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PROCESSES AND EFFECTS OF MOBILE PHONE-MEDIATED SOCIAL INTERACTIONS:  
MOTIVES, USE PATTERNS, AND SOCIAL CAPITAL OUTCOMES

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by

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## ABSTRACT

Although some previous studies found positive associations between interpersonal communication media and social capital outcomes, such as life satisfaction, social trust, civic engagement, social leisure activities, and political engagement, little empirical research has been done on the examination of the mobile phone and its implications for social capital at the individual level. Using an online survey technique, this study investigated the causal mechanisms involving individuals' social interaction motives for mobile phone use, the quantity, the content, and the quality of mobile phone-mediated social interactions, and the effects on social capital outcomes, based on the theoretical grounds of social capital, uses and gratifications theory, and relationship theories.

Results indicated the potential value of mobile phone-mediated social interactions. Motives for contacting close friends were positively associated with mobile phone use and with mobile phone-mediated self-disclosure. Motives for contacting acquaintances were not related to mobile phone use but negatively related to mobile phone-mediated self-disclosure. Mobile phone use was directly, positively associated with perceived social support, civic engagement activities, and social leisure activities, but indirectly with life satisfaction (via social support and social leisure activities). Mobile phone use was negatively related to social trust, whereas mediated self-disclosure was positively associated with social trust. Mobile phone-mediated self-disclosure was directly related to stronger life satisfaction and to social trust. Theoretical implications of mobile phone-mediated social interactions for social capital were discussed, followed by practical implications on developing and using the mobile phone, and future research opportunities.

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## Chapter 1

### Introduction

The mobile telephony and wireless interpersonal communication technologies have been changing how people interact with one another and have been playing an important role in everyday life (Ishii, 2006; Petric, Petrovic & Vehovar, 2011). The mobile phone—converged hand-held, on-the-go media—has become the fastest growing communication technology, providing people with various interpersonal communication channels<sup>1</sup>, such as voice calling, texting, email, and apps for social networking sites, with which people can stay connected for mediated social interactions wherever they are at any time (Campbell & Ling, 2009). Thanks to wireless technology, these interpersonal communication channels possibly help create, maintain, and nurture meaningful social relationships in this fast-paced contemporary society where people have a limited amount of time for socializing with others face to face. As a result of communication technologies imbuing everyday life, body-to-body communication, or face-to-face communication, is suggested to have lost its perceived prototypical role in human communication (Fortunati, 2005). This on-the-go connection through the mobile phone and wireless communication technologies is dubbed “mobile sociality” (Mascheroni, 2007),

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<sup>1</sup> The present study uses the term “channel” to refer to (each of) different types of interpersonal media that can be available in the mobile phone. As the mobile phone itself can be called media, using the term “media” or “medium” to refer to those interpersonal media in the present paper might produce unnecessary confusion. However, there seemed to be no agreed upon, specific term in academia to indicate those interpersonal media within the mobile phone. One possible term that could be used, though, was “modality,” which could indicate different modes of information communication (e.g., text, audio, video), along with “multimedia” referring to a composite, or integration, of different modalities to deliver a message (Sundar, 2000). Instead of modalities, “channel” was chosen because this term seemed to be able to implicitly and explicitly mean a technological conduit through which people can communicate. In addition, because many of the interpersonal media featured in the mobile phone can be considered multimedia themselves, channel seemed to be better for the current study. For instance, an app for a social networking site provides different modalities, such as text, photos, etc. However, it has to be noted that using of the term “channel” should be considered for the purpose of convenience for the current paper rather than be considered a choice made based on thorough conceptual and theoretical investigations.

“connected presence” (Licoppe, 2004), “perpetual contact” (Katz & Aakhua, 2002), and “hypercoordination” (Ling & Yttri, 2002).

Although people seem to be wired and reachable for mediated social interactions without the communication barriers of time and space thanks to technology such as the mobile phone, scholars have not been able to agree on implications of new(er) communication technology for social capital. Social capital is broadly conceived as “connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them,” which facilitate formal cooperative and collective moves for mutual benefit as well as informal socializing with close others (Putnam, 2000, p. 19). Some scholars have suggested that the strength of individuals’ connections to others, due to increases in privatized leisure time as a result of increases in the consumption of media technology, may have been eroded. For example, Putnam (2000) contended that media technology (i.e., television, to be specific) increased alone time that led to weakened group memberships, resulting in decreases in participation in politics, volunteering works, informal socials, and civic interaction. Similarly, with data from hundreds of interviews with adults and adolescents, Turkle (2011) argued that people were often engaged not in two-way interaction through technology, such as social networking sites, but in one-way communication. For instance, Tuckle quoted an 18-year-old student saying that he didn’t apologize to people anymore but put his excuses on Facebook as his status instead. Tuckle argued that online places provide “cheap” alternatives to directly interacting with others to resolve conflicts and that some other people see this type of apology, which can be easily observed these days, as offensive.

On the other hand, other scholars, like Resnick (2002), argue that new media technologies can facilitate social interactions. For instance, people can benefit from mediated

interpersonal communications, such as telephone (Wellman & Guila, 1999), home email (Stafford, Kline, & Dimmick, 1999), and the Internet (Best & Krueger, 2006; Hampton & Wellman, 2002), to sustain their social ties with others. In the same vein, given that the telephone is perceived as a tool for the maintenance of symbolic proximity between individuals (Wurtzel & Turner, 1977), the mobile phone would be considered a tool with the same function (Ling, 2008), but even better with its mobility (Leung & Wei, 2000).

In this sense, the implications of the mobile phone for mediated social interactions and social connection raise important questions (Ling, 2004), which seem to need more inquiry. Only a few studies, in fact, have looked at the implications of social interactions via the mobile phone on various aspects of social capital, such as social cohesion (Ling, 2008), social connectedness (Wei & Lo, 2006), civic and political participation (Campbell & Kwak, 2010a), and social leisure activity (Campbell & Kwak, 2010b). Growing interest in the effects of the use of new media technologies on social capital, such as the Internet (e.g., Beaudoin, 2008; Vergeer, & Pelzer, 2009) and social networking sites (e.g., Ellison, Steinfield, & Lampe, 2007; Valenzuela, Park, & Kee, 2009), is obvious though.

Therefore, the present study aims to explore the mobile phone as convergent media and its effects on people's social capital at the individual level. The mobile phone has not been fully examined (Campbell & Ling, 2009), especially the smartphone as convergent media. In addition, previous social capital studies tended to focus more on community- and society-level benefits from exchanges and interactions through social networks (for a review, see Adler & Kwon, 2002). Since social capital was initially conceived to be a more macro-level concept (Brewer, 2003), it was natural that the focus of the inquiry in this area has been more on macro-level and has stressed possible beneficial outcomes at the collective level, such as economic advancement,

civil society, good governance and democracy (Fukuyama, 2001; Putnam, 2000). Consequently, little research has been done on the examination of the relationship between the mobile gadget and social capital at the individual level. Individual-level social capital can be conceived in terms of individuals' interactions with others of social ties of different strength and relevant socio-psychological and behavioral outcomes, such as life satisfaction, social trust and civic participation (Granovetter, 1983; Lee & Lee, 2010; Putnam, 2000; Scheufele & Shah, 2000). Less is known about the micro-level causal mechanisms involving social capital. These might help explain how an individual's social interactions with others could contribute to his/her psychological well-being and his/her involvement activities, especially in the context of the mobile phone. In addition, this study is expected to contribute to a better understanding of the concept because the mechanisms, if identified, could at least indirectly explain the linkage between individual-level social capital (e.g., civic participation activities) and collective-level social capital (e.g., civil society and democracy through citizen participations).

To examine the relationship between mobile phone use and social capital, the current study engaged uses and gratifications theory and relationship theories. These theories were expected to complement each other and to help design a theoretically robust study. Uses and gratifications theory can help investigate the mobile phone and its impacts at the individual level because the theory foregrounds individuals' motivations for media use, different use patterns and subsequent psychological outcomes (Katz, Blumler, & Grurevitch, 1974; Palmgreen, 1984; Rubin, 2002). With its theoretical premises, uses and gratifications theory was expected to help conceptually differentiate various components of individual-level social capital. In addition, the current study takes advantage of relationship theories, such as self-disclosure and social support, to include what is being exchanged during social interactions in its inquiry of social capital.

Relationship theories, such as self-disclosure and social support, can help better explain the micro-level causal mechanisms involving social capital, especially psychological wellness of individuals, because self-disclosure (i.e., disclosing sensitive, personal information to others) and social support (i.e., providing resources to others such as informational and emotional support) are considered to be related to life satisfaction and social trust (Franzini, 2008; House & Kahn, 1985; Lippert & Prager, 2001; Rosenfeld, 1979).

## Chapter 2

### Literature Review

In this section, three bodies of literature are discussed to help formulate hypotheses and research questions. Firstly, the social capital literature and uses and gratifications theory are separately visited. Then, I attempt to build theoretical foundations by connecting these theories in the context of the mobile phone for the research purpose of the present study. The third body of literature involves relationship theories that are expected to help better understand outcomes of social interactions by allowing studying what could be exchanged between individuals during the interactions. After the survey of the literature, hypotheses and research questions for the current study are presented.

#### *Social Capital*

One of the most accepted definitions of social capital, arguably, would be one by Putnam (1995), who posits social capital as “features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit” (p. 67). However, social theorists have approached social capital in various ways, resulting in the existence of various, disputed meanings (Adler & Kwon, 2002; Vergeer & Pelzer, 2009; Williams, 2006). The abundance of meanings and approaches has invited cynical attitudes toward the concept, such as “a wonderfully elastic term” (Lappe & Du Bois, 1997, p. 119) and “a circus-tent quality” (De Souza Briggs, 1997, p. 111). Therefore, it is important to establish an appropriate conceptualization depending on the level of investigation and the purpose of the current study.

As an initial step for the theoretical conceptualization of social capital, the term “capital” needs to be clarified. Capital, from a socioeconomic perspective, refers to “a resource that can be accumulated and whose availability allows people to create value for themselves or others”



(Resnick, 2002, p. 647). Some social science scholars do not welcome the adoption of the economic term, capital, in their disciplines (Baron & Hannan, 1994). There are roughly four different types of capital, which are physical capital (e.g., buildings, tools, and machines), financial capital (e.g., money), human capital (e.g., education), and social capital (Resnick, 2002). In this sense, social capital can be defined as the resources available to people through their social interactions (Lin, 2001).

Three scholars are considered to significantly contribute to building theoretical foundations for understanding social capital—Bourdieu, Coleman, and Putnam. For Bourdieu (1986), social capital is “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (p. 248). Viewing social capital at the individual level, he stresses two of its elements: “the size of the network of connections” and “the volume of the capital (economic, cultural or symbolic),” which compose resources that an individual can benefit from when s/he can effectively mobilize (p. 249).

Coleman (1994) defined social capital as some part of a social structure that facilitates the actions of people in the structure. In other words, social capital “exists in the relations among persons” (Coleman, 1988, pp. S100-S101), and therefore, it can mean various things depending on the functions of the interpersonal relations. Coleman perceives social capital as having two elements in common from a functional perspective: (some aspects of) social structures and the function of facilitating one’s actions within the structure. The value of social capital is that one cannot achieve one’s interests by one’s actions without using some aspects of social structures. He further argued that social capital might influence people’s perceived quality of life as it could facilitate their desired actions.

Although, in a nutshell, sociologists Bourdieu and Coleman conceived social capital more in terms of invisible resources available in the networks of social relations, their perspectives on the outcomes of the networks would be a bit different from one another. Bourdieu (1986), as a Neo-Marxist theorist, emphasized the negative value of social capital since it is the assets of elite groups. According to Bourdieu, every type of capital, including social capital and economic capital, can be accessible based on social class, which means the capitals are largely under control of elite groups. In contrast, Coleman focused on the potential benefits of social capital for individuals in marginalized groups in society, saying that close social ties between individuals in a less advantaged group, such as African Americans, can help the cognitive and social development of young people in the group. In other words, Coleman (1988), from a functionalist perspective, was interested in social capital's public goods quality, which means it is relatively more widely distributed than economic capital: If social capital is appropriately mobilized, it may counterbalance the skewed distribution of economic capital. Thus, Bourdieu was dubious of social capital as a force to deteriorate socioeconomic inequality between social classes, a position with which Coleman would not necessarily agree because Coleman would argue that social capital is crucial for creating better human capital (e.g., education), which might lead a person to landing a better job and economic situation.

Similar to Coleman, Putnam's understanding of social capital centers on the potential benefits for individuals from the voluntary, horizontal networks of social relations and resources as informal social groups could exist beyond boundaries of social class (2000). Putnam (2000) argued that civic virtue-embedded, reciprocal social relations in society can be strongly beneficial to individuals of all classes and society. He further detailed possible benefits, which include, but are not limited to, providing social mechanisms to prepare measures for collective

problems. Other benefits include that social capital can offer grounds for efficient and productive business and social interactions based on enhanced mutual trust, that it can increase awareness of interconnected fates of individuals in society, that it can provide conduits for the smooth flow of information, and that it can enhance individual lives (Putnam, 2000). In other words, social capital can now be conceptualized to have at least two levels, collective and individual, although it was originally perceived to be a more collective-level, community-level concept (Brewer, 2003; Putnam, 2000). Depending on who or what entity accesses and mobilizes resources within the networks of social relations, the size of the effects from the action on individual development, democracy and economy could vary. When an individual accesses and mobilizes his/her social connections that include “intangible social resources” to achieve a certain goal, s/he can benefit from the action (Beaudoin, 2011, p. 157). However, the benefit from his/her action can even be expanded to others in the same, smaller collective units and relatively larger units (Beaudoin, 2011).

Social capital having two different levels, namely individual and collective levels, would be a possible reason that social capital has been called a slippery term. Although all the definitions that have been offered seem to be largely similar in the sense of resources being embedded in the social structure composed of the networks of various social relations, they look different in terms of what level of social capital they refer to. For instance, Burt (1992) conceptualized social capital at the individual level, explaining it as “friends, colleagues, and more general contacts through whom you receive opportunities to use your financial and human capital” (p. 9). In contrast, some scholars perceive it at the collective level by saying that “the web of cooperative relationships between citizens that facilitate resolution of collective action problems” (Brehm & Rahn, 1997, p. 999), and that “those voluntary means and processes

developed within civil society which promote development for the collective whole” (Thomas, 1996, p. 11). However, some others like Nahapiet and Ghoshal (1998) define social capital as a multi-level concept, providing the following definition: “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network” (p. 243). Another possible difference among a number of definitions would be that they have different limits in the scope of the term. According to Nahapiet and Ghoshal (1998), the concept means only the structure of the relationship networks for Baker (1990), whereas its scope goes beyond by including not only the actual but also the potential resources accessible via the relationship networks for others, such as Bourdieu (1986) and Putnam (1995).

To summarize, based on the conceptualizations by Bourdieu (1985), Coleman (1988; 1994), Putnam (2000), and others, the core of social capital can be understood as having two large components: The social networks, wherein individuals’ networks of reciprocal social relations are interwoven and interactions take place, and outcomes from the interactions. In other words, social resources are embedded in social relations and social structures, and they are purposively activated to yield outcomes for certain purposes (Beaudoin, 2007; Lin, 2001). That is, any single individual or an entity cannot be a sole owner of social capital because networks and interactions need at least two entities to exist, whereas an individual can be an exclusive owner of other types of capital (Burt, 1992; Nahapiet & Ghoshal, 1998). The current study focuses more on the investigation of the individual-level social capital although the concept can exist at various levels. As individuals are part of society, examining social capital at the individual level could allow a better understanding of social capital at the collective level. For

instance, the mechanisms that explain how individuals' interactions with others through media, such as the mobile phone, would influence their psychological wellness and their involvement in civic activities would help us, at least indirectly, better understand how individual-level social capital is connected to society because individuals' involvement in civic activities would yield better civil society. What, then, do we mean by reciprocal social relations and their prospective outcomes?

*Social relations & beneficial outcomes.* Social networks can be classified into three dimensions in terms of types of relations, namely social relations, market relations and hierarchical relations (Adler & Kwon, 2002). Of the three dimensions, Adler and Kwon conceptualized social relations as the only type of relations in social life that belong to social capital. Unlike market relations and hierarchical relations, they argued, social relations are neither related to monetary exchanges/flows in return for services and products nor obedience to authority for material or spiritual security; instead, often gifts and non-material, including favors, are exchanged among social relations. Therefore, good will, such as sympathy, trust and forgiveness offered by friends and acquaintances, is the substance of social capital (Adler & Kwon, 2002).

Other social capital theorists delve more into the conceptualization of social relations. One of the most popular conceptualizations would be that done by Putnam (2000). He classified two different types of social capital in terms of social relations between individuals—bridging and bonding. Bonding, or exclusive, social capital refers to one's networks with close others from similar backgrounds, such as families, relatives and close friends. In contrast, bridging, or inclusive, social capital refers to one's connections with distant others from different backgrounds, such as colleagues and acquaintances. Bonding social capital refers to links among

people who have similarities in ethnicity, age, social class and so on, whereas bridging refers to links among people from different social cleavages (Helliwell & Putnam, 2004). Putnam's classification seems to be largely based on Granovetter's (1983) conceptualization, who classified social capital in terms of strong ties and weak ties. Both Granovetter and Putnam perceived people who have strong ties with each other, or bonding, tend to have relatively homogeneous backgrounds, whereas people who have weak ties with each other, or bridging, tend to have heterogeneous backgrounds. Other scholars make similar distinctions but with different terms, such as internal versus external ties (Adler & Kwon, 2002). Depending on the location of an individual, one's relation to others can be classified as either bonding or bridging. Therefore, the location of an individual within the social structure is also a key part for the definition of social capital (Adler & Kwon, 2002; Ellison, Steinfield, & Lampe, 2011).

However, it should be considered that a social group cannot be neatly classified into either bonding or bridging category because bonding and bridging can exist in one group (Putnam, 2000). For example, The Knights of Columbus is a bonding group in terms of religious and gender backgrounds, but it can be seen as a conduit group that interconnects different racial communities as well (Putnam, 2000). Even in the group of friends who hang out together, Person 1 might consider Person 2 as a close friend but not Person 3. At the individual level, therefore, bridging and bonding could be understood as an individual's perception of strength of ties with specific others, rather than his/her group memberships. And this conceptualization of bridging and bonding seems to better work for studying individual-level social capital. Also, the location of others in a person's networks of relations can be pictured based on the strength of ties: Strong ties are located closer to a person in his/her network, while weak ties are located distant to a person in his/her network. Therefore, an individual's relational networks could be perceived to

be composed of two perceptual groups of people in his/her mind—strong ties, or bonding, and weak ties, or bridging.

Different types of social ties are conceived to yield distinctive benefits as people share different types of information, or resources. Bonding social capital, such as ethnic fraternal organizations, provides social and psychological support, whereas bridging networks offer connections to socially distant assets (Putnam, 2000). For instance, weak ties can act as a bridge for one to obtain information from the distant parts of one's social system, which is vital for one's "integration into modern society" as the information from distant others is something that one usually can't obtain from one's clique (Granovetter, 1983, p. 203). The continued reciprocity between individuals with strong ties can provide emotional or substantive support (Ellison et al., 2011; Williams, 2006). In this sense, social interactions in one's networks of relational ties can be considered as having two components: Social relations and contents of interactions (i.e., exchanged resources, such as personal advice and novel information).

From this two-component perspective, it can be assumed that outcomes of social interactions differ as a result of dynamics between types of social relations and content exchanged. In addition to new information, exposure to diverse ideas and emotional support (Ellison et al., 2011), people derive various types of benefits from their social relationships, such as health (Cohen, 2004), education and economic advancement (Beaudoin, 2011). Another elaborated conceptualization of social capital would be the one by Scheufele and Shah (2000), who described social capital as having three outcome domains—intrapersonal, interpersonal, and behavioral. The intrapersonal domain is related to individuals' life satisfaction; interpersonal social capital deals with trust among individuals; the behavioral dimension includes civic and political participation (Campbell & Kwak, 2010a; Scheufele & Shah, 2000; Valenzuela, Park, &

Kee, 2009). The behavioral dimension is further expanded to non-civic or non-political activities. For instance, Campbell and Kwak (2010b) conceptualized the behavioral domain of a social capital outcome as a social leisure activity in their inquiry of the relationship between mobile phone use and social capital.

*Mass media & social capital.* When Putnam (2000) introduced social capital to the mass communication realm (Kobayashi, 2010), he used the concept to argue that media technologies (television in particular) contribute to decreases in social capital: To be specific, television as a time-consuming, entertainment-oriented, passive leisure activity often done alone was responsible for decreases in participation in politics, civic engagement, altruistic groups and informal social gathering. Similarly, Turkle (2011) voiced criticisms on the erosion of true, between-human interactions on social networking sites, such as Facebook, as the sites are filled with the banality of social interactions and with individuals' self-expressions seemingly not toward the human but toward the site itself. Similarly, Ling (2008) wrote about another technology that "the mobile phone tips the balance in the favor of the intimate sphere of friends and family" (p. 159), suggesting negative effects of the mobile phone on the maintenance of and investment in the relationship with socially distant others.

However, in contrast to scholars like Putnam, other scholars began discussing and examining possibilities for new media technologies' contribution to increases in social capital and subsequent positive outcomes. For instance, Norris (2002) provided evidence for the positive association between access to television and social capital indicators (i.e., an individual's perceived strength of one's associational networks). In the same vein, Resnick (2002) used the term "sociotechnical capital" to refer to social capital facilitated by technologies, arguing that new communication technologies can facilitate interactions between individuals as the



technologies can help people overcome the communication barriers of time and space. In other words, technological affordance allows individuals to make the best use of their relational networks and facilitates social interactions. Empirical research has found evidence to support Resnick's argument, such as the positive relationship between the level of interactions via the Internet and generalized trust (Best & Krueger, 2006); between individuals' computer-mediated communications and offline interactions with their neighbors, and between the communications and knowledge of their neighbors (Hampton & Wellman, 2002); between social networking sites (e.g., Facebook) and social capital (Ellison et al., 2007); and between the mobile phone and participation in civic life (Campbell & Kwak, 2010a).

The jury is therefore still out on the positive and/or negative relationship of media technology to social capital. Thus, the present study is designed to contribute to the on-going line of inquiry on social capital. With the support of the evidence for technological benefits, the current study investigates the mobile phone as a facilitator of individual-level sociotechnical capital. More specifically, the present study follows Putnam's (2000) conceptualization of social relations, bridging and bonding, as part of perceptual groups of social ties in one's network of social relations. And, Scheufele and Shah's (2000) conceptualization of social capital outcomes—intrapersonal, interpersonal, and behavioral domains—is employed to see whether the mobile phone helps individuals interact with others and helps yield beneficial outcomes from the interactions. Thus, the current study examines the behavioral dimension of social capital outcome both in terms of Scheufele and Shah's (2000) conceptualization, which is civic and political engagement, and in terms of social leisure activity (Campbell & Kwak, 2010b). Social leisure refers to leisure activities with others, whereas privatized leisure indicates spending time alone by, for example, watching television (Campbell & Kwak, 2010b; Leung & Lee, 2005;

Putnam, 2000). However, the present study looks not at political engagement but only at civic engagement. This decision was made because the current study was conducted during a non-election season. Political engagement can be sensitive to elections, and not a lot of political activities of individuals are expected to happen during a non-election season. In addition, investigating civic engagement and social leisure activities, which are individuals' involvement in communities, is expected to help at least indirectly understand whether and how individual-level social interactions would be related to the collective-level social capital. The following section discusses uses and gratifications theory, which is expected to help examine the relationship between social capital and media at the individual level as it puts an emphasis on individuals' needs and motivations for media consumption and psychological consequences.

#### *Uses and Gratifications Theory*

Uses and gratifications theory posits that people have social, psychological needs, and that the needs can often be fulfilled through consumption of media (Katz, Blumler, & Grurevitch, 1974; Palmgreen, 1984; Rubin, 2002). Scholars noted that uses and gratifications theory is based on five assumptions, namely that (1) “communication behavior, including the selection and use of the media, is goal-directed, purposive, and motivated”; (2) individuals “initiate the selection and use of communication vehicles...to satisfy felt needs or desires”; (3) “social and psychological factors guide, filter, or mediate people's communication behavior”; (4) “media compete with other forms of communication—or, functional alternatives—such as interpersonal interaction for selection, attention, and use to gratify our needs or wants”; and (5) “people are typically more influential than the media in this process, but not always” (Rubin, 2009, p. 167). The theory can be understood to be consistent with a perspective of social cognitive theory (Bandura, 1986), which postulates an agentic view on human as being “self-

developing, proactive, self-regulating, and self-reflecting, not just reactive organisms shaped and shepherded by environmental events or inner forces” (Bandura, 2009, p. 94). From this perspective, people can be perceived to behave with motives, have expected outcomes from their behaviors, including media use, and learn from direct and indirect experiences that influence later behaviors.

As the theory evolved, its plausibility was criticized because of several of its assumptions about individuals’ initiation of media selection, “expectations for media use that are produced from individual predispositions, social interaction, and environmental factors” and the idea of “active audience with goal-directed media behavior” (Ruggiero, 2000, p. 11). Despite the criticism, the theory is known to have a competitive edge in theoretically explaining the goal-directed use of a new medium through examining active users’ diverse motivations for media use (Ruggiero, 2000), especially the newer, interactive media environment (Rubin, 2002). Likewise, Ruggiero (2000) extolled the value of the theory, saying, “as new technologies present people with more and more media choices, motivation and satisfaction become even more crucial components of audience analysis” (p. 14). Therefore, it is not surprising that, as Ko, Cho, and Roberts (2005) and Wei and Lo (2006) noted, the theory has been applied to almost every medium such as newspapers (e.g., Licheterstein & Rosenfeld, 1984), magazines (e.g., Payne, Severn & Dozier, 1988), radio (e.g., Turow, 1974), television (e.g., Papacharissi & Mendelson, 2007), VCR (e.g., Rubin & Bantz, 1989), the Internet (e.g., Papacharissi & Rubin, 2000), and interpersonal media, such as the telephone (e.g., O’Keefe & Sulanowski, 1995) and the mobile phone (e.g., Ho & Syu, 2010).

*Mobile phone uses & gratifications.* “Use” in uses and gratifications theory should be treated differently when it comes to the mobile phone, an interpersonal communication tool.

Dissimilar to mass media such as TV and radio, mobile phone use should be conceived as not media exposure but mediated social interaction. Use of interpersonal communication devices are “essentially a social relation between interlocutors who through interaction relate to each other and ascribe meanings to their actions” (Petric et al., 2011, p. 119). That is, it is important to acknowledge two communicating parties when investigating interpersonal communication devices. Therefore, the use of the mobile phone can be understood not as a form of simple media consumption or media exposure but as a form of social interaction. Likewise, Campbell and Ling (2009) pointed out that “human beings are socially contagious in how they think and how they act. As a result, how people think about and use technologies, such as the mobile phone, is a product of social context and social contact” (p. 602). Therefore, it seems legitimate to include media as part of the social structure that facilitates connections between individuals so that they can share norms and exchange resources. For instance, if an individual feels s/he needs to contact his/her close friends and/or acquaintances for various purposes (e.g., getting information or advice), s/he might try to get connected with them via the mobile phone. They seem to be readily available to him/her, and therefore s/he would think s/he could achieve what s/he needs by contacting them.

Previous studies noted that the mobile phone has become part of or central to the everyday life of individuals, evolving from its initial role as a business tool (Wei & Lo, 2006), which makes an investigation on the role of the mobile phone for social relations even more valuable. That is, the mobile phone has become a communication tool for an individual’s contact with his/her different social relationships, such as bridging (weak ties) and bonding (strong ties). Mobile phone use can facilitate connections between individuals within the social system, which means if individuals have certain desires and needs pertaining to social connections, they can

reach others in their networks of different ties through the mobile phone. Therefore, it is not surprising to approach social capital implications of the mobile phone from a uses and gratifications perspective as the theory postulates social, psychological origins of needs for media use. In the same line, Beaudoin explained that the idea of mass media use causing social capital has “a general basis in Bandura’s (2002) contention that media influence on behavior change is mediated by connections to the social system” (Beaudoin, 2007, p. 642). Also, Vergeer and Pelzer (2009) pointed out the significance of user motives, and likewise, Valenzuela et al. (2009) argued that individuals’ purposeful use of media would have an impact on social capital.

Therefore, the following section is to display the elaborated theoretical foundations for the mobile phone’s significance for social capital from a uses and gratifications perspective, by visiting various components, i.e., use motives, selective use, social and psychological traits of users and desired behavioral and psychological outcomes.

*Motivation for mobile phone use & social capital.* Earlier uses and gratifications studies identified two broad motives for conventional telephone use—intrinsic or social motives, and instrumental or task-oriented motives (Leung & Wei, 2000). Intrinsic or social motivations indicate the use of the telephone for socialization (e.g., chat, gossip, family contacts, a sense of security), whereas instrumental or task-oriented motivations relate to the utility of calls such as information seeking and making appointments (Keller, 1977; Noble, 1987). Likewise, Classie and Rowe (1987) identified functional and relational motives for telephone use. Other more recent telephone gratifications studies identify two broad gratifications categories, namely interpersonal and mass media gratifications, which include sociability, entertainment, acquisition, and time management as four gratification factors (O’Keefe & Sulanowski, 1995). The general conclusions of the previous studies are as follows: The stronger the motivations, the

more people use telephones (O’Keefe & Sulanowski, 1995); and there are more frequent social uses than instrumental uses (Keller, 1977; Noble, 1987). Similarly, Leung and Wei’s (2000) study identified affection/sociability as one of the seven motivation dimensions of cell phone use, along with fashion/status, relaxation, mobility, immediate access, instrumentality, and reassurance. Other uses and gratifications studies identify social interactions/sociality as a strong motive for mobile phone use (Liu, 2010; Walsh, White, & Young, 2007; Wei & Lo, 2006).

Considering the primary function of the mobile phone—mediated interpersonal communication—it is not surprising to see previous uses and gratifications studies reporting that individuals use media for social interactions. Moreover, most motivation dimensions of mobile phone use seem to be relevant to users’ interactions with people of different social ties. For instance, instrumentality includes an item pertaining to people’s use of the mobile phone for business talk, while the affection/sociability dimension is all about communication with one’s close others (Leung & Wei, 2000). Likewise, many of Wei and Lo’s (2006) motivation items for mobile phone use deal with interpersonal communication items or social ties.

Given the primary function of the mobile phone and the question items that were used to gauge motives for interpersonal communication, it would be theoretically possible and beneficial if we more concretely reduce or conceptualize social interaction motives in detail, using some of social capital dimensions, i.e., bridging and bonding social capital. What Leung and Wei (2000) found indirectly helps conceptualize motives for mobile phone use in terms of motives for interacting with people of different social ties: Instrumental gratifications seem to pertain more to co-workers and business partners, whereas mobility and affection gratifications seem to pertain more to family members. In this sense, the former can be perceived as bridging social capital, with the latter perceived as bonding social capital. However, since some of their question

items do not manifest different types of social ties, it is unclear whether instrumental gratifications, for instance, are solely about bridging. Therefore, investigating the same activity by two different types of social ties might be useful to delineate and clarify different types of motives. Wei and Lo (2006) found in a survey study done in Taiwan that people perceive mobile phone communications as an apparatus that helps them strengthen their bond with their families and expand perceptions of their psychological neighborhood. Similarly, other studies found positive perceptions about the influence of new media technology on social capital. For instance, Ellison et al. (2007) reported that Facebook users expect that they can achieve bridging, bonding, and maintained (i.e., maintenance of bridging with distant acquaintances) social capital through the use of the social networking site. Therefore, it can be assumed that individuals have both bridging and bonding needs, and they may use the mobile phone to cater to the needs.

*Selective use of media.* As uses and gratifications theory posits, users acknowledge the functionality of a certain medium and based on their perceptions select different types of media to fulfill their specific social, psychological needs (Finn, 1997; Katz et al., 1974). In other words, their needs are catered to when they actually use certain types of media (Rubin, 2002). For instance, Cho, De Zuniga, Rojas, and Shah (2003) reported a social connection motivation dimension was associated with frequency of and time-spent on email and Internet use. In the same sense, users possibly understand the interpersonal communication function of the mobile phone, and therefore, they seek to connect to different types of others via the gadget. In addition, as the contemporary mobile phone is perceived as convergent media with diverse interpersonal communication channels available (e.g., voice-calling, texting, video-calling, the Internet, different apps for interpersonal communication, etc.), it can be assumed that if users have strong motivations for different types of social interactions, they would try to make the best use of the

different options available within the phone in order to satisfy their needs. In other words, “different individuals tend to display different types and amounts of activity in different communication settings and at different times in the communication process” as uses and gratifications theory postulates (Ruggiero, 2000, p. 8).

Some previous studies attempted to explain different usage patterns of various communication channels within the mobile phone. Use of a certain interpersonal communication channel within the mobile phone when communicating with peers but not with others might help people, in part, to create the group boundaries that they need. For instance, teens can use texting to communicate with peers while using voice calling to contact their parents (Campbell & Ling, 2009). Using a secondary data analysis, Campbell and Kwak (2010b) found the following two different usage patterns: A positive association between voice calling and offline social leisure activity for the local-usage group (i.e., participants who in a survey reported seven or more latest mobile phone contacts with others who were located within 25 miles from the participants); and a positive association between texting and offline social leisure activity for both the local-usage group and the distant-usage group (i.e., participants who in a survey reported that seven or more latest mobile phone contacts with others who were located more than 25 miles away from the participants).

Ramirez, Dimmick, Feaster, and Lin (2008) compared individuals’ perceptions on the usability and competitive niche of interpersonal media, such as the cell phone, email, instant messaging, and the telephone. Although Ramirez et al. didn’t investigate different interpersonal communication channels in the mobile phone, their decision to compare different interpersonal media can be expanded to exploring the relationship between different social motivations and use of different interpersonal capabilities in the converged mobile phone. However, there seem



no enough empirical studies that explain how social interaction motivations, especially in terms of bridging and bonding social ties, would be related to individuals' use patterns of different interpersonal communication channels within the mobile phone.

*Social capital outcomes as gratifications obtained.* Previous uses and gratifications studies mostly conceptualized gratifications obtained, or outcomes of media use, in terms of the level of needs satisfaction with media. For example, Ho and Syu (2010) examined the relationship between motives for mobile phone use and outcomes of the use, using the needs satisfaction index that is modified based on the motivation index. However, it seems to be tautological or to be too predictable to see a correlation between them if we use very similar measures to examine the relationship between endogenous and exogenous variables. In other words, it would be more theoretically beneficial if we focus more on concrete outcomes, rather than asking individuals to report the level of satisfaction with media. In this sense, there are benefits to conceptualizing outcomes of media consumption in terms of social capital outcome. Also, it may help us indirectly understand why people are satisfied with the media. As noted earlier, social capital can be understood as having two components—one's social interactions within one's relational networks and outcomes from the interactions (Bourdieu, 1986; Coleman, 1994; Putnam, 2000). If mediated interpersonal communication channels can facilitate one's (needs for) interaction with others with whom one has different levels of social ties such as bridging and bonding ties, or perceptual groups of social ties, the individual may enjoy beneficial outcomes from the mediated interactions. Therefore, this section discusses how outcomes of social capital and outcomes from uses and gratifications may be related. As there seem insufficient studies done in the context of the mobile phone in this regard, the present study looks to findings in the literature on other media of social interactions as well.

Outcomes of social capital may contribute to individuals' perceived quality of life in different ways (Coleman, 1988). Beaudoin (2011) noted that social capital can yield various beneficial outcomes, such as “good health and low mortality, good governance and democracy, and education and economic advancement,” when social relationships and structures are appropriately mobilized (p. 157). As can be inferred, these outcomes can be understood at the individual level, collective level, and/or multi-levels of social capital. Among various beneficial outcomes of social capital, however, Scheufele and Shah's (2000) elaborated classifications seem to provide sufficient grounds for examining social capital outcome at the individual level.

Scheufele and Shah (2000) classified three dimensions of social capital—life satisfaction (intrapersonal domain), social/interpersonal trust (interpersonal), and civic engagement (behavioral). In their terms, life satisfaction is “contentment with respect to present condition and future prospects”; social/interpersonal trust refers to “generalized faith in the honesty and integrity of others”; and civic engagement refers to “formal group memberships and civic participation” (p. 108). Similarly, Lee and Lee (2010) conceived trust and life contentment as significant individual-level socio-psychological components of social capital. However, various studies define the concepts in different ways, resulting in political and civic engagement being considered slippery concepts (Valenzuela et al., 2009). For instance, civic engagement is defined by Scheufele and Shah (2000, p. 108) as “formal group memberships and civic participation” while Quan-Haase, Wellman, Witte, and Hampton (2008) defined the concept as participation in voluntary organizations and political activities, through which people can bond and accomplish collective goals. Moreover, some scholars privilege elements such as participation in electoral activities while some others include media use and news attention as part of civic and political engagement (see Valenzuela et al., 2009). For the current study, civic participation is

conceptualized as individuals' physically and financially participating in community, social causes and social groups (Campbell & Kwak, 2010a) to examine this social capital outcome at the individual level. Political activities were not included in the present study because no sufficient political activities were expected during a non-election time period. Instead, social leisure activity was included as part of the behavioral domain.

Although civic and political engagement have been considered essential parts of the behavioral outcomes of social capital, such outcomes are not limited to civic and political engagement. Some scholars like Campbell and Kwak (2010b) pay attention to social leisure activity. Social leisure activity refers to individuals' participation in leisure activities with others (Campbell & Kwak, 2010b; Leung & Lee, 2005) as opposed to privatized leisure that indicates spending time alone by, for example, watching television (Putnam, 2000). However, social leisure activity as part of the behavioral domain of social capital outcomes is not a new conceptualization: Putnam (2000) explained decreases in social capital as a result of media technology consumption, i.e., TV viewing, with the example of get-togethers for bowling. In other words, both informal (e.g., casual gatherings such as social leisure activity) and formal social interactions (e.g., civic and political involvement such as voting) can be included in the behavioral outcome as a result of mediated interactions (Campbell & Kwak, 2010b; Putnam, 1995).

Findings of previous studies suggest that media use for social interactions could yield positive outcomes. Campbell and Kwak (2010b) found a positive relationship between mobile phone communication and social leisure activity in terms of the amount of time spent and involvement in organized groups and clubs. Mobile communication contributes to increases in face-to-face sociability with its handy connectedness to locate the whereabouts of the person one

wants to reach (Campbell & Ling, 2009). Valenzuela et al. (2009) followed Scheufele and Shah's conceptualization and suggested that individuals' purposeful use of media based on motives would have an impact on social capital. Valenzuela et al. found that intensity of Facebook use was positively related to life satisfaction, social trust, and civic and political participation, but the observed relationships were somewhat weak. Other new media technology-aided communications such as online communities can also help individuals overcome the barrier of geographical distance for social contacts (Wellman & Haythornthwaite, 2002). Other studies found positive associations between informational uses of the Internet and civic and political participation (e.g., Shah, McLeod, & Yoon, 2001). Beaudoin (2008) found evidence for a causal link between social resource motivation for Internet use and interpersonal trust; the link was mediated by the intensity of Internet use. He used secondary analysis of data from the 2006 Gadgets Survey of the Pew Internet & American Life Project, in which social interaction motivations were measured with the items including those that asked about whether people belonged to the groups that reflected their personal and professional interest, and how people kept in touch with others in the same group and kept track of group activities via the Internet (i.e., email, instant messaging, listserv or group emails, a group website or blog). Internet use was measured with the items that asked how often they used the Internet at different locations (i.e., home, work, some other places).

Although social ties of different strength levels are considered to yield different outcomes (Granovetter, 1983; Williams, 2006) and potentially motivate people to use the mobile phone differently, there seems to be a lack of ample empirical evidence. However, solid theoretical foundations seem to exist for the causal link between the use of the mobile phone and life

satisfaction, between the use and social trust, between the use and civic engagement activities, and between the use and social leisure activities.

### *Relationship Theories*

As noted earlier, the social capital literature conceives that individuals share different types of information when they interact with others whom they perceive they have different strength of social ties. In other words, when they initiate interactions with others of different social ties, they expect different things from the interactions and consequently, expect to achieve what they want. That being said, it seems important to look at what might be exchanged during social interactions because it would help us to better understand social capital outcomes.

Relationship theories conceive that social interactions between two people are considered to be composed of an amount of interaction, the content of the interaction, and the evaluation of the exchanged content (Darley & Fazio, 1980). In this sense, relationship theories of interpersonal communication would complement the uses and gratifications approach that the current study is employing because uses and gratifications theory seems not to be necessarily interested in the communicated content, unlike other mass communication theories such as cultivation and framing theories. Including what would be exchanged during mobile phone-mediated social interactions in the current study would enable a balanced and multifaceted theoretical investigation than focusing just on the quantity of mobile phone-mediated social interactions.

According to the relationship literature, every message between two communicators includes each communicator's identity, their perceptions about identity of their communicating partners and their beliefs about the relationship in addition to the literal meaning of the message (Watzlawick, Beavin, & Jackson, 1967). Darley and Fazio (1980) explained that a generally accepted sequence of a social interaction might be as follows: (1) based on past experiences and

situations, one's (hereafter, Person 1) expectancies about one's interacting other (hereafter, Person 2); (2) Person 1's action toward Person 2 is consistent with Person 1's expectations; (3) Person 2 interprets the meaning of Person 1's actions; (4) based on the interpretation, Person 2 responds to the action; (5) Person 1 interprets Person 2's response. This sequence indicates that it is important to take content into account when we evaluate the effects of social interactions. Otherwise, it might just be cursory to examine social interactions if we only do so in terms of quantity. In the same vein, Pinguart and Sorensen (2000) found in their meta-analysis that the quality of social contacts is more strongly associated with subjective well-being in old age than with the quantity of social contacts. For the current study, social interaction motives are conceptualized based on the assumption that one has needs that motivate one to communicate with others of different social ties. Then, the attributes of communication content can be conceived in terms of self-disclosure since one would reveal about oneself in different degrees during the communication process, depending on one's perceived closeness of the communicating other.

In addition, the attributes of interaction can be conceived of in the sense of the interaction partner's level of responsiveness because, thinking that interaction means two-way communication, it seems natural to consider both communicating parties when we examine the attributes of interactions. Some scholars consider that communicating individuals display reciprocal behaviors to maintain a comfortable level of closeness (Laurenceau, Barrett, & Pietromonaco, 1998; Patterson, 1982). Likewise, Laurenceau et al. (1998) noted that self-disclosure and partner responsiveness are key components of the interpersonal process in intimacy theory. Therefore, the following section looks into attributes of communication content in terms of self-disclosure and social support as part of an effort to establish theoretical and

conceptual grounds for relationships between concepts of interest, i.e., social interactions and social capital outcomes, for the current study.

*Self-Disclosure.* Self-disclosure can be defined as the expression of the information about the self to others (Wheless & Grotz, 1976). More elaborately, self-disclosure refers to the process of constructing shared knowledge between communicating entities, and this process indicates voluntary sharing of personal, sensitive information that potentially makes the discloser vulnerable (Jourard & Lasakow, 1958; Moon, 2000; Rosenfeld, 1979). In other words, self-disclosure is comprised of four components: self-disclosure is

- 1) the voluntary and intentional
- 2) verbal expression of
- 3) the information that has indirect or direct reference to the speaker
- 4) but that is not readily evident to others (Holtgraves, 1990).

Weber, Johnson, and Corrigan (2004) suggested that one's tendency of self-disclosure can be understood through studying its five dimensions: (a) the amount of the self-disclosed information; (b) the intentionality of the person's self-disclosure; (c) the honesty or accuracy of the self-disclosed information; (d) the depth or intimacy of the self-disclosed information; (e) and the positiveness of the self-disclosed message.

Previous studies examined different aspects of self-disclosure and found evidence for its positive associations with mood (e.g., Forgas & Smith, 2003), with intimacy in interpersonal relationships (e.g., Lippert & Prager, 2001; Sprecher & Hendrick, 2004), with the duration of personal relationships (e.g., Berg & McQuinn, 1986), with marital satisfaction (e.g., Hendrick, 1981) and with a feeling of security (e.g., Rosenfeld, 1979). It has also been studied as an outcome of alcohol consumption (e.g., Caudill, Wilson, & Abrams, 1987), personality

characteristics (e.g., self-consciousness and self-monitoring: Shaffer & Tomarelli, 1989), gender differences (e.g., Davidson & Duberman, 1982; Shaffer, Pegalis, & Cornell, 1992), and cultural differences (e.g., Yang, 2010).

However, self-disclosure has been usually examined in relation to different types of social relationships, including friendship (e.g., Parks & Floyd, 2006), virtual email friend (Tsuji & Mikami, 2001), romantic relationship (e.g., Laurenceau et al., 1998), and parent-child relationship (Heeman, 2008). This approach makes sense since social norms influence how people behave toward certain others. As social norms, which are an important component of social capital (Putnam, 2000), act as informal social restraints on behaviors (Beaudoin, 2011), we can argue for theoretical connections between social capital and self-disclosure. In other words, depending on one's relationship with the communication partner, the degree of self-disclosure and response to it may differ.

Self-disclosure has been examined not only in the context of face-to-face interpersonal communication but also in the context of various mediated communications, e.g., the social networking site (e.g., Ledbetter, Mazer, DeGroot, Meyer, Mao, & Swafford, 2011), online marketing (e.g., Moon, 2000), email (Joinson, 2004), and email through the mobile phone (Tsuji & Mikami, 2001). A general finding of the previous studies is as follows: Self-disclosure is positively associated with the development of relationships and increases trust and psychological wellness (Rosenfeld, 1979).

Given the definition of self-disclosure and the previous findings, it can be assumed that if one talks to his/her best friend, one would reveal more personal information (Chaikin & Derlega, 1974). In other words, a person would share the information, which would be more personal, accurate, in-depth and potentially humiliating, with his/her close others such as family, friends,



spouse and romantic partner because of the already established closeness and intimacy. In contrast, one would not share personal information as much when communicating with another person with whom one has business or formal relations. Wheelless and Grotz (1976) found that individuals who have a strong intention for disclosure of personal information and greater actual revelation of it, tend to trust the communicating other. Also, Arslan, Hamarta and Uslu (2010) found correlations among self-esteem, conflict confrontation, emotional expression, self-disclosure and life satisfaction; they concluded that as “confrontation, emotional expression and self-disclosure increase, life satisfaction increases” (p. 34).

However, Arslan et al. (2010) seems not to have taken account of “interactions” between one and one’s communicating other when explaining the relationship between one’s self-disclosure and one’s life satisfaction. Rosenfeld (1979) conceived that one’s self-disclosure would positively contribute to one’s mental health and trust through increasing one’s feeling of staying integrated into one’s associational networks. Given that self-disclosure is perceived to correlate with feelings of security (Rosenfeld, 1979), one shares sensitive, personal information because one wants to get support from one’s communicating other and may feel secured if one gets support. Similarly, Koerner (2007) argued that being open and supportive in family communications is key to satisfying relationships. Based on the conceptualization of social support as one’s perceived reciprocal interactions with or responses from one’s communicating other, the following section discusses social support and its role in the dynamics among the variables of interest for the current study.

*Social support.* Social support can be defined as “a social network’s provision of psychological and material resources *intended to benefit an individual’s ability to cope with stress*” (Cohen, 2004, p. 676). In other words, social support serves as a buffer or resource that

helps individuals reduce or overcome anxiety from difficult situations (Albrecht & Adelman, 1987). Therefore, social support could be understood from a social capital perspective as well because social support is a type of resource that is available and can be provided through social interactions.

Weber et al. (2004) distinguished between emotional support and social support in terms of the content of the support, or the aim of the supportive message. The former is a communicative display of caring and sympathy, whereas the latter is more like messages for serving “to reduce the recipient’s situational uncertainty to better manage the problems at hand” (p. 317). Weber et al. (2004) further explained that social support is a product of the recipient’s relational networks, whereas emotional support is the act of an individual for the recipient. In other words, social support goes beyond emotionally supportive messages and provides practical assistance for a goal. People expect to receive support from those that they are close to, such as family and friends (Gray, 2009; Keefe, Légaré, & Carrière, 2007; Weber et al., 2004). As social support is from someone with whom one has a social relationship, it is not strange for social support to be conceived as part of social capital (e.g., Beaudoin, 2007; Cohen, 2004). Accordingly, it can be assumed that one gets social support such as emotional and/or informational support, depending on the person with whom one communicates. For instance, one may receive more emotional support from those with whom one has strong ties than from those with whom one has weak ties.

Similarly but more elaborately, social support is conceived as providing three different types of resources, such as instrumental, informational, and emotional (House & Kahn, 1985). Instrumental support refers to “the provision of materials aid, for example, financial assistance or help with daily tasks”; information support involves “the provision of relevant information

intended to help the individual cope with current difficulties and typically takes the form of advice or guidance in dealing with one's problems"; emotional support refers to "the expression of empathy, caring, reassurance, and trust and provides opportunities for emotional expression and venting" (Cohen, 2004, pp. 676-677). From the psychological and physical health perspective, social support can be defined as "interactions with family members, friends, neighbors, peers and health care providers that may provide instrumental, informational, emotional, and appraisal support" (Forbes, Montague, Gibson, Hirdes, & Clark, 2011, p.6). Appraisal support involves the provision of the information and support for self-evaluation (Forbes et al., 2011).

Social support has been considerably studied in light of psychological and physical health and found to be an important factor for wellness of people, including breast cancer patients (Hill, Holcombe, Clark, Boothby, et al., 2011) and the elderly (Forbes et al., 2011). A considerable number of studies found social support's positive associations with self-rated health and self-rated mental health (Clark, 2007) and with quality of life (Sherman, Shumaker, Rejeski, Morgan, Applegate, & Ettinger, 2006). Cohen (2004) noted that other previous studies identified the quality and quantity of social interactions (e.g., Kiecolt-Glaser & Newton, 2001) and the support from others (e.g., Cohen, Gottlieb, & Underwood, 2000) as predictors of health and wellbeing. Family and friend networks of elderly people become smaller compared to their younger years (Keefe et al., 2007), which influences decreases in social support (Gray, 2009).

Previous research has also shown that one's life satisfaction is influenced by the level of one's perceived social support from close others (i.e., family, friends, significant other; Cheng & Chan, 2004). Similarly, Leung and Lee (2005) found a positive association between social support and life satisfaction. Lippert and Prager (2001) conceived that effective self-disclosure

leads to social support and this elicited social support contributes, in part, to psychological wellness. In addition, interactions between two communicating entities in a supportive manner can contribute to trust (Rempel, Homles, & Zanna, 1985). Franzini (2008) argued that individuals with stronger social support tend to be more trusting because the social support leads them to having positive experiences and becoming more socially and culturally integrated into their groups. Moreover, social support is not only related to self-disclosure as noted above but also associated with communication through the telephone and with Internet use for sociability (Leung & Lee, 2005).

Considering previous findings and the rationale based on relationship theories, it is plausible to assume various positive relationships among motivations for social interactions, mobile phone use, mobile phone-mediated self-disclosure, social support, life satisfaction and social trust.

#### *A Summary of Hypotheses and Research Questions*

As the social capital literature suggests, individuals are conceived to have two different types of social ties, bridging and bonding, depending on their perceived strength of relationships and feeling of closeness (Granovetter, 1983; Helliwell & Putnam, 2004; Putnam 2000). The literature suggests that if a person feels in need of resources, s/he would attempt to contact others whom s/he has different strength of social relations. Different types of social ties offer different resources, e.g., not easily attainable, novel information from acquaintances, and emotional and substantive support from close friends (Ellison et al., 2011; Granovetter, 1983; Williams, 2006). However, a person could think s/he could be more easily connected to others of different strength of social ties through the mobile phone as it provides him/her with the connection on the go (Katz & Aakhua, 2002; Licoppe, 2004). Likewise, uses and gratifications theory suggests that

social interaction motives strongly encourage mobile phone use (Liu, 2010; Walsh et al., 2007; Wei & Lo, 2006). Therefore, a positive association can be assumed between motivations for social interactions with different social ties and mobile phone use, based on the social capital literature and uses and gratifications theory, leading to the formulation of hypotheses 1 and 2:

*H1. The stronger users' motivation for bridging social capital, the greater use of the mobile phone.*

*H2. The stronger users' motivation for bonding social capital, the greater use of the mobile phone.*

As explained earlier, social capital outcomes via media use can be conceived as life satisfaction, social trust, civic engagement activities, and social leisure activities at the individual level from a uses and gratifications perspective. These outcomes appear when a person successfully mobilizes resources available in his/her networks of social relations through interactions, and technology could help mobilize resources by facilitating interactions (Coleman, 1988; Resnick, 2002). With the convenience of the mobile phone mentioned above, a person is expected to benefit from the resources that are conveyed via mobile phone-mediated social interactions, leading to experiencing positive outcomes. This sequence also corresponds to what uses and gratifications theory postulates: Motives lead to media use that results in outcomes (Katz et al., 1974; Palmgreen, 1984; Rubin, 2002). Looking at this sequence from both social capital and uses and gratifications perspectives enables this study's investigation on social capital at the individual level and on outcome of mobile phone use in a more concrete way. Findings of previous studies suggest that the use of interpersonal media, including the mobile phone, could yield positive social capital outcomes (e.g., Campbell & Kwak, 2010b; Valenzuela et al., 2009).

Although there is not enough empirical evidence in the context of the mobile phone, the relationships in theory should exist. Therefore, hypotheses 3, 4, 5, and 6 are formulated:

*H3. The greater individuals' use of the mobile phone, the greater individuals' life satisfaction.*

*H4. The greater individuals' use of the mobile phone, the greater individuals' social trust.*

*H5. The greater individuals' use of the mobile phone, the greater individuals' civic engagement activities.*

*H6. The greater individuals' use of the mobile phone, the greater individuals' offline social leisure activities.*

Uses and gratifications theory helps hypothesize the above-mentioned predictions about relationships between motives for social interactions and mobile phone use, and between mobile phone use and social capital outcome. However, those hypotheses seem to pertain only to the amount of social interactions. Based on relationship theories, social interactions between two people are composed of an amount of interaction, the content of the interaction, and the evaluation of the exchanged content (Darley & Fazio, 1980). Therefore, relational theories are expected to contribute to a more elaborated understanding of processes and effects of mobile phone-mediated social interactions. Literature suggests that self-disclosure should be voluntary and intentional and creates shared knowledge between communicating entities (Holtgraves, 1990). In other words, a person should be motivated to disclose personal, sensitive information to the communicating other with whom s/he has a social relation. Based on the relationship literature, one discloses personal, sensitive information about himself/herself more to his/her close friends (Chaikin & Derlega, 1974). Based on the social support and social capital literature,

it can be assumed that if a person is motivated to interact with others and maintain continuous reciprocity with them, s/he would get support, ranging from informational to emotional support (Cohen, 2004; Ellison et al., 2011; Williams, 2006). The self-disclosure and social trust literature suggests that self-disclosure is positively, directly related to life satisfaction and/or indirectly via social support (Arslan et al., 2010; Cheng & Chan, 2004; Leung & Lee, 2005; Lippert & Prager, 2001; Rosenfeld, 1979). It also suggests that self-disclosure is positively, directly related to social trust and/or indirectly via social support (Franzini, 2008; Rempel et al., 1985; Rosenfeld, 1979; Wheelless & Grotz, 1976). Therefore, hypotheses 7, 8a, 8b, 9a, 9b, and 10 are formulated:

*H7. There will be a positive relationship between motives for social interactions and mobile phone-mediated self-disclosure.*

*H8a. There will be a positive relationship between mobile phone-mediated self-disclosure and life satisfaction.*

*H8b. The relationship between mobile phone-mediated self-disclosure and life satisfaction is mediated by perceived social support.*

*H9a. There will be a positive relationship between mobile phone-mediated self-disclosure and perceived social trust.*

*H9b. The relationship between mobile phone-mediated self-disclosure and social trust is mediated by perceived social support.*

*H10. There will be a positive relationship between mobile phone use and perceived social support.*

One of the main conceptualizations of different types of social ties is that of bonding (strong ties) and bridging (weak ties) in the social capital literature (Granovetter, 1983; Helliwell & Putnam, 2004; Putnam, 2000). This classification can be applied to studying differentiate

different types of motivations for social interactions with different social ties from a perspective of uses and gratifications theory as explained earlier in this chapter. The uses and gratifications literature shows that sociability is an important motive (e.g., Leung & Wei, 2000). However, no study seems to have attempted to delve more into different types of social interaction motives for mobile phone use. One study on Facebook suggests a possibility that there are additional types of motives besides bridging and bonding motives (Ellison et al., 2007), leading to research question 1:

*RQ1. What kinds of social interactions do users of the mobile phone seek? Are there additional types of social interactions other than bridging and bonding?*

Previous studies of social capital on interpersonal media suggest mobile phone use's positive associations with life satisfaction, social trust, civic engagement and social leisure activities (Campbell & Kwak, 2010b; Valenzuela et al., 2009). Likewise, diverse communication channels within the mobile phone, including voice calling, texting, and apps for social networking sites, would function the same way. In addition, it would be also possible that a person thinks the functionality of each of the interpersonal communication channels differently, as uses and gratifications theory postulates (Finn, 1997; Katz et al., 1974). What is interesting is the channels directly compete with each other as some of them or all of them could be available in a single mobile gadget. However, it seems to have not been studied if certain interpersonal communication channels inside the mobile phone are associated with social capital outcomes while others are not. Therefore, research questions 2, 3, 4, 5, and 6 are formulated:

*RQ2. Is there a difference between bonding and bridging motives in the use of the mobile phone?*

*RQ3. To what extent can the use of each interpersonal communication channel in*



*the mobile phone predict individuals' life satisfaction?*

*RQ4. To what extent can the use of each interpersonal communication channel in the mobile phone predict individuals' social trust?*

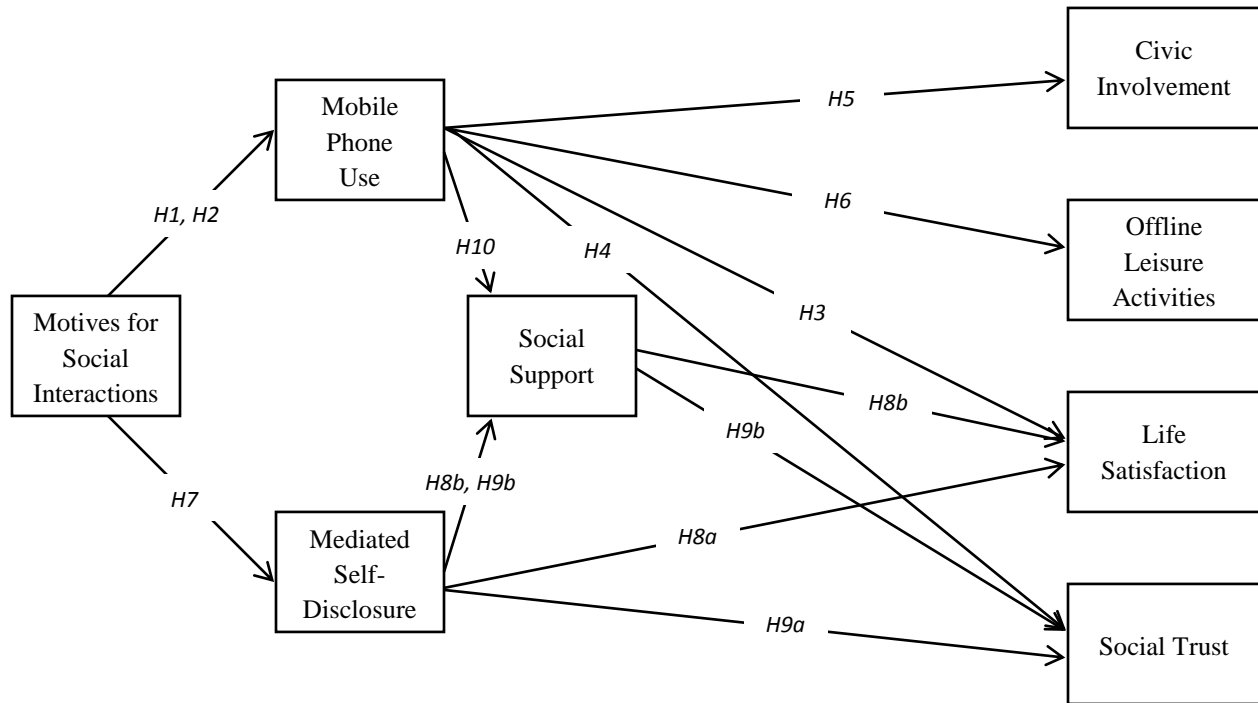
*RQ5. To what extent can the use of each interpersonal communication channel in the mobile phone predict individuals' civic engagement activities?*

*RQ6. To what extent can the use of each interpersonal communication channel in the mobile phone predict individuals' offline social leisure activities?*

*Proposed path model.* Each of the abovementioned hypotheses is formulated in accordance with the specific literature that pertains to social capital, uses and gratifications theory, and relationship theories. Figure 2-1 shows the proposed theoretical path model that displays each of the hypotheses. The model displays the causal sequence that uses and gratifications theory postulates: Motivations for social interactions influence mediated social interactions via the mobile phone; the mediated interactions lead to expected beneficial outcomes of individuals. This sequence corresponds to what social capital theorists posit: Individuals can benefit from interactions with their relational networks when they positively attempt to mobilize their networks for certain purposes. However, given the nature of mobile phone communication, the present study attempts to elaborate the causal mechanism by inviting a generally accepted sequence of a social interaction suggested by relationship theories, which enables the current study to incorporate the content and the quality of interaction. Based on the generally accepted social interaction sequence (Darley & Fazio, 1980), mobile phone use and self-disclosure were conceptualized as the communication initiator's action, followed by the initiator's interpretations of the responses from the communicating party (i.e., social support) that influences the initiator's satisfaction with life and social trust. The path model only accounts for the person who initiates

the mediated social interactions and for the person's interpretations of responses from his/her communicating other.

*Figure 2-1: Proposed Path Model and Summary of Hypotheses*



## Chapter 3

### Methods

The intent of the current study is to examine if individuals' use of the mobile phone could affect their social capital. Based on previous research and theories, a number of hypotheses and research questions were formulated, which include various cognitive variables, personal traits and behavioral patterns. An online survey technique was employed to investigate the noted research questions and hypotheses. The following section details the procedures that were taken to examine the questions and hypotheses, including the sources of the key measures, participant recruitment and the analysis procedure for the current study.

#### *Participants*

Participants were recruited through multiple sources, such as the official online news sources of a large northeastern university in the United States, the faculty, staff and student email listserv of the college of communications at the university, and a large-sized undergraduate class of the college. A total of 382 people completed the online survey. However, responses from two of them, who were found to be younger than 18 years of age, were removed. In addition, because of problems with data, including skewness, a total of 89 participants were removed. Detailed explanations regarding the problems are provided toward the end of the current chapter (See *Data Analysis Procedures*). The resultant convenience sample ( $n = 291$ ) was 69.1% female (or 201), ranged in age from 18 to 58,  $M = 21.13$ ,  $SD = 6.01$ .

Of the 291, 83.16%, or 242 participants, were White, with 6.19% of Asians, 4.12% of Black, 1.37% of Hispanic or Latino, and others. Most of them, or 247 participants (84.88%), were undergraduates: 69 freshmen, 66 sophomore, 51 junior and 61 senior-level students. All the participants indicated that they had at least some college education or higher. A majority of the

participants possessed a smartphone ( $n = 190$ ; 65.29%), followed by a feature phone<sup>2</sup> ( $n = 61$ ; 20.96%) and, finally, a budget phone ( $n = 40$ ; 13.75%).

### *Data Collection Procedures*

There were two phases of data gathering. Initially, recruitment announcements were posted on various official online news sources of a large northeastern university in the U.S. and the official Facebook site for the alumni of the college of communications at the university. In addition, recruitment emails were sent out to subscribers of the college's faculty and staff email listserv, of the college's incumbent students and of the college's alumni. In the recruitment announcement, participants were notified that two people would be selected among participants to receive a \$50 VISA gift card in return for his/her participation. From June 10, 2011 to July 22, 2011, a total of 341 visited the online survey site, but 155 completed the survey. In order to increase statistical power, additional participants ( $n = 227$ ), who received extra course credit in return for their participation, were recruited from a large undergraduate communication class at the same university from September 22, 2011 to October 6, 2011. As previously mentioned, a total of 91 participants were removed from  $n = 382$ , resulting in the convenience sample,  $n = 291$ .

When participants visited the survey site, which was available on [www.qualtrics.com](http://www.qualtrics.com), they were introduced to brief explanations about the objectives of the current study. They were also informed that their participation in the survey was voluntary and that they could leave the survey anytime they wished. It was estimated to take no more than 30 minutes to complete the

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<sup>2</sup> For the current study, the feature phone was defined as the mobile phone with "access to the Internet but no or very limited feature of downloading apps," as there seemed no agreed standard definition of the feature phone in the industry. Although there was no single, clear definition of the phone, the feature phone was generally considered to offer more features than the entry-level, budget phone but fewer features than the smartphone.

survey. Once they finished the survey during the first phase of data gathering, they were thanked and provided with a link to the page where they could leave their email address to enter to win the gift card. The IP-based control function available at the research service provider was activated in order to prevent one person's possible multiple participation in hopes of increasing chances to win the gift card. For the second phase of data gathering, participants were asked to leave their school email addresses at the end of the survey so that they could receive extra course credit in return for their participation.

### *Key Measures*

*Motives.* Mobile phone use motives for social interactions were asked, using 7-point Likert scale items, with higher scores reflecting stronger motivations. The items were developed largely based on previous studies on the mobile phone from uses and gratifications perspectives (Leung & Wei, 2000; Wei, 2008; Wei & Lo, 2006), and interpersonal communication media (Ramirez et al., 2008). Question items were revised to suit the media of interest for this study. Of the items in the previous studies, those regarding social interactions only were included and further developed in order to cover user motives for communication with others that one has different social ties, i.e., bonding and bridging (Putnam, 2000). Bonding social ties were measured with interaction motivations with *close friends*, while bridging was measured with interaction motivations with *acquaintances*. In addition, items that take diverse social interaction situations into account were also created and added. Therefore, a total of 49 items were created (See Appendix A) and asked on scales ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*),  $M = 5.65$ ,  $SD = .72$ , Cronbach  $\alpha = .95$ . Of the 49 items, for bonding motives, the mean of the 21 items that specifically asked about mobile phone-mediated social interactions with *close friends* was calculated ( $M = 6.16$ ,  $SD = .65$ , Cronbach  $\alpha = .91$ ). Bridging motives were estimated with a

total of 21 items that asked about mobile phone-mediated social interactions with *acquaintances* ( $M = 5.05$ ,  $SD = 1.11$ , Cronbach  $\alpha = .96$ ).

*Mobile phone use.* Individuals' use of nine interpersonal communication channels in the mobile phone was measured. The channels include voice calling, voice mail, video calling, texting, email, instant messaging, online discussion forums, apps for social networking sites and dating apps. Use patterns, however, were measured in three different ways— intensity, frequency, and time spent (see Appendix B). The intensity was measured by asking how much they use each channel on scales ranging from 1 (*Not at All*) to 7 (*Very Much*). The frequency was measured by asking how many times one uses each communication channel on a daily basis, with the amount of minutes spent on each channel measured on a daily basis. The reliability of the intensity measure (Cronbach  $\alpha$ ) was at .65, which was somewhat low ( $M = 3.64$   $SD = .94$ ). However, none of the items was deleted since each channel has seemingly distinctive characteristics and the current study aims to see the differences between channels. A total number of the use frequencies and that of the use minutes were calculated for subsequent data analysis. The mean of the summed frequencies was as follows:  $M = 91.74$  ( $SD = 82.86$ ). Descriptive statistics of the summed minutes were as follows:  $M = 141.75$ ;  $SD = 105.76$ .

*Social capital outcomes.* Three dimensions of social capital were measured— intrapersonal, interpersonal, and behavioral. Following Valenzuela et al. (2009), the intrapersonal dimension was measured with different levels of life satisfaction, while the interpersonal dimension was measured with social trust. The 5-item Satisfaction with Life Scale by Diener, Emmons, Larsen and Griffin (1985) was employed to gauge the intrapersonal dimension, rated on scales ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Higher scores reflect stronger satisfaction with life,  $M = 5.03$ ,  $SD = 1.18$ , Cronbach  $\alpha = .88$ .

The current study adapted the 5-item scale developed by Valenzeula et al., based on Rosenberg's (1956) Faith in People scale. Different levels of social trust were rated on scales ranging from 1 (*Never*) to 7 (*All the Time*). Three items were reverse-coded to make higher scores consistently indicating stronger faith in people. Although the scale reliability was found to be a bit low at Cronbach  $\alpha = .66$  ( $M = 3.76$ ,  $SD = .85$ ), the results suggest an elimination of any item would not lead to greater scale reliability. Therefore, no item was removed for hypothesis testing.

The behavioral dimension was measured in terms of social leisure activity, e.g., informal face-to-face social get-togethers, based on the operationalization in the Campbell and Kwak study (2010b) and in terms of civic engagement, e.g., volunteering and donation, based on the operationalization in another Campbell and Kwak study (2010a). Nine open-ended ratio items were used to measure various offline social leisure activities, such as dining out, going to the movies and playing sport, with close friends or acquaintances per month on average. Eight open-ended ratio items were used to measure civic engagement activities, such as monetary donation and participation in neighborhood meeting, per month on average. See Appendix C for the complete measures of social capital outcomes. A total number of offline social leisure activities and that of civic engagement activities were calculated for subsequent data analysis. The mean of the summed offline social leisure activities was as follows:  $M = 42.12$ ;  $SD = 28.69$ . Descriptive statistics of the summed civic engagement activities were as follows:  $M = 8.79$ ;  $SD = 9.09$ .

*Mediated self-disclosure.* The multitude of dimensions of self-disclosure was assessed with the 21-item scale modified from Wheelless and Grotz (1976). They developed these Likert-type items to capture the depth of self-disclosure free from social context topics wherein interpersonal communications take place so that perceptions of actual communication behaviors

are better gauged (Wheeles & Grotz, 1976). To suit the media context of the present study, the items were slightly modified: Participants were asked how much they tend to disclose about themselves during communication via the mobile phone. In addition, some of their items that can be perceived as double-barreled questions were broken down to multiple questions. For instance, the item that asks about one's "feelings, emotions, behaviors, or experiences" was broken down to three separate questions (see Appendix D). Of the 21 items measured on scales ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*), a total of 13 items were reverse-coded to achieve higher scores indicating stronger tendencies of self-disclosure. After reverse coding, the scale reliability test of the 21 items revealed a moderate level of reliability at Cronbach  $\alpha = .77$  ( $M = 4.49$ ,  $SD = .59$ ).

*Perceived social support.* Three dimensions of perceived social support, namely support from *significant others*, *family*, and *friends*, were measured with the 14-item Likert scale adapted from Zimet, Dahlem, Zimet, and Farley (1988). To suit the design of the present study, the items were slightly modified to measure perceived social support from different types of people via the mobile phone (see Appendix E). Also, the original items that could be perceived as a double-barreled question as they contain both "joys" and "sorrows" were separated into two items. The response scale ranged from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*), with higher scores indicating stronger perceived social support,  $M = 5.31$ ,  $SD = 1.15$ , Cronbach  $\alpha = .97$ .

*Control variables & demographics.* The demographic variables that previous studies identified to influence social capital, such as age, gender, education, household income, and race, were measured and controlled for (Campbell & Kwak, 2010a). However, there were too many missing cases in household income, and therefore, household income was not included as a control variable during analysis. One's job status and the absence/presence of one's significant



other, which would indicate the size of one's existing social network, were also controlled for since they could influence the amount of cell phone usage for interpersonal communications. For a similar reason, the number of social groups and clubs to which one belongs were also controlled for. The two data collection periods, which were indicated earlier in this chapter, was also controlled for. Other demographic variables such as the number of years living in the current town and distance from one's hometown to the current residence were measured. Also, use of other media was measured (See Appendix F for questions for control variables and demographics).

#### *Data Analysis Procedures*

*Data cleaning.* As previously mentioned, a total of 382 participants completed the online survey. However, two of them were deleted because they identified themselves as under 18 years of age. The survey was designed for people 18 years of age or over. In addition, data from 89 participants were removed. Most of them were deleted as they appeared to be outliers and to influence the skewness of some variables. The rest was deleted due to concerns for systematic missing data. The following explains steps to taken to delete those 89 participants: After completing each step described below, the skewness of all measured variables were examined and additional step was taken if necessary. From the remaining 380 cases, 12 participants who reported they used their mobile phone more than 960 minutes a day, equivalent to 16 hours per day, and one participant who reported 0 minutes per day were removed. It was considered unrealistic to use the mobile phone more than 16 hours per day. Then, eight cases were deleted because there were two or more missing categories in mobile phone use in minutes. Five cases additionally were deleted because there were two or more of missing categories in mobile phone use in frequency, followed by the removal of six other cases whose Z-score of the sum of the

mobile phone use frequencies were over  $\pm 3.29$  (Tabachnick & Fidell, 2001). Six other cases were removed as their Z-score of the sum of the mobile phone use time in minutes were over  $\pm 3.29$ . One case was removed as it had two or more missing categories in leisure activity measures, followed by the deletion of one more case whose Z-score of the sum of leisure activities were over  $\pm 3.29$ . Eight additional cases that had Z-score of the sum of civic activities were over  $\pm 3.29$  were deleted. Three cases were removed as the Z-score of each case's mean of bonding motives were over  $\pm 3.29$ . Then, 11 cases were deleted as each case's sum of mobile phone use frequencies was larger than the combined figure of the mean of the summed mobile phone use in frequency and 3 standard deviations (Kline, 2005). One case was removed as its sum of mobile phone use frequencies were 0. Nine other cases were deleted as they failed to lie within 3 standard deviations of the mean of mobile phone use in minutes. Six more cases were removed as they failed to lie within 3 standard deviations of the mean of the summed leisure activities. Nine other cases were deleted because they failed to lie within 3 standard deviations of the mean of the summed civic activities. Two additional cases were removed because of group membership, a control variable: They had Z-score of the sum of memberships of groups and clubs were over  $\pm 3.29$ . After completing these procedures, the basic demographic information of the finalized sample ( $n = 291$ ) and that of the initial sample ( $n = 380$ ) were compared. There was no statistically significant difference between the two in age:  $t(669) = .37, p = .71$ ; in gender:  $\chi^2(1, n = 671) = .61, p = .44$ ; or in race (White vs. non-White):  $\chi^2(1, n = 671) = 1.27, p = .26$ .

With the finalized sample ( $n = 291$ ), the skewness of all measured variables was examined (See Table 3-1). Means and standard deviations were deemed adequate. The skewness values for all variables appeared acceptable ( $> -1, < 1$ ) except the summed frequency of mobile phone use, the summed minutes of mobile phone use, the summed offline leisure activities and

the summed civic engagement activities. In order to produce normality of those four variables, logarithmic transformation was employed (Tabachnick & Fidell, 2001). This made the normality of those variables acceptable (See Table 3-2). For further data analysis hereafter, the transformed variables were used.

Table 3-1: Descriptive Statistics for Key Variables

	M	SD	MIN	MAX	Skew	$\alpha$
Motives for Social Interactions	5.65	.72	3.69	7.00	-.41	.95
Bonding	6.16	.64	4.00	7.00	-.84	.91
Bridging	5.05	1.11	1.71	7.00	-.5	.96
Mediated Social Interactions						
Intensity	3.64	.94	1.67	6.00	.15	.65
Summed Frequencies	91.74	82.86	2.00	423.00	1.65	N/A
Summed Minutes	141.75	105.76	3.00	545.00	1.44	N/A
Mediated Self-Disclosure	4.49	.59	2.81	6.00	.01	.77
Perceived Social Support	5.31	1.15	1.00	7.00	-.76	.97
Summed Offline Leisure Activities	42.12	28.69	1.00	145.00	1.31	N/A
Summed Civic Engagement	8.79	9.09	.00	41.00	1.23	N/A
Life Satisfaction	5.03	1.18	1.00	7.00	-.71	.88
Social Trust	3.76	.85	1.00	5.80	-.17	.66

Table 3-2: Descriptive Statistics for Logarithmic Transformed Variables

	M	SD	MIN	MAX	Skew
<b>Mediated Social Interactions</b>					
Summed Frequencies	1.78	.43	.30	2.63	-.49
Summed Minutes	2.03	.35	.48	2.74	-.65
Summed Offline Leisure Activities	1.52	.32	.00	2.16	-.91
Summed Civic Engagement	.77	.49	.00	1.62	-.29

*Data analysis.* A total of 10 different hypotheses and six research questions proposed in the current study governed data collection and data analysis strategies. Firstly, as a preparation for testing hypotheses and research questions, all the measured key variables were statistically controlled for. In order to control for age, gender, race, education, relationship status, the number of social group memberships, job status and data collection periods, the variance in each of the key measured variables that were due to the control variables was removed. The residuals, or errors, were extracted by regressing each of the key measured variables on the control variables in SPSS (for more information about this statistical technique, see Gunther, Bolt, Borzekowski, Liebhart, & Dillard, 2006).

Using SPSS 19, various statistical techniques, such as correlations and factor analysis, were employed to test research questions and hypotheses. While mobile phone use in terms of intensity, frequency and time in minutes were used to test hypotheses and the proposed theoretical model, mobile phone use intensity only was used to investigate research questions. In addition, a path analysis technique using AMOS 19 was employed to test the proposed hypotheses and model. As an initial step for testing the model, the bivariate correlations were

tested (See Table 3-3), which showed a low likelihood of multicollinearity with these data as no significant correlations greater than .60 were found (Kline, 2005). After theoretical variables were assigned to the path model, multivariate normality was examined. A latent variable was created for mobile phone use, under which three types of mobile phone use measures were included. Mardia's coefficient of multivariate kurtosis showed that there was multivariate normality: Mardia's coefficient for the model with overall motives for social interactions = 9.61. Mardia's coefficient that is lower than  $p(p + 2)$ , which in this case =  $10(12) = 120$ , where  $p$  is the number of observed variables, indicates multivariate normality (Bollen, 1989). In addition, a modified version of the proposed model was created to parsimoniously test hypotheses 1, 2, and 5. In this model, bridging and bonding motives were separately placed in the model as two exogenous variables that covary, instead of overall motives for social interactions. This modified version of the proposed model was found to have multivariate normality: Mardia's coefficient for this model = 10.32, which is lower than  $11(11+2) = 143$ .

In testing the proposed model, path analysis with maximum likelihood estimation was performed. A chi-square goodness of fit and other fit indices were examined because the chi-square goodness of fit test is known to be sensitive to sample size (Kline, 2005). Then, the significance of each path in the model was examined for adding or removal, based on modification indices and adequate, theoretical justifications. When there was no indication that any changes would improve the fit or have theoretical justifications, indirect effects, if any, were tested, using a bootstrapping using 2000 bootstrapped samples.

Table 3-3: Bivariate Correlations for Key Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. Motivations	1.00											
2. Bonding Motives	N/A	1.00										
3. Bridging Motives	N/A	.44***	1.00									
4. Mobile Phone Use Intensity	.29***	.16**	.24***	1.00								
5. Mobile Phone Use Frequency	.24***	.21***	.16**	N/A	1.00							
6. Mobile Phone Use Time	.19**	.19**	.11 <sup>+</sup>	N/A	N/A	1.00						
7. Self-Disclosure	.00	.17**	-.09	.01	.09	.08	1.00					
8. Social Support	.24***	.43***	.10	.05	.12*	.11 <sup>+</sup>	.08	1.00				
9. Life Satisfaction	.17**	.18**	.11 <sup>+</sup>	.13*	.14*	.06	.22***	.33***	1.00			
10. Social Trust	-.03	-.01	-.01	-.12*	-.08	-.09	.10 <sup>+</sup>	-.04	.24***	1.00		
11. Leisure Activities	.08	.05	.07	.17**	.33***	.26***	.16**	.10 <sup>+</sup>	.30***	.01	1.00	
12. Civic Involvement	.11 <sup>+</sup>	.10 <sup>+</sup>	.09	.15**	.05	.05	-.09	.12*	.08	-.01	.15**	1.00

Note: <sup>+</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$  for  $n = 291$  (two-tailed)

Some cells have N/A and provide no correlations because the two variables for each cell are different measures for the same theoretical variable (e.g., Mobile Phone Use Intensity, Mobile Phone Use Frequency), because one is part of the other variable (e.g., Motivations, Bonding Motives), or because the two variables are two different parts of one variable (e.g., Bonding, Bridging).

## Chapter 4

### Results

The present study examines 10 hypotheses and six research questions. Various path analyses were performed to examine individual hypotheses and model fit. Three different types of measures for mobile phone use were used to test the hypothesized relationships. In addition, Mobile Phone Use Intensity was used to explore the research questions with different statistical analyses.

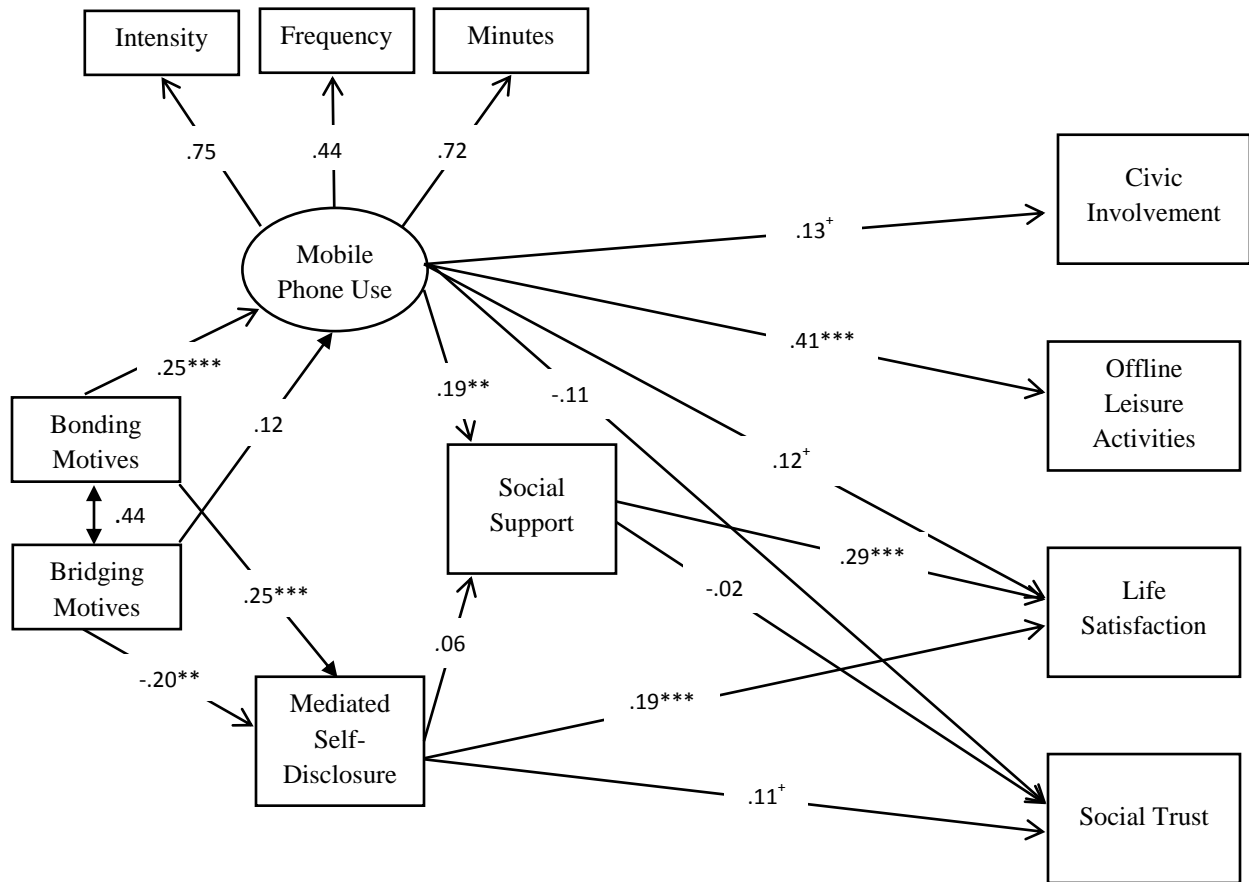
#### *Hypotheses Testing*

Hypothesis 1 predicts that the stronger users' motivation for bridging social capital, the greater use of the mobile phone. Figure 4-1 shows all significant and non-significant paths in the modified version of the hypothesized model for bridging and bonding motives as two exogenous variables. The results did not support H1: There was no statistically significant, positive association between respondents' bridging social capital motives and mobile phone usage ( $\beta = .12, p = .11$ ).

Hypothesis 2 predicts that the stronger users' motivation for bonding social capital, the greater use of the mobile phone. Consistent with H2, respondents' bonding social capital motives were significantly, positively associated with mobile phone usage,  $\beta = .25, p < .001$  (See Figure 4-1).

Hypothesis 3 posits that the greater individuals' use of the mobile phone, the greater individuals' life satisfaction. Figure 4-2 shows all significant and non-significant paths in the hypothesized model for overall motives for social interactions as the exogenous variable. The results showed that there was a small, positive relationship between mobile phone usage and life satisfaction,  $\beta = .12, p = .06$ .

Figure 4-1: Modified Proposed Path Model with Bridging and Bonding Motives (Standardized)



Note: <sup>+</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , for  $n = 291$  (two-tailed)

Hypothesis 4 predicts that the greater individuals' use of the mobile phone, the greater individuals' social trust (See Figure 4-2). H4 was not supported. There was no statistically significant relationship between mobile phone use and social trust,  $\beta = -.11$ ,  $p = .11$ .

Hypothesis 5 forecasts that the greater individuals' use of the mobile phone, the greater individuals' civic engagement activities. There was a weak, positive relationship between mobile phone use and civic engagement,  $\beta = .13$ ,  $p = .06$  (See Figure 4-2).

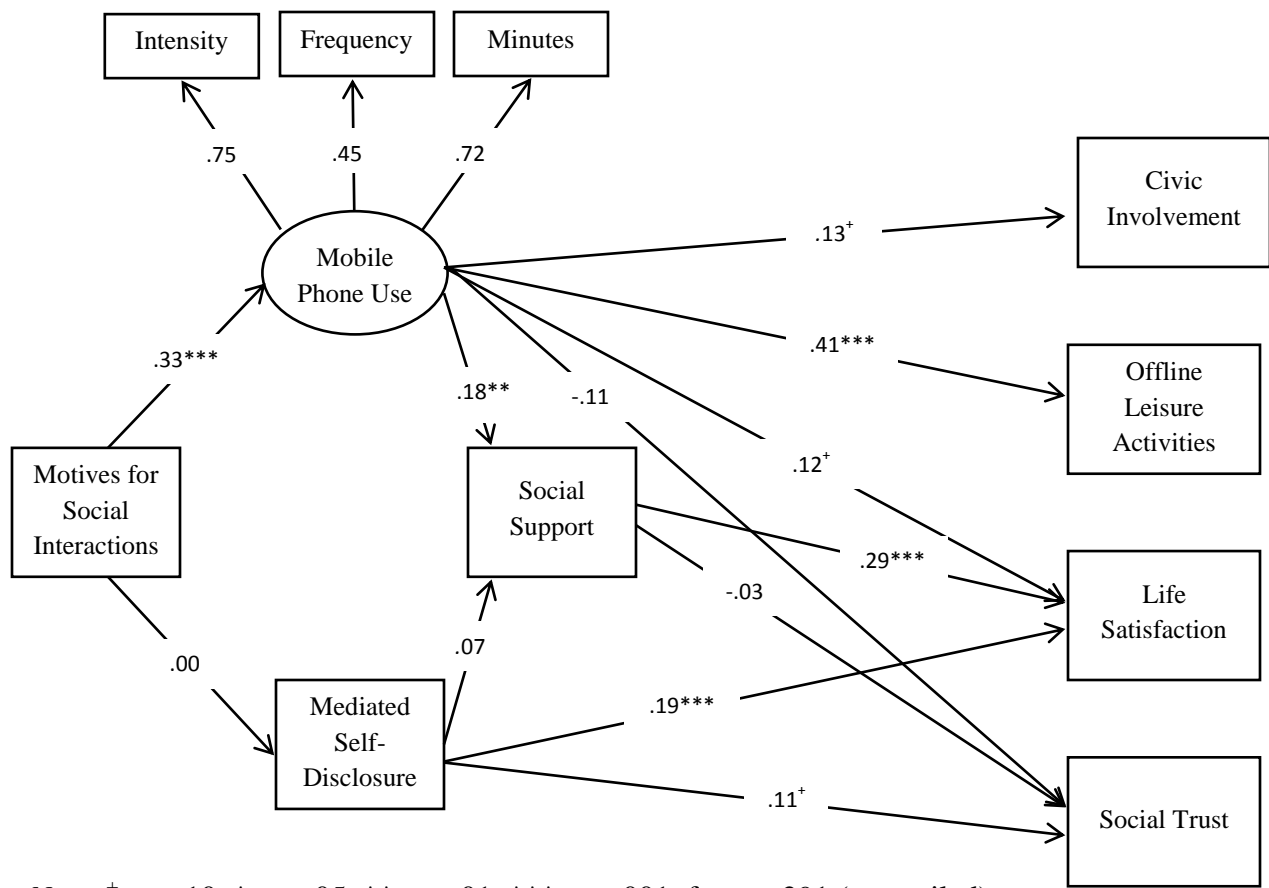
Hypothesis 6 predicts that the greater individuals' use of the mobile phone, the greater individuals' offline social leisure activities. Consistent with H6, respondents' mobile phone use



was significantly, positively associated with offline leisure activities,  $\beta = .41, p < .001$  (See Figure 4-2).

Hypothesis 7 proposes a positive relationship between motives for social interactions and mobile phone-mediated self-disclosure. H7 was not supported as overall social interaction motives were not significantly associated with mediated self-disclosure,  $\beta = .00, p = .98$  (See Figure 4-2). However, there was a statistically significant, positive association between social interaction motives for bonding and mediated self-disclosure,  $\beta = .25, p < .001$ . More interestingly, there was a statistically significant inverse relationship between bridging motives and mobile phone-mediated self-disclosure,  $\beta = -.20, p < .01$  (See Figure 4-1).

Figure 4-2: Proposed Path Model with Overall Motives for Social Interactions (Standardized)



Note:  $^+ p < .10, * p < .05, ** p < .01, *** p < .001$ , for  $n = 291$  (two-tailed)

Hypothesis 8a predicts a positive relationship between mobile phone-mediated self-disclosure and life satisfaction. Consistent with the prediction, respondents' mediated self-disclosure via the mobile phone was significantly, positively associated with their level of satisfaction with life,  $\beta = .19, p < .001$  (See Figure 4-2). Hypothesis 8b proposes that the relationship between self-disclosure and life satisfaction is mediated by perceived social support. H8b, however, was not supported: The path from mobile phone-mediated self-disclosure to social support was not statistically significant ( $\beta = .07, p = .25$ ), while self-disclosure and social support were statistically significant predictors of satisfaction with life ( $\beta = .29, p < .001$ ). A bias-corrected 95% bootstrap confidence interval for the indirect effect using 2000 bootstrap samples was generated, which confirmed non-significant indirect effects of self-disclosure on life satisfaction,  $\beta = -.02, p = .26$ .

Hypothesis 9a predicts a positive relationship between mobile phone-mediated self-disclosure and social trust. The results reported a moderately significant relationship between self-disclosure and social trust,  $\beta = .11, p = .06$  (See Figure 4-2). Hypothesis 9b proposes that the relationship between self-disclosure and social trust is mediated by perceived social support. H9b was not supported. Neither the path from self-disclosure to social support ( $\beta = .07, p = .25$ ) nor that from social support to social trust ( $\beta = -.03, p = .67$ ) was statistically significant.

Hypothesis 10 proposes a positive relationship between mobile phone use and perceived social support. The results showed that mobile phone use was significantly positively associated with perceived social support,  $\beta = .18, p < .01$  (See Figure 4-2).

### *Testing of Research Questions*

*Bonding, bridging & other motives?* RQ1 concerns whether there are additional motives for social interactions via the mobile phone other than bonding and bridging. To test the research

question, the principal axis factoring method (PAF) with direct oblimin rotation was used for data analyses. Between the two, most used factor analysis techniques, namely PAF and principal component analysis (PCA), the current study employed principle axis factoring. PAF is considered to be more correct as it assumes error variance (Field, 2000; Rietveld & Van Hout 1993). In the initial PAF, the anti-image correlation matrix, Kaiser-Meyer-Olkin adequacy sample measure (KMO), and Bartlett's test of sphericity were calculated in order to assess the possibility of a factor analysis of items. In general, satisfactory results of anti-image correlations were obtained, with the matrix diagonal greater than .5, ranging between .725 and .95 (Field, 2000). KMO was equal to .89, and the test of sphericity was equal to 11763.29,  $p < .001$ . In addition, descriptive statistics for each of the 49 items (See Appendix G), communalities of the items (See Appendix G), and correlations between the items were also calculated. Mean scores of items ranged between 4.41 and 6.77 while standard deviations ranged between .641 and 1.78. Items with low communalities were taken into consideration for elimination during subsequent analyses.

The initial PAF with direct oblimin rotation suggested possible nine factors with eigenvalues greater than 1 that accounted for 70.98% of the total variance. However, during subsequent analyses, items that had low communalities in the initial analysis and that failed to meet the 60/40 rule in the pattern matrices were eliminated. A total of three analyses were conducted, and 25 items were selected in the end. The final analysis revealed six factors with eigenvalues greater than 1 that accounted for 76.4% of the variance. Table 4-1 reports the final pattern matrix of factor loadings.

Six factors were labeled, and then scale reliability was evaluated. In general, good levels of reliability were obtained. The first factor was labeled "Bridging." A total of eight items

belonged to the first factor. Scales for Bridging, which were created by averaging the ratings of the eight variables, showed a good level of reliability, Cronbach's  $\alpha = .92$ ,  $M = 5$ ,  $SD = 1.21$ . The second factor represented by six variables was labeled "Bonding," and its scales also showed a good level of reliability,  $\alpha = .90$ ,  $M = 6.62$ ,  $SD = .67$ . The third factor of three items was labeled "Support Exchange with Friends,"  $\alpha = .90$ ,  $M = 6.04$ ,  $SD = 1.05$ . The fourth factor of four items was labeled "Relational Maintenance,"  $\alpha = .83$ ,  $M = 5.04$ ,  $SD = 1.30$ . The fifth factor was labeled "Convenience for Bonding,"  $r = .90$ ,  $M = 6.39$ ,  $SD = .87$ . The sixth, final factor was labeled "Business Utility,"  $r = .67$ ,  $M = 5.20$ ,  $SD = 1.44$ . The correlation between the factors ranged from .00 to .363, which indicates fair independence between them (See Table 4-2).

Items responding to these factors can be analyzed from previous research conceptualizations reviewed earlier. Just as Putnam (2000) conceptualized, mobile phone users have bonding and bridging motives: Two main factors found were Bridging and Bonding. However, it seems more complicated than a simple categorization or distinction: While the Bridging dimension seemed to be relatively simple, the traditional concept of bonding was found to encompass three other dimensions. Bonding, Support Exchange with Friends, and Convenience for Bonding were composed of the items involving social interaction motives for mobile phone use with close friends.

What is also interesting is that two factors, Relational Maintenance and Business Utility, were found not to be dictated by social ties: They were more about the functional utility of the mobile phone. Regardless of social ties, people expected that the mobile phone would serve as a channel to resolve conflicts and improve relationships with both close friends and acquaintances. As the mobile phone first appeared as a business tool (Wei & Lo, 2006), it was not surprising to see Business Utility as a factor.

Table 4-1: Factor Loadings Using Principal Axis Factoring and Direct Oblimin Rotation

Items	Bridging	Bonding	Support Exchange with Friends	Relational Maintenance	Convenience for Bonding	Business Utility
To keep in contact with acquaintances who live far away from you	<b>.83</b>	.15	-.15	.02	.13	.01
To express caring with acquaintances	<b>.77</b>	-.17	.38	.00	.04	.03
To feel caring with acquaintances	<b>.77</b>	-.17	.41	.01	.02	.02
To keep in contact with acquaintances when you don't have enough time to see them in person	<b>.70</b>	.27	-.15	-.06	.07	.06
To keep in touch with acquaintances	<b>.69</b>	.25	-.17	-.01	-.04	.11
To communicate personal messages with acquaintances	<b>.66</b>	.23	-.12	-.13	-.1	.08
For a feeling of companionship with acquaintances	<b>.63</b>	-.13	.16	-.20	.00	.08
To share concerns with acquaintances	<b>.62</b>	-.17	.17	-.11	.08	.15
To give and receive information with close friends	-.06	<b>.83</b>	.16	.03	-.00	.07
To send and receive personal messages	.04	<b>.83</b>	-.00	.01	-.14	-.03
To keep in touch with close friends	.07	<b>.81</b>	-.03	.04	.08	.01
To communicate personal messages with close friends	-.05	<b>.79</b>	.17	-.03	-.03	-.01
To keep in contact with close friends when you don't have enough time to see them in person	.05	<b>.69</b>	.04	-.08	.1	.02
To keep in contact with close friends who	.1	<b>.62</b>	-.09	.02	.23	-.09

live far away from you						
To express caring with close friends	.08	.16	<b>.83</b>	-.05	.05	.04
To feel caring with close friends	.08	.14	<b>.79</b>	-.05	.08	.03
To share concerns with close friends	-.08	.13	<b>.60</b>	-.21	.16	.04
To resolve conflicts with close friends	-.21	.04	.07	<b>-.79</b>	.10	.04
To resolve conflicts with acquaintances	.17	-.07	-.03	<b>-.73</b>	-.06	.12
To improve relations with close friends	-.07	.07	.11	<b>-.70</b>	.09	-.14
To improve relations with acquaintances	.33	-.07	-.06	<b>-.65</b>	-.01	-.03
To have immediate access anytime to close friends	.02	.00	.05	.02	<b>.94</b>	.06
To have immediate access anywhere to close friends	.01	-.01	-.01	-.07	<b>.91</b>	-.01
To communicate non-personal or business messages with close friends	-.14	.04	.05	.02	.02	<b>.89</b>
To communicate non-personal or business messages with acquaintances	.18	-.06	-.06	.01	.02	<b>.74</b>
<hr/>						
Eigenvalue	7.87	4.03	3.08	1.67	1.31	1.14
Proportion of Variance	31.5%	16.11%	12.32%	6.68%	5.22%	4.57%

Table 4-2: Factor Correlation Matrix

Factor	1	2	3	4	5	6
1. Bonding	1.00					
2. Bridging	.15	1.00				
3. Support Exchange with Friends	.11	.03	1.00			
4. Relational Maintenance	-.33	-.08	-.33	1.00		
5. Convenience for Bonding	.13	.27	.32	-.36	1.00	
6. Business Utility	.36	.00	.15	-.13	.11	1.00

*Different motives & different channels.* Research question 2 concerns whether there is a difference between bonding and bridging motives in their relationships with the use of different interpersonal communication channels in the mobile phone. As previously mentioned, mobile phone use intensity was used to investigate research questions. However, the skewness of data for the use of some interpersonal communication channels in the mobile phone was too large to fix (See Table 4-3). None of transformations, such as logarithmic, square-root and inverse transformations, worked to fix the skewness. Other mobile phone use measures, namely frequency and time in minutes, had the same issue. Therefore, nonparametric correlations were calculated to test RQ2. The residuals, or errors, were extracted by regressing each of the variables that are interpersonal communication channels in the mobile phone on the control variables for the testing.

The results of nonparametric correlations showed that voice mail and texting were significantly, positively associated with bonding motives. There was a moderately significant, positive relationship between bridging motives and texting, *Spearman's rho* = .099, *p* = .090, but voice mail was not related to bridging motives. Video calling and email were significantly,

positively associated with bridging motives although there was a moderately significant, positive relationship between email and bonding motives (*Spearman's rho* = .111, *p* = .059). For both bonding and bridging, respondents reported that they used instant messaging, online discussion forum, and apps for social networking sites. Neither bonding nor bridging motives were significantly associated with voice calling or dating apps. Table 4-4 reports a summary of the results.

Table 4-3: Descriptive Statistics of Use Intensity of Different Channels in the Mobile Phone

	M	SD	MIN	MAX	Skew
Voice Calling	5.34	1.77	1	7	-1.170
Voice Mail	4.20	1.77	1	7	-.029
Video Calling	1.91	1.53	1	7	1.700
Texting	6.68	.90	1	7	-3.924
Email	4.37	2.49	1	7	-.330
Instant Messaging	2.72	2.24	1	7	.892
Online Discussion Forum	1.73	1.43	1	7	2.140
SNS Apps	4.67	2.58	1	7	-.535
Dating Apps	1.18	.82	1	7	5.153



Table 4-4: Use of Different Interpersonal Communication Channels According to Bonding & Bridging Motives

	Bonding	Bridging
Voice Calling	$\rho = -.021$	$\rho = -.040$
Voice Mail	$\rho = .133^*$	$\rho = .087$
Video Calling	$\rho = .000$	$\rho = .131^*$
Texting	$\rho = .226^{***}$	$\rho = .099^+$
Email	$\rho = .111^+$	$\rho = .254^{***}$
Instant Messaging	$\rho = .119^*$	$\rho = .205^{***}$
Online Discussion Forum	$\rho = .117^*$	$\rho = .175^{**}$
SNS Apps	$\rho = .116^*$	$\rho = .134^*$
Dating Apps	$\rho = -.038$	$\rho = .063$

Note:  $^+ p < .10$ ,  $^* p < .05$ ,  $^{**} p < .01$ ,  $^{***} p < .001$ , for  $n = 291$  (two-tailed)

*Predictors of social capital outcomes.* Research question 3 is interested in to what extent the use of each interpersonal communication channel in the mobile phone can predict individuals' life satisfaction. Nonparametric correlations were conducted to see the relationships between individual interpersonal communication channels and satisfaction with life. The results showed a statistically significant, positive relationship between texting and life satisfaction (*Spearman's*  $\rho = .168$ ,  $p < .01$ ). Also, there was a moderately significant, positive relationship between email and life satisfaction ( $\rho = .105$ ,  $p = .074$ ). None of the other channels were found to be significant (See Table 4-5).

Research question 4 concerns to what extent the use of each interpersonal communication channel in the mobile phone can predict individuals' social trust. Nonparametric correlations were conducted to see the relationships between individual interpersonal communication channels and social trust. Interestingly, there was a statistically significant, negative association between the use of voice mail and social trust ( $\rho = -.145$ ,  $p < .05$ ). In addition, moderately significant, negative associations were found in instant messaging ( $\rho = -.099$ ,  $p = .092$ ) and

online discussion forum ( $\rho = -.108, p = .066$ ). None of other channels were found to be significant (See Table 4-5).

Research question 5 addresses to what extent the use of different interpersonal communication channels in the mobile phone can predict individuals' civic engagement activities. The results of nonparametric correlations reported that email was the only interpersonal communication channel in the mobile phone that was significantly, positively associated with civic engagement activities (*Spearman's rho* = .191,  $p < .01$ ). Table 4-5 reports a summary of the results. Research question 6 is interested in to what extent the use of different interpersonal communication channels in the mobile phone can predict individuals' offline social leisure activities. Analyses of nonparametric correlations reported that there were statistically significant, positive relationships for texting ( $\rho = .170, p < .01$ ), email ( $\rho = .208, p < .001$ ), and SNS ( $\rho = .137, p < .05$ ). No significant results were found for other channels (See Table 4-5).

Table 4-5: Different Interpersonal Communication Channels' Correlation with Life Satisfaction, Social Trust, Leisure Activities and Civic Engagement

	Life Satisfaction	Social Trust	Civic Engagement	Leisure Activities
Voice Calling	$\rho = .087$	$\rho = -.015$	$\rho = .094$	$\rho = .062$
Voice Mail	$\rho = .088$	$\rho = -.145^*$	$\rho = .071$	$\rho = .019$
Video Calling	$\rho = .012$	$\rho = .015$	$\rho = .038$	$\rho = .053$
Texting	$\rho = .168^{**}$	$\rho = -.010$	$\rho = .025$	$\rho = .170^{**}$
Email	$\rho = .105^+$	$\rho = -.089$	$\rho = .191^{**}$	$\rho = .208^{***}$
Instant Messaging	$\rho = .011$	$\rho = -.099^+$	$\rho = .076$	$\rho = .056$
Online Discussion Forum	$\rho = .012$	$\rho = -.108^+$	$\rho = .034$	$\rho = .009$
SNS Apps	$\rho = .084$	$\rho = -.087$	$\rho = .096$	$\rho = .137^*$
Dating Apps	$\rho = -.039$	$\rho = .007$	$\rho = .015$	$\rho = -.026$

Note:  $^+ p < .10$ ,  $* p < .05$ ,  $** p < .01$ ,  $*** p < .001$ , for  $n = 291$  (two-tailed)

### *Model Testing*

A path analysis was used to test the proposed theoretical model. The residuals, which were retained by regressing each of the key measured variables on the control variables (i.e., age, gender, race, education, relationship status, the number of social group memberships, job status and data collection periods) in SPSS, were imported into AMOS 19 to test the model (Gunther et al., 2006). The model was assessed using the chi-square goodness-of-fit statistic, which is sensitive to large sample size ( $n = 291$ ), along with the root mean square error of approximation (RMSEA) index, the comparative fit index (CFI), and the standardized root mean square residual (SRMR).

Path analysis with maximum likelihood estimation for the initial model was performed. The initial fit for the theoretical model was not particularly good:  $\chi^2 = 103.19$ ,  $df = 30$ ,  $p < .001$ , RMSEA = .09 (90% confidence interval = .07 - .11), CFI = .78, SRMR = .07 (See Figure 4-2). It seemed there were various reasons for the bad fit of the model, including the paths that were not significant. During model developments, some paths were added or removed based on their statistical significance, their theoretical interest, and the modification indices. By doing so, a parsimonious model with a better fit was expected to be built. The following explains the steps taken to improve the model fit: Firstly, the path from mobile phone-mediated self-disclosure to perceived social support and that from social support to social trust were removed as they appeared statistically not significant. The test of the original model showed that motives for social interactions did not lead to mobile phone-mediated self-disclosure ( $\beta = .00$ ,  $p = .98$ ). However, the path from motives for social interactions to mobile phone-mediated self-disclosure was retained due to its theoretical interest. In the subsequent analysis, the model fit was not

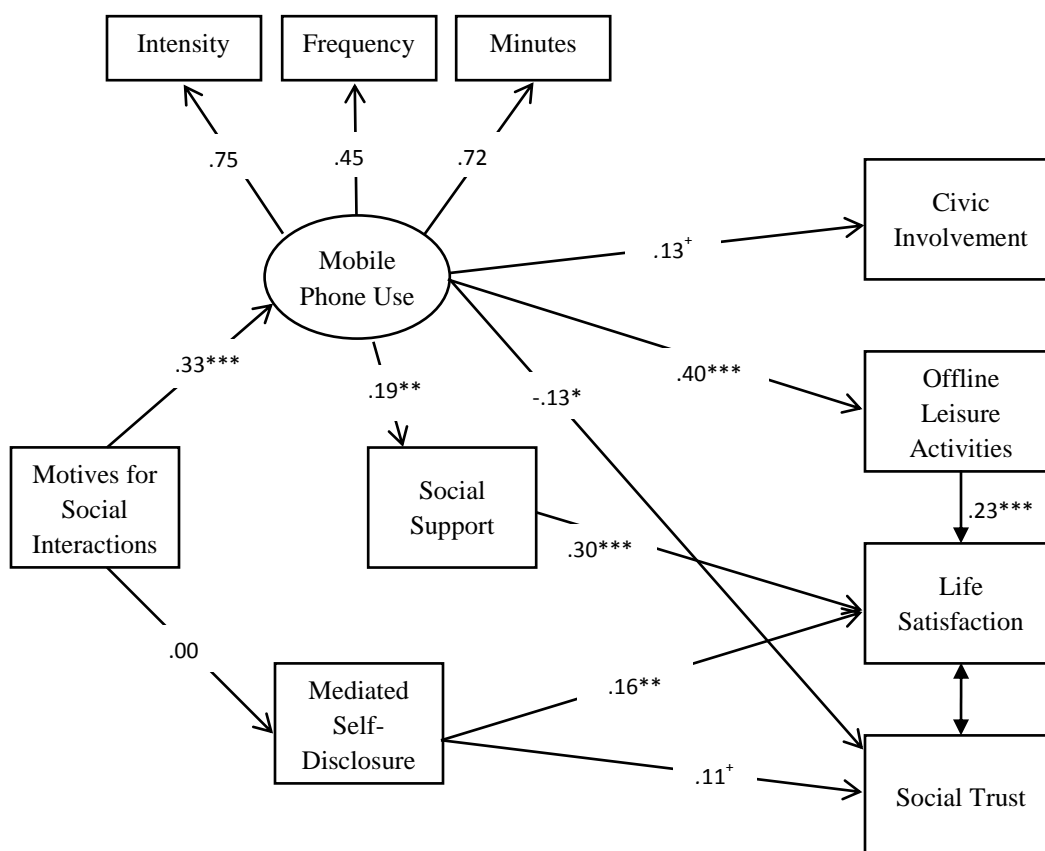
substantially improved:  $\chi^2 = 104.66$ ,  $df = 32$ ,  $p < .001$ , RMSEA = .09 (90% confidence interval = .07 - .11), CFI = .78, SRMR = .08.

Secondly, the modification indices suggested that error terms of life satisfaction and social trust were correlated. In addition, they suggested a path from life satisfaction to social trust and that from social trust to life satisfaction. Helliwell and Putnam (2004) conceived and found that people who think they live around trustworthy people would report higher levels of life satisfaction. They found significant correlational results. However, an alternative explanation seems to be also plausible: If people are generally satisfied with their well-being, they might be very positive about their surroundings, including other people. Therefore, instead of choosing a path between the two suggested paths, the error terms of life satisfaction and social trust were correlated. The analysis of the model fit reported:  $\chi^2 = 81.95$ ,  $df = 31$ ,  $p < .001$ , RMSEA = .08 (90% confidence interval = .06 - .10), CFI = .85, SRMR = .07.

Thirdly, the modification indices suggested a path from offline social leisure activities to life satisfaction. Because social interactions through leisure activities can predict life satisfaction (Leung & Lee, 2005), the path was added. After modifying the fit and adjusting paths, the model fit was improved from the original model:  $\chi^2 = 67.58$ ,  $df = 30$ ,  $p < .001$ , RMSEA = .07 (90% confidence interval = .05 - .09), CFI = .89, SRMR = .06. However, the results of the subsequent analysis reported that the direct path from mobile phone use to life satisfaction was not significant ( $\beta = .01$ ,  $p = .86$ ). Phantom variables were generated to examine the significance of each of the indirect path between mobile phone use and life satisfaction via social support and leisure activities (Macho & Ledermann, 2011). Bootstrapping procedures using 2000 bootstrap samples and bias-corrected confidence intervals were employed to test the relationship between mobile phone use and life satisfaction via social support and leisure activities. The results

reported significant indirect effects for social support and leisure activities, social support:  $\beta = .06, p < .01$ ; leisure activities:  $\beta = .09, p < .001$ . After deleting the direct path from mobile phone use to life satisfaction, one more analysis was performed. The fit of the finalized model was,  $\chi^2 = 67.61, df = 31, p < .001, RMSEA = .06$  (90% confidence interval = .04 - .09), CFI = .89, SRMR = .06 (See Figure 4-3).

Figure 4-3: Finalized Path Model with Overall Motives for Social Interactions (Standardized)



Note: <sup>+</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , for  $n = 291$  (two-tailed)

Although the results reported that the path from social interaction motives to mediated self-disclosure was not significant, it was retained in the model. The decision was made based on the literature that argues people tend to disclose personal, sensitive information more to close

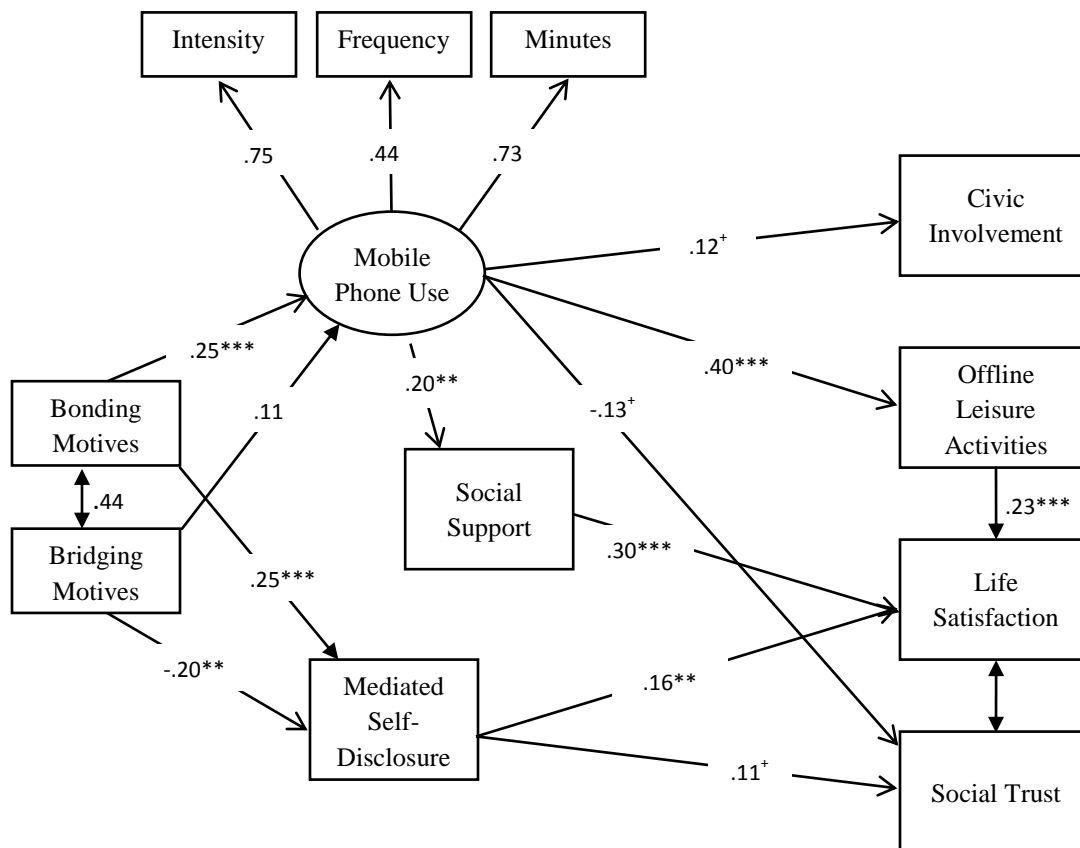
others than acquaintances (Chaikin & Derlega, 1974). Therefore, it was assumed that the path might work better if the original model was tested with bonding and bridging motives as two exogenous variables, instead of overall social interaction motives (Figure 4-1). In the initial analysis of the model with bonding and bridging motives, the overall fit statistics showed that the model did not fit the data very well:  $\chi^2 = 146.05$ ,  $df = 37$ ,  $p < .001$ , RMSEA = .10 (90% confidence interval = .08 - .12), CFI = .75, SRMR = .08. As seen when testing hypothesis 5, bonding motives led to mobile phone-mediated self-disclosure; there was a statistically significant, inverse relationship between bridging motives and mobile phone-mediated self-disclosure.

Besides that, the initial analysis for bonding motives indicated a strong similarity to the pattern of the overall model analyses. The path from mobile phone-mediated self-disclosure to perceived social support and that from social support to social trust were not statistically significant, and therefore removed. Although bridging motives appeared to be not significantly associated with mobile phone use ( $\beta = .12$ ,  $p = .11$ ), the path between them was retained due to theoretical interest. Error terms of life satisfaction and social trust were correlated, based on suggestions from the modification indices and the theoretical reason explained above (Helliwell & Putnam, 2004). The model fit analysis reported,  $\chi^2 = 124.87$ ,  $df = 38$ ,  $p < .001$ , RMSEA = .09 (90% confidence interval = .07 - .11), CFI = .80, SRMR = .07.

In the subsequent analysis, a path from offline social leisure activities to life satisfaction was added. The modification indices suggested this path, which seemed consistent with the findings of Leung and Lee's study (2005). This analysis reported,  $\chi^2 = 110.05$ ,  $df = 37$ ,  $p < .001$ , RMSEA = .08 (90% confidence interval = .07 - .10), CFI = .83, SRMR = .07. However, the results showed that the direct path from mobile phone use to life satisfaction was statistically not

significant ( $\beta = .01, p = .94$ ), and therefore removed. The fit of the final model for bonding and bridging motives was improved from its initial model:  $\chi^2 = 110.05, df = 38, p < .001, RMSEA = .08$  (90% confidence interval = .06 - .10), CFI = .84, SRMR = .07 (Figure 4-4). Using phantom variables (Macho & Ledermann, 2011), bootstrapping procedures using 2000 bootstrap samples and bias-corrected confidence intervals were employed to test the relationship between mobile phone use and life satisfaction via social support and leisure activities. Significant indirect effects for social support ( $\beta = .06, p < .01$ ) and leisure activities ( $\beta = .09, p < .001$ ) were found.

Figure 4-4: Finalized Path Model with Bridging and Bonding Motives (Standardized)



Note: <sup>+</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , for  $n = 291$  (two-tailed)

*A summary of model testing results.* The two modified models (Figures 4-3, 4-4) show that mobile phone use is predicted by bonding motives but not by bridging motives. Self-disclosure is positively predicted by bonding motives but negatively predicted by bridging motives. Mobile phone use is significantly associated with civic involvement and offline social leisure activities. Life satisfaction is predicted by mobile phone use via social support and leisure activities. Life satisfaction is also predicted by mobile phone-mediated self-disclosure. Social trust is positively predicted by self-disclosure but negatively predicted by mobile phone use.



## Chapter 5

### Discussion

The current study investigated processes and effects of mobile phone use for social interactions. Based on theoretical foundations of social capital, uses and gratifications theory, and relationship theories, the present study examined how motivations for social interactions influenced mobile phone use patterns, a mobile phone-mediated self-disclosure tendency, and subsequent perceptions and behavioral patterns, such as perceived social support, life satisfaction, social trust, social leisure activities, and civic engagement. This section discusses the results of hypothesis and research question testing, and general theoretical and practical implications. In addition, limitations and suggestions for future research are presented toward the end of this chapter.

#### *Theoretical Implications*

*Social capital & uses and gratifications.* This study found that bridging motives for social interactions were not related to mobile phone use, whereas bonding motives were positively related to mobile phone use (See Figure 4-1). That is, as participants expressed stronger motivations to contact close friends (i.e., bonding motives), they reported greater mobile phone use. In contrast, participants' strength of motivations for contacting acquaintances for various purposes (i.e., bridging motives) was not associated with the amount of mobile phone use. In other words, even if a person has strong motivations to contact acquaintances, s/he would not necessarily use the mobile phone: The mobile phone would not be perceived as a tool for an individual to contact others with whom s/he has weak ties. Therefore, the results of bridging motives, unlike those of bonding motives, seemed not to be consistent with uses and gratifications theory in the sense that stronger motivations did not lead to greater media use

(Katz et al., 1974; Palmgreen, 1984; Rubin, 2009). However, no association appeared perhaps because of mobile phone use time in minutes: There was a weak association between bridging motives and mobile phone use time, whereas bridging motives were significantly related to mobile phone use intensity and frequency (See Table 3-3). One possible interpretation is that participants would contact acquaintances whenever they need to do but try to achieve what they intend to do during the short period of mobile phone contact time.

The relationship between motivations and mobile phone use was further explored by examining the relationships between bridging motives and individual interpersonal communication channels in the mobile phone and those between bonding motives and the channels (See Table 4-4). Results reported that participants expressed relatively stronger use intensity of voice calling ( $M = 5.34$ ), voice mail ( $M = 4.20$ ), texting ( $M = 6.68$ ), email ( $M = 4.37$ ), and SNS apps ( $M = 4.67$ ), compared with video calling ( $M = 1.91$ ), IM ( $M = 2.72$ ), online discussion forum ( $M = 1.73$ ), and dating apps ( $M = 1.18$ ) (See Table 4-3). In general, the findings involving some of the individual channels were considered to be consistent with the motivation-use postulation by uses and gratifications, while others were not (Katz et al., 1974; Palmgreen, 1984; Rubin, 2009). As participants expressed stronger motivations for contacting close friends, they reported greater use of voice mail, texting, IM, online discussion forum and SNS apps; there was a weak but positive association between bonding motives and email use as well. Bonding motives were neither positively nor negatively associated with any of voice calling, video calling, or dating apps. In contrast, participants' motivations for contacting acquaintances were positively related to the use of video calling, email, IM, online discussion forum, and SNS apps, separately; there was a weak but positive relationship between motivations

for contacting acquaintances and texting (See Table 4-4). Bridging motives were neither positively nor negatively related to any of voice calling, voice mail, or dating apps.

These results may indicate that people tended not to use voice mail when they contacted acquaintances but to use it when they contacted close friends. Participants reported they didn't use video calling very much ( $M = 1.91$ ). When they used it, however, they did not use video calling to get connected with close friends but with others whom they had weak ties with. Texting was found to be a much-used channel for contacting close friends, while there was a weak yet positive relationship between bridging motives and texting. That is, even if participants reported a very strong use intensity of texting ( $M = 6.68$ ), it could be mostly for interacting with close friends. In contrast, email was a much-used channel for contacting acquaintances, while there was a weak but positive association between bonding and email for those who wanted to contact others with whom they had strong social ties. That is, if a person sends an email via the mobile phone, it would be highly possible that s/he tries to communicate with acquaintances. The results on texting and email together may indicate that people are relatively less concerned about quick responses when they communicate with acquaintances than with close friends. Interestingly, voice calling was associated with neither bonding motives nor bridging motives although participants reported the fairly strong use intensity of the channel ( $M = 5.34$ ). Voice calling would have arguably been the main communication channel in the mobile phone. Perhaps, there are some other types of motives, besides bridging and bonding, for the use of voice calling, which was beyond the scope of the current study. In sum, from a perspective of uses and gratifications theory (Rubin, 2009), it can be concluded that people (wittingly or unwittingly) acknowledge that a certain channel in the mobile phone offers better functionality for interactions with a certain type of social relations.

In order to examine whether there were additional types of social interaction motives besides bridging and bonding, the current study delved more into motives relevant to social interactions that the uses and gratifications literature had identified. This attempt was propelled by one study that found maintenance motives in addition to bonding and bridging motives for Facebook use (Ellison et al., 2007). Six different types of social interaction motivations were identified, namely Bridging, Bonding, Support Exchange with Friends, Relational Maintenance, Convenience for Bonding, and Business Utility (See Table 4-1). As the social capital literature suggests (e.g., Helliwell & Putnam, 2004; Putnam, 2000), two main factors found were Bridging and Bonding. What is interesting, though, is that three factors—Bonding, Support Exchange with Friends, and Convenience for Bonding—can be categorized as part of the social capital literature’s traditional conceptualization of bonding.

In contrast, the Bridging dimension appears much simpler (See Table 4-1). But no motivation item relevant to information-seeking was found to belong to the Bridging dimension, which seemed to contradict the social capital literature: The literature suggests that novel information is an essential resource that can be obtained from one’s weak ties (Granovetter, 1983). Perhaps, it is because people don’t know very much about their acquaintances and therefore don’t know what information can be accessed through their acquaintances. In this sense, if a person is encouraged to interact more with socially distant others or weak ties and actually get connected, s/he would learn more about possible information available and could mobilize it later. The rest two dimensions, namely Relational Maintenance and Business Utility, seemed to be dictated not by types of social ties but by the functional utility of the mobile phone. People tended to perceive the mobile phone as a useful tool to improve or maintain relationships

with people of different social ties. Business Utility could mean that the mobile phone keeps its initial identity as a business tool (Wei & Lo, 2006).

This study found a positive relationship between mobile phone use and life satisfaction (See Figures 4-1, 4-2), as the social capital literature suggests (Valenzuela et al., 2009). The relationship was further explored with considering each of the interpersonal communication channels (See Table 4-5). Participants who expressed a greater amount of mobile phone use reported stronger life satisfaction. Of the various communication channels within the mobile phone, results indicated the more people's texting, the stronger their life satisfaction. A weak, positive association was found between email and life satisfaction, indicating that people might get satisfied more with life as they interacted with others via email.

However, inconsistent with what the social capital literature suggests (e.g., Campbell & Kwak, 2010b; Valenzuela et al., 2009), mobile phone use was not positively associated with social trust (See Figures 4-1, 4-2). The relationship was further explored with considering each of the interpersonal communication channels (See Table 4-5). More interestingly, there was only an inverse relationship between the use of some channels and social trust. As participants used voice mail more, they trusted others less. Social trust's weak, negative associations with IM and discussion forum were also found, while none of other interpersonal communication channels were significantly related to social trust. The results not only failed to support what the social capital literature suggests but also reported negative effects of some channels on social capital. In particular, it was interesting to see no relationship between the use of SNS apps and social trust, although previous studies found SNS sites positively influenced social trust (e.g., Valenzuela et al., 2009). Perhaps the amount of use of certain channels was negatively associated with those channels due to certain characteristics of them. For instance, some people may want to use voice

mail because they want to avoid even direct, mediated interaction for some possible multiple reasons. However, it was beyond the capacity of the current study to identify reasons for such relationships.

Results showed that there was a weak, positive relationship between mobile phone use and civic engagement activities (See Figures 4-1, 4-2). Multiple interpretations seem to be possible for this finding. One possible interpretation is that mediated interactions with others could lead individuals to participation in civic involvement activities (Campbell & Kwak, 2010a; Valenzuela et al., 2009). People might get motivated to participate in those activities by some information shared during the mediated interactions. Also, people might use the mobile phone to plan participations in those activities with their communicating other. Among the various channels, email was the only interpersonal communication channel in the mobile phone that was significantly, positively associated with civic engagement activities (See Table 4-5). It is perhaps because email can be relatively more information-rich than other channels: For instance, one could describe detailed, long information about a good deed and/or an opportunity for civic activities in an email message and direct it to specific, similar-minded others, whereas s/he would need to exchange multiple text messages to deliver the same amount of information. In addition, since email can be considered a relatively older media compared to SNS apps, people who don't adopt or use those newer media/channels in the mobile phone might have favored email communication.

As hypothesized (Campbell & Kwak, 2010b), mobile phone use was positively associated with social leisure activities (See Figures 4-1, 4-2). This finding seems to allow for multiple interpretations as well. People might tend to organize social leisure activities via the mobile phone. In addition, people might get motivated to meet with their communicating other

during the mediated interactions. Voice calling, though, was not related to social leisure activity (See Table 4-5), which was inconsistent with previous findings (Campbell & Kwak, 2010b). Social leisure activity was positively associated with texting, email, and SNS apps. Therefore, from the uses and gratifications perspective (Rubin, 2009), people might have the idea that texting, email, and SNS apps offered better functionality to organize social leisure activity than other channels.

*Social capital & relationship theories.* This study found that, contrary to expectations (Holtgraves, 1990), there was no significant relationship between social interaction motives and mobile phone-mediated self-disclosure (See Figure 4-2). However, when the relationship was further tested with two types of social ties based on the social capital literature (Granovetter, 1983; Helliwell & Putnam, 2004), the results of the relationship testing were more theoretically interesting (See Figure 4-1). Participants with strong motives to contact close friends reported that they tended to do greater disclosure of sensitive, personal information to others via the mobile phone. In contrast, as participants' strength of motives for contacting acquaintances increased, they tended to do less self-disclosure via the mobile phone. These findings were consistent with what the self-disclosure literature suggests: People's established closeness and intimacy with others of close ties, such as close friends, family and romantic partners, enable them to share more personal, accurate, in-depth, and potentially humiliating information (Chaikin & Derlega, 1974). In this sense, feelings of intimacy and closeness would be important factors for people to distinguish the strength of their social ties with others (Granovetter, 1983; Helliwell & Putnam, 2004).

As for the relationship between mobile phone-mediated self-disclosure and life satisfaction (Arslan et al., 2010; Rosenfeld, 1979), this study found a direct relationship between

them (See Figures 4-1, 4-2). But the relationship was not mediated by perceived social support as expected (Lippert & Prager, 2001). More specifically, while social support was positively related to life satisfaction as expected (Clark, 2007; Leung & Lee, 2005; Sherman et al., 2006), there was no relationship between mediated self-disclosure and perceived social support. One interpretation of this is that, when people disclosed their personal, sensitive, and potentially humiliating information to others via the mobile phone, they might not necessarily look for support from their communicating other. In other words, mobile phone-mediated self-disclosure itself, perhaps, can be therapeutic and does not necessarily require social support for perceived psychological wellness to occur.

Mobile phone-mediated self-disclosure was also found to influence social trust (Wheless & Grotz, 1976), although the relationship between the two was weak. However, the relationship between self-disclosure and social trust was not mediated by perceived social support via the mobile phone (See Figures 4-1, 4-2). Specifically, social support was related neither self-disclosure (Lippert & Prager, 2001) nor social trust (Franzini, 2008; Rempel et al., 1985) contrary to expectations. As noted above, a person might disclose about himself/herself for the purpose of self-therapy but without necessarily intending to look for support. In addition, one possible interpretation of this finding is that people may obtain stronger feelings of security about their relationships with close friends after self-disclosure, leading to increases in their perceptions about trustworthiness of others in general (Rosenfeld, 1979). This interpretation might receive indirect support from the finding that mobile phone-mediated self-disclosure was positively related to bonding but negatively to bridging motives.

However, this study found the positive association between mobile phone use and perceived social support as expected (Cohen, 2004; Ellison et al., 2011; Williams, 2006). That is,



as people's use of the mobile phone increased, they tended to think more that there were others available for help through the mobile phone (See Figures 4-1, 4-2). Therefore, the mobile phone was perceived as an important tool through which people could obtain social support from others.

*Revised path models.* As the fit of the original path model (See Figure 4-2), which included all the key variables of interest, was not good, the model was revised and modified. The modifications, which were based on theoretical and empirical rationale, led to the finalized model that displayed the mechanisms regarding individuals' mobile phone-mediated social interactions and related outcomes (See Figure 4-3). In addition, another version of the original model was created as noted in the previous chapter: In this model, overall social interaction motives were replaced with bonding and bridging motives (See Figure 4-4). After a series of modifications, the two finalized models were almost identical except for their exogenous variables.

Firstly, the two models showed that social interaction motives predicted mobile phone use. More specifically, mobile phone use was predicted by bonding motives but not by bridging motives. Overall social interaction motives didn't lead to mobile phone-mediated self-disclosure. However, this was because self-disclosure was positively predicted by bonding motives but negatively predicted by bridging motives. Mobile phone use led to civic involvement activities and social leisure activities. Life satisfaction was also predicted by mobile phone-mediated self-disclosure. Social trust was positively predicted by self-disclosure but negatively predicted by mobile phone use.

One of the most interesting findings was that the amount of mobile phone use, i.e., mediated social interactions, did not directly lead to life satisfaction but indirectly led to life satisfaction via social leisure activities and via perceived social support. In the initial hypothesis

testing, there was a positive relationship between mobile phone use and life satisfaction.

Although the literature suggests the direct relationship between mediated social interaction and life satisfaction (Valenzuela et al., 2009), the findings of this study might indicate that social interactions should include desirable content or resources to make people more satisfied with life. In other words, when a person's social interactions are mediated via the mobile phone, there should be appropriate responsiveness from his/her communicating other. Otherwise, the mediated interactions would not influence his/her life satisfaction. This interpretation seemed to get support from the significant path from mobile phone-mediated self-disclosure to life satisfaction. Also, if a person's mediated social interactions were used to organize offline social leisure activities, s/he was able to interact with others more, leading to stronger life satisfaction. This indirect path suggested that mobile phone-mediated social interactions might not be able to substitute for face-to-face interactions unless there was sufficient support or resources provided during mediated social interactions. Therefore, both quality and quantity of social interactions are important for life satisfaction (Kiecolt-Glaser & Newton, 2001).

Another interesting finding from the two finalized models is the inverse association between mobile phone use and social trust. In the initial hypothesis testing, mobile phone use was not significantly associated with social trust, although the direction of the relationship was negative. It was not clear why the amount of mobile phone use negatively impacted social trust. However, in the two models, mobile phone-mediated self-disclosure appeared to positively influence social trust although the relationship between the two was somewhat weak. Similar to what was mentioned above, this might indicate that what was actually exchanged during mediated social interactions mattered to yield positive outcomes. Also, it could be possible that

characteristics of some of the interpersonal communication channels in the mobile phone yield the inverse relationship as noted earlier.

### *Practical Implications*

Given the results of the current study, it is recommended that more interpersonal communication channels on the go need to be developed. For the past few decades, the telephone spawned the mobile phone (with voice calling only). Then, the mobile phone started to include more interpersonal communication channels, ranging from texting to Internet connection-based video calling, IM, SNS apps, etc. In addition, the mobile phone has evolved not only by including new interpersonal communication channels but also adding new functions to the existing channels. For instance, voice calling has evolved with a new function of 3-way calling. Therefore, there seem unlimited possibilities for developing and adding new, various interpersonal communication channels to the mobile phone, especially to the smartphone. For instance, a variety of applications of interpersonal communication channels can be developed by engineers and selectively added to the smartphone by its owner, based on the owners' certain needs. That is, application developers can create products for a new, niche market that targets a certain group of people who are in need of certain types of virtual environment for mediated interactions. However, the results of this study indicated that some channels would not necessarily work for psychological wellness and social trust. Therefore, developers of new media technologies are recommended to more cautiously think about devising the channels that would facilitate positive experiences with mediated social interactions.

In addition, the mobile phone could be used as a tool that helps people with depressive symptoms. If they get to interact more with others through various channels within the mobile phone, they might have a better chance to experience more social support from others and to

create opportunities for social leisure activities. These mediated interactions possibly result in improved psychological wellness. In that sense, support groups for psychological wellness could device various ways to make their members communicate more with other members, close friends, family, and confidants so that they could be socially active and benefit from social contacts.

### *Limitations & Future Research Considerations*

There were questions raised on the generalizability of the results of this study. Firstly, a non-probability sampling technique was employed for the current study. The sample was composed mostly of White and college students, who obviously could not represent the general population of mobile phone users. In addition, since the sample was a convenience sample, it was hard to tell that the sample represents college students in the U.S. According to a recent report, however, 67% of the people aged 18-24 were smartphone owners in the United States as of February 2012 (Pew Research Center, 2012). In the current study, 65.29% of the respondents were smartphone owners. In addition, the report (Pew Research Center, 2012) said 71% of the people aged 25-34 and 54% of the people aged 35-44 were smartphone owners. Although the percentage decreased for other older age groups, a total of 46% of all adults in the U.S. were smartphone owners as of February 2012, a leap from 35% in May 2011. Therefore, the sample of the current study seems to have achieved a certain level of representativeness at least for the U.S. adults aged 18-34.

However, it was also possible that some of the results might also be due to the nature of the student sample. In particular, the lack of an association between bridging motives and mobile phone use may reflect that undergraduate respondents didn't feel in need of reaching acquaintances for new information such as jobs until the graduating semester. That is, it might be

possible to see changes in the relationship between bridging motives and mobile phone use (from no relationship to a positive one) when individuals get to work in the field. Yet when they are students, most of what they needed may quite possibly be related to schoolwork and personal (leisure) life, which they could easily obtain from their friends in the campus town environment. A significant, strongly positive relationship between mobile phone use and social leisure activity seemed to tell of a similar story: Students in a campus town live with or nearby their friends, have lunch and dinner together, and hang out on nights and weekends. However, a positive relationship between mobile phone use and social leisure activity was found in a study with a nationally representative dataset as well (Campbell & Kwak, 2010b). In addition, as people become more dexterous with their mobile phone, their attitudes toward the gadget might become positive regardless of their age. Perceived competence with technology is important for users to experience beneficial outcomes such as civic and political engagement (Campbell & Kwak, 2010a). Therefore, the current study might be criticized for its student sample, but the results with the sample would make it possible to examine what would be the possible, maximum benefits from the mobile phone.

There is another issue related to the sample and the skewness, e.g., mobile phone use frequency and time in minutes. The current study had to remove 91 participants before it moved onto data analysis. The decision on the removal was made as part of effort to prepare firm statistical grounds for generalizability, e.g., normality, so that its results could be generalize to the sample population to a certain degree. However, the current study cannot be free from criticism that it lost too many participants. The skewness of data was mostly associated with outliers in open-ended question items (ratio-level measures). It was possible that those participants were not serious about the study participation or that those participants were just

hyperbolic in their responses. However, the skewness was also found in some of 7-point Likert-type mobile phone use measures, i.e., use intensity of texting and apps of dating sites. That is, it was possible that the skewness reflected the way it was in reality, at least for the college student population.

Another measurement issue is related to scale reliability. Although this study employed and modified existing measures of self-disclosure and social trust, the scale reliability of self-disclosure and that of social trust were somewhat lower than anticipated. Therefore, it is important for future research to devise better measures and implement them.

Despite that the direction of the relationships between the variables of interest was hypothesized based on social capital, uses and gratifications theory, and relationship theories, the present study cannot be free from criticisms on its causality claim. The results of this study were based on survey results, possibly raising a concern for the temporal precedence of the variables of interest. The decision to use the survey technique was made in consideration of the nature of the mobile phone, which made it difficult to design an experimental study that manipulated social interaction motives or mobile phone use patterns. It would be beneficial if future research finds a better way to establish temporal precedence and quantitatively investigate relationships between the variables of interest.

As for causality, some previous studies claimed causal relationships between social capital outcomes. For instance, Leung and Lee (2005) found the positive relationship between leisure activities and life satisfaction, arguing that situational factors, such as leisure activities, could influence perceived life quality. The present study also found a positive relationship between leisure activities and life satisfaction. In addition, Helliwell and Putnam (2004) conceived social trust as a predictor of life satisfaction, but the other causal direction between

them seemed to be also possible as noted earlier. Therefore, the testing of the causal relationships between social capital outcomes would contribute to a more elaborated and theoretically interesting understanding of social capital.

It would be also interesting to examine whether there are possible mediators and moderators for the relationship between mobile phone use and social capital outcomes, such as self-esteem and perceived social connectedness. For instance, Joinson (2004) found that Internet users of low self-esteem tended to prefer email communication, and that those of high self-esteem preferred face-to-face. In addition, it seems possible that the feeling of being connected to others, or sense of belonging, may function as a mediator for the relationship between mobile phone use and life satisfaction: If the use of the interpersonal communication channels in the mobile phone would be driven by social interaction motives, then it seems possible that the relationship between mobile phone use and life satisfaction is mediated by the perception of social connectedness.

The current study was designed to only account for the perspective of the initiator of mobile phone-mediated social interactions. However, since social interactions, in nature, require at least two communicating parties (Darley & Fazio, 1980), it would be beneficial if future research accounts for two communicating parties, what they actually exchange during the interactions, and what outcomes they experience. In addition, since the mobile phone today offers functions with which multiple people can participate in mediated social interactions, such as 3-way calling, it would also be theoretically interesting to see whether or not there are differences in effects between mediated social interactions of two communicating parties and those of three or more communicating parties.

Despite political engagement as one of the main concepts of interest in the social capital literature (Putnam, 2000), the current study did not investigate the concept because it was conducted during a non-election period. As previous studies found a positive relationship between media use and political participation (e.g., Campbell & Kwak, 2010a), it is important for future research to assess the impact of mobile phone use on political involvement.

Finally, there seems a plethora of opportunities for research on different types of smartphone apps and their implications for social capital. People can access SNS sites via apps as well as install a variety of apps for social interactions. Some of those apps are hybrids of IM, texting, voice mail, and/or voice calling. That is, there can be multiple layers of convergent media inside the convergent mobile phone. In addition, there are various apps of massively multiplayer online role-playing games, or also known as MMORPGs, with which people from all around the world can create a clan and play together or against other clans. Besides apps for interpersonal communication, other types of apps, such as podcasts, might be related to social capital outcomes, especially civic and political engagement. As apps are recent, on-going, and growing developments, very little research has been done and countless study opportunities seem to be available.

### *Conclusion*

This study examined how different types of social interaction motives would influence the quantity, the content, and the quality of interactions via the mobile phone, resulting in social capital outcomes. The results of this study indicated that participants' bonding motives were positively related to mobile phone use and to mobile phone-mediated self-disclosure. In contrast, participants' bridging motives were not associated with mobile phone use but negatively related to mobile phone-mediated self-disclosure. Mobile phone use directly, positively related to more



perceived social support, civic engagement activities, and social leisure activities, but indirectly related to life satisfaction (via social support and social leisure activities). Mobile phone use was negatively associated with social trust. In contrast, participants' mobile phone-mediated self-disclosure was directly related to stronger life satisfaction and to social trust. With the results, this study suggests that the investigation on the implications of interpersonal media, such as the mobile phone, should take into consideration of the quantity, the content, and the quality of the mediated interactions. In addition, new media technologies, especially those relevant to interpersonal communication, could yield positive social capital outcomes. Therefore, media technology engineers are encouraged to devise interpersonal communication media that could enhance positive experiences of mediated social interactions.

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## Appendix A

**Social Interaction Motives (1-7 strongly disagree to strongly agree)**

**Instructions:** We are interested in *why you use your mobile phone*. Please, read each statement carefully and indicate your agreement with each item by marking the appropriate number on the line next to the item.

***I use the mobile phone...***

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1. To send and receive personal messages\*
  2. To send and receive non-personal or business messages\*
  3. To keep in touch with close friends
  4. To keep in touch with acquaintances
  5. To keep in contact with close friends when you don't have enough time to see them in person
  6. To keep in contact with acquaintances when you don't have enough time to see them in person
  7. To keep in contact with close friends who live far away from you
  8. To keep in contact with acquaintances who live far away from you
  9. To give and receive information with close friends
  10. To give and receive information with acquaintances
  11. To communicate personal messages with close friends
  12. To communicate personal messages with acquaintances
  13. To communicate non-personal or business messages with close friends
  14. To communicate non-personal or business messages with acquaintances
  15. To share ideas and opinions with close friends
  16. To share ideas and opinions with acquaintances
  17. For fun or pleasure of communicating\*
  18. To feel caring with close friends
  19. To express caring with close friends
  20. To feel caring with acquaintances
  21. To express caring with acquaintances
  22. To share concerns with close friends
  23. To share concerns with acquaintances
  24. For a feeling of companionship with close friends
  25. For a feeling of companionship with acquaintances
  26. To give or receive advice on personal matters or issues with close friends
  27. To give or receive advice on personal matters or issues with acquaintances
  28. To give or receive advice on non-personal matters or issues with close friends
  29. To give or receive advice on non-personal matters or issues with acquaintances
  30. To resolve conflicts with close friends
  31. To resolve conflicts with acquaintances
  32. To improve relations with close friends
  33. To improve relations with acquaintances
  34. For coordinating social events with close friends
  35. For coordinating social events with acquaintances
-

- 
36. To seek updated information on social events\*
  37. To pass time\*
  38. To feel closer to close friends
  39. To feel closer to acquaintances
  40. To schedule appointments\*
  41. To gossip or chat with close friends
  42. To gossip or chat with acquaintances
  43. To have immediate access anywhere to close friends
  44. To have immediate access anywhere to acquaintances
  45. To have immediate access anytime to close friends
  46. To have immediate access anytime to acquaintances
  47. To seek information about products or services\*
  48. To feel involved with what's going on close friends
  49. To feel involved with what's going on with acquaintances

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*Note. \* indicates items of neither bonding nor bridging.*

## Appendix B

**Mobile phone use**

**Instructions:** We are interested in **patterns of your mobile phone usage**. Please, read each statement carefully. Using the 1-7 scale below, indicate your usage of **each interpersonal communication channel within the mobile phone** by marking the appropriate number on the line next to the item.

***I use the following interpersonal communication channels on my mobile phone...***

	<i>Not at all</i>						<i>Very much</i>	
Voice calling	1	2	3	4	5	6	7	
Voice mail	1	2	3	4	5	6	7	
Video calling	1	2	3	4	5	6	7	
Texting	1	2	3	4	5	6	7	
Email	1	2	3	4	5	6	7	
Instant messaging	1	2	3	4	5	6	7	
Online discussion forums	1	2	3	4	5	6	7	
Apps of social networking sites (e.g., Facebook)	1	2	3	4	5	6	7	
Apps for dating sites	1	2	3	4	5	6	7	
Other interpersonal communication apps Please, specify _____	1	2	3	4	5	6	7	

**Instructions:** We are interested in **patterns of your mobile phone usage**. Please, read each question carefully and provide your best estimates.

***Per day on average, how many times (frequencies) do you use the following interpersonal communication channels on your mobile phone?***

	Times per Day
Voice calling	_____
Voice mail	_____
Video calling	_____
Texting	_____
Email	_____
Instant messaging	_____
Online discussion forums	_____
Apps for social networking sites (e.g., Facebook, MySpace)	_____
Apps for dating sites	_____
Other interpersonal communication apps Please, specify _____	_____

**Instructions:** We are interested in **patterns of your mobile phone usage**. Please, read each question carefully and provide your best estimates.

**Per day on average, how many minutes do you use the following interpersonal communication channels within the mobile phone?**

	Minutes per Day
Voice calling	_____
Voice mail	_____
Video calling	_____
Texting	_____
Email	_____
Instant messaging	_____
Online discussion forums	_____
Apps for social networking sites (e.g., Facebook, MySpace)	_____
Apps for dating sites	_____
Other interpersonal communication apps Please, specify _____	_____

## Appendix C

**Life satisfaction (1-7 strongly disagree to strongly agree)**

**Instructions:** Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by marking the appropriate number on the line next to the item. Please, be open and honest in your responding.

In most ways my life is close to my ideal.  
 The conditions of my life are excellent.  
 I am satisfied with my life.  
 So far I have gotten the important things I want in life.  
 If I could live my time over, I would change almost nothing.

**Social trust (1-7 never to all of the time)**

**Instructions:** Carefully read each of the following statements. Using the 1-7 scale below, indicate your thought about each of the items by marking the appropriate number on the line next to the item. Please, be open and honest in your responding.

Generally speaking, most people can be trusted.  
 People try to take advantage of you if they got the chance.\*  
 People try to be fair.  
 You can't be too careful in dealing with people.\*  
 People are just looking out for themselves.\*

Note. \* indicates reverse-coded items for data analysis.

**Leisure activities**

**Instructions:** Below are some activities that you may or may not have engaged in. For each activity listed, please indicate **how many times you do the following activities per month with your free time**. Please, be open and honest in your responding.

**Per month on average, how many times do you...**

	Times per Month
Eat a meal with close friends in a restaurant?	_____
Eat a meal with acquaintances in a restaurant?	_____
Meet close friends for informal socializing?	_____
Meet acquaintances for informal socializing?	_____
Play sport for fun with close friends?	_____
Play sport for fun with acquaintances?	_____
Go to the movies/theater/a concert with friends?	_____

Go to the movies/theater/a concert with acquaintances? \_\_\_\_\_  
 Participate in offline activities of your social groups and clubs? \_\_\_\_\_

### **Civic Engagement**

**Instructions:** Below are some activities that you may or may not have engaged in. For each activity listed, please indicate how many times you do the following activities per month. Please, be open and honest in your responding.

*Per month on average, how many times are you engaged in...*

	Times per Month
Doing volunteer work?	_____
Working on a community project?	_____
Contributing money to a social group?	_____
Contributing money to a social cause?	_____
Going to a community meeting?	_____
Going to a neighborhood meeting?	_____
Working on behalf of a social group?	_____
Working on behalf of a social cause?	_____

## Appendix D

**Self-disclosure (1-7 strongly disagree to strongly agree)**

***Instructions:*** Please think about how you communicate with people using different interpersonal communication channels within your phone. With your experiences in mind, please indicate how much you agree or disagree with each statement.

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*Intended discourse factor*

When I wish, my self-disclosures are always accurate reflections of who I really am.  
 When I express my personal feelings, I am always aware of what I am doing and saying.  
 When I reveal my feelings about myself, I consciously intend to do so.

*Amount factor*

I do not often talk about myself.\*  
 My statements of my feelings are usually brief.\*  
 My communication lasts the least amount of time when I am discussing myself.\*  
 Only infrequently do I express my personal beliefs and opinions.\*

*Positive-negative factor*

I usually disclose positive things about myself.\*  
 On the whole, my disclosures about myself are more negative than positive.

*Honesty-Accuracy Factor*

I cannot reveal myself when I want to because I do not know myself thoroughly enough.\*  
 I am often not confident that my expression of my own feelings and emotions is true reflections of myself.\*  
 I am often not confident that my expression of my own experiences is true reflections of myself.\*  
 I am not always honest in my self-disclosures.\*  
 I do not always feel completely sincere when I reveal my own feelings and emotions.\*  
 I do not always feel completely sincere when I reveal my own behaviors.\*  
 I do not always feel completely sincere when I reveal my own experiences.\*

*Control of general depth factor*

I intimately disclose who I really am, openly and fully in my communication with others.  
 Once I get started, my self-disclosures last a long time.  
 I typically reveal information about myself without intending to.\*

*Relevance-message nature factor*

My messages reveal what I like.  
 My disclosures of personal beliefs and opinions are always directly related to the conversation.

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*Note.* \* indicates reverse-coded items for data analysis.

## Appendix E

**Perceived social support (1-7 strongly disagree to strongly agree)**

*Instructions: We are interested in how you feel about the following statements. Please, read each statement carefully and indicate how you feel about each statement.*

**Using different interpersonal communication channels within the mobile phone helps to...**

Reassure me that there is a special person who is around when I am in need.

Reassure me that there is a special person with whom I can share my joys.

Reassure me that there is a special person with whom I can share my sorrows.

Reassure that my family really tries to help me.

Get me the emotional help and support I need from my family.

Reassure me that there is a special person who is a real source of comfort to me.

Reassure me that my friends really try to help me.

Reassure me that I can count on my friends when things go wrong.

Talk about my problems with my family.

Reassure me that I have friends with whom I can share my joys.

Reassure me that I have friends with whom I can share my sorrows.

Reassure me that there is a special person in my life who cares about my feelings.

Reassure me that my family is willing to help me make decisions.

Talk about my problems with my friends.



## Appendix F

**Demographics, other media variables & control variables**

1. Please indicate how much you like using each of the following media.

*I like using the following media... (1-7 Not at all-Very much)*

- 1) Radio
- 2) Newspaper
- 3) Television
- 4) Mobile phone
- 5) Magazine
- 6) Internet
- 7) Other, please specify: \_\_\_\_\_

2. Please indicate the amount of time you spend on **using each media per day** by clicking and moving the bar next to each type of media.

Television  
Internet  
Radio  
Newspaper  
Magazine

3. Below are a number of reasons why people watch **television**. For each reason, please indicate how much you watch television for the reason listed:

	<i>Not at all</i>						<i>Very much</i>	
1) Entertainment	1	2	3	4	5	6	7	
2) Information seeking	1	2	3	4	5	6	7	
3) School work	1	2	3	4	5	6	7	
4) Social use	1	2	3	4	5	6	7	
5) Habitual surfing channels	1	2	3	4	5	6	7	
6) Other, please specify: _____	1	2	3	4	5	6	7	

4. Below are a number of reasons why people use **the Internet**. For each reason, please indicate how much you use the Internet for the reason listed:

	<i>Not at all</i>						<i>Very much</i>	
1) Entertainment	1	2	3	4	5	6	7	
2) Information seeking	1	2	3	4	5	6	7	
3) School work	1	2	3	4	5	6	7	
4) Social use	1	2	3	4	5	6	7	
5) Habitual surfing websites	1	2	3	4	5	6	7	
6) Other, please specify: _____	1	2	3	4	5	6	7	

5. Do you have a Facebook account?

- 1) Yes    2) No

5-1. If you have a Facebook account...

How many "Facebook friends" do you have?

How many of them are nearby close friends?

How many of them are distant close friends?

How many of them are nearby acquaintances?

How many of them are distant acquaintances?

How many of them are your family members?

6. What is your gender?

- 1) Male            2) Female

7. How old are you? (Arabic numbers, please) \_\_\_\_\_ years

8. Please specify your ethnicity below. Please check all that applicable.

- 1) Anglo American    2) African American  
3) American Indian, or Alaska Native (AIAN)  
4) Asian    5) Native Hawaiian, or Other Pacific Islanders  
6) Hispanic or Latino  
7) Other, please specify: \_\_\_\_\_

9. Are you a college student?

- 1) Yes    2) No

9-1. If yes, what is your year in school?

- 1) Freshman    2) Sophomore            3) Junior  
4) Senior            5) Graduate student    6) Other, please specify: \_\_\_\_\_

9-2. If no, what is the highest level of education you have completed?

- 1) Less than High School  
2) High School/GED  
3) Some College  
4) 2-Year College Degree (Associates)  
5) 4-Year College Degree (BA, BS)  
6) Master's Degree  
7) Doctoral Degree  
8) Professional Degree (JD, MD)

10. How long have you lived in the current town of residence? (e.g., University Park, State College, Bellefonte, Boalsburg) \_\_\_\_\_ years

11. How far is your hometown away from your current residence? \_\_\_\_\_ miles

12. How many siblings do you have? \_\_\_\_\_

13. How many members are there in your family? \_\_\_\_\_

14. Among your family members, how many of them live in the same town you live?
15. *How many friends do you have?*
16. *About how many friends do you have?*
17. *Among your friends, how many of your close friends live in the town of your current residence (e.g., University Park, State College, Bellefonte, Boalsburg)?*
18. *Approximately how many acquaintances do you have?*
19. *Please indicate how much you agree or disagree with the following statements on the scale below (1-7 strongly disagree to strongly agree).*  
 Most of my close friends live nearby.  
 Most of my acquaintances live nearby.  
 I see most of my close friends frequently.  
 I see most of my acquaintances frequently.  
 I'd like to have more close friends.  
 I'd like to have more acquaintances.  
 I make a special effort to stay in touch with close friends.  
 I make a special effort to stay in touch with acquaintances.
20. *About how many phone numbers from close friends are stored in your mobile phone?*
21. *About how many phone numbers from acquaintances are stored in your mobile phone?*
22. *About how many email addresses do you have for close friends?*
23. *About how many email addresses do you have for acquaintances?*
24. *Are you married?*  
1) Yes    2) No  
 24-1. *If not married, do you have a person whom you have a romantic relationship with?*  
1) Yes    2) No
25. *How many social groups or clubs do you belong to:*
- |                                                                                     | <i>The number of groups joined</i> |
|-------------------------------------------------------------------------------------|------------------------------------|
| Social groups for hobbies such as sports club, knitting club, video game club, etc. | _____                              |
| Religious groups such as church, etc.                                               | _____                              |
| Civic groups such as environmental group, animal protection etc.                    | _____                              |
| Political groups such as political party, etc.                                      | _____                              |
| Other, please specify: _____                                                        | _____                              |
26. *Please provide information about your annual income in dollars.*  
 What is your total household income (total income of your family)?

What is your individual total income?

27. Do you work (either part-time or full-time)?

1) Yes    2) No

27-1. If yes, how many co-workers do you have ? \_\_\_\_\_

27-2. If yes, how many co-workers do you have regular contact with? \_\_\_\_\_

28. What kind of mobile phone do you have?

1) Budget phone/entry-level phone

2) Feature phone (Access to the Internet but no or very limited feature of downloading apps)

3) Smartphone

29. Please, indicate whether or not the following features or interpersonal communication channels are included in your mobile phone.

Voice mail            1) Yes    2) No

Video calling        1) Yes    2) No

Texting                1) Yes    2) No

Email                  1) Yes    2) No

Instant messaging 1) Yes    2) No

Downloading apps 1) Yes    2) No

30. Please, provide information about the last text message (the latest text message as of now) that you sent through your mobile phone.

30-1. Who did you send the text message to (Please state relationship and do not use specific names)? \_\_\_\_\_

30-2. What was it about? Please describe the content of it: \_\_\_\_\_

## Appendix G

## Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Moti1	6.77	.685	291
Moti2	5.09	1.777	291
Moti3	6.73	.738	291
Moti4	5.52	1.363	291
Moti5	6.42	.959	291
Moti6	5.37	1.419	291
Moti7	6.50	.973	291
Moti8	4.89	1.743	291
Moti9	6.66	.751	291
Moti10	5.56	1.313	291
Moti11	6.63	.793	291
Moti12	5.23	1.509	291
Moti13	5.37	1.633	291
Moti14	5.04	1.519	291
Moti15	6.37	.920	291
Moti16	5.27	1.428	291
Moti17	6.44	.932	291
Moti18	5.97	1.184	291
Moti19	6.01	1.171	291
Moti20	4.74	1.488	291
Moti21	4.74	1.533	291
Moti22	6.15	1.090	291
Moti23	4.70	1.477	291
Moti24	6.05	1.080	291

Moti25	4.77	1.531	291
Moti26	6.23	1.043	291
Moti27	4.52	1.666	291
Moti28	5.92	1.187	291
Moti29	4.78	1.608	291
Moti30	5.13	1.759	291
Moti31	4.41	1.760	291
Moti32	5.55	1.427	291
Moti33	5.06	1.455	291
Moti34	6.68	.641	291
Moti35	5.98	1.182	291
Moti36	6.38	1.008	291
Moti37	6.00	1.443	291
Moti38	5.99	1.195	291
Moti39	5.12	1.517	291
Moti40	5.73	1.584	291
Moti41	6.20	1.091	291
Moti42	4.76	1.635	291
Moti43	6.38	.880	291
Moti44	5.41	1.436	291
Moti45	6.40	.913	291
Moti46	5.29	1.474	291
Moti47	4.67	1.859	291
Moti48	6.11	1.023	291
Moti49	4.94	1.573	291

**Communalities**

	Initial	Extraction
		n
Moti1	.678	.637
Moti2	.482	.415
Moti3	.765	.726
Moti4	.730	.679
Moti5	.677	.646
Moti6	.779	.695
Moti7	.617	.551
Moti8	.793	.757
Moti9	.768	.759
Moti10	.796	.713
Moti11	.727	.696
Moti12	.770	.714
Moti13	.665	.710
Moti14	.691	.645
Moti15	.557	.376
Moti16	.718	.634
Moti17	.537	.438
Moti18	.797	.758
Moti19	.836	.816
Moti20	.912	.785
Moti21	.917	.780
Moti22	.669	.659
Moti23	.715	.644
Moti24	.687	.560

Moti25	.722	.644
Moti26	.651	.598
Moti27	.765	.740
Moti28	.667	.641
Moti29	.790	.740
Moti30	.740	.665
Moti31	.757	.683
Moti32	.749	.656
Moti33	.775	.690
Moti34	.549	.491
Moti35	.640	.560
Moti36	.481	.439
Moti37	.478	.432
Moti38	.799	.639
Moti39	.827	.715
Moti40	.351	.262
Moti41	.605	.536
Moti42	.769	.717
Moti43	.874	.765
Moti44	.841	.789
Moti45	.870	.795
Moti46	.855	.800
Moti47	.473	.380
Moti48	.657	.570
Moti49	.755	.725

Extraction Method: Principal  
Axis Factoring.

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