also my closest friends
12. My partner disapproves of some of my friends
13. I am satisfied with our sex life
14. I feel our sexual activity is routine
15. I am able to tell my partner when I want sexual intercourse
16. I 'hold back' my sexual interest because my partner makes me feel uncomfortable
17. Sexual expression is an essential part of our relationship
18. My partner seems disinterested in sex
19. My partner helps me clarify my thoughts
20. When it comes to having a serious discussion it seems that we have little in common
21. I feel "put down" in a serious conversation with my partner
22. I feel it is useless to discuss some things with my partner
23. My partner frequently tries to change my ideas
24. We have an endless number of things to talk about
25. We enjoy the same recreational activities
26. I share in very few of my partner's interests
27. We like playing together
28. We enjoy the out-of-doors together
29. We seldom find time to do fun things together
30. I think that we share some of the same interests
31. My partner has all the qualities I've ever wanted in a mate
32. There are times when I do not feel a great deal of love and affection for my partner
33. Every new thing that I have learned about my partner has pleased me
34. My partner and I understand each other completely
35. I don't think anyone could possibly be happier than my partner and I when we are with one another
36. I have some needs that are not being met by my relationship

NOTE: Items 3, 5, 6, 8, 9, 12, 14, 16, 18, 20, 21, 22, 23, 26, 29, 32, 36 are reverse coded.
Appendix I - ENRICH

Enriching and Nurturing Relationship Issues, Communication, and Happiness-
Communication Scale (Olson, Fournier, & Druckman, 1985)

Please indicate how much you agree/disagree with the following statements ranging from "strongly disagree" to "strongly agree".

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Moderately disagree</th>
<th>Neither agree nor disagree</th>
<th>Moderately agree</th>
<th>Strongly Agree</th>
<th>I Choose Not to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

1. It is very easy for me to express all my true feelings to my partner.
2. When we are having a problem, my partner often gives me the silent treatment.
3. My partner sometimes makes comments which put me down.
4. I am sometimes afraid to ask my partner for what I want.
5. I wish my partner was more willing to share his/her feelings with me.
6. Sometimes I have trouble believing everything my partner says to me.
7. I often do not tell my partner what I am feeling because he/she should already know.
8. I am very satisfied with how my partner and I talk with each other.
9. I do not always share negative feelings I have about my partner because I am afraid he/she will get angry.
10. My partner is always a good listener.

NOTE: 2, 3, 4, 5, 6, 7, 9 are reverse coded
Appendix J - Conflict Avoidance Scale  (Stafford, 2010)

Please indicate the frequency in which you engage in any of behaviors with your partner from "never" to "always".

<table>
<thead>
<tr>
<th>Never</th>
<th>Almost Never</th>
<th>Occasionally/Sometimes</th>
<th>Almost Always</th>
<th>Always</th>
<th>I Choose Not to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

1. When my partner and I disagree, I drop the issue.
2. If I notice my partner getting upset because of something I said or did, I change the subject.
3. I avoid arguments with my partner.
4. When my partner does something that annoys me, I let him/her know about it.
5. When my partner does or says something that irritates me, I hesitate to express my irritation with him/her

NOTE: Item 4 is reverse coded

In regards to your current romantic relationship, please indicate whether you believe the statement to be "True" or "False". Please select the appropriate letter beside each statement.

<table>
<thead>
<tr>
<th>True</th>
<th>False</th>
<th>I Choose Not to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I seldom disclose my feelings concerning our relationship with my partner.
2. I don’t talk to my partner about my thoughts on our sexual relationship.
3. I rarely discuss aspects of our relationship that I would like to change.
4. I tell my partner how I feel about our sexual relationship.
5. I rarely discuss certain aspects of our relationship.
6. I reveal most of my thoughts on sexuality to my partner.
7. I rarely disclose my need for closeness to my partner.
8. I disclose my thoughts on sexuality to my partner.
9. I seldom disclose my need for companionship to my partner.
10. I seldom disclose my thoughts on sexuality to my partner.
11. I rarely tell my partner how he or she makes me feel.
12. I don’t usually let my partner know what arouses me sexually.
13. I let my partner know my real feelings.
14. I rarely mention my sexual fantasies to my partner.
15. I seldom disclose my thoughts concerning our relationship with my partner.
16. I tell my partner when I am satisfied sexually.
17. I tell my partner how he or she makes me feel.
18. I let my partner know what turns me on sexually.
19. I talk about my feelings concerning our relationship with my partner.
20. I often reveal to my partner my sexual fantasies.

NOTE: Items 1, 2, 3, 5, 7, 9, 10, 11, 12, 14, 15 are reverse scored
Appendix L - Technology Use Questions

1. On average, how many minutes per day do you spend connecting with your romantic partner?

2. What communication methods do you use to communicate with your romantic partner?
   A. Telephone (either landline phone, cell phone or internet phone) Yes / No
   B. Text message Yes / No
   C. Email Yes / No
   D. Snap Chat
   E. Instant Messenger/Chat Programs (ex. Facebook chat, WhatsApp) Yes / No
      Please describe which chat apps you use.
   F. Video call/webcam (ex. Skype, Facetime, Google Hangout, etc) Yes / No
   G. Other (Please describe)

**If Yes is selected, participants will be brought to subsections under question two where they will fill out more information on how often they use the specific communication method to communicate with their partner

3. Please tell us approximately how often you communicate with your romantic partner via the following communication channels:

   A. Telephone call (including landline phone, cell phone and internet phone)

      Over the last month, how many days did you use this method WITH YOUR PARTNER? Answered will be displayed on a drop down menu from 1-31
      Over the last month, on average how many times per day did you use this method WITH YOUR PARTNER?
      Over the last month, on average, how minutes PER TIME did you use this method WITH YOUR PARTNER?
B. Text message

Over the last month, how many days did you use this method (WITH YOUR PARTNER)?
Answered will be displayed on a drop down menu from 1-31

Over the last month, on average how many times per day did you use this method (WITH YOUR PARTNER)?

Over the last month, on average, how many words PER TEXT were your text messages WITH YOUR PARTNER?

C. Email

Over the last month, how many days did you use this method WITH YOUR PARTNER?
Answered will be displayed on a drop down menu from 1-31

Over the last month, on average how many times per day did you use this method WITH YOUR PARTNER?

Over the last month, on average, how many words PER EMAIL were your emails WITH YOUR PARTNER?

D. Snap Chat

Over the last month, how many days did you use this method WITH YOUR PARTNER?
Answered will be displayed on a drop down menu from 1-31

Over the last month, on average how many times per day did you use this method WITH YOUR PARTNER?

E. Instant messenger (text only; Windows Live messenger, Yahoo messenger, Facebook chat, etc.)
Over the last month, how many days did you use this method WITH YOUR PARTNER?

Answered will be displayed on a drop down menu from 1-31

Over the last month, on average how many times per day did you use this method WITH YOUR PARTNER?

Over the last month, on average, how many words PER MESSAGE were your instant messages WITH YOUR PARTNER?

F. Video call/webcam (Skype, Facetime, Google Hangout, etc)

Over the last month, how many days did you use this method WITH YOUR PARTNER?

Answered will be displayed on a drop down menu from 1-31

Over the last month, on average how many times per day did you use this method WITH YOUR PARTNER?

Over the last month, on average, how minutes PER TIME did you use this method WITH YOUR PARTNER?
Appendix M - Relationship Uncertainty Scale (Knobloch & Solomon, 1999)

Instructions: We would like to know how certain you are about aspects of YOUR RELATIONSHIP, in general. Please use the following scale: The response options include completely or almost completely uncertain; mostly uncertain; slightly more uncertain than certain; slightly more certain than uncertain; mostly certain; and completely or almost completely certain.

<table>
<thead>
<tr>
<th>Completely or Almost Completely Uncertain</th>
<th>Mostly Uncertain</th>
<th>Slightly more Uncertain than Certain</th>
<th>Slightly More Certain than Uncertain</th>
<th>Mostly Certain</th>
<th>Completely or Almost Completely Certain</th>
<th>I Choose Not to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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</tr>
</tbody>
</table>

How certain are you about...

1. What you can or cannot say to each other in this relationship?
2. The boundaries for appropriate and/or inappropriate behavior in this relationship?
3. The norms for this relationship?
4. How you can or cannot behave around your partner?
5. Whether or not you and your partner feel the same way about each other?
6. How you and your partner view this relationship?
7. Whether or not your partner likes you as much as you like him or her?
8. The current status of this relationship?
9. The definition of this relationship?
10. How you and your partner would describe this relationship?
11. The state of the relationship at this time?
12. Whether or not this is a romantic or platonic relationship?
13. Whether or not you and your partner will stay together?
14. The future of the relationship?
15. Whether or not this relationship will end soon?
16. Where this relationship is going?

NOTE: Items will be reversed scored to compute a measure of relational uncertainty
Appendix N - Final Survey Question

Final Survey Question:
1. Is there anything else you would like us to know?
Appendix O - Attention Checks

Attention Check Questions:
1. Please describe the scene above in two to three full sentences

2. If you live on planet earth, select “strongly agree”. (strongly disagree-strongly agree)

3. How are you feeling right now? Although we are interested in your actual feelings, we want to see if you are reading through the questions carefully. Please answer "excited" (Excited, happy, sad, angry)

4. What is the first letter of the English alphabet?
   a. A
   b. J
   c. V
   d. S

5. Where did you meet your partner? Although we are interested in all aspects of your relationship, please select "On vacation"
   a. Online
   b. On vacation
   c. At school
   d. At work

6. Do you believe you can talk to your partner about anything that is important to you? Although we are interested in your relationship, please select "No, definitely not" (Yes, definitely; yes, probably; No probably not; No, definitely not)
Appendix P - Additional Resources

Counselling Services

If participating in this study has caused you to feel distressed, worried, or upset, there are resources on this campus you can access. You can contact the University of Guelph counselling services at (519) 824-4120 Ext. 53244 or drop by the front desk on the third floor of the University Centre. In addition, you can access Good2Talk; a free, confidential, and anonymous helpline that provides professional counseling, information, and referrals on mental health, addictions and well-being. It serves all college and university students in Ontario. To contact Good2Talk please go to www.good2talk.ca or call them at 1-866-925-5454.
Appendix Q - Table of Survey Questions

<table>
<thead>
<tr>
<th>Source</th>
<th>Items</th>
<th>Response Options</th>
<th>Notes</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part A. Demographic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>What year were you born?</td>
<td>Numeric response options</td>
<td>Demographic</td>
<td>-Mean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Recode year to age</td>
<td>-Range</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Sd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-t-test: compare GCR and LDR</td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Please indicate how you identify yourself:</td>
<td>- Woman</td>
<td>Demographic</td>
<td>Percentage/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Man</td>
<td></td>
<td>proportions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Transgender- Female to Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Transgender - Male to Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- I do not identify as any of the above</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- I choose not to answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>I would describe myself as:</td>
<td>- Heterosexual</td>
<td></td>
<td>Percentage/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Gay or Lesbian</td>
<td></td>
<td>proportions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Bisexual</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Queer</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>- Pansexual</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Uncertain or questioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Other (please specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- I choose not to answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Relationship Status - Are you..?</td>
<td>- Dating</td>
<td>Demographic</td>
<td>Percentage/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Engaged</td>
<td></td>
<td>proportions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Married</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cohabitating</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Other (please specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- I choose Not to Answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>How long have you been with your current partner?</td>
<td>Numeric response options in years and months</td>
<td>Demographic</td>
<td>-Mean, sd</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>-Range</td>
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<td>Items</td>
<td>Response Options</td>
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<td>Analysis</td>
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<td>---------------</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
<td>---------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Would you define your relationship as being long-distance?</td>
<td>Yes or No response</td>
<td></td>
<td>GCR and LDR</td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>If &quot;Yes&quot;, what characteristics make it long-distance?</td>
<td>Open-ended (text) response</td>
<td>Relationship Questions</td>
<td>Percentage/ Proportions</td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Please indicate which of the following that best describes your long-distance relationship:</td>
<td>- Always have been in an long-distance relationship - Relationship cycles between geographically close and long-distance - Other (please specify)</td>
<td></td>
<td>GCR and LDR</td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Please describe any other details you think are relevant</td>
<td>Open-ended (text) response</td>
<td></td>
<td>GCR and LDR</td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Please describe how often you see your current partner in person</td>
<td>- Regularly - Infrequently -It varies - Open-ended (text) response under each options</td>
<td></td>
<td>GCR and LDR</td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Thinking about the last month, how many days have you spent <strong>face to face</strong> with your romantic partner</td>
<td>Drop-down menu from 0-31</td>
<td></td>
<td>GCR and LDR</td>
</tr>
<tr>
<td>Researcher-created</td>
<td>Thinking about the last month, how many days have you spent <strong>apart</strong> from your romantic partner?</td>
<td>Drop-down menu from 0-31</td>
<td></td>
<td>GCR and LDR</td>
</tr>
<tr>
<td>Researcher-created</td>
<td>Is this pattern typical? (please explain)</td>
<td>Open-ended (text) response</td>
<td></td>
<td>GCR and LDR</td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Thinking about the last three months, how far apart in distance (miles / km) have you been from your romantic partner?</td>
<td>Open-ended (text) response Open-ended (text) response</td>
<td></td>
<td>GCR and LDR</td>
</tr>
<tr>
<td>Source</td>
<td>Items</td>
<td>Response Options</td>
<td>Notes</td>
<td>Analysis</td>
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</tr>
<tr>
<td>Researcher-Created</td>
<td>Thinking about the last three months, how much is the cost of travel expenses for a visit to see your romantic partner? (US $ / CDN$):</td>
<td>Open-ended (text) response</td>
<td>Relationship Questions</td>
<td>-Mean, sd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open-ended (text) response</td>
<td></td>
<td>-Range</td>
</tr>
<tr>
<td>Part C. Technology Use Questions</td>
<td>Is this pattern typical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>On average, how many minutes per day do you spend connecting with your romantic partner?</td>
<td>Open-ended (text) response</td>
<td>Technology/Communication</td>
<td></td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Do you have the access to the following communication methods?</td>
<td>- Yes</td>
<td>Technology</td>
<td>-Percentage/Proportions</td>
</tr>
<tr>
<td></td>
<td>• Telephone</td>
<td></td>
<td></td>
<td>compare GCR and LDR</td>
</tr>
<tr>
<td></td>
<td>• Text message</td>
<td>- No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Email</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Instant Messenger</td>
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<tr>
<td></td>
<td>• Webcam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Other (please describe)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher-Created</td>
<td>Please tell us approximately how often you communicate with your romantic partner via the following communication channels:</td>
<td>- Response options 1-31</td>
<td>Technology</td>
<td>-Mean</td>
</tr>
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<td></td>
<td>Over the last month, how many days did you use this method WITH YOUR PARTNER?</td>
<td></td>
<td></td>
<td>-Sd</td>
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<td></td>
<td>• Face-to-face</td>
<td></td>
<td></td>
<td>-t-test: compare GCR and LDR</td>
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<td></td>
<td>• Telephone call (including landline phone, cell phone and internet phone)</td>
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<td></td>
<td>• Text message</td>
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<td></td>
<td>• Email</td>
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<td></td>
<td>• Instant messenger (text only; Windows Live messenger, Yahoo messenger, and etc.)</td>
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<td></td>
<td>• Video call/webcam (Skype, Facetime, Google Hangout, etc)</td>
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<td>Researcher-Created</td>
<td>Over the last month, on average how many times per day did you use this method WITH YOUR PARTNER?</td>
<td>Open-ended (text) response</td>
<td>Technology</td>
<td>-Mean</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>-Sd</td>
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<tr>
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<td>Notes</td>
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<td>PARTNER?</td>
<td>Over the last month, on average, how many minutes PER TIME did you use this method WITH YOUR PARTNER?</td>
<td>Open-ended (text) response</td>
<td>Technology</td>
<td>-t-test: compare GCR and LDR</td>
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<td>Researcher-Created</td>
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**Part D. Relationship Assessment Scale - Relationship Satisfaction**

| Hendrick, 1988 | 1. How well does your partner meet your needs? 2. In general, how satisfied are you with your relationship? 3. How good is your relationship compared to most? 4. How often do you wish you hadn’t gotten in this relationship? 5. To what extent has your relationship met your original expectations? 6. How much do you love your partner? 7. How many problems are there in your relationship? | 1-5: response options vary; See Appendix G 0 - I Choose Not to Answer | • Items 4 & 7 - Reverse Coded  • Scoring is kept continuous. The higher the score, the more satisfied the respondent is with his/her relationship. | Mean -Sd -t-test: compare GCR and LDR -Cluster analysis -ANOVA |

**Part E. ENRICH - Communication Subscale - Communication**

<p>| Olson, Fournier, &amp; Druckman, 1985 | 1. It is very easy for me to express all my true feelings to my partner. 2. When we are having a problem, my partner often gives me the silent treatment. 3. My partner sometimes makes comments which put me down. 4. I am sometimes afraid to ask my partner for what I want. 5. I wish my partner was more willing to share his/her feelings with me. 6. Sometimes I have trouble believing everything my partner says to me. 7. I often do not tell my partner what I am feeling because he/she should already know. 8. I am very satisfied with how my partner and I talk | 5 - Strongly Agree 4 - Moderately agree 3 - Neither agree nor disagree 2 - Moderately disagree 1 - Strongly Disagree 6 - I choose not to answer | • Items 2, 3, 4, 5, 6, 9 are reverse coded  • higher scores indicate more relationship better communication quality | Mean -Sd -t-test: compare GCR and LDR -Cluster analysis -ANOVA |</p>
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| Schaefer & Olson, 1981 | 1. My partner listens to me when I need someone to talk to.  
2. I can state my feelings without him/her getting defensive  
3. I often feel distant from my partner  
4. My partner can really understand my hurts and joys  
5. I feel neglected at times with my partner  
6. I sometimes feel lonely when we're together  
7. We enjoy spending time with other couples  
8. We usually "keep to ourselves"  
9. We have very few friends in common  
10. Having time together with friends is an important part of our shared activities  
11. Many of my partner's closet friends are also my closest friends  
12. My partner disapproves of some of my friends  
13. I am satisfied with our sex life  
14. I feel our sexual activity is routine  
15. I am able to tell my partner when I want sexual intercourse  
16. I 'hold back' my sexual interest because my partner makes me feel uncomfortable  
17. Sexual expression is an essential part of our relationship  
18. My partner seems disinterested in sex  
19. My partner helps me clarify my thoughts  
20. When it comes to having a serious discussion it seems that we have little in common | 5 - Strongly Agree  
4 - Moderately agree  
3 - Neither agree nor disagree  
2 - Moderately disagree  
1 - Strongly Disagree  
6 - I Choose Not to Answer | • Items will be phrased in terms of how the relationship is now (rather than how it should be)  
• There will be separate scores for each specific type of intimacy rather than a total score  
• Items that are reverse scored: 3, 5, 6, 8, 9, 12, 14, 16, 18, 20, 21, 22, 23, 26, 29, 32, 36 | -Mean  
-Sd  
-t-test: compare GCR and LDR  
-Cluster analysis  
-ANOVA |
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<tr>
<td></td>
<td>21. I feel &quot;put down&quot; in a serious conversation with my partner</td>
<td>-True</td>
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<td></td>
<td>22. I feel it is useless to discuss some things with my partner</td>
<td>-False</td>
<td></td>
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<td></td>
<td>23. My partner frequently tries to change my ideas</td>
<td>-I Choose Not to</td>
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<td></td>
<td>24. We have an endless number of things to talk about</td>
<td>回答</td>
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<td></td>
<td>25. We enjoy the same recreational activities</td>
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<td></td>
<td>26. I share in very few of my partner's interests</td>
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<td>27. We like playing together</td>
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<td></td>
<td>28. We enjoy the out-of-doors together</td>
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<td></td>
<td>29. I seldom disclose my feelings concerning our relationship with my partner.</td>
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<td>30. We seldom find time to do fun things together</td>
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<td>31. My partner has all the qualities I've ever wanted in a mate</td>
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<td>32. There are times when I do not feel a great deal of love and affection for my partner</td>
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<td>33. Every new thing that I have learned about my partner has pleased me</td>
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<td>34. My partner and I understand each other completely</td>
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<td>35. I don't think anyone could possibly be happier than my partner and I when we are with one another</td>
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<td>36. I have some needs that are not being met by my relationship</td>
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<td><strong>Part G. Martial Self-Disclosure Questionnaire - Self-Disclosure</strong></td>
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<tr>
<td>Waring, Holden, &amp; Wesley, 1998</td>
<td>1. I seldom disclose my feelings concerning our relationship with my partner.</td>
<td>-True</td>
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<td></td>
<td>2. I don’t talk to my partner about my thoughts on our sexual relationship.</td>
<td>-False</td>
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<td>3. I rarely discuss aspects of our relationship that I would like to change.</td>
<td>-I Choose Not to</td>
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<td>4. I tell my partner how I feel about our sexual relationship.</td>
<td>回答</td>
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<td>Negatively worded responses are reverse scored (Items: 1, 2, 5, 9, 13, 17, 18, 20, 21, 22, 26, 29) Higher scores means more self-disclosure</td>
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<td>Total scores equal the sum of scores on the four scales</td>
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<td></td>
<td>-Mean -Sd -t-test: compare GCR and LDR -Cluster analysis -ANOVA</td>
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| Knobloch & Solomon, 1999| 5. I rarely discuss certain aspects of our relationship.  
6. I reveal most of my thoughts on sexuality to my partner.  
7. I rarely disclose my need for closeness to my partner.  
8. I disclose my thoughts on sexuality to my partner.  
9. I seldom disclose my need for companionship to my partner.  
10. I seldom disclose my thoughts on sexuality to my partner.  
11. I rarely tell my partner how he or she makes me feel.  
12. I don’t usually let my partner know what arouses me sexually.  
13. I let my partner know my real feelings.  
14. I rarely mention my sexual fantasies to my partner.  
15. I seldom disclose my thoughts concerning our relationship with my partner.  
16. I tell my partner when I am satisfied sexually.  
17. I tell my partner how he or she makes me feel.  
18. I let my partner know what turns me on sexually.  
19. I talk about my feelings concerning our relationship with my partner.  
20. I often reveal to my partner my sexual fantasies. | 6 - Completely or Almost Completely Certain  
5 - Mostly Certain  
4 - Slightly More Certain than Uncertain  
3 - Slightly more Uncertain than Certain  
2 - Mostly Uncertain | - Lower values indicate greater degrees of relational uncertainty. | -Mean  
-Sd  
-t-test: compare GCR and LDR  
-Cluster analysis  
-ANOVA |
<table>
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<td></td>
<td>5. Whether or not you and your partner feel the same way about each other? 6. How you and your partner view this relationship? 7. Whether or not your partner likes you as much as you like him or her? 8. The current status of this relationship? 9. The definition of this relationship? 10. How you and your partner would describe this relationship? 11. The state of the relationship at this time? 12. Whether or not this is a romantic or platonic relationship? 13. Whether or not you and your partner will stay together? 14. The future of the relationship? 15. Whether or not this relationship will end soon? 16. Where this relationship is going?</td>
<td>1 - Completely or Almost Completely Uncertain 7 - I Choose Not to Answer</td>
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<td><strong>Part I. Conflict Avoidance Scale - Conflict Avoidance</strong></td>
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<td>Stafford, 2010</td>
<td>1. When my partner and I disagree, I drop the issue 2. If I notice my partner getting upset because of something I said or did, I change the subject 3. I avoid arguments with my partner 4. When my partner does something that annoys me, I let him/her know about it 5. When my partner does or says something that irritates me, I hesitate to express my irritation with him/her</td>
<td>5 - Always 4 - Almost Always 3 - Occasionally/Sometimes 2 - Almost never 1 - Never 6 - I Choose Not to Answer</td>
<td>Item 4 - reversed scored Higher scores = more conflict avoidance</td>
<td>-Mean -Sd -t-test: compare GCR and LDR -Cluster analysis -ANOVA</td>
</tr>
<tr>
<td>Pistole &amp; Roberts, 2011</td>
<td>1. My partner does not live in my close geographical area. 2. My partner lives far enough away from me that it would be very difficult or impossible for me to see him/her every day 3. I consider my relationship to be a long-</td>
<td>7 - Strongly Agree 6 - Agree 5 - Somewhat Agree 4 - Neither Agree Nor Disagree 3 - Somewhat Disagree</td>
<td>Higher scores indicate a long-distance relationship while lower scores indicate a geographically close relationship</td>
<td>-Mean -Sd -t-test: compare GCR and LDR -Cluster analysis -ANOVA</td>
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<td>Source</td>
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<td>distance/commuter relationship, My partner &amp; I live apart (don't sleep in the same location) from each other at least 2 nights each week, We are employed/attend college in different cities, and because of this, each maintain a consistent residence in the city in which we are employed/go to school, My partner &amp; I are unable to see each other, face-to-face, on a frequent basis, I live 25 miles (40 km) or more from my partner</td>
<td>2 - Disagree</td>
<td>1 - Strongly Disagree, 8 - I Choose Not to Answer</td>
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