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The effects of values and the presence of a mobile phone on friendship interactions

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**The Effects of Values and
the Presence of a Mobile Phone on
Friendship Interactions**

By

Genavee Brown

Accepted in Partial Completion
of the Requirements for the Degree
Master of Science

Kathleen L. Kitto, Dean of the Graduate School

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MASTER'S THESIS

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Genavee Brown

July 1, 2014

**The Effects of Values and the Presence of a Mobile Phone on Friendship
Interactions**

A thesis
Presented to
The Faculty of
Western Washington University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Science

By Genavee Brown
July, 2014

Abstract

Friends are sources of social support and are often observed interacting in public settings while using their mobile phones. Four types of mobile phone use were predicted: distraction, distraction multitasking, facilitation, and facilitation multitasking. These types of mobile phone use were predicted to be influenced by communication technology use, values, and friendship quality. Furthermore, these phone use types were predicted to influence the quality of a friendship interaction. An observational paradigm was used to observe mobile phone use behaviors in friendship interactions. Participants were recruited in friendship dyads and completed communication technology, values, and friendship quality questionnaires before visiting the laboratory. Friends attended the appointment together and were shown to a waiting room area where they were left alone for five minutes, and their interaction was videotaped. Following the interaction, friends completed an interaction quality questionnaire. Analyses were conducted in HLM to account for nonindependence in the dyadic data. Neither communication technology use, values, nor friendship quality had an influence on the types of phone use. An actor-partner interaction model tested the influence of phone use on interaction quality. Each actor's interaction quality was predicted from their own friendship quality and the four types of mobile phone use and from their partner's friendship quality and the partner's four types of phone use. The actor's friendship quality increased interaction quality. The partner's distraction decreased interaction quality and the actor's distraction multitasking increased interaction quality. These results extend previous research on multitasking and suggest new understandings of *social snacking* and *customized sociality*.

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The Effects of Values and the Presence of a Mobile Phone on Friendship

Interactions

I would rather walk with a friend in the dark, than alone in the light.
--Helen Keller

Friends share their lives. They make each other laugh and occasionally cry. Friends are sources of help and support in times of crisis. Because they are integral parts of our social support systems and give meaning to life, it is not surprising to frequently see friends happily interacting with one another in various social settings. Today these interactions generally involve two or more people and their cell phones. Glancing around a coffee shop one can observe friends either completely lost in their mobile devices and unaware of the other's presence. From time to time, friends can be observed at a restaurant or park half engaged in conversation and half engaged in their mobile devices. Occasionally, one observes friends huddled over the same phone, intently watching a YouTube video at the bus stop or mall. Sometimes friends sit in the library or a waiting room discussing text messages received and how to respond to them.

Might these different uses of mobile phones during a friendship interaction, some that detract from being present and undermine being focused on one's friend and some that promote being present and engage one's friend, come from different, deeply held values? For example, respecting being present for one's friend perhaps stems from the value for promoting the well-being of others over oneself. In addition to being the result

of individual values, mobile phone use during a friendship interaction may also be due to a person's comfort with and frequency of use of communication technologies and the quality of their friendship. Furthermore, the different types of mobile phone use performed during the interaction may also promote different levels of quality in their interactions.

Research Questions

Is the mobile phone use performed during a friendship interaction influenced by one's personal values, communications technology use, and friendship quality?

How do friendship quality and the amount and types of phone use that friends perform during a waiting interaction influence the perception of the quality of the interaction by participants themselves?

Friendship

Friendship has been defined as a "dyadic co-constructed phenomenon characterized by reciprocity, closeness, and intimacy" (Amichai-Hamburger, Kingsbury, & Schneider, 2013, p. 34). Friendships are enjoyable, positive, reassuring relationships that provide emotional support (Hays, 1989) as well as instrumental support in times of need (Semmer, Elfering, Jacobshagen, Beehr, & Boos 2008). Social and instrumental support result in less stress (Cohen & Wills, 1985), better health (Albrecht & Goldsmith, 2003), and greater satisfaction with life (Deiner & Seligman, 2002). Additionally, friendships promote happiness by fulfilling psychological needs (Demir & Özdemir, 2010). Friendship is especially important for emerging adults who are transitioning away from the support of their families and are forming new social support networks. For emerging adults, friends are sounding boards for new values and beliefs with which they

are experimenting and create a safe space to explore new identities and adult roles (Arnett, 2000). Only high quality friendships, however, can fulfill these benefits (Mendelson & Aboud, 1999). Friendship quality is composed of both affection for one's friend and how many friendship functions the friends fulfill for each other. Affection in friendships concerns how much one likes one's friend and wants to continue being friends (Mendelson & Aboud, 1999). Functions of friendship include bolstering self-esteem, providing help in times of need, giving emotional support, being a confidant, being loyal, and spending time together. Friendship quality is made up of both affection and fulfilling the friendship functions. If all functions are fulfilled and affection is present in the friendship, then the friendship is experienced as high quality and friends benefit from the relationship by having a safe space to be supported as they change and grow. Maintaining and sustaining high quality friendships and the benefits that come from them require friends to spend time together in high quality interactions (Oswald, Clark, & Kelly, 2004).

Technology and Relationships

As with many technological advances there are some who laud mobile phones as a solution to many difficulties of social interaction and there are others who have concerns about the technology. Fortunati (2002) concedes that the mobile phone helps people decrease their anxiety in a world where social relationships are no longer closely tied to physical space. Nevertheless, she continues by discussing mobile phone users' tendency to completely withdraw from the uncertainty of the physical world and face-to-face interactions into a familiar social world of friends and family accessible through the mobile phone. Turkle (2011) makes a similar argument in her book *Alone Together*

where she argues that mobile phones detract from thoughtful, deliberate reflection about emotion, distract from engaging in face-to-face interaction, and inhibit learning the social skills and emotional resources necessary to navigate the difficulties and uncertainties of face-to-face interaction. In the opinion of each of these authors, mobile phones create tension between experiencing relationships in the physical world and experiencing relationships in a virtual world.

Stimulation and displacement hypotheses

Psychological research on new communication technologies, including mobile phones, has produced conflicting results about whether these communication tools promote or detract from creating, maintaining, and experiencing close relationships in the physical world. Valkenburg & Peter (2011) present two competing hypotheses that seem to be supported by the research: the stimulation hypothesis and the displacement hypothesis. Proponents of the stimulation hypothesis suggest that communication technologies promote more social interaction by making communication and information sharing more convenient and by causing connection to be less intimidating (Bryant, Sanders-Jackson, & Smallwood, 2006; Valkenburg & Peter, 2009; Hampton, Sessions, & Her, 2011). Proponents of the displacement hypothesis suggest that communication technologies consume time that, in the past, would have been spent engaging in richer, more satisfying face-to-face interactions, or they distract one's attention from the face-to-face interactions occurring in one's life (Hampton, Livio, & Sessions, 2010; Schiffrin & Edelman, 2010; Subrahmanyam & Lin, 2007; Short, Williams, & Christie, 1976).

Relating each of these hypotheses to mobile phone use, stimulation hypothesis supporters would suggest that mobile phones will be used to communicate with others by

sharing information on the phone to engage one's face-to-face interaction partner, whereas displacement hypothesis supporters would suggest that mobile phones will be used for activities that will distract from or interrupt face-to-face interactions by directing attention toward the phone. The current observational experiment examines mobile phone use during a friendship interaction to shed light on whether mobile phones are stimulating or displacing high quality face-to-face friendship interactions.

Interaction Behaviors

To examine the use of communication technology in friendship interactions, I examine the phenomena at the level of the dyad. Examining dyadic interaction behaviors, or interaction behaviors between two people, are useful for understanding initial interactions, mother and child relationships, romantic relationships, and friendships (Ickes, 2009; Ainsworth & Bell, 1970; Welsh & Schulman, 2008; Deutz, Lansu, & Cillessen, 2014). Although these interactions all take place with varying levels of familiarity and power status of the dyad members, the behaviors that indicate a high quality interaction are similar across the relationships. When interacting with one another people generally enjoy being listened and responded to, smiling, and making eye contact (Ickes, 2009). Finding similar behaviors across many different types of relationships points to the importance of these behaviors in having high quality interactions.

Previous studies, however, were conducted without mobile phones being present in the interaction, and this new technology may change the way people behave in face-to-face interactions. Using a mobile phone during a face-to-face social interaction can both prevent and promote the behaviors associated with high quality interactions. Often using

a cell phone requires one's attention to be focused on the device. Directing attention toward the device creates attentional blindness (Hyman et al., 2010) which prevents behaviors such as making eye contact, listening attentively, and monitoring the other person's emotions and behavior to respond appropriately. Not engaging in these behaviors would decrease the quality of the interaction. However, friends may use their phones to share information that would encourage shared understanding and spark discussion which could increase the quality of the interaction. Therefore, it is not necessarily mobile phone use itself that inherently decreases or increases the quality of the interaction, but it is the specific ways in which the friends are using their mobile phones may influence the quality of the interaction in different ways (Katz, Blumler, & Gurevitch, 1974-1974). In this study, I look at four different types of mobile phone use that can occur during friendship interactions.

Perhaps most detrimental to a social interaction would be using one's mobile phone in a way that distracts one completely from the friendship interaction, which involves being completely focused on one's mobile device and not at all focused on one's friend. This type of *distraction* mobile phone use is characterized by not listening to or responding to one's friend and having one's gaze directed at one's phone. Evidently, this type of mobile phone use prevents making eye contact, active listening, and monitoring the friend's emotions which are the behaviors that lead to high quality, enjoyable interactions. This type of mobile phone use is labeled *distraction use* and is expected to decrease interaction quality.

The second type of mobile phone use involves one's attention being divided between his/her friend and his/her phone, and this could be detrimental to the interaction,

as well. Although multitasking, switching focus from one's friend to one's phone, allows for some interaction behaviors to occur such as listening, responding, and eye contact, these may occur at a lower frequency and level of attentiveness than if the phone was not distracting one from the interaction. This type of mobile phone use is labeled *distraction multitasking*. Research on multitasking suggests that individuals engaged in multitasking perform worse on both tasks that they are engaging in no matter what type of task it is, and therefore *distraction multitasking* may lead to lower interaction quality as it leads to poorer interaction performance (Logan & Gordon, 2001).

The third type of mobile phone use involves both friends looking at the same phone to watch a video or look at a picture. This type of phone use does prevent eye contact while it is occurring, but it may benefit the interaction later in that it provides a shared understanding of what was viewed and may lead to increased conversation and positive interaction behaviors like smiling. This type of mobile phone use is labeled *facilitation*, and is predicted to increase the quality of the interaction.

The fourth type of mobile phone use involves discussing what is on one's screen with one's friend, but not showing his/her friend the image or text. This type of mobile phone use may have a similar effect to *facilitation* in that, information is shared, and this information could spark discussion and is predicted to increase interaction quality. This type of mobile phone use is labeled *facilitation multitasking*. *Facilitation* and *facilitation multitasking* are distinguished from one another because in one case (*facilitation*) the friends have equal knowledge of what is on the screen, and in the other case there is a difference in understanding of what is on the screen between the friends.

Based on the observational research conducted in public parks where researchers observed that technology use was most often engaged in alone even when visiting the park with friends (Hampton, Livio, & Sessions, 2010), it is predicted that *distraction* and *distraction multitasking* will be observed more often than *facilitation* and *facilitation multitasking*, even in the context of friendship interactions.

It is possible that friendship quality plays a role in friends' decision to use their phone and in their decision about the way in which and how much they use their phones. One possibility is that if the friendship is low quality using one's phone might be a more desirable use of the waiting time than interacting with one's friend. The possible effect of friendship quality on mobile phone use will be tested, low quality friendships are expected to be associated with more mobile phone use.

Values' Influence on Interaction Behaviors

Values may play a role in the types of mobile phone use in which one engages during a friendship interaction. Values have been defined as "concepts or beliefs that pertain to desirable end states or behaviors, transcend specific situations, guide selection or evaluation of behavior and events, and are ordered by importance" (Schwartz, 1992; p. 4). In his seminal work on values, Schwartz (1992) identified 10 value types that can be seen across all cultures: self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, and universalism. Self-direction concerns independent thought and needs for control and mastery. Stimulation is a desire for novelty and challenge. Hedonism is desiring pleasure or enjoyment in life. Achievement concerns one's personal success as compared to others. Power is related to the desire for prestige and control over other people or resources. Security is the desire for safety

harmony, and stability. Conformity is the suppression of actions or impulses likely to harm or upset others. Tradition is the amount of respect and acceptance one has for ideas and customs that one's culture or religion impose on the individual. Spirituality is concerned with the search for the ultimate meaning of life. Benevolence is concern for the welfare of close others in everyday life. Universalism is concern for the welfare of all people and nature.

These values are arranged in a wheel shape. Similar values are adjacent to one another in the wheel and opposite values are across from one another (see Figure 1). Furthermore, each of the ten values also fits with a larger pair of values: self-transcendence versus self-enhancement and openness to change versus conservation (Schwartz, 1994). Power and achievement fall into the self-enhancement category while their opposites, benevolence and universalism, fall under the self-transcendence category. Tradition, conformity, and security fall under the conservation category, and their opposites, self-direction, stimulation, and hedonism, fall under openness to change category.

Although all ten values are endorsed to some extent by everyone, individuals and cultural groups differ in the level of importance they place on each value. For example, undergraduate students who were humanities or social science majors rated universalism values as more important than business and technology students, and theology majors indicated greater importance of tradition values and less importance of hedonism and stimulation values (Lindeman & Verkasalo, 2005). Most relevant to the current study, Isomuru, Ervasti, Kinnula, and Isomuru (2011) found that achievement, power, conformity, and self-direction values were all associated with adopting a new technology.

Interestingly, benevolence was mentioned as a motivation to use technology because this specific form of technology allowed one's parents and teachers to keep track of students' movements and prevents them from worrying. Benevolence, however, was only mentioned by a few people as a reason to use technology. Hansen, Postmes, van der Vinne, and van Thiel (2012) found that laptop use for school assignments was associated with increased self-enhancement values (power and achievement). Based on the findings in these two studies achievement, power and self-direction are predicted to be positively associated with *distraction* and *distraction multitasking* mobile phone use and benevolence and conformity are predicted to be positively associated with *facilitation* and *facilitation multitasking* mobile phone use.

A New Experimental Paradigm

Due to the development of smartphones in the past decade and differing goals of previous human interaction observation studies, past studies did not allow participants access to their belongings during the interaction (Ickes & Tooke, 1986) or the laboratory atmosphere discouraged participants from using their mobile phones. In the current study, participants were not instructed to set their belongings aside and the laboratory space was designed to mimic a neutral waiting room setting where participants might feel comfortable using their phones. This allowed the researcher to observe more naturalistic behaviors of mobile phone use in a one on one friendship interaction. To date this is the first study that has observed how friends use their mobile phones during a one on one friendship interaction and that has observed the influence that mobile phones may have on the quality of this type of interaction.

Friendships and friendship interactions cannot be understood by observing one individual alone in the friendship; both friends play a role in the success of the friendship and the success of isolated interactions (Oswald, Clark, & Kelly, 2004). In the current study, a model that examines the effects of both the individual's and their friend's mobile phone use and friendship quality on the quality of the interaction will be tested. From this model, it will be possible to determine whose interaction quality is more strongly influenced by mobile phone use during an interaction, the individual referred to as the actor or their friend referred to as the partner.

Hypotheses

1. All four types of mobile phone use behaviors (*distraction use, distraction multitasking, facilitation use, and facilitation multitasking*) will be observed in the laboratory. More *distraction* and *distraction multitasking* will be observed than *facilitation* and *facilitation multitasking*.
2. Higher amounts of communication technology use will be associated with more of each type of mobile phone use occurring during the interaction.
3. Achievement and power will be associated with more *distraction* and *distraction multitasking*. Benevolence and conformity will be associated with *facilitation* and *facilitation multitasking*.
4. Low friendship quality will be associated with more *distraction, distraction multitasking, facilitation, or facilitation multitasking*.
5. When controlling for friendship quality, actors and partners who use their mobile phones for *distraction* or *distraction multitasking* will have lower actor

perception of interaction quality and actors and partners who use their mobile phones for *facilitation* or *facilitation multitasking* will have higher actor perception of quality interactions.

Method

Participants

Participants were Western Washington University students ($M_{age} = 18.79$, $SD_{age} = .99$). Participants were recruited in a same-sex friendship dyads using Sona system with some targeted recruitment from various ethnic student groups on campus to include diverse value orientations. Sixty-eight close friendship dyads of diverse ethnicities were recruited for a study on friendship and values, however it was necessary to exclude four of the dyads. Three dyads were dropped because they did not meet the selection criteria (different gender dyad or only recently acquainted). Two other dyads were dropped due to extensive missing data. The remaining 63 dyads contained 94 women and 32 men. Seventy percent of the sample identified as Caucasian, twelve percent identified as Asian, nine percent identified as Hispanic, and the remaining nine percent identified as other ethnicities. The average length of the friendship for each dyad was over two years ($M_{length} = 2.88$, $SD_{length} = 3.36$ years). The most frequently reported friendship length was 1 year. Ninety percent of participants reported that they had access to their phone during the interactions. Each participant was reimbursed for their time with a gift card with a value of \$5.00 or research credit if they had signed up through the Sona system.

Measures

Mobile phone use codes. Friendship interactions lasted 5 minutes and were unobtrusively videotaped. Participants were unaware that they were being taped and were

allowed access to all their belongings. The following codes were used to designate different types of mobile phone use engaged in by participants. The complete coding manual utilized by video coders can be found in Appendix A.

Distraction mobile phone use. This type of mobile phone use distracts from or prevents interactions. Behaviors in this category included gazing at the phone and not talking, eyes gazing at phone, not talking, and manipulating the phone (scrolling, texting, looking at pictures, etc.), or taking photos or videos of oneself or the environment while not talking to the interaction partner. Other indications of *distraction* use were if the phone user responded “what” or “hmm” to a friend’s comment or question showing that they were not listening to their friend.

Distraction multitasking mobile phone use. This type of mobile phone use splits the attention of the individual between their phone and their friend. Behaviors in this category include eyes gazing at phone while talking to one’s friend, eyes gazing at phone and manipulating phone while talking to one’s friend, eyes gazing at phone and/or manipulating phone while listening to and making appropriate responses to their friend.

Facilitation mobile phone use. This type of mobile phone use involves using the phone to engage one’s friend and both friends are aware of the information on the screen. Behaviors in this category include both interaction partners gazing at the phone and/or talking about the information displayed on the screen, both interaction partners gazing at the phone while one friend manipulates the phone, and taking photos of or filming one’s friend while the friend is aware of the filming or photo taking.

Facilitation multitasking mobile phone use. This type of mobile phone use involves the phone user verbally sharing the information on the phone, but the user has

more knowledge of the information than their friend, and the user's attention is split between their friend and the phone. Behaviors in this category include eye gaze of the user being directed at the phone and talking about the information on the screen but his/her friend cannot see the screen, talking while eye gaze of the user is directed at the phone and he/she is manipulating the phone but his/her friend cannot see the screen, and taking photos or videos of oneself or the environment while discussing the process with the interaction partner. Additionally, *facilitation multitasking* mobile phone use may occur if the friends continue to discuss information shared through facilitation mobile phone use.

Communication Technology Use Questionnaire. Twenty-five questions developed by the author were used to assess amount and purpose of the participants' general technology use focusing on internet and mobile phone use (see Appendix B). These questions were narrowed from 30 items using a Rasch analysis. Communication technology use was normally distributed ($M = 11.61$, $SD = 2.80$) with possible values ranging from 0 to 25. Cronbach's alpha for this scale was low ($\alpha = .584$).

Best-Worst Scaling Approach to Schwartz Values Survey. The Best-Worst Scaling approach to Schwartz's Value Survey (BWSSVS) was developed by Lee, Soutar, and Louviere (2008). The BWSVS asks respondents to pick their most important value and their least important value from a list of five values. Different groupings of Schwartz's values are given until each value type has appeared three times. Each Schwartz's value rated most important receives a value of 2^4 , and each Schwartz's value rated least important is given a value of 2^0 . The Schwartz's values between most and least important receive the average of $2^1 + 2^2 + 2^3$, the possible values if the respondent had

ranked all values in the set. This simulates having respondents make all pairwise comparisons of Schwartz's values, but does so in much less time and fewer groupings. The benefit of this method is that the data are a ratio scale because they are based on a count of the number of times each of Schwartz's values would have been chosen as most important in all pairwise comparisons. Factor analysis on the BWSSVS revealed that the data matched the circular structure of the original Schwartz's Values Survey ($r_s = .99$). (See Appendix C for a sample item.)

Friendship quality. Friendship quality is a combination of the McGill Friendship Questionnaires for Friend's Functions and Respondents affection. Items from each measure were averaged together to create the friendship quality variable. Friendship quality was high for participants ($M = 7.61$, $SD = .88$). The possible values ranged from 1 to 9.

McGill Friendship Questionnaire—Friend's Functions (MFQ-FF). This measure developed by Mendelson & Aboud (2012) measures to what extent a respondent's friend is fulfilling the functions of friendship, delineated as stimulating companionship, help, intimacy, reliable alliance, self-validation, and emotional security. It was validated for use with late adolescents and emerging adults (ages 16-21). Each function serves as a subscale. Cronbach's alpha for each of the subscales are as follows: stimulating companionship ($\alpha = .84$), help ($\alpha = .84$), intimacy ($\alpha = .90$), reliable alliance ($\alpha = .88$), self-validation ($\alpha = .89$), and emotional security ($\alpha = .85$). Chronbach's alpha for the entire scale is also acceptably high (.948). Sample items include: "My best friend is fun to sit and talk with" and "my best friend is someone I can tell private things." (See Appendix D for the complete questionnaire.)

McGill Friendship Questionnaire—Respondent's Affection (MFQ-RA). This measure developed by Mendelson & Aboud (2012) measures a respondent's affection for their friend based on positive emotions and satisfaction with the relationship. This measure was validated for use with late adolescents and emerging adults (ages 16-21). Cronbach's alpha for the entire scale is high ($\alpha = .943$), and was high for the two subscales, for the positive feelings subscale ($\alpha = .93$) and for the satisfaction subscale ($\alpha = .96$). (See Appendix E for the complete questionnaire.)

Interaction Quality Scale for Friendship Dyads. The Perception of Interaction scale was developed by Cuperman and Ickes (2009) to study each interaction dyad partner's perception of the interaction. The original questions were tailored to initial stranger interactions. To adapt it to friendship dyads several questions were altered and the wording of the questions was changed to refer to one's friend. The questions concern perceived quality and enjoyment of the interaction. (For the full scale, see Appendix F.) Interaction quality was relatively high ($M = 7.72$, $SD = 1.12$). The scale ranged from 1 to 10. Cronbach's alpha for the scale was high ($\alpha = .875$).

Procedure

One week prior to the participants' laboratory appointment a link to questionnaires on a secure web server was emailed to them. Participants were asked to fill out the BWSSVS, general tech use, and sociodemographics. Additionally, the participants were asked to confirm that they were in fact friends with the dyad interaction partner with whom he/she agreed to participate as a manipulation check and was given the MFQ-RA/FF and specifically asked to think about the friend with whom he/she was participating in the research as he/she responded.

On the day of the experiment, friendship dyads reported to the laboratory and waited in a lobby area until the experimenter led them to a room designed to look like a waiting room. Participants were then asked to be seated and the experimenter excused herself from the room to check the progress of other participants located in an adjoining room. The participants were left alone in the room for five minutes and their interactions were video recorded and monitored by the experimenter. After five minutes the experimenter reentered the laboratory. Participants were then partially debriefed about the deception of being video recorded and purpose of the study and were asked to complete informed consent paperwork allowing the researcher to use the video recording of the participants' interaction. Then the experimenter asked the participants to complete the second phase of the study by filling out the perception of interaction quality questionnaire. When these questionnaires had been completed participants were fully debriefed about the true purpose of the study.

Manipulation checks

When participants entered the lab they were asked if they were friends with their dyad partner. After the five minute interaction, all participants were asked if they knew what the experiment was about and if they had any suspicion that they were being video recorded.

Coded interaction behaviors

Three coders were trained on how to score the interaction behavior videos and interrater reliabilities were computed. Training was continued until interrater reliability reached an acceptable level and coders felt confident that they understood the coding system. All tapes were coded by two independent coders and interrater reliabilities were

calculated by correlating the two coders scores on each of the five codes. Interrater reliability for all five codes was high (for *distraction* code $r = .90$; for *distraction multitasking* code $r = .91$; for *facilitation* code $r = .88$; for *facilitation multitasking* $r = .90$).

Results

Descriptive analyses of the phone use types

Over half of participants (56%) used their phones during the interaction. The most common use of the mobile phone was *distraction multitasking* which 52% of participants performed during the interaction. *Distraction* mobile phone use was performed by 36% of the participants. *Facilitation* mobile phone use was engaged in by 21% of participants and *facilitation multitasking* was engaged in by 25% of participants. For the participants who used their mobile phones, the average amount of phone use was over one and a half minutes ($M = 99.74s$, $SD = 88.09$). Table 1 contains measures of normality for total phone use and the four types of phone use.

Data Cleaning

If one item response was missing from a subscale of a questionnaire, the average of the individual's other subscale items was used to replace the value of the missing item. In cases where the scale did not have subscales the average of the individual's responses to the entire scale was entered in place of the missing item score.

Hierarchical Linear Modeling

Hierarchical linear modeling (HLM) was used in all further analyses. HLM is a program that allows researchers to analyze nested data (Kenny, Kashy, & Cook, 2006). Nested data occurs when multiple observations are made in one group, and HLM

accounts for the nonindependence of these observations. In the current study, individual participants are nested within friendship dyads. Friends' scores are likely to be correlated (i. e. share variance) which makes them nonindependent. Friends' scores are likely to be correlated because friends tend to be similar to one another (Amichai-Hamburger, Kingsbury, & Schneider, 2013) and typically accurately assess their level friendship (Oswald, Clark, & Kelly, 2004). HLM parses the total variance in the data into variance explained at the individual level and variance explained at the friendship dyad level. Dividing the variance into these two levels allows us to see whether the effect of the independent variable is influencing the individual's scores or influencing the friendship dyad's scores on the dependent variable. Furthermore, HLM is capable of parsing the variability into individual level and friendship dyad level variability based on the friendship pairings even when there are no predictors at the higher level. However, in order to use the estimates of variance given at the two levels, it is necessary to find the units of variance from the unconditional model. The unconditional model contains only the dependent variable in the model with no predictors. The results of this model give an estimate of the total variance to be explained in the dependent variable at both the individual and dyad level. The variance estimates from the unconditional model are compared to the unexplained variance estimates given in the predicted model containing all predictor variables. This allows for percentages of variance explained to be calculated for the predicted models. For all the following models the unconditional model was run before conducting the main analyses. Estimates of variance explained come from information given in the conditional and unconditional models. In addition to providing units for the variance, variability at the individual and dyad level in an unconditional

model can be used to calculate the percentage of variability at the friendship dyad level which provides an estimate of the correlation between all pairs of friends' scores. The correlation between friends' mobile phone use is reported in Table 1. *Distraction* use was highly correlated between friends meaning that if one friend used their phone for *distraction* the other was highly likely to also use their phone for *distraction* ($p < .001$). *Distraction multitasking* was moderately correlated between friends ($p < .05$). *Facilitation* and *facilitation multitasking* were not correlated between friends meaning whether or not one friend used their phone for *facilitation* or *facilitation multitasking* had no effect on whether or not the other friend used their phone for this purpose. The correlations between friends' values, friendship quality, communication technology use, and interaction quality are reported in Table 2. Universalism-environment and universalism-people were moderately correlated between friends ($p < .05$). Achievement was weakly correlated between friends ($p < .10$). Friendship quality was moderately correlated between friends meaning that friends reported similar levels of friendship quality ($p < .05$). Perceived interaction quality was strongly correlated between friends ($p < .01$).

In all of the following analyses, only Level 1 predictors will be entered. Level 1 predictors are variables measured at the individual level and can be inconsistent between dyad members. Level 2 predictors are variables that are consistent between dyad members. Although no Level 2 predictors are entered in the following analyses, HLM can still parse the variance into individual and dyad level variance through the friendship pairings. Furthermore, although there are no Level 2 predictors, there are Level 2 equations containing only fixed intercepts. These intercepts are equal to the slopes in the

Level 1 equation. Fixing these intercepts is based on the assumption that the effect of the independent variables on the dependent variable does not vary by dyad.

Testing Hypothesis 1: More *distraction* and *distraction multitasking* will be observed than *facilitation* and *facilitation multitasking*.

Testing for mean differences between the amounts of *distraction*, *distraction multitasking*, *facilitation*, and *facilitation multitasking* between all pairs of mobile phone use types required using a Bonferroni correction to test all pairwise comparisons between the mobile phone use types. This analysis required running six separate HLM regressions to test all pairwise comparisons, therefore alpha was set at .008 by dividing alpha of .05 by 6. This analysis required the data to be organized in a pairwise structure. The four types of mobile phone use were the independent variables which were entered at Level 1 using dummy codes to create the pairwise comparisons. The amount of time each type of phone use was performed was the dependent variable. *Distraction* was significantly greater than *facilitation* and *facilitation multitasking* ($p < .001$). *Distraction multitasking* was significantly greater than *facilitation* and *facilitation multitasking* ($p < .001$). *Distraction* and *distraction multitasking* were not significantly different. *Facilitation* and *facilitation multitasking* were not significantly different. Regression values can be found in Table 3. Means are plotted in Figure 2.

Testing Hypothesis 2 : Communication technology use will be associated with mobile phone use performed during the interaction.

In four HLM regression equations, overall technology use was used to predict each of the four types of phone use: *distraction*, *distraction multitasking*, *facilitation*, and *facilitation multitasking*. No type of phone use was associated with communication

technology use (see Table 4). This suggests that the amount of phone use observed during the waiting interaction in the current study was unrelated to overall technology usage.

Testing Hypothesis 3: Values will be associated with mobile phone use.

Values and phone use types were entered in HLM at Level 1. The four phone use types were entered as the dependent variables in four separate analyses and benevolence, universalism-environment, universalism-people, self-direction, stimulation, hedonism, achievement, power, security, conformity, and tradition were entered as the predictor variables and were centered around the grand mean. Centering values around the grand mean causes the intercept of the equation to be equal to the amount of phone use for a person with average scores on all values. In models testing whether an individual's values would predict the amount of *distraction* use, *distraction multitasking*, *facilitation* use, and *facilitation multitasking*, none of the eleven values was predictive of any of the four types of phone use (see Tables 5-8).

Testing Hypotheses 4: Low friendship quality will be associated with more mobile phone use.

In order to suggest that phone use during the interaction was causing the interactions to be lower quality and was not caused by a low quality friendship encouraging an individual to use their phone during the interaction, the relationship between friendship quality and phone use was analyzed. *Distraction*, *distraction multitasking*, *facilitation*, and *facilitation multitasking* were all unrelated to friendship quality. Regression values for the analyses can be found in Table 9. This suggests that it

is not low quality friendships acting as a third variable causing both phone use and low quality interactions.

Testing Hypothesis 5: Interaction quality will be negatively influenced by *distraction* use and *distraction multitasking* and positively influenced by *facilitation* use, *facilitation multitasking*, and friendship quality.

To test this hypothesis the Actor-Partner Interaction Model (APIM) was used (Kenny, Kashy, & Cook, 2006). This model uses the actor's (individual's) amounts of each type of phone use and the partner's (friend's) amount of each type of phone use as well as the actor's friendship quality and partner's friendship quality as predictors for their own level of interaction quality (see Figure 3). This model allows the researcher to see if the phone use of the partner influences the actor's interaction quality and to see if the actor's own phone use influences his/her interaction quality. Additionally, this model allows the researcher to see if the actor's own friendship quality influences his/her interaction quality and to see if the friendship quality of the partner influences the actor's interaction quality.

HLM was used to test the APIM. In the analysis, the actor's interaction quality was predicted from actor *distraction*, actor *distraction multitasking*, actor *facilitation*, actor *facilitation multitasking*, partner *distraction*, partner *distraction multitasking*, partner *facilitation*, partner *facilitation multitasking*, actor friendship quality, and partner friendship quality. All predictor variables were grand mean centered meaning that all slopes are the effect of each variable when all other variables are average (i. e. the equation controls for all other variables). This equation explained 12.37% of the variance in interaction quality at the individual person level and 35.30% of the variance at the

dyad level. The more a participant's friend performed *distraction* mobile phone use, the lower the participant perceived the interaction quality to be ($b = -0.012, p < .001$). Higher actor friendship quality ($b = .362, p = .01$) and more individual *distraction multitasking* ($b = .003, p = .03$) increased interaction quality. Regression values can be found in Table 10.

These findings support the idea that one's own satisfaction with the friendship as indicated by friendship quality increases one's satisfaction with the interaction. Additionally, these findings support the idea that when an individual's friend uses their cell phone for *distraction* during the interaction, this decreases the quality of the interaction for the individual. Furthermore, using one's phone for *distraction multitasking* increases one's own interaction quality.

Discussion

The current study was designed to observe whether or not friends would use their phones while waiting in a waiting room setting, what factors might influence their decision to use their phone, and whether the quality of their interaction might be influenced by their phone use. Approximately 56% of individuals used their mobile phones during the five minute waiting period. Of those who did engage in mobile phone use, they generally used their phones for one and a half minutes. Mobile phones were used for four specific purposes (*distraction, distraction multitasking, facilitation, and facilitation multitasking*). The most common use of phones was to distract from the interaction rather than to facilitate it.

Previous studies conducted in naturalistic settings such as parks (Hampton, Livio, & Sessions, 2010; Hampton, Sessions, & Her, 2011), suggested that mobile phone use is

a common behavior in interpersonal interactions, however, these studies did not examine what purposes the mobile phones were serving within the interaction. The current study addressed this limitation by coding for four different types of mobile phone use that each serve a different purpose: *distraction*, *distraction multitasking*, *facilitation*, and *facilitation multitasking*. This allowed the stimulation and displacement hypotheses of technology use to be examined in more detail.

Stimulation and Displacement Hypotheses

Friends used their phones more for *distraction* and *distraction multitasking* during the interaction than *facilitation* or *facilitation multitasking*. In other words they used their phones in ways which distracted them from the interaction and they either ignored their friend or divided their attention between their friend and their phone. Friends were less likely to use their phones to engage their friends by sharing videos or pictures or to talking about information displayed on their phones. These results parallel those of Hampton, Sessions, and Her (2011) who found that those people in parks who had technology devices were less likely to meet or interact with other people in a physical setting due to their absorption in their devices. This finding lends support to the displacement hypothesis that technology is more often used in ways that displace face-to-face interaction rather than stimulate it.

Predictors of Cell Phone Use

Communication technology use and mobile phone use. Communication technology use did not predict mobile phone use during the interaction. This contradicted our hypothesis that individuals who used more communication technology would be more likely to use their mobile phones in the interaction and would use them for longer

amounts of time. This may be due to the fact that mobile phone use during an interaction and overall communication technology use are unrelated; more plausibly, however, the communication technology use questionnaire may not have been measuring communication technology use accurately as evidenced by the measure's low reliability. The current author attempted to create the communication technology use scale in a way that would sample a broad range of the most common types of communication technologies, but perhaps it would have been more apt to create certain technology use profiles which would encompass certain uses specific to a subgroup of technology users, such as those who use tumblr, imgur, and twitter. Future studies should pursue this avenue of communication technology use measurement.

Values and mobile phone use. Although personal values were hypothesized to predict whether or not one used their phone during the friendship interaction and each of the four types of mobile phone use, there was very little support for these hypotheses. This finding is contrary to the finding by Isomuru et al. (2011) which suggested that self-direction would be associated with higher technology use. One reason our results may be different is that the previous study was examining the adoption of a brand-new technology whereas mobile phones are no longer considered cutting-edge technology. A second reason our results may be different is that in the current study technology use occurred in the context of a social interaction whereas the technology used by students in the Isomuru et al. (2011) study was used briefly only twice a day in a nonsocial interaction. Our results also differ from those found by Hanson et al. (2012) who found that self-enhancement values increased as technology use increased. There may be at least three reasons why the current study did not replicate these results. First, in the

current study values were measured before mobile phone use was measured whereas the order of measurement was reversed in the previous study. This could suggest that the relationship between technology use and values only moves in one direction from more technology use leading to higher self-enhancement values and not higher self-enhancement values leading to more technology use. Second, few participants in the study endorsed self-enhancement values; perhaps the lack of variability in these data masked the effect of these values on mobile phone use. Third, the technology in the previous study was a laptop computer used more for academic work than social interaction. The differences in purposes of the technology, the laptop for school work and the mobile phone for socialization, could be why our study's results differed from the previous study's results.

Friendship quality and mobile phone use. Friendship quality was not predictive of any type of mobile phone use. This suggests that friends did not use their phones during the interaction because they were not satisfied with their friendship, nor did having a very satisfying friendship lead to more mobile phone use which might be considered a sign of comfort in the relationship. This finding suggests that using the phone fulfills some different psychological needs than a close friendship does.

Consequences of Mobile Phone Use during a Friendship Interaction

Summary of findings. In regards to the relationship between friendship quality, mobile phone use, and interaction quality, the actor's (individual's) friendship quality and the partner's (friend's) *distraction* mobile phone use were the most important predictors of perceived interaction quality however the actor's amount of *distraction multitasking* was also a predictor of perceived interaction quality. When friendship quality for the

actor was high, he/she perceived a higher quality interaction. This suggests that when an individual views their friendship as high quality, then he/she is more likely to have good interactions. This finding supports the hypothesis that an individual's friendship quality would increase the interaction quality. When the partner performed *distraction* phone use during the interaction, the actor perceived the interaction quality as lower. When the actor performed *distraction multitasking* for more time during the interaction, he/she perceived the interaction quality as higher. This means that an individual who used his/her phone for *distraction multitasking* was content with the interaction. If his/her friend, however, is using his/her phone for *distraction*, then the individual is less satisfied with the interaction. These findings partially match the predicted pattern of results. The friend's *distraction* mobile phone use during the interaction did decrease interaction quality however the individual's own *distraction multitasking* increased the quality of the interaction.

Distraction mobile phone use and interaction quality. Partners performing more *distraction* use was associated with lower interaction quality for the actor. This suggests that in a friendship interaction the more one's interaction partner uses their phone for *distraction* then the less one is satisfied with the interaction. This finding coincides with previous findings on mobile phone use and attentional blindness. Researchers have found that using one's phone while trying to cross the street leads to more accidents (Byington & Schwebel, 2013). Additionally, students using their phones while walking around campus are distracted to the point of missing bizarre behaviors occurring around them (Hyman et al., 2010). If *distraction* mobile phone use can distract one from viewing oncoming traffic and unicycling clowns, the subtleties of social

interaction are even more likely to be missed. *Distraction* decreasing interaction quality suggests that as hypothesized, this type of phone use prevents positive interaction behaviors like eye contact, talking, smiling, listening, and monitoring the other person's behavior and emotion.

Distraction multitasking mobile phone use and interaction quality. The prediction that *distraction multitasking* would decrease interaction quality for both the actor and the partner was not supported; to the contrary, *distraction multitasking* by the actor was associated with increased perceived quality of the interaction for the actor. There may be several explanations for this association. One reason is that this type of interaction style, having one's attention divided between people and technology, is becoming increasingly common. Furthermore, this form of divided attention mirrors many other types of divided attention interactions that have occurred throughout time and that many people consider enjoyable. Women often had conversations while cross-stitching or sewing and men would chat while fishing or hunting, activities which require one's gaze to be directed at the project. Conversations over meals require one's attention to be divided between the food and one's dinner guests. These seem to be socially accepted times for one's attention to be divided between conversation and other activities, so perhaps people have become adept at balancing these types of divided attention interactions through centuries of practice and having one's attention divided does not bother either the individual him/herself or his/her friend. Additionally, research on multitasking and cognitive flexibility suggests that more multitasking occurs when one is in a good mood (Zwosta, Hommel, Goschke, & Fischer, 2013). Perhaps, a good

mood is responsible for both the greater amount of *distraction multitasking* and the higher interaction quality.

An additional reason that *distraction multitasking* could increase interaction quality is that while performing *distraction multitasking*, one is involved in two enjoyable activities, interacting with one's friend to maintain a social bonding relationship and possibly using one's phone to maintain social bridging relationships. Social bonding needs are emotional relational needs typically fulfilled by close relationships. Social bridging needs are instrumental relational needs typically fulfilled by acquaintances or members of one's broader social network (see Putnam, 2000 for discussion of bridging and bonding social needs). Using the phone during a friendship interaction to look at social media sites online or text may be explained by the idea of *social snacking* (Deters & Mehl, 2012) which occurs when individuals check social media or use communication technologies to have their bridging relational needs fulfilled in small doses. Having a face-to-face interaction with one's friend while *social snacking* may serve to increase the quality of the interaction because one is having both his/her bonding and bridging relational needs fulfilled.

Furthermore, this could be an example of *customized sociality* (Manago & Vaughn, in press) occurring in the moment during face-to-face interactions. *Customized sociality* has been hypothesized to occur at the network level, where individuals surround themselves with networks of friends that fulfill certain needs, for example your foodie friends are the ones you invite out to restaurants and close friends may fulfill the role of confidant, but the current study might provide support for extending the idea of *customized sociality* into the realm of real time social interactions. In the current study,

interacting with one's friend face-to-face may fulfill close relationship or bonding socializing needs and using the phone may fulfill bridging socializing needs, so by engaging in both activities, one can customize the social interaction to receive the desired amounts of each type of socializing.

Facilitation and facilitation multitasking mobile phone use and interaction quality. The current study did not support the hypothesis that *facilitation* and *facilitation multitasking* would increase the interaction. The hypotheses about *facilitation* and *facilitation multitasking* may have not been supported for several reasons. One reason could be that similar to *distraction multitasking*, this behavior may be normative and neither add nor detract from the interaction. Additionally, although the *facilitation* behaviors may add shared understanding, laughter, or conversation topics which improve interaction quality, they also prevent other high quality interaction behaviors such as making eye contact as well as reading and reacting to each other's behavior. More likely, however, is the possibility that these behaviors were too rarely observed in the current study to gauge their true influence on interaction quality.

Future Directions

Future observational studies of mobile phone use in naturalistic settings are warranted as this phenomenon is relatively new and has not frequently been studied. Completing more observational studies will give researchers insight into how and why mobile phones are being used during face-to-face interactions. Observing how larger groups of friends use mobile phones in their interactions would be informative about social norms concerning the use of phones during friendship interactions. Additionally, future studies on how mobile phones might help or hinder initial interactions that could

lead to developing friendships would add greatly to both the initial interactions literature and the mobile phone use literature. Due to the disparity between *facilitation* and *distraction* mobile phone use in the current study, future studies could experimentally manipulate which type of phone use occurs through the use of specific instructions to participants or through the use of a confederate to observe the effects of *facilitation* and *facilitation multitasking* on interaction quality more clearly.

Conclusions

Altogether, these findings provide some support for the displacement hypothesis of technology's influence on face-to-face interaction. More people used mobile phones for either *distraction* or *distraction multitasking* purposes than for *facilitation* or *facilitation multitasking* purposes. Additionally, those who did use their phones for *facilitation* and *facilitation multitasking* performed these behaviors for less time than *distraction* and *distraction multitasking* were performed. Furthermore, *facilitation* and *facilitation multitasking* did not improve the quality of the interaction, and the partner's *distraction* use decreased the quality of the interaction for the actor. The only finding that lends support to the stimulation hypothesis is that *distraction multitasking* by the actor increased their own interaction quality. While actor *distraction multitasking* may have increased their own interaction quality it did not serve to engage their partner or improve their partner's interaction quality.

Concerning observations made while coding the interaction tapes, when friends were engaged in *facilitation* they did seem to be enjoying themselves. *Facilitation multitasking* and *distraction multitasking* however did not seem to be as beneficial to the interaction. Conversations often remained at the surface level and did not progress very

far. Interactions containing *distraction* use were the most saddening. Often, one friend would look at the other as if they wanted to begin a conversation, but when they saw the phone in their friend's hand and their friend absorbed in the information on their screen, they stopped short, in some cases comfortable in the silence, in others disappointed. In either case, the interaction was not strengthening their friendship or providing either with emotional support or connection.

Although some may say these interactions were only a snapshot of these two people's friendship, these were five minutes, three hundred seconds, of opportunities to connect with the friend sitting next to you. Some chose their friend. Others chose their phone. The incredible technology of mobile phones gives us the great opportunity to connect with those at long distances from us, to keep in touch with broad networks of distant others, but at what cost? When we choose the far away over the here and now, do we end up distancing ourselves from the one's closest to us and weakening those connections? Or does choosing the far away allow us to broaden our networks of relationships and create more connections with diverse others? Has basking in the glow of a friend projected on a screen become the equivalent of basking in the presence of a flesh and blood friend? The current study seems to suggest that each of these forms of connection is valuable in fulfilling our varied relational needs.

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Table 1

Descriptive Statistics and Correlations between Friends' Scores for Mobile Phone Use Variables.

Type of phone use	M	SD	Skewness	Kurtosis	Correlation between Friends
Mobile Phone Use	57.00	82.85	1.38	0.84	.7102
Distraction	22.24	45.78	2.16	2.16	.8808
Distraction	25.96	40.05	1.69	2.46	.4336
Multitasking					
Facilitation	5.09	18.13	5.67	37.21	.0414
Facilitation	3.71	9.89	3.89	18.40	.1441
Multitasking					

Table 2

Correlations between Friends' Scores on Values, Communication Technology Use, Friendship Quality, and Interaction Quality

Variable	Correlation between Friends
Benevolence	.0902
Universalism-Environment	.3089
Universalism-People	.3565
Power	.0119
Hedonism	.0011
Stimulation	.0998
Self-Direction	.0037
Achievement	.2720
Conformity	.1335
Tradition	.0010
Security	.1570
Communication Tech Use	.0008
Friendship Quality	.3435
Interaction Quality	.5064

Table 3

Slopes and Standard Errors for Pairwise Comparisons of Distraction, Distraction Multitasking, Facilitation, and Facilitation Multitasking

	D	DM	F
DM	-1.83 (1.86)		
F	8.64 * (1.82)	10.45* (1.79)	
FM	9.32* (1.81)	11.13* (1.79)	0.69 (1.86)

Note: Regression slopes are in bold. Standard errors are in parentheses. * : $p < .008$. D =

Distraction, DM = Distraction multitasking, F = Facilitation, FM = Facilitation multitasking.

Table 4

*Slopes and Standard Errors for Communication Technology Use Predicting Mobile**Phone Use.*

	Slope	S. E.	p-value
Distraction	0.34	0.74	.65
Distraction	0.44	1.27	.73
Multitasking			
Facilitation	0.99	0.51	.06
Facilitation	0.13	0.32	.68
Multitasking			

Note: S. E. = Standard error.

Table 5

Slopes and Standard Errors for Values Predicting Distraction Mobile Phone Use

Values	Slope	S. E.	p-value
Benevolence	0.44	0.59	.46
Universalism- Environment	-0.48	0.55	.38
Universalism- People	0.36	0.60	.55
Power	0.29	0.50	.56
Hedonism	0.20	0.28	.46
Stimulation	-0.04	0.35	.91
Self-Direction	-0.13	0.41	.75
Achievement	-.023	0.51	.65
Conformity	0.56	0.61	.37
Tradition	0.10	0.43	.81
Security	-0.29	0.43	.50

Note: S. E. = Standard error.

Table 6

*Slopes and Standard Errors for Values Predicting Distraction Multitasking Mobile**Phone Use*

Values	Slope	S. E.	p-value
Benevolence	0.68	1.43	.64
Universalism- Environment	1.30	1.60	.42
Universalism- People	1.26	1.52	.41
Power	1.37	1.46	.36
Hedonism	-0.38	1.26	.77
Stimulation	1.75	1.55	.26
Self-Direction	-0.74	1.31	.57
Achievement	0.25	1.54	.87
Conformity	0.43	1.74	.81
Tradition	1.71	1.70	.32
Security	1.20	1.60	.46

Note: S. E. = Standard error.

Table 7

Slopes and Standard Errors for Values Predicting Facilitation Mobile Phone Use

Values	Slope	S. E.	p-value
Benevolence	-0.46	0.77	.56
Universalism- Environment	-0.49	0.46	.29
Universalism- People	0.10	0.41	.80
Power	-0.23	0.42	.58
Hedonism	-0.27	0.51	.60
Stimulation	-0.44	0.48	.37
Self-Direction	-0.18	0.50	.72
Achievement	-0.68	0.68	.32
Conformity	0.16	0.43	.71
Tradition	-0.89	0.73	.23
Security	-0.59	0.51	.26

Note: S. E. = Standard error.

Table 8

*Slopes and Standard Errors for Values Predicting Facilitation Multitasking Mobile**Phone Use*

Values	Slope	S. E.	p-value
Benevolence	0.30	0.21	.16
Universalism- Environment	-0.03	0.20	.87
Universalism- People	-0.25	0.28	.37
Power	-0.27	0.19	.17
Hedonism	0.05	0.16	.78
Stimulation	-0.17	0.31	.58
Self-Direction	-0.31	0.20	.12
Achievement	-0.29	0.33	.38
Conformity	-0.41	0.33	.22
Tradition	-0.36	0.25	.15
Security	-0.18	0.24	.47

Note: S. E. = Standard error.

Table 9

Slopes and Standard Errors for Friendship Quality Predicting Mobile Phone Use

	Slope	S. E.	p-value
Distraction	1.01	2.52	.69
Distraction Multitasking	0.50	2.54	.84
Facilitation	-0.13	0.82	.87
Facilitation Multitasking	0.82	0.79	.30

Note: S. E. = Standard error.

Table 10

*Slopes and Standard Errors for the Actor-Partner Interaction Model Predicting**Interaction Quality*

	Slope	S. E.	p-value
Actor D	0.002	0.099	.44
Actor DM	0.003	0.001	.03*
Actor F	0.000	0.006	.98
Actor FM	0.001	0.008	.95
Partner D	-0.012	0.003	<.001*
Partner DM	-0.002	0.002	.27
Partner F	-0.002	0.004	.72
Partner FM	-0.003	0.008	.67
Actor FQ	0.362	0.132	.01*
Partner FQ	0.150	0.098	.13

Note: S. E. = Standard error. D = Distraction, DM = Distraction multitasking, F =

Facilitation, FM = Facilitation multitasking. *: $p < .05$.

Figure 1

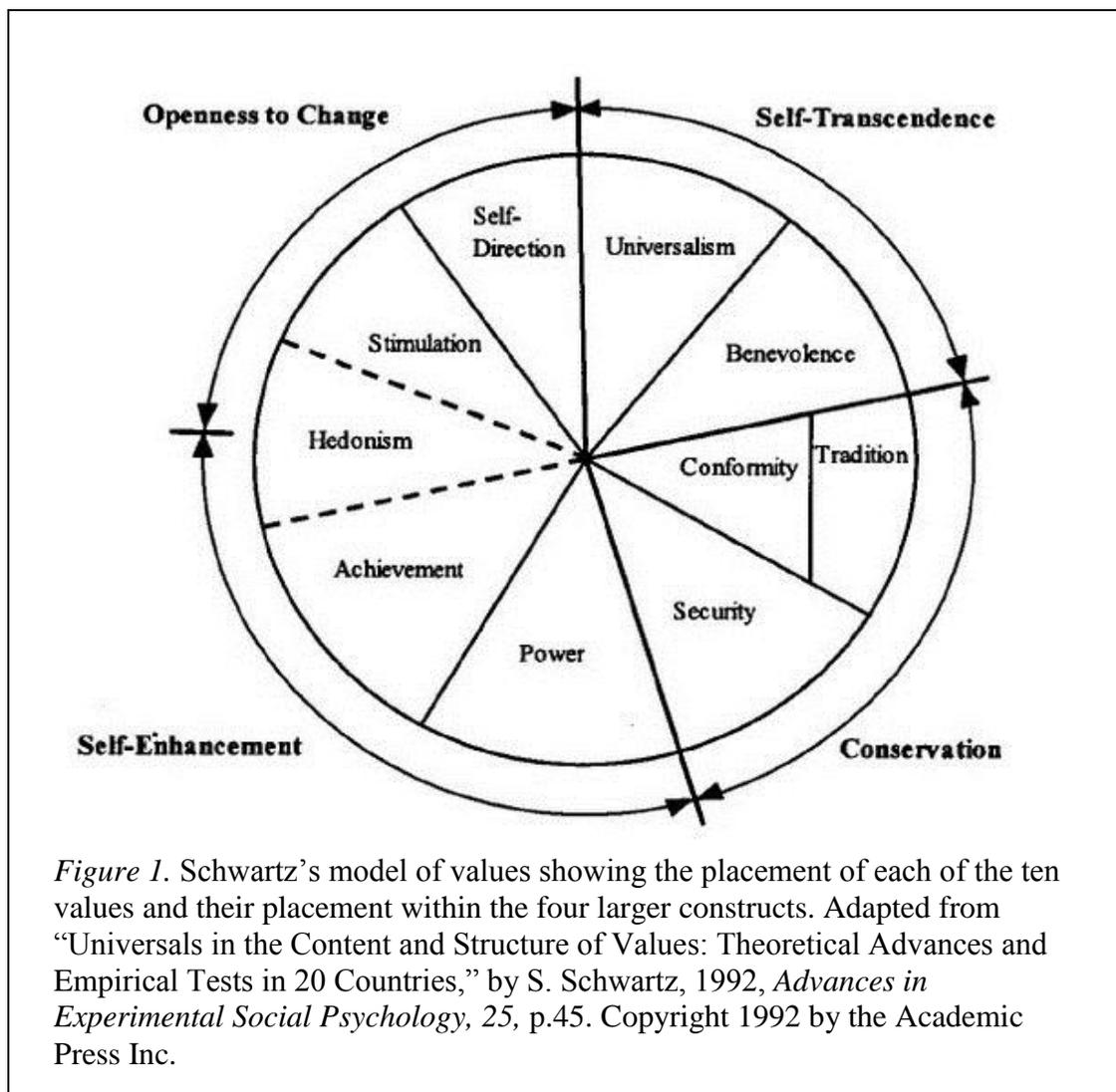


Figure 2

Mean Number of Seconds that each Mobile Phone Use Type was Performed

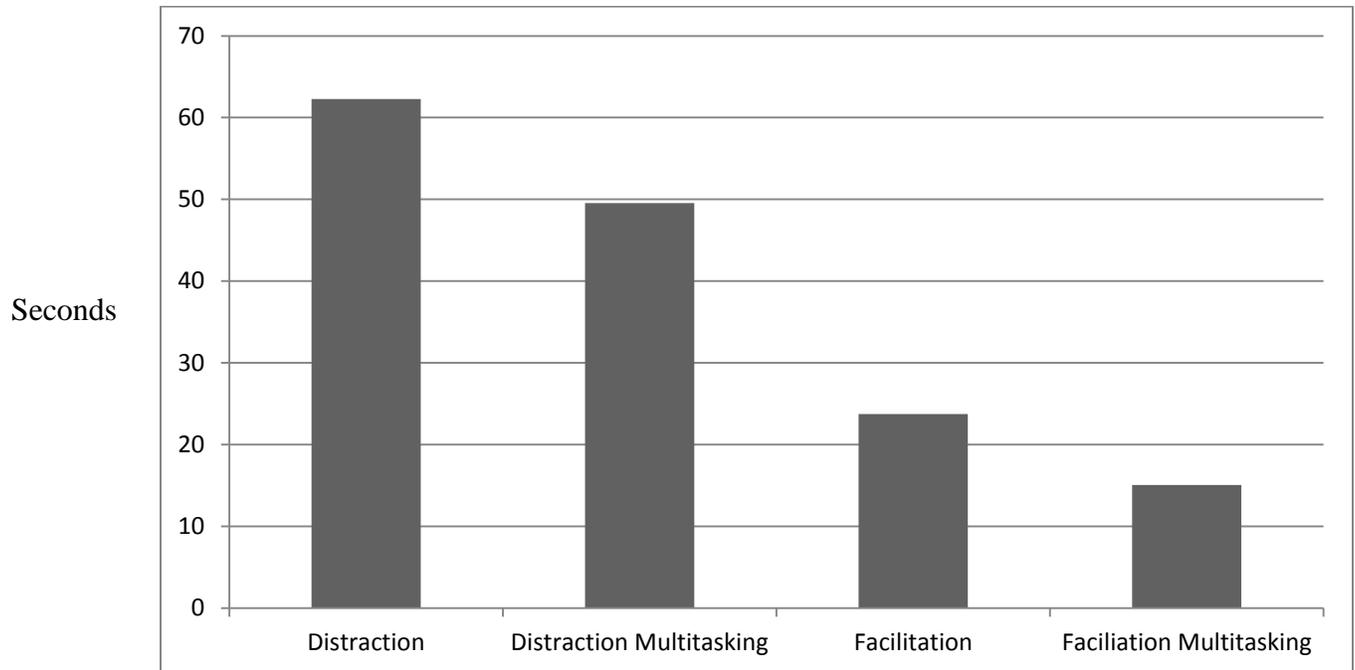
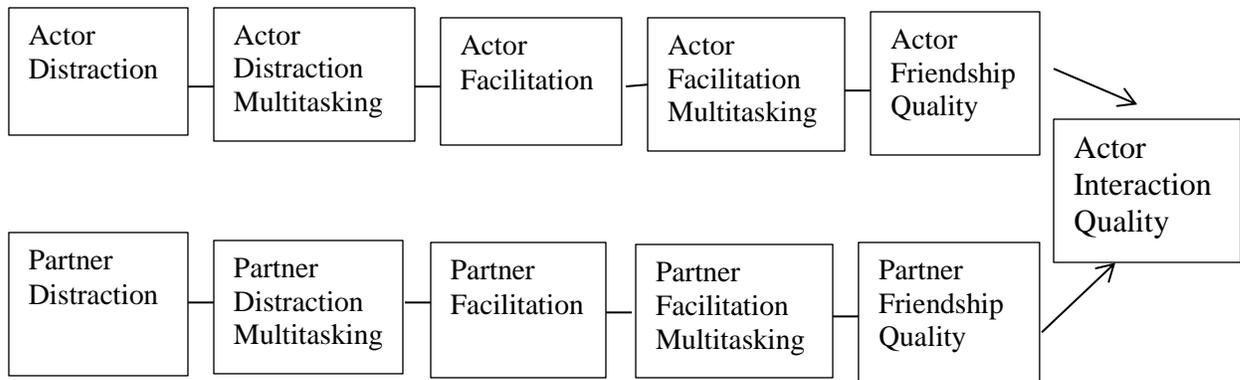


Figure 3

*Actor-Partner Interaction Model: Mobile phone use types and friendship quality
predicting interaction quality*



Appendix A

Coding Manual for Mobile Phone Use during a Friendship Interaction

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Purpose of Codes

The purpose of the following codes is to distinguish between types of mobile phone use in a friendship interaction. These codes will be assigned to behaviors and the length of these behaviors will be used as both dependent and independent variables in further statistical analysis.

Overview of Codes

- There are 5 codes:
 - Distraction Mobile Phone Use (D)
 - Distraction Multitasking Mobile Phone Use (DM)
 - Facilitation Mobile Phone Use (F)
 - Facilitation Multitasking Mobile Phone Use (FM)
 - Physical Contact with Phone (PC)
- Keys to distinguishing between behaviors:
 - Eye gaze
 - Responsiveness (ex. to questions or behaviors)
 - Location of phone

Distraction Mobile Phone Use (D)

- Definition: This type of mobile phone use distracts from or prevents interaction
- Example behaviors:
 - Eyes gazing at phone and not talking
 - Eyes gazing at phone, not talking, and manipulating (i.e. interacting with) phone (ex. texting, scrolling through web page, looking at pictures, etc.)
 - Taking photos or videos of self or environment while not talking to interaction partner.
- Special cases:
 - If interaction partner asks a question and the mobile phone use responds, “what?”, “hmm?”, etc., as if they did not hear the question, the previous cell use was Distraction.
 - Start coding Distraction when interaction partner begins talking and mobile user makes no acknowledgement of their statement or inappropriate response.
- Notes:

Distraction Multitasking

- Definition: The mobile user is somewhat mentally engaged in the interaction but some of his or her attention is directed toward the phone.
- Examples behaviors:
 - Eyes gazing at phone but talking
 - Eyes gazing at phone and manipulating (ie. interacting with) the phone while talking
 - Eyes gazing at phone and manipulating the phone while not talking but making some socially appropriate response to their interaction partner.
 - Taking photos or videos of self or environment while talking to interaction partner about topics other than the video or photo being taken.
- Notes:

Facilitation Mobile Phone Use

- Definition: The individual is using the phone to engage with the interaction partner and both are aware of the info on the screen.
- Example behaviors:
 - Both interaction partners are gazing at the phone.
 - Both interaction partners are gazing at the phone and talking about the information displayed on the phone.
 - Both interaction partners gazing at phone while one or more interaction partners manipulates (i.e. interacts with) the phone.
 - Taking photos of or filming the interaction partner.
- Notes:

Facilitation Multitasking

- Definition: The mobile user is using the phone to interact with the interaction partner, however the mobile user has more knowledge about what is on the phone than the interaction partner.
- Example behaviors:
 - Eye gaze of mobile user directed at phone and talking about information on the phone, but the interaction partner cannot see the mobile user's phone.
 - Eye gaze of mobile user directed at phone, mobile user is manipulating phone, and talking about information on the phone, but the interaction partner cannot see the mobile user's phone.
 - Taking videos or photos of self or environment while discussing the process with the interaction partner.
 - After a facilitation mobile phone use behavior the information shared on the screen continues to be discussed.
- Notes

Physical Contact with Phone

- Definition: the individual is making physical contact with the phone.
- Example behaviors:
 - Holding the phone in hand(s) but not gazing at the phone.
 - Phone sitting on lap.
 - Phone placed in pocket but still held in hand.
- Do not code:
 - When the phone is visible but not touched (ex. phone sitting on chair next to individual).
 - During any other phone use code.
- Notes:

Distinguishing between Distraction and Distraction Multitasking Mobile Phone Use

- The true distinguishing factor between these categories is where the individual's attention is focused. Are they aware of the other person's presence?
 - If attention is fully focused on phone then code as Distraction.
 - If attention is partially focused on friend then code as Distraction Multitasking.
- To decide between these you may have to wait and see how the mobile user responds to the partner.
 - If they make appropriate acknowledgments during partner's speech (ex. "yeah," or nodding), then code as Distraction Multitasking.
 - If they respond appropriately to their interaction partner's questions then code as Distraction Multitasking.
 - If they are silent during partner's speech when acknowledgements or answers were required then code as Distraction.
- Switching between these two types may seem fluid but there are cues that indicate a change.
 - Examples:
 - Individual has been silent for a long time while using the phone (D) → then begins talking to partner while still using phone (DM)
 - Individual is talking to partner while using phone (DM) → then slowly trails off and falls silent (D)
- Notes:

Distinguishing between Facilitation and Facilitation Multitasking

- True distinguishing feature between these is inequality in knowledge of what is on the screen.
 - In Facilitation both members have equal knowledge of what is on the screen.
 - In Facilitation multitasking, one person is in control of the phone and the other doesn't know exactly what is on the screen.
- Notes:

Distinguishing between Facilitation and Distraction Mobile Phone Use

- True distinguishing feature between these is shared versus individual phone use.
 - In Distraction, attention is focused on the phone by only the mobile user.
 - In Facilitation, attention is focused on the phone by both individuals.
- Notes:

Distinguishing between Distraction Multitasking and Facilitation Multitasking

- True distinguishing feature is topic of conversation.
 - If conversation is about information on the phone then code as Facilitation Multitasking.
 - If conversation is about external info not on the phone then code as Distraction Multitasking.
- Notes:

Appendix B

Communication Technology Use Questionnaire

Instructions: Please read and answer the following questions by placing a check in either the “No” or “Yes” column.

Yes

No

1. Do you have a cell phone that is considered a smart phone?
2. Are you a Facebook user?
3. Do you check your phone during a movie at the theater?
4. Are you a Pinterest user?
5. Are you a regular visitor of any forums or blogs?
6. Are you a Tumblr user?
7. Have you ever posted a YouTube video?
8. Do you often text during classes?
9. Are you a Twitter user?
10. Are you more comfortable texting or calling?
11. Do you check your phone while on dates?
12. Do you have a data plan that includes internet access?
13. Do you often text while hanging out with your friends?
14. Do you often use your phone while waiting for the bus?
15. Do you prefer to text rather than call to organize a get-together with your friends?
16. Do you primarily get your news from the internet?
17. Do you sleep with your phone next to you at night so that you won't miss calls or texts?
18. Do you text every day?

19. Do you use social media applications (Facebook, Twitter, or Instagram) on your cell phone?
20. Do you use the internet for keeping in touch with family and friends almost every day?
21. Do you use your phone while eating dinner with your family?
22. Do you watch videos on your phone?
23. Have you ever used an online application or site to find a date?
24. Is the internet your main source of media entertainment?
25. On an average weekday do you use the internet for school or work?

Appendix C

BWSVS

In this section, we will ask you to pick the **MOST** and **LEAST** important values from each set of values that guide your life. While more than one may be important or unimportant, please choose the **MOST** and the **LEAST** important to **YOU** as a guiding principle in **YOUR** life. While each set of values has some in common, each set also introduces some new statements. Please read each statement in each set, as all of the sets provide important information. In total, there are 11 sets to consider. In each set you must select one (1) statement as "Most Important", and one (1) statement as "Least Important". They cannot be the same statement.

1/11) Of these, which are the most and least important to you as guiding principles in your life?

	Most Important	Least Important
Clean, national & family security, social order		
Devout, accepting my portion in life, humble		
Helpful, honest, forgiving		
Equality, world at peace, social justice		
Politeness, honoring parents & elders, obedient		
Protecting the environment, a world of beauty, unity with nature		

Appendix D

McGill Friendship Questionnaire–FF

The items on this form concern the kind of friend your friend is to you. Imagine that the blank space in each item contains your friend's name. With him or her in mind, decide how often the item applies. On the scale directly to the right of each item **circle the number** that indicates how often your friend is or does what the item says. There are no right or wrong answers because adult friendships are very different from one another. Just describe your friend as he or she really is to you.

Never Rarely Once in a While Often Always
 0 1 2 3 4 5 6 7 8

1. ___ helps me when I need it.
2. ___ would make me feel comfortable in a new situation.
3. ___ is someone I can tell private things to.
4. ___ has good ideas about entertaining things to do.
5. ___ would want to stay my friend if we didn't see each other for a few months.
6. ___ makes me feel smart.
7. ___ makes me laugh.
8. ___ knows when I'm upset.
9. ___ helps me do things.
10. ___ points out things that I am good at.
11. ___ would be good to have around if I were frightened.
12. ___ would still want to be my friend even if we had a fight.
13. ___ lends me things that I need.
14. ___ would make me feel better if I were worried.
15. ___ is someone I can tell secrets to.
16. ___ would stay my friend even if other people criticized me.
17. ___ compliments me when I do something well.
18. ___ is exciting to talk to.
19. ___ makes me feel special.
20. ___ would stay my friend even if other people did not like me.
21. ___ knows when something bothers me.
22. ___ is exciting to be with.
23. ___ would make me feel calmer if I were nervous.
24. ___ helps me when I'm trying hard to finish something.
25. ___ makes me feel that I can do things well.
26. ___ would still want to stay my friend even if we argued.

Appendix E

McGill Friendship Questionnaire–RAi # _____

The items on this form concern your feelings for your friend. Imagine that the blank space in each

item contains your friend's name. With him or her in mind, decide how much you agree or disagree with the item. On the scale directly to the right of each item **circle the number** that indicates how much you agree that the statement describes your feelings. There are no right or wrong answers, because adults' feelings for friends differ from person to person. Just honestly describe your feelings for your friend.

Very Much Disagree Somewhat disagree Somewhat Agree Very Much Agree

-4 -3 -2 -1 0 1 2 3

4

1. I am happy with my friendship with ____.
2. I care about ____.
4. I feel my friendship with ____ is a great one.
5. I am satisfied with my friendship with ____.
6. I feel my friendship with ____ is good.
7. I want to stay friends with ____ for a long time.
8. I prefer ____ over most people I know.
9. I feel close to ____.
10. I think my friendship with ____ is strong.
11. I am pleased with my friendship with ____.
12. I am glad that ____ is my friend.
13. I hope ____ and I will stay friends.
14. I would miss ____ if he/she left.
15. I am content with my friendship with ____.
16. I enjoy having ____ as a friend.

Appendix F

PERCEPTIONS OF INTERACTION (F)

In the following questions we are interested in assessing your perceptions of the interaction between you and your friend over the 6-minute period that you waited together. Indicate your answers by circling the point on each scale that best describes your feelings or perceptions. Please reflect on how you felt during the interaction and try to answer each question as accurately and honestly as possible. Your answers will *not* be shown to your friend and will be used for research purposes *only*.

1. To what extent was this interaction representative of past interactions with your friend?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all very much

2. To what extent do you think your friend thought this interaction was representative of past interactions with you?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all very much

3. To what degree did the interaction seem *awkward, forced, and strained* to you?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all very much

4. To what degree do you think the interaction seemed *awkward, forced, and strained* to your friend?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all very much

5. How well do you think you understood your friend?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all very much

6. How well do you think your friend understood you?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all very much

7. To what degree did the interaction seem *smooth, natural, and relaxed* to you?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

8. To what degree do you think the interaction seemed *smooth*, *natural*, and *relaxed* to your friend?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

9. To what extent were you distracted during the interaction?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

10. To what extent do you think your friend was distracted during the interaction?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

11. How much did you use your friend's behavior as a guide for your own behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

12. How much do you think your friend used your behavior as a guide for his/her behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

13. How focused were you on the interaction?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

14. How focused do you think the other person was on the interaction?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

15. To what extent did this interaction make you feel closer to your friend?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all very much

16. To what extent do you think this interaction made your friend feel closer to you?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10

not at all

very much

17. How enjoyable was this interaction for you?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10

not at all

very much

18. How enjoyable do you think this interaction was for the other person?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10

not at all

very much