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Similarities and differences in self-disclosure and friendship development between fact-to-face communication and Facebook

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SIMILARITIES AND DIFFERENCES IN SELF-DISCLOSURE AND FRIENDSHIP DEVELOPMENT BETWEEN FACE-TO-FACE COMMUNICATION AND FACEBOOK

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ABSTRACT

This research identified the patterns of self-disclosure between face-to-face and Facebook friends' interactions. A survey of 317 participants was conducted to compare the hypothesized relationships among social attraction, self-disclosure, predictability and trust in three types of relationships: recently added Facebook friend, exclusive Facebook friend, and an exclusive face-to-face friend. Data was analyzed using structural equation modeling (SEM), multivariate analysis of variance (MANOVA), t-tests and correlations.

Results indicated that individuals reporting high levels of social attraction also reported having greater self-disclosure with their latest added Facebook friend, exclusive Facebook friend and an exclusive face-to-face friend. This supports a theorem of Uncertainty Reduction Theory that states that persons disclose intimate information to individuals they like and withhold intimate information from persons whom they do not like. These individuals also reported greater predictability of their Facebook and face-to-face friends' behavior, which supports axiom of Uncertainty Reduction Theory that as the amount of verbal communication between strangers increases, the level of uncertainty for each interactant in the relationship will decrease. The more friends talked to each other, the less uncertainty they experienced. Additional evidence that the relationship development across different friendship types (latest added Facebook friend, exclusive Facebook friend and exclusive face-to-face friend) is similar was the statistically significant relationship between the variables of self-disclosure and trust. This supports the tenets of Social Penetration Theory and previous studies that found self-disclosure to be important for the facilitation of developing mutual trust.

The results of this study showed that the process of relationship development, in terms of the relationship between social attraction, self-disclosure, predictability and trust, were similar in both Facebook and face-to-face relationships. However, significant differences existed in the

amount of self-disclosure and trust between Facebook friends and face-to-face friends. Although the average duration of both exclusive face-to-face friendships and exclusive Facebook friendships was six years, participants reported more self-disclosure, more predictability and trust in their face-to-face friends than with their Facebook friends. The findings about offline friendships involving more breadth and depth than online friendships seem to support "cues-filtered-out" approach.

CHAPTER 1
INTRODUCTION

"The human being can never be fully understood apart from his or her relation with others"
Martin Buber (1923)

According to traditional theories of relationship development, physical and geographical proximity and information about the physical appearance of individuals were necessary pre-conditions for social relationships to develop (Gennaro & Dutton, 2007; Honeycutt & Bryan, in press). This view, also known as "cues filtered out" theory, was challenged by later studies that support the interpersonal side of computer-mediated communication (CMC). Users report that they socialize, maintain relationships, play games and receive emotional support via online communication. Although online communication can lack face-to-face characteristics, such as physical proximity, frequent face-to-face interaction, and physical appearance, individuals in an online setting can still decrease their uncertainty about one another. Physical proximity is not an issue in online relationships; rather, frequency of online contact is what is important in the formulation of online relationships (McKenna, Green, & Gleason, 2002; Wellman & Gulia, 1999). According to Walther (1996), computer-mediated communication facilitated the formation of "hyperpersonal" relationships – greater feelings of intimacy than would have otherwise been experienced in face-to-face (FTF) relationships.

Computer-mediated communication is a type of communication facilitated by computer technologies and defined as "synchronous or asynchronous electronic mail and computer conferencing, by which senders encode in text messages that are relayed from senders' computers to receivers" (Walther, 1992, p. 52). Computer-mediated communication acts as a vehicle for interpersonal communication, but also alters the content of social norms and

boundaries. Sometimes, CMC can be supplemental to offline, face-to-face relationships (McQuillen, 2003).

Due to the growth of new social software applications such as instant messaging, blogs, wikis and a variety of social networking services, today people can connect and interact through CMC (Gennaro & Dutton, 2007). They can see and talk to their friends online, read how they are currently feeling, see what they are cooking or which book they are reading. Thanks to online social networking sites (SNSs), such as Facebook, MySpace and Bebo, people can share their private photo albums with three hundred friends at the same time and keep in touch with friends who moved away after high school.

Boyd and Ellison (2007) define social network sites (SNSs) as web-based applications allowing three functions: "1) users construct a public or semi-public profile; 2) present a list of other users to whom an individual is connected; and 3) view and follow that list and the lists of others within the system" (p. 211). The rise of SNSs indicates a shift in the organization of online communities. Unlike previous types of CMC, such as chats and blogs, social network sites are primarily organized around people, not interests (Boyd & Ellison, 2007). The main purpose of social networks is to make new friendships or to maintain those that already exist (Sheldon, 2008).

According to its website, Facebook (2010) is the most-trafficked social media site in the world with over 350 million active users (January, 2010) and is one of the fastest growing social network sites today. The most active members of Facebook are college students (Mack, Behler, Roberts, & Rimland, 2007). The generation born between roughly 1980 and 1994 has been characterized as the "Digital Natives" (Prensky, 2001) or the "Net Generation" (Tapscott, 1998). Digital natives are described as living lives immersed in technology, "surrounded by and using

computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age" (Prensky, 2001, p. 1). As Livingstone reports (2008), "The simple distinction between offline and online no longer captures the complex practices associated with online technologies as they become thoroughly embedded in the routines of everyday life" (p. 395). Arnett (2004) coined the term "emerging adulthood" to describe young adults who are between the ages of 18 and 29. His studies showed that emerging adults are postponing marriage and parenthood until at least their late twenties, and are spending their time in self-focused exploration. Most young adults in the western world are still searching for their vocational (career) and religious identities (Cote, 2006). They use a variety of online and offline social networks to establish intimacy; connect and reconnect with friends and family members (Subrahmanyam, Reich, Waechter, & Espinoza, 2008). In a Subrahmanyam et al. (2008) study, young adults used social network sites to stay in touch with their friends and relatives, especially those that they do not see often. The majority of their time on social networking sites was spent reading comments, writing comments, and responding to comments and messages. Other studies also suggested that emerging adults use social networking sites to connect with people from their offline lives (Steinfield, Ellison, & Lampe, 2008).

Online social networks provide users the opportunity to communicate things they might never say in person. Tidwell and Walther (2002) found that computer-mediated communication users have higher proportions of self-disclosures than those in face-to-face interactions. According to Walther's (1996) hyperpersonal communication framework, the reduced nonverbal cues of CMC enables people to feel less inhibited and thus disclose their inner feelings earlier in the relationship (1996). People can disclose personal information and develop relationships through CMC, just as they can in FTF situations (Cho, 2006). Research by Craig, Igiel, Wright,

Cunningham, and Ploeger (2007) and Walther, Van Der Heide, Kim, Westerman, and Tong (2008) supported the notion that existing interpersonal communication theories work in a social network setting. Craig et al. (2007) examined the role of perceived similarity and social attraction on self-disclosure on Facebook, and they found that computer-mediated relational development and face-to-face relational development are quite similar. The perception of attraction influenced self-disclosure patterns. Craig et al. (2007) also urged for the expansion of the model so it includes other variables.

While some studies suggested that anonymity and isolation make it easier for individuals to form strong ties (McKenna et al., 2002; Joinson, 2001), others report that the quality of online social interactions is lower than that of face-to-face interactions (Haythornthwaite, 2002). Cummings, Butler and Kraut (2002) reported that college students evaluated e-mail communication as inferior to face-to-face communication. Wellman (1997), however, noted that the relationships formed online are strong when they are voluntary and revolve around a common interest. According to Jenkins (2006), SNSs did not replace face-to-face communication. Social network sites are rather displacing some forms of online communication (e-mail, chat rooms) and incorporating others (instant messaging [IM], blogging, music downloading).

Self-disclosure and trust are important aspects of friendship and measures of intensity of a relationship (Levinger & Rands, 1985). Wheeless and Grotz (1976) defined self-disclosure as "any message about the self that a person communicates to another" (p. 338). Although it has not been extensively studied in CMC, trust is important for the development of intimacy and commitment (Anderson & Emmers-Sommer, 2006) and for the development of close relationships (Rempel, Holmes, & Zanna, 1985). According to Rempel et al. "trust is seen to

evolve out of past experience and prior interaction; thus it develops as the relationship matures" (p. 96). Many studies have looked at self-disclosure in face-to-face relationships, but for communication scholars it would be important to know how the communication in social network sites is different or similar to face-to-face communication or in other computer-mediated channels.

The main goal of this study is to understand whether the friendship development facilitated through online social networks is comparable to face-to-face friendships. How is the process of self-disclosure to a friend different depending upon the type of friendship (new Facebook friendship, exclusive Facebook friendship and exclusive face-to-face friendship)? What is the relationship between social attraction and self-disclosure, and self-disclosure and trust for face-to-face friends versus Facebook friends?

Previous studies suggested that the more time a person spends interacting with another person, the closer they will become, which supports the mere exposure effect. Exposure to another person increases attraction to that person (Brehm, Miller, Perlman et al., 2002). The question is therefore asked, how does the frequency of communication influence relationship development on Facebook and face-to-face?

Sex differences in self-disclosure have emerged in both face-to-face and computer-mediated communication. For instance, college women discuss intimate topics with friends more frequently and in greater depth than college men do (Aries & Johnson, 1983; Buhrke & Fuqua, 1987; Petronio, 2002). Women disclosed on Internet more than men (Peter, Valkenburg, & Schouten, 2005), and also use more maintenance strategies than men in relationships when communicating through the Internet (Fleuriet, Estrada, & Houser, 2009). The question for this

study is, how does gender influence relationship development on Facebook when compared to face-to-face?

This dissertation examines three types of relationships: exclusive Facebook, exclusive face-to-face, and a recently added Facebook friend relationship. Exclusive Facebook relationship in this study is defined as the one maintained exclusively through Facebook, expecting that friends first met face-to-face. Therefore, survey participants were asked to think about a Facebook friend whom they do not see face-to-face anymore because the friend moved away or they moved away. Rabby (2007) called this group of Internet users, Cyber Emigrants. They tend to first meet offline, and then emigrate to cyberspace. Exclusive face-to-face relationships occur between interactants who communicate face-to-face, but not through Facebook. Rubby calls those interactants Real Worlders. In this study, participants are asked to think about one good friend who does not have a Facebook account. For the latest added Facebook friend, it is assumed that participants just met at an event, and recently added each other as a Facebook friend. In order to distinguish between exclusive and latest added Facebook friend, duration of relationship is measured. Although this study looks at self-disclosure, predictability and trust in three different setting, the readers have to keep in mind that the use of either FTF or CMC might not be the only way friends communicate to each other. Other media (e.g., telephone) could potentially intervene in relationships as well (Rabby, 2007).

Social network sites, including Facebook, may impact the definition of friendship (Beer, 2008). While most people have an average of 10-15 intimate acquaintances, the figure of 150 seems to "represent the maximum number of individuals with whom we can have a genuinely social relationship" (Dunbar, 1996, p. 77). Ellison, Steinfield, and Lampe (2007), however, argued that young adults, such as college students, may benefit from the large, more

heterogeneous network that Facebook enables as they provide a window into a diverse set of perspectives and information (Ellison et al., 2007).

Chapter 2 summarizes the important literature relevant to this study by providing an overview of the interplay between computer-mediated and face-to-face interpersonal communication. It discusses the characteristics and evolution of social network sites, focusing on the most popular SNS, Facebook. In addition, the review summarizes the literature on two theories directly related to the purpose of this research – Social Penetration Theory and Uncertainty Reduction Theory, citing relevant studies on relational development in computer-mediated and face-to-face settings. Finally, the literature on sex differences, and the frequency of communication, is reviewed as it may relate to the breadth and depth of self-disclosure between Facebook friends and face-to-face friends. Chapter 3 presents the hypotheses and research questions and rationale for them, and chapter 4 presents methodology. Chapter 5 reports the findings of the study, and chapter 6 discusses them, including limitations and directions for future research.

CHAPTER 2
REVIEW OF LITERATURE

This section introduces the differences between computer-mediated and face-to-face interpersonal communication, including differences in self-disclosure and the quality of online versus offline relationships. The chapter defines social network sites, characteristics and evolution, and focuses on the Facebook notion of friendship. The relational development theories are explained, including Uncertainty Reduction Theory and Social Penetration Theory.

Facebook and Face-to-Face Friendships

Research from various social science disciplines provides different definitions of friendship. Hartup (1975) defined friends as those "who spontaneously seek the company of another" (p. 11). According to Wright (1984), friendship is a relationship that includes voluntary interaction. Hays (1988) defined it as a voluntary interdependence between two persons over time. As Rawlins (1992) notes, "the importance of friendship as a source of security and self-esteem, is surely a principle source of the impulse to study such relationships" (p. 13). Friends help individuals develop new skills and provide companionship, emotional acceptance, connectedness, inclusion, affiliation, satisfaction and belonging (Burleson & Samter, 1994).

Throughout history, scholars studied social networks and how their sizes are influenced by gender, income, education and personality. While the size of any average social network is expected to be about 125 people, only four of these contacts are considered as a real source of help during severe hardship (Hill & Dunbar, 2003). It was suggested that newer communication technologies could have a dramatic impact on social networking behavior (Acar, 2008; Kiesler et al., 2002). Acar (2008) argued that online social networks, more popularly known as social network sites (SNS), are not only larger than regular social networks but also structurally

different since they are not highly influenced by demographic factors, such as income and attractiveness. An average Facebook user has several times more friends on Facebook than in real life (Acar, 2008; Sheldon, 2008), because of a perceived lower risk of accepting new members, ease of requesting a membership, social desirability (positive feeling of online popularity) and failure to exclude members who are no longer contacted (Acar, 2008, p. 77). Lack of anonymity and the physical proximity of the users in SNS distinguishes them from other forms of CMC (Acar).

SNS scholars suggest that technological tools such as social network sites assist us in maintaining friendship relationships with more individuals (Donath, 2007; Donath & Boyd, 2004). SNSs could be useful for strengthening weak ties (Ellison et al., 2007). Although in "real" life individuals differentiate between close friends, true friends, best friends, good friends, casual friends, work friends, social friends and friendly acquaintances (Westmyer & Myers, 1996), on Facebook this differentiation is lost. Bryant and Marmo (2009) also reported confusion in the definition of "friend." Some people consider their casual relationships to be friendships, whereas others reserve the term friend for close relationships, the difference being the level of trust and intimacy of disclosures between the two types of friendships. Bryant and Marmo explored which relational maintenance behaviors are performed on Facebook, and which relationship types comprise college students' Facebook "friend" list. Bryant and Marmo's analysis revealed that Facebook "friend" lists are comprised of five distinct types of relationships: close friends, casual friends, acquaintances, romantic partners and outsiders (e.g., parents, bosses, and teachers). Participants in their study explained that most of their offline close friends are also their Facebook friends; however, that category accounted for only a small portion of their Facebook friends. Nearly all of their participants agreed that Facebook is a

useful tool to maintain long-distance close friendships. They even referred to such casual friendships as obligations. Participants also reported being friends with people on a nonvoluntary basis, such as parents, uncles, grandparents and bosses on their list of Facebook friend. However, most participants agreed that most of their Facebook friends are neither close nor casual friends, but simple acquaintances with whom they rarely or never interact with on Facebook.

Long before social networking sites existed, Reisman (1981) identified three types of friendships, including the friendship of reciprocity, receptivity and association. The friendship of reciprocity is the ideal, characterized by loyalty, self-sacrifice, mutual affection and generosity. It is based on equality. In the friendship of receptivity, there is an imbalance in giving and receiving. At the lowest level, the friendship of association is often described as a friendly relationship rather than a true friendship. However, they are still important as they help young adults to develop a better sense of self (Bagwell, Schmidt, Newcomb, & Bukowski, 2001). In his article, Granovetter (1982) explained the benefits of weak ties "… Ego will have a collection of close friends, most of whom are in touch with one another – a dense "clump" of social structure. Ego will [also] have a collection of acquaintances, few of whom know one another. Each of these acquaintances, however, is likely to have close friends in his or her own right and therefore to be enmeshed in a closely knit clump of social structure, but one different from Ego's… These clumps would not … be connected with one another at all were it not for the existence of weak ties" (p. 105-106).

Numerous studies have been conducted in the area of interpersonal relationships to describe how friendships develop from these acquaintanceships (Chan & Cheng, 2004). According to Parks and Floyd (1996) and Chung (2003), interpersonal relationships of all types

are usually conceptualized as developing from the impersonal to the personal along a series of relatively specific dimensions: an increase in interdependence, breadth and depth of the interaction, a shared communicative code change (specialized ways of communicating), an interpersonal predictability and understanding, and a continued relationship into the future. Uncertainty Reduction and Social Penetration Theory explain the process of relationship development.

In this study, three types of friendships were examined: recently established Facebook friendships, exclusive Facebook friendships and exclusive face-to-face friendships. The differences between the three are in the medium through which individuals communicate (online vs. face-to-face), but also in the duration of those relationships. The goal of the study was to compare to what extent the process of relationship development, conceptualized by Parks and Floyd (1996) and Chung (2003), is similar in these three relationship types. Secondly, can Social Penetration and Uncertainty Reduction Theory be applied to Facebook relationships?

Uncertainty Reduction Theory

Uncertainty Reduction Theory (URT) was introduced in 1975 by Charles R. Berger and Richard J. Calabrese, in order to predict and explain relational development (or lack thereof) between strangers. At the beginning, Berger and Calabrese (1975) focused on the steps people engaged in during initial interactions to reduce uncertainty about each other and increase predictability of both their actions. At the very beginning of a particular encounter, one task for each interactant is to attempt to *predict* the most likely alternative actions the other person might take. However, before such response selection can occur, the individual must reduce his or her uncertainty about the other. In other words, each person has to narrow the range of alternatives about the other's probable future behavior. Axiom 1 of URT states that "given the high level of

uncertainty present at the onset of the entry phase, as the amount of verbal communication between strangers increases, the level of uncertainty for each interactant in the relationship will decrease. As uncertainty is further reduced, the amount of verbal communication will increase" (Berger & Calabrese, 1975, p. 102). This means that both persons have to verbally communicate in order to reduce uncertainty or increase predictability about each other. Axiom 1 also states that there is a reciprocal causal relationship between the amount of verbal communication and the level of uncertainty reduction. Increased verbal communication results in easier prediction of another person's reaction, which in turn results in more verbal communication. The reduction of uncertainty helps users decide if they want to initiate a relationship with the other person; similarities between the two users should decrease uncertainty, and the decrease in uncertainty should subsequently increase liking (Berger & Calabrese, 1975).

Although URT presumes that partners encounter each other physically when they interact, Lea and Spears (1995) argue that this aspect of the theory might be dismissed as theoretically irrelevant since nonverbal behaviors are substitutable for verbal behaviors. Since the early days of the Internet, users have been able to initiate and maintain interpersonal relationships online (Baym, 1995; McLaughlin, Obsourne, et al., 1997; Parks & Floyd, 1996). Early online relationship networks, or virtual communities, utilized the Internet as a way to bring together people based on shared interests and hobbies as opposed to shared geography (Rheingold, 1993). In personal web pages, Haythornthwaite (2005) writes, individuals engage in self-presentational behaviors communicating identity through text and images. These identity cues can be assessed, just as one's style of dress or color of skin can be studied. Park, Jin and Jin (2009) argued that individuals' strategies to decrease uncertainties in face-to-face interaction can be applied in computer-mediated settings such as social network sites as well.

There are different types of uncertainty reduction strategies (Berger, Gardener, Parks, Schulman, & Miller, 1976): 1) passive strategies through which the information seeker collects information about a target person by observing his or her behavior; 2) active strategies which involve proactive efforts to gain knowledge about another person, usually by asking a third party about a target person; and 3) interactive strategies that require direct communication with a target for information seeking. One of the interactive strategies for uncertainty reduction is self-disclosure (Berger et al., 1976). In the context of social network sites, self-disclosure is the most important as users not only present themselves through disclosing private information, but also self-disclosure generates return disclosures (Tidwell & Walther, 2002). Tidwell and Walther (2002) found that interactive strategies can be easily utilized in both a face-to-face and computer-mediated context, while passive and active strategies have possibilities to be applied in a computer-mediated context. Channels such as social network sites were frequently reported to be useful regardless of whether the target was well known or less known, unlike phone calls, e-mails and face-to-face communication that were useful depending on the relationship between the target and seeker. SNSs were reported as useful for learning about all types of targets (Westerman, Van Der Heide, Kline, & Walther, 2008). Uncertainty Reduction Theory can also provide a starting point for understanding the relationship between social attraction and self-disclosure on Facebook.

Self-Disclosure and Social Attraction

Interest in the relationship between self-disclosure and social attraction started with the pioneering work of Jourard (1959), who found a positive relationship between social attraction for another person and disclosure to that person in a sample of nursing students and faculty. A number of studies conducted in FTF setting have confirmed that individuals disclose more to

those whom they initially like (e.g., Certner, 1973, Fitzgerald, 1963; Worthy, Gary, & Kahn, 1969). According to Theorem 14 of URT, persons tend to disclose intimate information to persons they like and withhold intimate information from persons whom they do not like (Berger & Calabrese, 1975). Altman and Taylor's (1973) Social Penetration Theory suggests that a discloser anticipates a benefit in allowing others to know more about him- or herself. Therefore, according to Worthy et al. (1969), self-disclosure is rewarding to a recipient and people will give more rewards to those whom they like. Liking someone is a prerequisite to high levels of disclosure (Lynn, 1978).

In a CMC setting, Ramirez, Walther, Burgoon, and Sunnafrank (2002) and Levine (2000) supported the idea that perceptions of attraction may drive self-disclosure. People tend to like those who disclose to them first, and people tend to disclose more to those they like (Collins & Miller, 1994; Park, Lee, & Kim, Lee, 2006). According to Theorem 14 of Uncertainty Reduction Theory, persons tend to disclose intimate information to persons they like and withhold intimate information from persons whom they do not like (Berger & Calabrese, 1975).

Uncertainty Reduction Theory in Developed Relationships

Berger updated his theory in 1982 and 1987. He found that uncertainties are ongoing in relationships, and the process of uncertainty reduction is relevant in developed relationships as well as in initial relationships (Berger, 1987). In fact, originally, Berger and Calabrese (1975) observed that "while uncertainty reduction may be rewarding up to a point, the ability to completely predict another's behavior might lead to boredom" (p. 101). Dainton and Aylor (2001) examined how relational uncertainty operated in long-distance relationships with both no face-to-face and with some face-to-face interaction. They concluded, as URT would predict, that the more uncertainty that existed in the relationships, the more jealousy and lack of trust existed.

They also found that face-to-face contact is critical to reducing relational uncertainty (Dainton & Aylor, 2001). Within the CMC context, Parks and Floyd (1996) argued the relative lack of social cues should lead both to increased uncertainty and difficulty in predicting how a partner will behave. However, researchers did not study Facebook, which *is* a social network.

Unlike chats and bulletin boards, where users primarily connect with other individuals to talk about sports or politics, Facebook is not a place where strangers meet and talk without knowing each other's physical appearance. Facebook is created for people who are willing to disclose their personal information to other people who know each other's names. The purpose of Facebook is to reach the social network of individuals that also visit, or mail and telephone each other. Therefore, people can have Facebook friends that they talk to exclusively through Facebook and those that they also talk to face-to-face. They can use Facebook to get to know people they have just met face-to-face. Table 1 graphically displays the differences between face-to-face (FTF), chat, blog, and social network sites' (SNSs) features.

Self-disclosure can occur in dyads or in a small group setting. Jourard (1971) explained the tendency to disclose in established relationships as the "dyadic effect" – the more information one receives, the greater his or her willingness to disclose. Jourard's dyadic effect suggests the predominance of self-disclosure in dyads. Most research on self-disclosure has been limited to the dyad (Pearson, 1981).

Social Penetration Theory

Social Penetration Theory (Altman & Taylor, 1973) claims that self-disclosure plays a critical role in the development of intimacy in relationships. Disclosing information is an important element of building relationships. The more time we spend with others, the more likely we are to self-disclose more intimate thoughts and details of our life. If self disclosure is

high, then the relationship will develop. As the friendship level increases, so does the intimacy level of the topic (Hays, 1984). Social Penetration Theory explains self-disclosure in the economic terms of social exchange. According to the SPT, the level of self-disclosure depends on each relationship in terms of rewards and costs. Individuals expect a reward from receivers for self-disclosure and subsequently create obligations to reciprocate, which is known as the norm of reciprocity (Omarzu, 2000).

Table 1
Some Pertinent Features of Different Communication Media

	Interaction	Visual Identification	Personal Information
FTF	X full	X	X
Chat	X full		X
Blog	X through posted comments		
Facebook and SNSs	X full (comments) = chat	X	X

(Adopted from Zheng, Veinott, Bos, Olson, & Olson, 2002)

Altman and Taylor compared people to a multilayered onion. They believed that each opinion, belief, prejudice, and obsession is layered around and within the individual. As people get to know each other, the layers "shed away" to reveal the core of the person (Richardson, 2001). These layers have both breadth and depth. Breadth refers to the number of various topics discussed in the relationship. Depth refers to the degree of intimacy that guides topic discussions. In the initial stages, relationships have narrow breadth and shallow depth. As

relationships move toward intimacy, a wide range of topics is discussed (breadth), with several of the topics to be intimately discussed (depth) (Altman & Taylor, 1987).

Although Social Penetration Theory has been developed to explain self-disclosure in face-to-face interactions, researchers have successfully applied it to relational development (e.g., Honeycutt & Bryan, in press; Knapp & Vangelisti, 2009) as well as computer-mediated communication. Due to limited nonverbal and contextual cues in CMC, self-disclosure is important for the formation of online relationships (Cho, 2006; Walther, 1992; 1996). Users can get to know each other by disclosing personal information that others are unlikely to discover from other sources (Trenholm & Jensen, 1996). Haider (2002) and McKenna et al. (2002) found a positive association between self-disclosure and intimacy in chat rooms. In their study of newsgroups, McKenna et al. found that self-disclosure leads to an increase in intimacy and that only after liking and trust were established could an online relationship be formed. McKenna et al. suggested that with increased self-disclosure, online relationships would develop faster than offline relationships. In many chat rooms and message boards, if a person does not self-disclose, she is not considered part of the community (Levine, 2000). People give online support to each other more, and self-disclosure takes place much more quickly than in person (Levine).

Parks and Floyd (1996) also found a positive correlation among the breadth and depth of self-disclosure and predictability in online newsgroups. A newsgroup is an Internet-based discussion about a particular topic that can range from sports, cars, to investing and marriage problems. Parks and Floyd's findings reflect Axiom 1 of Uncertainty Reduction Theory. Craig et al. (2007) also found that the breadth and depth of self-disclosure on Facebook leads to greater predictability of another person's behavior. Predictability is the most important element in developing trust about another individual (Park et al., 2006, Rempel et al., 1985). According to

the Rempel et al. model, predictability is one of the dimensions of trust. We self-disclose to a person if we can predict their behavior.

A series of surveys conducted by Parks and colleagues (e.g. Parks &Floyd, 1996; Parks & Roberts, 1998) found that online friendships were moderately committed. No difference existed in the depth and breadth of interaction between offline and online relationships. In contrast, Cummings, Butler and Kraut (2000) argued that online relationships are of a lower quality than offline relationships. In their study, students rated email lower than face-to-face or telephone interactions for maintaining relationships. Mesch and Talmud (2006) also found that online friends tend to be perceived as less close than face-to-face friends. Baym, Zhang and Lee (2004) also found that internet interactions were rated slightly lower in quality than face-to-face conversations and telephone calls (which did not differ significantly from one another). However, in their latest study, Baym, Zhang, Kunkel, Ledbetter and Lin (2007) found that the extent to which a relationship is conducted online or by telephone may have little to do with the quality of that relationship.

Polish sociologist, Piotr Sztompka (1999), in his book *Trust: A sociological theory*, argued that, during the 1990s, there was a "new wave of sociological interest in trust." (p. 14) People became more dependent on persons they do not know because of social and technological changes in the society (Henderson & Gilding, 2004). A varied terminology has been used to reflect the construct of trust (Delgado-Ballester, 2002). Morrow, Hansen, and Pearson (2004) described trust as "one's overall belief that another individual, group, or organization will not act to exploit one's vulnerabilities" (p. 50). However, as pointed out by Bhattacharya, Debinney, and Pillutla (1998), different scholars address the trust concept from different approaches and methods. The studies conducted in the psychology area are mainly focused on the motivational

dimension of the concept, the belief that one's partner does not have the intention to lie, to break promises, or to take advantage of one's vulnerability. For example, Frost, Stimpson, and Maughan (1978) highlight the term "altruism," Larzelere and Huston (1980) proposed two qualities of trust: benevolence and honesty, and Rempel, Holmes, and Zanna (1985) use the words dependability and fairness. Rempel and Holmes developed a scale for measuring trust in a specific person in close relationships.

While developing Social Penetration Theory, Altman and Taylor (1973) concluded that self-disclosure facilitates the development of close relationships and mutual trust. Wheeless and Grotz (1977) and Larzelere and Huston (1980) found a positive correlation between trust and the amount, depth, and honesty of self-disclosure in FTF relationships. Other studies reported that information disclosure increased the impression of trustworthiness (Christophides, Muise, & Desmarais, 2009). Although trust has not been extensively studied in a computer-mediated environment, it is associated with self-disclosure in face-to-face interactions (Park, Kim, & Lee, 2006). A survey of individuals in exclusively online romantic relationships found that the length of time the relationships lasted and the amount of time spent communicating with one's partner correlated with perceived commitment, intimacy, and trust (Anderson & Emmers-Sommer, 2006). Meeting face-to-face prior to communicating online helped to promote trust (Zheng et al., 2002). Research has also shown that those who are more trusting in real life have a harder time trusting online (Feng, Lazar, & Preece, 2004). Bos, Olson, Gergle, Olson, and Wright (2002) studied trust in four different communication situations: face-to-face, video, audio, and text chat. They reported that face-to-face, video and audio communication support trust better than text chat. However, this may not be true within the context of Facebook relationships. If a

person trusts another highly in real life, they might highly trust that same person on Facebook, and vice versa (Obremski, 2008).

On the other hand, researchers found that CMC is often "hyperpersonal." (Walther, 1996) In Henderson and Gilding (2004) study, individuals reported that their online friendships are characterized by higher levels of self-disclosure. Text is the most important medium online; subsequently respondents felt that the only way they could get close to someone was by revealing information about themselves (Henderson & Gilding). In real life, friendships are often based on spending time with another person, and not necessarily talking. In their study, the respondents who used CMC to develop and maintain friendships described the Internet as a unique environment in which to explore oneself and create intimacy (Henderson & Gilding, 2004). In FTF relationships, they noted, appearance can get in the way of intimacy.

Giddens (2000) also argued that in contemporary societies, people expect "pure relationship," and online environment is a perfect place to accomplish it. Pure relationships are characterized by increased self-disclosure which in turn require risk-taking and active trust in another individual (Henderson & Gilding, 2004). Giddens said that women are especially prone to expect pure relationships through the Internet. Sheldon (2008) found that women reported having more Facebook friends than men and used Facebook more for the maintenance of relationships than men did. Valenzuela, Park and Lee (2009) argued that since online social networks allowed users to learn detailed information about their contacts, including personal information, this reduced uncertainty about other users' intentions and behaviors, which is a necessary condition for developing norms of trust and reciprocity (Berger & Calabrese, 1975). Finding that another person possesses less attractive attributes may lead to mistrust (Valenzuela et al, 2009).

The following section describes both gender differences and frequency of communication that may influence the amount and intimacy of self-disclosure to a Facebook and face-to-face friend.

Predictors of Self-Disclosure

Sex

Sex differences in self-disclosure have emerged in both face-to-face communication and computer-mediated communication. For example, women, including college women, appeared to discuss intimate topics with friends more frequently and in greater depth than men do (e.g., Aries & Johnson, 1983; Buhrke & Fuqua, 1987; Caldwell & Peplau, 1982; Dolgin & Minowa, 1997; Petronio, 2002). Women seek dialogue and ease of conversation, while men tend to restrict dialogue and converse for functional reasons (Fleuriet, Estrada, & Houser, 2009). This trend appears to apply in CMC, too (Kleman, 2007). Peter et al. (2005) found that on the Internet, women disclosed more intimate information than men. Furthermore, CMC messages sent by males are found to be confrontational and autonomous, while female messages are supportive and rapport-building (Li, 2006). In a series of studies focusing exclusively on female adolescent personal home pages, Stern (1999, 2002a, 2002b) found that girls' home pages were personal, intimate and immediate. Home pages authored by men provided less biographical information than those produced by women. Women also included more information about their families and romantic interests and men discussed sports more (Doering, 2002; Dominick, 1999; Stern, 2004). Acar (2008) and Sheldon (2008) studied Facebook and found than not only do women have more Facebook friends, they also spend more time communicating with them. In Fleuriet, Estrada and Houser (2009) study, women use more maintenance strategies than men in relationships when communicating through the Internet. They report using more positivity,

openness, assurances, social networks, and sharing tasks than men in their relationships, which has been shown in previous FTF research (Ragsdale, 1996).

Cho (2006) studied self-disclosure between men and women both in online chatting and FTF communication. His results showed that males were more likely to disclose personal information in FTF communication than in online chatting, while females express their feelings or personal information honestly and accurately without a difference between online and FTF communication. Dindia and Allen (1992) performed a meta-analysis of 205 studies to determine whether there are sex differences in self-disclosure. When the target had a relationship with the discloser (i.e., friend, parent, or spouse), women disclosed more than men regardless of whether self-disclosure was measured by self-report or observation. When the target was a stranger, men reported that they disclosed similarly to women; however, studies using observational measures of self-disclosure found that women disclosed more than men.

The explanation for the sex differences in self-disclosure may be due to variations in how men and women are socialized, sex-role expectations, or how men and women use different criteria in defining and controlling private information (Petronio, 2002). While men are traditionally taught to exercise restraint in sharing their feelings (Rubin & Shenker, 1978), women have been socialized to be more expressive and open in their communication. Women are concerned with and evaluate their interpersonal relationships more often than men. Men are more task-oriented than women. As Burnett (1990) found, men are bothered about the practical aspects that make relationships possible, regardless of what went on in them, whereas women care more about monitoring and evaluating the intrinsic relational events. A feminine communication style is characterized by emotional sensitivity, sympathy and consideration (Stephen & Harrision, 1985).

Jones (1991) offered another explanation for women's higher levels of overall self-disclosure. Having trust in the individual one discloses to tends to coincide with increased self-disclosure (Steel, 1991). Since females place more importance on trust than males, they also self-disclose more. However, Pearson (1981) noticed that claiming that women self-disclose more than men is not as simple as it seems. First, the concept of self-disclosure is not unidimensional, but multidimensional. Wheeless and Grotz (1976), for example, identified five dimensions of self-disclosure: intent, amount, positive/negative valence, accuracy, or honesty. Altman and Taylor (1973) discussed breadth and depth. According to Pearson (1981), the setting in which self-disclosure occurs may provide an additional mediating variable. She found that males self-disclosed more in dyads than they did in small-group settings, and females self-disclosed more in a small-group setting. Collins and Miller (1994), however, studied gender differences in a disclosure-liking hypothesis and found that men and women do not differ in their tendency to disclose to people they like. Sheldon (2008) found that women spend more time on Facebook than men and also have more Facebook friends.

Frequency of Communication and the Length of Relationship

There is little research on how formation and quality of online and offline friendships corresponds with the frequency of communication. Peter et al. (2005) found evidence that the effect of introversion on online friendship formation was not direct, but mediated by the frequency of online communication. More frequent online communication resulted in adolescents' greater willingness and ability to self-disclose. Sztompka (1999) also stated that the better and longer we are acquainted with somebody, the greater our readiness to trust."

Chan and Cheng (2004) compared the development of online and offline friendships and found that the duration of friendship development had to be taken into consideration. Parks and

Floyd (1996) generated a list of items for measuring interpersonal relationships and found that the variety of topics and communication channels increase when a relationship develops over time. People tend to reveal more important and personal information when their relationship progresses (Chan & Cheng, 2004). Collins and Miller (1994) also found that simply increasing the amount of time is sufficient to produce stronger correlations between disclosure and fondness between two friends.

Anderson and Emmers-Sommer (2006) examined predictors of relationship satisfaction for individuals involved in online romantic relationships. The length of a relationship did not account for as many differences in perceptions of satisfaction as did the amount of communication. People who had been involved for longer periods of time with their online romantic partners reported greater levels of intimacy and trust than did those who had been dating online for shorter periods of time.

Cues-Filtered Out Theories

Early research studies emphasized differences between CMC and FTF communication (Culnan & Markus, 1985; Kiesler, Siegel, & McGuire, 1984; Siegel, Dubrovsky, Kiesler, & McGuire, 1986) suggesting that people using CMC were prevented from gaining impressions due to the lack of nonverbal cues in the medium. This difference has led some to conclude that impressions and relationship development are thwarted in CMC (Kiesel et al., 1984). Proponents of the cues-filtered out theories (Culnan & Markus, 1985; Dubrovsky, Kiesler, & Sethna, 1991; Kiesler et al., 1984) argued that important nonverbal cues were missing from CMC. Brennan (1991) writes that CMC occurs in a much less cooperative environment because of the special conditions imposed by the medium itself. CMC is missing turn taking and yielding behaviors (Patterson, 1983; 1990), the collaborative commitment of participants and the co-formulation of

the message and the feedback, which allows the social meaning of the message to be processed immediately (Mantovani, 1996). Most of the research supporting the technologically deterministic view of CMC involved laboratory studies or experiments where small groups worked on structured problems for limited periods of time. Results from these early studies emphasized the social disadvantages of CMC (Hian, Chuan, Trevor, & Detenber, 2004).

Due to increased use of the Internet for social purposes in the last two decades, other perspectives emerged suggesting that people can have intimate relationships in the CMC environment as users rely on alternative mechanisms to accomplish these functions (Walther, 1996). According to Parks and Floyd (1996), the claims that computer-mediated communication is characterized by impersonality should be rejected, as studies of e-mail have consistently shown the interpersonal side of CMC. Predictions about online relationships, they said, could be obtained from theories of interpersonal communication and relationship development. Although online communication can lack face-to-face characteristics, such as physical proximity, frequent face-to-face interaction and physical appearance, people in an online setting can still decrease their uncertainty about one another. None of the theories of relational development, according to Parks and Floyd, require physical proximity and face-to-face interaction for relational development. They may be helpful, but they are not necessary for reducing uncertainty or the reward/cost ratio.

Walther (1992) suggested that without nonverbal cues, communicators adapt their relationship behaviors to the remaining cues available in CMC, such as content and linguistic strategies, as well as chronemic and typographic cues (Walther & Tidwell, 1995). In the last decade, emoticons have been used as a nonverbal representation of emotions (Walther & Tidwell; Walther, 2006; Walther & D'Addario, 2001). Even Carey (1980; as cited in Walther,

1992) talked about electronic "paralanguage" that online users use to express affective and socioemotional information. These informal codes, which they call "emotext," include intentional misspelling, strategic capitalization and visual arrangements of text characters into "emoticons." For example, intentional misspelling often includes the repetition of a vowel or consonant to represent the accentuation of a word or phrase for affect, as in the phrase, "sssoooooo good!" People are overcoming the technical limitations of CMC by inserting “smileys” to imitate facial expressions or simply supplementing it with additional channels of communication.

Personal relationships can and do develop in CMC, argued Lea and Spears (1995, p. 217). Users report that they socialize, maintain relationships, play games and receive emotional support via e-mail (McCormick & McCormick, 1992; Rice & Love, 1987). Some studies on online personal relationships showed that online friendships are actually deeper and have better quality than real-life friendships (Bruckman, 1992, p. 23). In some cases, online relationships have blossomed into romance and marriage (Bruckman, 1992). Stafford, Kline, and Dimmick (1999) studied how people use e-mail in their homes for interpersonal use and reported that e-mail is used for the maintenance of interpersonal relationships. Their findings revealed that people use e-mail as a tool to communicate and stay in touch with long-distance family and friends.

Although CMC is an excellent supplementary tool to keep in touch with established relationships, McQuillen (2003) concluded that relationships made solely through computers may not be what they seem. A problem with CMC is that it allows the communicators to portray inaccurate representations of themselves to others. According to McQuillen, since CMC lacks contextual cues, there tends to be an idealized perception of people on the Internet. McQuillen

also explained how CMC allows for selective self-perception, where people choose what to show about themselves. Lin, Sun, Lee and Wu (2007) also found that CMC is an excellent tool for interpersonal communication but is best used as a supplement to relationships already established in an offline setting.

McCormick and McCormick (1992) also found a high amount of "highly intimate content" in their study of e-mail communication at a university. Bonebrake (2002) wrote that meeting new people online is no longer rare, and it will only become more common. According to Levine (2000), physical proximity is also not an issue in online relationships. Rather, frequency of electronic contact is what is important in the formulation of online relationships. Often people feel more comfortable disclosing personal information online than face-to-face (Cooper & Sportolari, 1997). The sharing of intimacy causes people online to develop feelings of closeness more quickly than offline (McKenna & Bargh, 2000). Social Information Processing Theory (SIPT; Walther, 1992) has been developed to explain how people develop and maintain relationships in a computer-mediated environment.

Social Information Processing Theory

According to SIPT, people can develop online relationships that are similar to or better than normative face-to-face interactions. Long before the emergence of social network sites, scholars believed that some forms of CMC, such as email and text-based messaging, were flawed because of the lack of nonverbal and other social-contextual cues that are present in face-to-face interaction (Wallace, 1999). According to SIPT, individuals are motivated to form impressions and develop relationships of some kind, no matter what medium they are using. Therefore, even when nonverbal cues are unavailable – as occurs in text messaging, e-mail or online chats – the remaining communication systems are employed to do the work of those that are missing

(Walther, 2008). SIPT predicts that people may indeed get to know one another online, albeit more slowly and through different mechanisms than through face-to-face interaction. Other studies (e.g., Henderson & Gilding, 2004) suggested that disclosure is more likely and more intense in CMC than in face-to-face settings. Walther (1996) introduced the theory that he called the "Hyperpersonal Perspective," in which users make overattributions to their online partners. Tidwell and Walther study (2002) of dyads concluded that individuals compensate for the limitations of CMC by hyperpersonalizing their interactions.

Hyperpersonal interaction refers to the idea that not only can relationships be enhanced in a computer-mediated environment, but users can manage relationships and impressions in ways more effective than with face-to-face communication or other mediated channels. Walther (1996) described the online world as "hyperpersonal" where one feels anonymous, distant and safe. In her book *Life on the Screen: Identity in the Age of the Internet*, Turkle (1995) documented people's greater level of comfort with their screen life friends than their real-life friends (Rosen, Cheever, Cummings, & Felt, 2008). The hyperpersonal communication model has found support in a number of studies (Hian et al., 2004; Walther & Burgoon, 1992; Walther, 1995).

Chan and Cheng (2004) conducted a study in which they asked Hong Kong residents to think of two friendships they had – one was an offline "physical life" or "real life" friendship, and the other one initiating and developing online. Researchers found that offline friendships involved greater interdependence, breadth, depth, understanding, and commitment than online friendships. Their findings confirm the predictions of the "cues-filtered-out" approach. The difference in quality between online and offline friendships was moderated by the duration of the relationship. The differences between the two types of friendship were diminished after the

relationship lasted for more than a year. Chan and Cheng (2004) conclude that "the general trend that both online and offline friendships develop and their qualities over time provides support for the social information processing theory." (p. 317) As Walther (1992) stated, if given enough time, relationships can become personal online.

The following section explains different kinds of computer-mediated communication, including the most popular social network site, Facebook.

Social Network Sites

Social network sites are a not a new type of CMC. Some researchers claim that the history of online social networks goes back to 1978 when computer scientists Murray Turoff and S. Roxanne Hiltz established the Electronic Information Exchange System (EIES) at the New Jersey Institute of Technology for the US Office of Civilian Defense (Acar, 2008). EIES allowed users to email each other, see the bulletin board and utilize the list serve (Hiltz & Turoff, 1978; 1993; Wasserman & Faust, 1994).

The first wide-scale online social network was created by Andrew Weinreich in 1997. SixDegrees.com -- the name refers to Milgram's famous small-world study that determined that randomly-selected American citizens can be connected to each other by six nodes -- worked in such a way that a person registered at the site could list up to 10 friends. Those friends were supposed to join and list 10 friends each of their own, and so on. The site was used for apartment searches, job hunts, quests for medical specialists or lawyers, and even finding old high school colleagues.

In 2001, Adrian Scott, a former investor in Napster, a file-sharing site, founded a website called Ryze.com. Ryze was designed to link business professionals, particularly new entrepreneurs. According to new.ryze.com (accessed on June 18, 2009), the name of the social

network came from the words “rise up,” “because it's about people helping each other 'rise up' through quality networking.” The site is still running, but it is not as popular as it used to be. Scott reported that he first introduced the site to his friends, members of the San Francisco business and technology community, who later invested in future SNSs (A. Scott, personal communication, June 14, 2007). The creators of Ryze, Tribe.net, LinkedIn, and Friendster were tightly entwined personally and professionally. They believed that they could support each other without competing (Festa, 2003).

As a social complement to Ryze, Friendster.com was created in 2002. It was designed to compete with Match.com, a profitable online dating site (Cohen, 2003). While most dating sites focused on introducing people to strangers with similar interests, Friendster was designed to help friends-of-friends meet. The idea was that friends-of-friends would make better romantic partners than would strangers (Boyd & Ellison, 2007). Friendster currently has over 90 million registered users and over 61 million unique visitors per month globally. The website receives approximately 19 billion page views per month and is in the top 100 global websites based on web traffic (Alexa.com, 2009). Over 90% of Friendster's traffic comes from Asia. In Asia, Friendster has more monthly visitors than any other social network.

Since 2003, many new SNSs have been launched, prompting social software analyst Clay Shirky (2003) to coin the term YASNS: "Yet Another Social Networking Service." After the 2002 launch of Friendster, several eUniverse employees in Santa Monica, California with Friendster accounts saw its potential and decided to mimic the more popular features of the social networking website. In August 2003, MySpace was created (Lapinski, 2006). The very first MySpace users were eUniverse employees. Indie-rock bands from the Los Angeles region began creating profiles; subsequently MySpace developers started contacting local musicians to

see how they could support them (T. Anderson, personal communication, September 28, 2006). The symbiotic relationship between bands and fans helped MySpace expand beyond former Friendster users (Boyd & Ellison, 2007). MySpace differentiated itself by regularly adding features based on user demand (Boyd, 2006) and by allowing users to personalize their pages. Unlike older users, most teens were never on Friendster (Boyd & Ellison, 2007), so they began using MySpace.

Facebook

Unlike previous SNSs, Facebook was originally designed to support distinct college networks only. Mark Zuckerberg created facebook.com to replace the paper facebook, or a class directory, that was given to freshmen as part of their introduction to a new school. He founded facebook.com with Dustin Moskowitz on February 4th, 2004. Their main headquarters today are in Palo Alto, California. Company currently has more than 900 employees (Press Info, facebook.com, August 31, 2009). The site is privately owned by Facebook, Inc. and is available in more than 40 different languages. The website's membership was initially limited to Harvard students, but was expanded to other colleges in the Boston area and the Ivy League. It later expanded further to include any university student, then high school students and, finally, to anyone aged 13 and over. The website currently has more than 350 million active users worldwide ("Facebook Statistics". Retrieved January 4, 2010). A January 2009 Compete.com study has ranked Facebook as the most used social network by worldwide monthly active users, followed by MySpace (Kazeniac, 2009). Over time, Facebook has changed its interface.

In 2010, Facebook has many features that help its users to interact with each other. All Facebook users have a “status” where they write how they feel or what they are currently doing. Each user has a “wall” on their Facebook profile where their friends can leave messages to the

user in public. These postings contain the friend's default photo as well as a verbal message. Users also have an option to poke their friends, which functions as a replacement for verbal message saying "I am thinking of you." When creating an account, users are asked to provide "basic info" about themselves, including their birthday, hometown, relationship status, religious views, political views, interests, activities, favorite quotations, "About Me," education and work. These kinds of information one could expect to share in traditional relational conversations (e.g., hobbies, music interests, etc.) (Woolley, Limperos, & Tamul, 2009).

Users can join the network of their residence, school or work. They can create up to 200 groups according to their interests and areas of expertise. Most users post a photo of themselves on Facebook and some upload entire albums. Users can also upload their videos through iPhones. On the top of each Facebook page are "privacy settings" that allow Facebook users to restrict the visibility of their profile page. They can limit who can see their profile and even block a person's access to their page. Public profiles also allow any stranger or acquaintance to contact the user which results in lack of privacy.

Some interesting results about Facebook users were recently published in a study conducted by Christofides, Muise, and Desmarais (2009). They found that among 343 undergraduate students who were current users of Facebook, nearly all of them had joined a network (97%) and posted their birthday (96%). Eighty-five percent (85%) shared personal information such as his or her e-mail address, relationship status (81%), along with the school and program (72%). However, only 24% shared his or her phone number and 4% shared his or her home address. Participants were also inclined to post a profile picture and pictures with friends, though most did not want to post pictures of them or their friends doing something illegal or pictures of themselves naked or partially naked (Christofides et al., 2009).

Facebook's "Top Friends" application was the most engaged application among U.S. Internet users in November 2007. The website has won awards such as placement into the "Top 100 Classic Websites" by *PC Magazine* in 2007 and the "People's Voice Award" from the Webby Awards. Visitors between the ages of 18-24 years were twice as likely as the average Facebook visitor to engage with applications (Hargittai, 2007), while those aged 25 and older exhibited this behavior less often. A study showed that Facebook is populated much more with college students than any other constituency and has far more college-age students than MySpace. MySpace attracts more high school students and also appears to be more commercially based than Facebook (comscore.com, 2008). MySpace allows users to decorate their profiles using HTML and Cascading Style Sheets (CSS), while Facebook does not (Sullivan, 2007).

Other "Cyber Communities"

Besides the social network sites, there are other types of "cyber communities" that are different from SNSs. One is a chat system, which includes Instant Messaging (IM). The difference between chat rooms and social network sites is that the majority of communication in online social networks takes place within the network of "friends" that the user has established (Ellison, Steinfield, & Lampe, 2007). Using a SNS is both a synchronous and asynchronous activity and by definition serves primarily a social purpose (Carr, Schrock, & Dauterman, 2009; Ellison et al., 2007). Synchronicity involves real-time communication between individuals while asynchronicity involves delayed communication (Chan, 2009). Instant Messaging (IMing) is typically a synchronous activity that has been shown to facilitate task-related information both in work and in social contexts (Carr et al., 2009). Facebook is a combination of both - asynchronous and synchronous elements.

The third type of computer-mediated community is a blog -- a personal website with frequently updated observations, news, commentaries and recommended links. Blogs are different from social network sites in one important aspect, and that is the access to information. On a blog, the recipients are not specified so that the discloser cannot reveal information differentially according to the relationship. Thus, the discloser can reveal very intimate information to strangers at the first communication via the personal Web space (Lee, Im, & Taylor, 2008). On Facebook and other social network sites, users know who their friends are, though they may not always be aware of which friend is reading their page. Facebook users can limit who has access to their profile information. Creators of blogs can combine text, images and links to other blogs, and readers can leave comments in an interactive format; Facebook profile pages have a fixed format, allowing a more controlled comparison of web pages. A Facebook page functions as a fill-in-the-blank system of personalization (Buffardi & Campbell, 2008). Facebook was created for people to stay in touch with their friends.

Summary

The recent rising popularity of social network sites such as Facebook and MySpace, is changing the definition of friendship. Literature reviewed in this chapter presents two conflicting perspectives on online relationships, including a debate on whether online relationships are as intimate and close as their offline counterparts. According to the cues-filtered out perspective that dominated in the early 1990s, people cannot develop close relationships in an online setting. Later approaches, including Social Information Processing Theory, suggested that online relationships may be comparable to offline relationships, but the key element is time. With more time allowed, CMC could serve the same communication function as found in face-to-face interactions (Walther, 1995). According to SIPT, individuals

are motivated to form impressions and develop relationships of some kind, no matter what medium they are using.

Comparing online and offline relationships provides opportunities to test existing theories of interpersonal communication and relationship development, such Uncertainty Reduction Theory and Social Penetration Theory. According to URT (Berger & Calabrese, 1975), individuals self-disclose in order to reduce uncertainty about another person's behavior. As the amount of verbal communication between two individuals increases, uncertainty decreases (Axiom 1). Researchers have found that self-disclosure is also related to interpersonal attraction. Perception of attraction may drive self-disclosure (Levine, 2000; Ramirez, Walther, Burgoon, & Sunnafrank, 2002).

Self-disclosure is at the center of Social Penetration Theory. Altman and Taylor (1973) believed that only through opening one's self to others can a close relationship develop. Both URT and SPT were established before online relationships existed. However, several studies (Haider, 2002; McKenna et al., 2002; Parks & Floyd, 1996) on CMC have discovered a positive association between self-disclosure and intimacy in mediated interactions. Parks and Floyd (1996) found a positive correlation among the breadth and depth of self-disclosure and predictability in online newsgroups. Craig et al. (2007) found a similar association between self-disclosure and predictability in the case of Facebook friends who users contact the most often.

Sex differences in self-disclosure also emerged in both FTF and CMC setting, suggesting that women disclose more than men and that those topics are more intimate (Aries & Johnson, 1983; Buhrke & Fuqua, 1987; Dolgin & Minowa, 1997; Peter et al., 2005; Petronio, 2002). Female users had more Facebook friends and spent more time communicating with them (Sheldon, 2008). A meta-analysis conducted by Dindia and Allen (1992) revealed that women

disclose more than men to persons they are in close relationships (i.e., friend, partner, or spouse), but men disclosed similarly to women when the target was a stranger.

Based on thorough literature review, the following chapter proposes the relationships among variables of social attraction, self-disclosure, predictability, trust, sex, frequency of communication and duration of relationship – and the rationale for each hypothesis tested in this study.

CHAPTER 3
RATIONALE AND HYPOTHESES

The previous chapter reviewed the literature relevant to computer-mediated and face-to-face relationships. This chapter proposes 9 hypotheses to explain if different types of friendship (exclusive Facebook friendship, recently established Facebook friendship, and exclusive face-to-face friendship) influence the amount of social attraction, self-disclosure, predictability and trust between two friends. The hypotheses focus on the following variables: social attraction, self-disclosure, predictability, trust, gender, duration of relationship, and frequency of contact.

A number of studies conducted in the face-to-face setting have confirmed that we disclose more to those whom we initially like (e.g., Certner, 1973, Fitzgerald, 1963; Worthy, Gary, & Kahn, 1969). Levine (2000) and Craig et al. (2007) suggested the same for online relationships. If this is the case, it can be hypothesized that:

Hypothesis 1: Individuals who report high levels of social attraction with their latest added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend will also report having greater breadth and depth of self-disclosure with those friends.

According to Axiom 1 of URT (Berger & Calabrese, 1975), as the level of verbal interaction increases between communicators, their level of uncertainty about one another will decrease. This causes communicators to further increase their level of verbal interaction with one another. In the context of Facebook relationships, Craig et al. (2007) also found that greater depth and breadth of self-disclosure lead to greater predictability of another person's behavior. The model that they tested included both self-disclosure and predictability and, according to Craig et al., "is strikingly similar to what we would expect in terms of relational development among college students in the face-to-face world" (p. 23). In fact, they concluded that relational

development on Facebook mirrors face-to-face relational development, which may not be the case with other types of online communities. Therefore, hypothesis 2 posits the following:

Hypothesis 2: Individuals who report greater breadth and depth of self-disclosure with their latest added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend will also report greater predictability of their friends' behavior.

Trust is related in important ways to the success of a close relationship (Rempel et al., 1985). It is related to self-disclosure (Anderson & Emmers-Sommer, 2006) and often considered an outcome of self-disclosure (Altman & Taylor, 1973). Self-disclosure theorists have emphasized the notion that trust is built gradually through repeated encounters (Rempel et al., 1985; Altman & Taylor, 1974). Even in more established relationships, uncertainty is necessary for the expression of the type of responsive behavior that fosters trust (Rempel et al., 1985). However, as Kim et al. (2006) discussed, trust does not increase linearly with self-disclosure. The most important element in developing trust about another is the overall predictability of that individual (Rempel et al., 1985). According to the Rempel et al. model, predictability is one of the dimensions of trust. Individuals self-disclose to a person if they can predict his or her behavior. Thus, this study posits that the predictability of another person's behavior will be a mediator between self-disclosure and trust for both Facebook friends and FTF friends.

Hypothesis 3: Predictability will mediate the relationship between self-disclosure and trust for latest added Facebook friend, exclusive Facebook friends and exclusive face-to-face friend.

If predictability is a mediator, self-disclosure must be associated with trust and predictability, while the impact of self-disclosure on trust must be reduced after controlling for predictability.

While developing Social Penetration Theory, Altman and Taylor (1973) concluded that self-disclosure facilitates developing mutual trust. Wheeless and Grotz (1977) and Larzelere and Huston (1980) came out with similar findings. With the popularity of CMC, Haider (2002) and McKenna et al. (2002) found a positive association between self-disclosure and intimacy in chat rooms. Based upon these assumptions, hypothesis 4 is proposed:

Hypothesis 4: Individuals who report more predictability, breadth and depth of self-disclosure with their latest added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend will also report greater trust in that friend.

Based on the hypotheses (H1, H2, H3, and H4), a model was constructed in which social attraction drives self-disclosure, as suggested by prior research (Levine, 2000; Ramirez et al., 2002), and predictability is a mediating variable between self-disclosure and trust (Park et al., 2006; Rempel et al., 1985). The final model (see Figure 1) is built upon previous studies done on face-to-face and computer-mediated relationships. They are partially supported in the Craig et al. (2007) research on Facebook relationships.

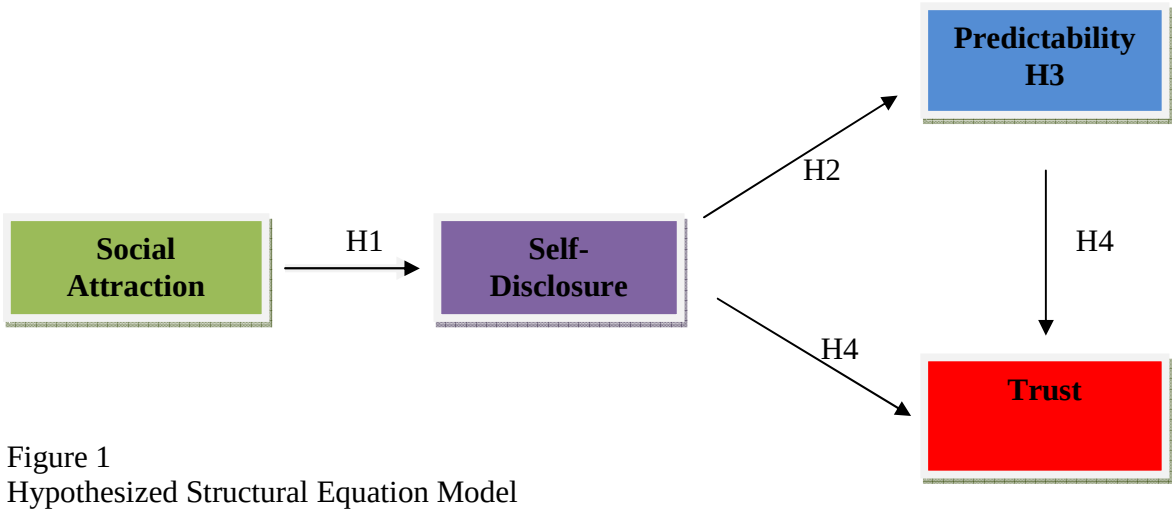


Figure 1
Hypothesized Structural Equation Model

There are contradictory findings about the amount of self-disclosure in online relationships versus self-disclosure in real life. According to researchers (e.g., Cummings et al., 2000; Mesch & Talmud, 2006) whose findings support "cues-filtered out hypothesis," offline relationships are characterized by higher interdependence, breadth and depth of self-disclosure. Similarly, the proponents (Henderson & Gilding, 2004; Levine, 2000; McKenna et al., 2002) of Walther's hyperpersonal perspective argued that individuals self-disclose online more, and develop intimacy much faster than in real life interactions. Parks and Roberts (1998) found no difference in the level of relational development (depth and breadth) between offline and online text-based virtual environment. Despite this contradictory finding about self-disclosure in an offline versus online environment, I believe that Facebook resembles word of mouth communication more than other online applications (chat, newsgroups). Therefore, this study predicts that there will be no significant difference in self-disclosure between exclusive Facebook friends and exclusive FTF friends. Furthermore, it is hypothesized that there will be less disclosure between recently added Facebook friends when compared to the breadth and depth of self-disclosure between two exclusive Facebook friends and two exclusive FTF friends because of the difference in the length of the relationships. The following hypotheses are proposed:

Hypothesis 5: There will be no significant difference in the breadth and depth of self-disclosure between exclusive Facebook friends and exclusive FTF friends.

Hypothesis 6: There will be less disclosure between latest added Facebook friends when compared to disclosure between exclusive Facebook friends and exclusive FTF friends.

Although researchers argued that people are more trusting each other face-to-face than through text chat (Bos et al., 2002; Feng, Lazar, & Preece, 2004), Obremski (2008) argued that

this may not be true within the context of Facebook relationships. If a person trusts another in real life, they might trust that same person on Facebook and vice versa. Henderson and Gilding (2004) went further to argue that people in an online environment self-disclose more to each other, and therefore, trust each other more. However, their study was only conducted with 17 participants who engaged in primarily text-based online interaction. Since Facebook resembles the word of mouth more than traditional newsgroups and anonymous chat boards, hypothesis 7 posits the following:

Hypothesis 7: There will be no significant differences in reported trust between exclusive Facebook friends and exclusive FTF friends.

Although SPT was successfully applied in a real world experience, Richardson (2001) criticized Altman and Taylor for abandoning several main factors that may influence self-disclosure, including sex, race, and ethnic background. This study explores sex differences in self-disclosure. Based on previous studies that women self-disclose more often than men both FTF and in CMC (e.g., Buhrke & Fuqua, 1987; Dolgin & Minova, 1997; Kleman, 2007; Petronio, 2002) and also spend more time on Facebook and have more Facebook friends than men (Sheldon, 2008), it is proposed that:

Hypothesis 8: Women will self-disclose to their latest added Facebook friends, exclusive Facebook friends, and an exclusive face-to-face friends more than men.

Duration of relationships – but even more so, the frequency of communication – was an important predictor of reported trust and intimacy in online romantic relationships studied by Anderson and Emmers-Sommer (2006). Other developmental studies also suggested that as the frequency of communication increases, the self-disclosure and social attraction between two FTF friends increases (Collins & Miller, 1994; Parks & Floyd, 1996). One of the tenants of mere

exposure effect is that exposure to another person increases attraction to that person (Brehm et al., 2002). Therefore, hypothesis 9 predicts that:

Hypothesis 9: As the frequency of communication and the length of a relationship increase, the levels of self-disclosure and trust will increase for both types of Facebook friends and also for face-to-face friends.

This chapter discussed hypotheses and a rationale for each hypothesis. The next chapter will describe the methods used to test them. The results of the pilot study are also reported.

CHAPTER 4
METHODS

Previous chapters reviewed the literature on self-disclosure and relationship development in both a computer-mediated and face-to-face environment, and presented the rationale for nine hypotheses - explaining the similarities and differences in the process of self-disclosure between Facebook friends and face-to-face friends. Two studies were conducted; a pilot and a large study. The purpose of this chapter is to describe the participants in the studies, the procedure used to collect the data, the instrument and statistical analyses used to test hypotheses.

Participants and Procedure in a Pilot Study

Before collecting data for a large study, a pilot study was conducted using college students to test the effectiveness of the measures and instruments used in this study. There were 120 students enrolled in Communication Studies summer classes that participated in the study. They responded to 114 items of an online questionnaire that was accessed from surveymonkey.com. Before analyzing any data, the dataset was examined for missing data. As a result, 13 cases were deleted from the dataset as they had 50 percent or more missing data (see Hair, Black, Babin, Anderson, & Tatham, 2006).

The questionnaire for the pilot study asked participants to think about a friend who belongs in each of the three categories of friends: a) latest added on Facebook, b) an exclusive Facebook friend, and 3) an exclusive face-to-face friend. All subjects responded on all three friendship categories. For the latest added Facebook friend, respondents were asked to think about an individual (only one) whom they added or were added most recently as a Facebook friend although they do not talk to that friend much face-to-face (e.g., met at the friend's house party and decided to add them as a friend). For an exclusive Facebook friend, respondents were

asked to think about a good friend (only one) whom they contact exclusively through Facebook (by messages, chats and wall posts) and never or rarely face-to-face (e.g, a friend that lives far away or is hard to reach). For an exclusive face-to-face friends, respondents were asked to think about an individual (only one) who is their good friend, but they talk to each other only face-to-face and never through Facebook wall, statuses or messages (e.g., a best friend that does not have a Facebook account). For all three types of friendship, respondents were asked to explain who this person is, how close they feel to him/her, and how often they talk to them on Facebook. For each friend, participants had to respond to items from the Social Attraction Scale (McCroskey & McCain, 1974), Self-Disclosure Scale (Parks & Floyd, 1996), Predictability Scale (Parks & Floyd, 1996), and Dyadic Trust Scale (Larzelere & Huston, 1980). The questionnaire also consisted of demographic information questions, including age, sex, ethnicity, country of origin and major.

The results showed that there were 107 participants, 44 men (41%) and 63 women (59%), who completed the surveys. The average age of participants was 22.5 (*SD* = 4.41). There were 4 sophomores, 26 juniors, 49 seniors, and 17 graduate students. One participant did not disclose his or her class. The ethnic background of participants included 67.3% Caucasian (n = 72), 9.3% African-Americans (n = 10), 10.3% Asian-Americans (n = 11), 1.9% Hispanics (n = 2), and 11.2% other (n = 12). Ninety-six (89.7%), participants were born in the USA, and 11 (10.3%) were international students.

Results of the pilot study are reported in Appendix B. The pilot study results partially supported this study's hypotheses. As a result of the study conducted, self-disclosure and predictability scales were slightly shortened to increase each scale's reliability.

Participants and Procedure in a Large Study

Data was gathered from 328 participants recruited from communication courses at Louisiana State University. College students were used in this study because they generally have a high degree of technological ability and are familiar with initiating relationships/friendships on Facebook. Furthermore, 18 to 24-year-olds grew up using computers and are the largest demographic to do so either at home, work, or school (www.census.gov). Before analyzing the data, the dataset was examined for outliers and missing data. As a result, 11 cases were removed from the dataset, including those indicating having 700 close face-to-face friends and 5500 Facebook friends. Other missing data was replaced by imputing mean values from all valid responses (Hair et al., 2006). Categorical data were not imputed. The final dataset contained 317 cases.

A sample consisted of 120 men (37.9%) and 197 women (62.1%). The average participant's age was 20 (M = 20.33, SD = 1.77), ranging from 17 to 30 years. There were 81 first year students, 100 sophomores, 115 juniors, and 21 seniors. Most respondents identified themselves as European American or White (n = 252, 79.5%), followed by African-Americans (n = 36, 11.4%), and Asian-Americans (n = 10, 3.2%). There were 306 American undergraduate students (96.5%) and 11 foreign students (3.5%).

The number of participants was limited to 350, due to the effect the sample size has on finding statistically significant relationships. Having too much power becomes a problem with an increased sample size. Power is "the probability of correctly rejecting the null hypothesis when it should be rejected" (Hair et al., 2006, p. 10). Power is determined by three factors: a) effect size, b) alpha (α), and c) sample size. At any given alpha level, increased sample sizes always produce a greater power of the statistical test. By increasing the sample size, smaller and

smaller effects are found to be statistically significant. This indicated the problem of "too much" power. At a very large sample size, almost any effect is significant.

For structural equation modeling (SEM) used in this study, there is no simple formula that can count the exact sample size needed to achieve a certain power. Sample size for SEM analysis depends on a) multivariate distribution of the data, b) estimation technique, c) model complexity, d) the amount of missing data, and e) the amount of average error variance among the reflective indicators (Hair et al., 2006). As data deviates from the assumption of multivariate normality, the ratio of respondents to parameters needs to be higher. A generally accepted ratio is 15 respondents for each parameter estimated in the model. For the most common SEM estimation procedure, the Maximum Likelihood Estimation (MLE), the recommended minimum sample size is 100-150 to ensure stable MLE solutions. Simpler models can then be tested with smaller samples. Complex models need larger samples. Models containing multiple constructs with communalities less than .5 also require larger sample sizes (Hair et al., 2006). Communalities "represent the average amount of variation among the measured variables explained by the measurement model" (p. 741). Some researchers suggest a minimum of 10 observations per parameter estimated (Joreskog & Sorbom, 1989), although guidelines as low as 5 to 10 observations per parameter estimated also have been suggested (Floyd & Widaman, 1995).

Hair et al. (2006) offered several suggestions on the issue of sample size in SEM. SEM models containing five or fewer constructs, each with more than three items (observed variables) and with high item communalities (.6 or higher), can be adequately estimated with samples as small as 100-150. If any communalities are modest (.45-.55) or the model contains constructs with fewer than three items, then the required sample size should be around 200 (Hair et al.).

For this study, a sample size of 200 should be adequate, but because of missing data, more than 300 participants were surveyed. For a simple t-test, to obtain a medium effect size with the specification of a .01 significance level, a sample of 164 (GPower) participants would be needed to achieve the desired level of 80 percent power (Miles, 2003).

Students filled out the 117- item questionnaire outside of the classroom as a part of their research learning requirement. Students were asked to provide their PAWS ID, which functions as the first part of their e-mail address in order to receive a credit. However, the confidentiality of their responses was assured. In order to participate in the study, participants had to be current, active members of the Facebook community. The advantage of administering an online survey was an opportunity for participants to stop the survey at any point and return later to answer the remaining questions. In addition, students could check their own Facebook page for the exact number of Facebook friends they had.

Instruments

The packet of instruments that was used in the pilot study was slightly modified for the full study (see Table 2, p. 48). To prevent carry-over effect, six versions of the questionnaire were created (for three friendship types, 3! = 3*2*1), and answer choices were randomized for each participant. The means, standard deviations and alphas were calculated for all scales used in the pilot study (see Table 3, p. 50) and a large study (Table 4, p. 50).

- Social Attraction

Social attraction was measured using the "social attraction" component of McCroskey and McCain's (1974) Interpersonal Attraction Scale (IAS). A number of researchers have reported high internal reliability coefficients for various dimensions (Ayres, 1989; Brandt, 1979; Krikorian, Lee, Chock, Harms, 2000; McCroskey & McCain, 1974; Wheeless, Frymier, &

Thompson, 1992). Social attraction was measured toward a recently added Facebook friend, an exclusive Facebook friend, and an exclusive face-to-face friend. Scale consisted of six items (e.g. "He(she) is a friend of mine" and "We have never established a personal friendship with each other") (see Table 2). Answers were measured on a 5-point Likert type scale where 5 = "strongly agree" and 1 = "strongly disagree". A higher number represented more social attraction to a person. Three items were reverse-coded.

Table 2
Items Measuring Social Attraction, Self-Disclosure, Predictability, and Trust in the Pilot and Large Study

Scale	Items	Abbreviation in structural models
Social Attraction		
	He(she) is a friend of mine. P*, F*	SA1
	I have a friendly [Facebook] chat with him(her). P, F	SA2
	It is difficult to meet and talk with him(her) [on Facebook]. P, F, r	SA3
	He(she) just does not really fit into my circle of offline friends. P, F, r	SA4
	We have never established a personal friendship with each other. P, F, r	SA5
	He(she) is pleasant to talk with [on Facebook.] P, F	SA6
Self-disclosure		
	Our [Facebook] communication is limited to just a few specific topics.[I do not usually write on their wall or comment on their statuses.] P, r	BREADTH
	Our communication ranges over a wide variety of topics [includes posting on each other's wall and commenting on their statuses and pictures.] P, F	BREADTH

"(table continued)"

	Our conversation easily moves from one topic to another. P, F	BREADTH
	I usually tell this person exactly how I feel. P, F	DEPTH
	I feel quite close to this person. P, F	DEPTH
	I have told this person what I like about him or her. P, F	DEPTH
	I feel I could confide in this person about almost anything. P, F	DEPTH
	I would never tell this person anything intimate or personal about myself. P, F, r	DEPTH
	I have told this person things about myself that he or she could not get from any other source. P, F	DEPTH
	I always feel I can post to this person's wall any kind of message and he/she won't get mad at me. **F**	BREADTH
	This person and I do not have many common interests.**F,** r	BREADTH
Predictability		
	I can accurately predict how this person will respond to me in most situations. P, F	PREDICT1
	I can usually tell what this person is feeling inside. P, F	PREDICT2
	I can accurately predict what this person's attitudes are. P, F	PREDICT3
	I do not know this person very well. P, F, r	PREDICT4
	I can predict this person's thoughts very well. **F**	PREDICT5
	I can read this person like a book. **F**	PREDICT6
	I can predict this person's behavior very well. **F**	PREDICT7
Trust		
	There are times when my friend cannot be trusted. P, F, r	TRUST1
	My friend is perfectly honest and truthful with me. P, F	TRUST2
	I feel that I can trust my friend completely. P, F	TRUST3
	I feel that my friend can be counted on to help me. P, F, r	TRUST4

*P = item used in a pilot study; F = item used in a large study; r = reverse coded item

Table 3
Means, Standard Deviations and Scale Alphas for Major Variables in the Pilot Study

Variable	Recently added Facebook friend			Exclusive Facebook friend			Exclusive face-to-face friend		
	M	*SD*	*α**	*M*	*SD*	*α*	*M*	*SD*	*α*
Social attraction	2.92	.79	.80	3.87	.60	.70	4.44	.63	.80
Breadth of self-disclosure	2.38	.86	.66	3.57	.79	.60	4.46	.69	.80
Depth of self-disclosure	2.23	.69	.83	3.40	.82	.91	4.21	.72	.92
Predictability	2.40	.88	.84	3.58	.85	.91	4.31	.71	.89
Trust	2.89	.69	.82	3.68	.80	.87	4.08	.85	.88

*Cronbach's alpha is calculated for the original items of all the scales

Table 4
Means, Standard Deviations and Scale Alphas for Major Variables in the Large Study

Variable	Recently added Facebook friend			Exclusive Facebook friend			Exclusive face-to-face friend		
	M	*SD*	*α*	*M*	*SD*	*α*	*M*	*SD*	*α*
Social attraction	3.04	.63	.65	4.02	.63	.68	4.42	.63	.76
Breadth of self-disclosure	2.57	.94	.76	3.94	.77	.67	4.43	.68	.82
Depth of self-disclosure	2.00	.82	.87	3.67	.96	.89	4.34	.79	.90
Predictability	2.00	.87	.94	3.41	1.02	.95	4.22	.77	.95
Trust	2.87	.74	.82	3.85	.83	.89	4.21	.79	.87

*Cronbach's alpha is calculated for the original items of all the scales

- Self-disclosure

Self-disclosure to a Facebook and face-to-face friend was measured by Parks and Floyd's (1996) scale that was developed based on Altman and Taylor's (1973) scales of self-disclosure, measuring depth and breadth. Although other scales exist (e.g., Joinson, 2001; Wheeless & Grotz, 1976) to measure self-disclosure in both an online and offline environment, this study was using the Parks and Floyd (1996) breadth and depth scale because it captures disclosure to another person more directly than the Wheeless and Grotz (1976) study. The Parks and Floyd (1996) scale is also topic-free and was used in numerous studies (e.g., Craig et al., 2007; Yum & Hara, 2005) to measure self-disclosure online. Both breadth and depth used a 5-point Likert-type scale (1 = "strongly disagree" and 5 = "strongly agree"). A higher number represented more self-disclosure with a person. One item in the breadth dimension and one item in the depth dimension were reverse-coded. In a large study, item 1 of breadth dimension of self-disclosure ("Our Facebook communication is limited to just a few specific topics. I do not usually write on their wall or comment on their statuses") was replaced by two additional items (see Table 2).

- Predictability

Perceptions of predictability and understanding are important aspects of Uncertainty Reduction Theory (Berger & Calabrese, 1975; Parks & Adelman, 1983). They were examined using Parks and Floyd's scale (1996) (e.g., "I am very uncertain about what this person is really like,") that measures predictability of an online friend's behavior. Predictability of a friend's behavior was measured with seven items (5 = "strongly agree"; 1 = "strongly disagree"), of which 1 was reverse coded. A higher number represented better predictability of another persons's behavior. Since participants had a problem with item 1 in two different scenarios, that

item was excluded from the large study data collection, and was replaced by additional three items ("I can read this person like a book," "I can predict this person's thoughts very well," and "I can predict this person's behavior very well.") (see Table 2)

- Trust

Altman and Taylor (1973) stated that trust is necessary for self-disclosure in ongoing relationships. The reciprocity of disclosure is based on reciprocity of trust in such relationships. Early conceptions of trust focused on "basic trust" as a necessary part of a healthy personality (Erikson, 1950). Two decades later, Rotter (1967) defined trust as an expectancy about the promise of another individual. His Interpersonal Trust Scale (ITS) was comprised of 25 Likert-type items, such as "Parents usually can be relied upon to keep their promises" and "Most elected public officials are really sincere in their campaign promises" (p. 664). However, the ITS refered to generalized groups (parents, teachers, etc.) and not specific individuals. Larzelere and Huston (1980) built on these previous studies and created the Dyadic Trust Scale (DTS) that measured trust with respect to a *particular* other person. Larzelere and Huston (1980) defined trust as dyadic because they believed "trust exists to the extent that a person believes another person (or persons) to be benevolent and honest" (p. 596). "Benevolence is described as whether a person is motivated by his or her own desires, or if he or she is motivated by gain in the relationship jointly with the partner" (Watson, 2004, p. 6). The Dyadic Trust Scale has been found to have a high reliability when measuring associations to self-disclosure. Larzalere and Huston (1980) reported an alpha reliability of .93, and Baxter (1988) has argued that, based on evidence from prior studies, the Dyadic Trust Scale has greater construct validity and internal reliability than other trust measures. In the Anderson and Emmers-Sommer (2006) study, Cronbach's alpha for DTS was .90. Trust in a Facebook and face-to-face friend was measured

with four items of DTS (5 = “strongly agree,” and 1 = “strongly disagree”), of which one item was reverse coded. A higher number represented more trust in another person (see Table 2).

- Duration of Relationship

Duration of relationship was measured with a single item: “How long have you known each other?” Respondents were asked to indicate the amount of time measured in days, months, or years. For the recently added Facebook friends, respondents indicated that they have known each other for an average of 19 months (M = 18.72; SD = 36.87), ranging from 2 days to 21 years. For the exclusive Facebook friend to whom participants interacted only through Facebook because he or she does live far away or is hard to reach, respondents indicated they have known each other for an average of 6 years (M = 6.43, SD = 5.41). Finally, duration of the relationship with an exclusive face-to-face friend (who does not have a Facebook account) was also 6 years (M = 6.02; SD = 5.57).

- Frequency of Communication

Frequency of communication was measured with a question, “How often do you communicate through Facebook/face-to-face.” Responses included, “Less than once a week,” “Once a week,” “Two-three times per week,” “Every day,” and “Several times per day” for an exclusive Facebook and exclusive FTF friend that participants interacted with. Most respondents indicated that they talk to their exclusive Facebook friend less than once a week (47.9%). Only 15% respondents indicated that they talk to each other every day or several times per day. For an exclusive face-to-face friend, 42% respondents indicated that they talk to each other every day or several times per day, and 29% that they talk to each other two-three times per week.

Table 5 provides some examples of whom the participants indicated as their Facebook and FTF friends.

Table 5
Examples of Facebook and Face-to-Face Friendships

Recently added Facebook friend with no much face-to-face interaction	*Good Facebook friend with no much face-to-face interaction*	*Good face-to-face friend (never had a Facebook conversation)*
A new/fellow classmate *	A friend who moved away*	My best friend*
A girl I met tailgating	I went to middle school with him/her.	Sister
A friend of a friend	Met at a camp	My girlfriend
A friend's boyfriend	Good friend who went to college out of state	My neighbor
Went to high school with this person	A friend I met in Europe this summer	Co-worker
Co-worker	My old roommate from London	My brother who does not have a FB account

*Dominant answer in a category

Statistical Analyses

To analyze data collected for this study, this dissertation used univariate and multivariate statistical techniques, including confirmatory factor analysis, structural equation modeling, MANOVA, t-test, correlation analysis and multiple regression.

Confirmatory factor analysis and structural equation modeling were used to test H1, H2, H3, and H4. Confirmatory factor analysis of four constructs, employing AMOS 17.0, a covariance-based SEM tool was conducted. Although EFA gives an idea of dimensionality, CFA, as the name implies, essentially focuses on whether a hypothesized factor model does or does not fit the data. Thus, CFA is a commonly accepted method to test/confirm dimensionality (Netemeyer, Bearden, & Sharma, 2003). The number of factors, the factor structure (i.e., which

load on which factors), and the relationship among factors (i.e., whether the factors are correlated) are specified a priori (Netemeyer et al., 2003). Figure 1 (p. 39) is the hypothesized measurement model for this study. Because there is no single universally accepted fit index, a variety of indices were used to provide a comprehensive indication of fit.

First, the χ^2 test was conducted to test the fit between the sample covariance matrix and the matrix implied by the models. A large χ^2 value and a statistically significant result (i.e., $p <$ .05) indicate a poor fit in that there is a substantial proportion of variance in the data not explained by the model. As this statistic is somewhat sensitive to sample size, a second calculation can be made that involves dividing the χ^2 value by the degrees of freedom (Kline, 1998). Although no clear-cut guideline exists, a ratio below 3 is generally considered to be acceptable according to Kline. Fit statistics insensitive to sample size are also be used, including the goodness-of-fit index. One badness-of-fit measure (root mean square error of approximation) is used. Values below .08 for RMSEA are generally considered to be acceptable.

In addition to testing the model fits, the results were used to determine measurement model validity including convergent validity and discriminant validity. Convergent validity is the extent to which indicators of a specific construct converge or share a high proportion of variance in common. Discriminant validity is the extent to which a construct is truly distinct from other constructs (Hair et al., 2006, p. 771) There are several methods used to estimate the relative amount of convergent validity including: standardized loading estimates of .5 and higher, variance extracted of .5 or higher, and construct reliability of .7 and higher. Variance extracted is computed as the total of all squared standardized factor loadings (λ_i) divided by the number of items (N). Construct reliabilities are computed from the squared sum of factor loadings (λ_i) for each construct and the sum of error variance terms for a construct (δ_i) are calculated using the

standard formula. Discriminant validity compares the variance extracted estimates (AVE) from each factor with the squared interconstruct correlations (SIC) associated with that factor.

To test for the difference in self-disclosure and trust between three types of friendship (H5, H6 and H7), paired samples t-tests were performed. To test sex differences in self-disclosure (H8), the one-way MANOVA and independent samples t-test were used. Correlations and multiple regressions were calculated to test the relationship between the frequency of communication and self-disclosure and trust, and the duration of the relationship and self-disclosure and trust for three friendship types (H9).

CHAPTER 5
FULL STUDY RESULTS

On average, respondents indicated that they spend 107 minutes (1.78 hours) per day on Facebook (*SD* = 82.18), ranging from a minimum of 0 minutes to a maximum of 420 minutes (8h). The average number of Facebook friends in the sample was 568 (*SD* = 371), with the lowest number being 16 friends and the highest number being 2300 friends.

Test of Hypotheses 1- 4

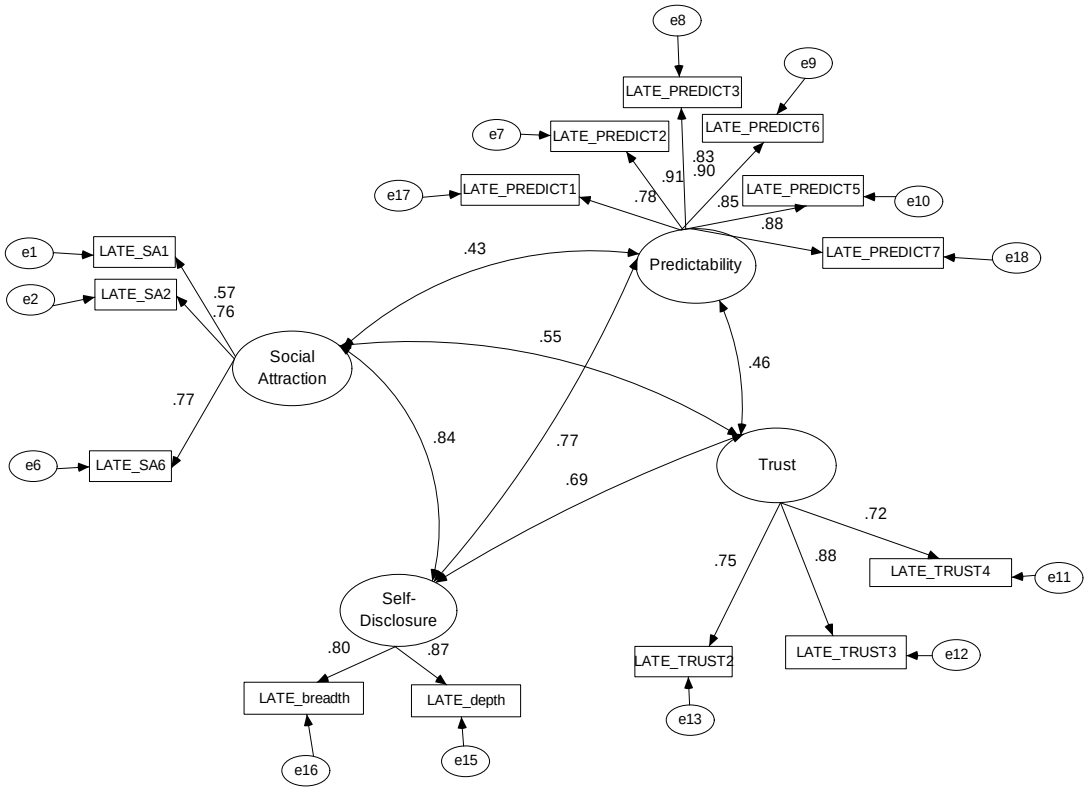
Hypothesis 1, 2 and 4 predicted that individuals who report high levels of social attraction with their most recently added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend will also report having greater breadth and depth of self-disclosure with those friends (H1), greater predictability of their friends' behavior (H2), and greater trust in them (H4). (see Figure 1, p. 39) Hypothesis number three posited that predictability will mediate the relationship between self-disclosure and trust for the three types of friendship.

Again, three confirmatory factor analyses and three structural equation models were tested to check for the dimensionality and relationship between social attraction, self-disclosure, predictability and trust in three friendship types (latest Facebook, exclusive Facebook, and exclusive face-to-face).

New Facebook Friendship

Figure 2 shows the final results of the confirmatory factor analysis for the model representing the relationship between social attraction, self-disclosure, predictability, and trust for the new Facebook friend. The model had a good fit, with all goodness-of-fit measures larger than .90, a badness-of-fit measure equal to .8, and all significant correlations.

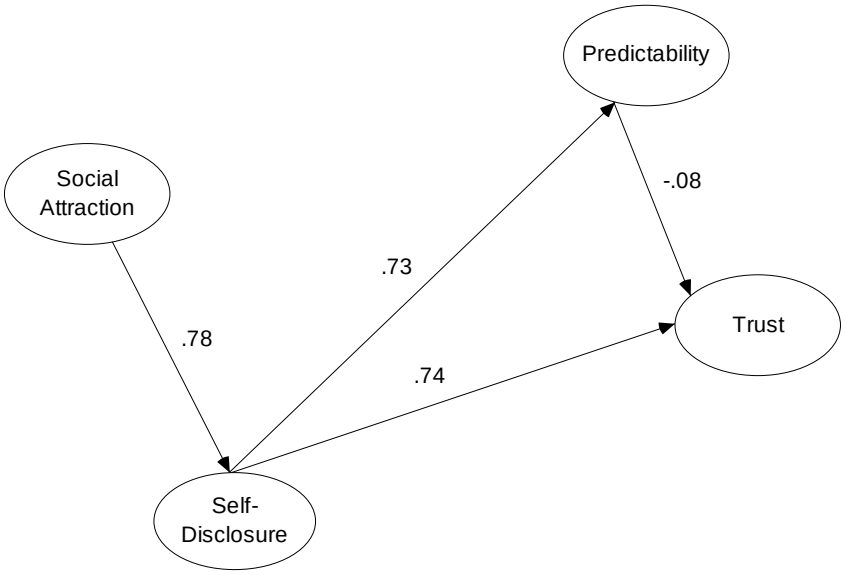
To test the research hypotheses, dependent relationships were established between the constructs of social attraction, self-disclosure, predictability and trust. In the hypothesized model, self-disclosure is dependent on social attraction, predictability is dependent on self-disclosure and trust is dependent on predictability and self-disclosure. Figure 9 shows the structural model relationships between variables. The χ^2/df ratio for the structural model was 3.27. In addition, the Comparative Fit Index (CFI) was .95, and the TLI was .93. The Root Mean Square Error of Approximation (RMSEA) was .08. The results indicate the model was a good fit. Items showed convergent validity (loadings higher than .5, AVE higher than .5, construct reliability larger than .7) and discriminant validity.



Goodness of fit summary: $\chi^2_{(317)}$/df = 3.28, CFI=.95, TLI = .93, RMSEA = .08

Figure 2
Final Confirmatory Factor Analysis of the Relationship between Social Attraction, Self-Disclosure, Predictability and Trust for a New Facebook Friend

Next, the significance of path coefficients was examined for all variables in the model. The paths between social attraction and self-disclosure, and between self-disclosure and predictability, and self-disclosure and trust were all significant ($p < .05$). However, the relationship between predictability and trust was not significant ($p > .05$).



Goodness of fit summary: $\chi^2_{(317)}/df = 3.27$, CFI=.95, TLI = .93, RMSEA = .08

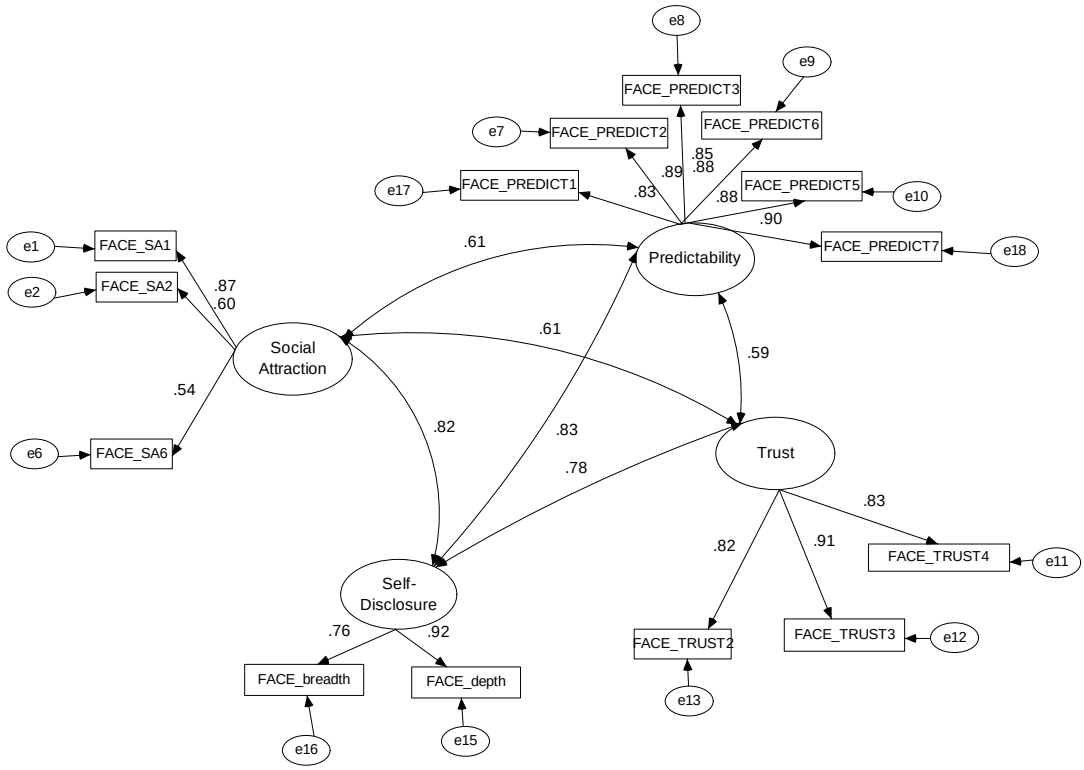
Figure 3
Final Structural Equation Model of Social Attraction Influence on Self-Disclosure, Predictability and Trust for a New Facebook Friend

The strength of the relationship between constructs is shown in Table 6 (p. 64). A strong relationship ($\beta = .78$) was found between social attraction and self-disclosure, which suggests that individuals self-disclose to recently added Facebook friends if they are socially attracted to them (H1 supported). A strong relationship also existed between self-disclosure and predictability ($\beta = .73$) (H2 supported), and between self-disclosure and trust ($\beta = .74$) (H4 supported). Self-disclosing to a recently added Facebook friend leads to the prediction of his or

her behavior, but also in trusting that individual. No significant relationship was found between predictability and trust, which would suggest that the predictability of someone's behavior does not lead us to trust that person more. Thus, predictability does not mediate the relationship between self-disclosure and trust in a case of a recently added Facebook friend (H3 not supported).

Exclusive Facebook Friendship

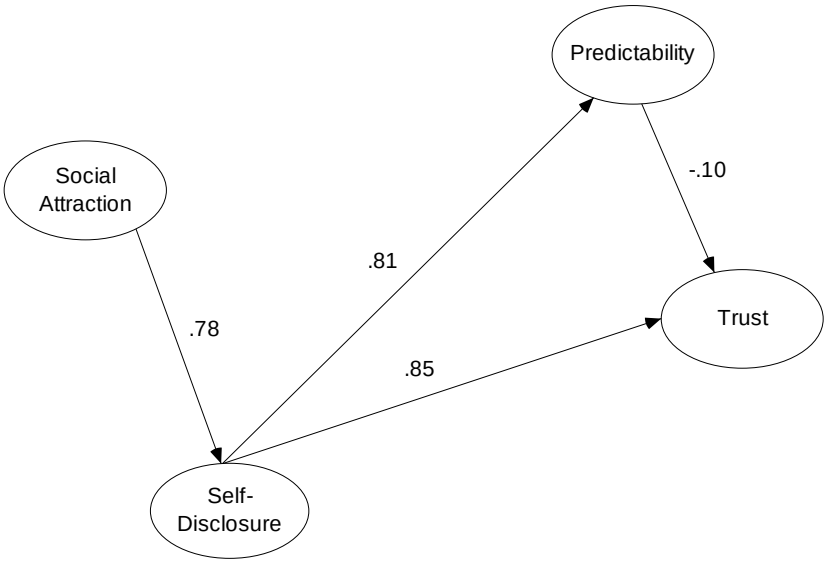
Figure 4 shows the results of the CFA for the model representing the relationship between constructs of social attraction, self-disclosure, predictability and trust for exclusive Facebook friends. The model showed a good fit, convergent and discriminant validity, and all significant correlations between social attraction, self-disclosure, predictability and trust.



Goodness of fit summary: $\chi^2_{(317)}/df = 2.91$, CFI=.96, TLI = .95, RMSEA = .078

Figure 4
Final Confirmatory Factor Analysis of the Relationship between Social Attraction, Self-Disclosure, Predictability and Trust for an Exclusive Facebook Friend

In order to test for structural or dependence relationship for social attraction, self-disclosure, predictability, and trust between exclusive Facebook friends, a structural model was tested (Figure 5).



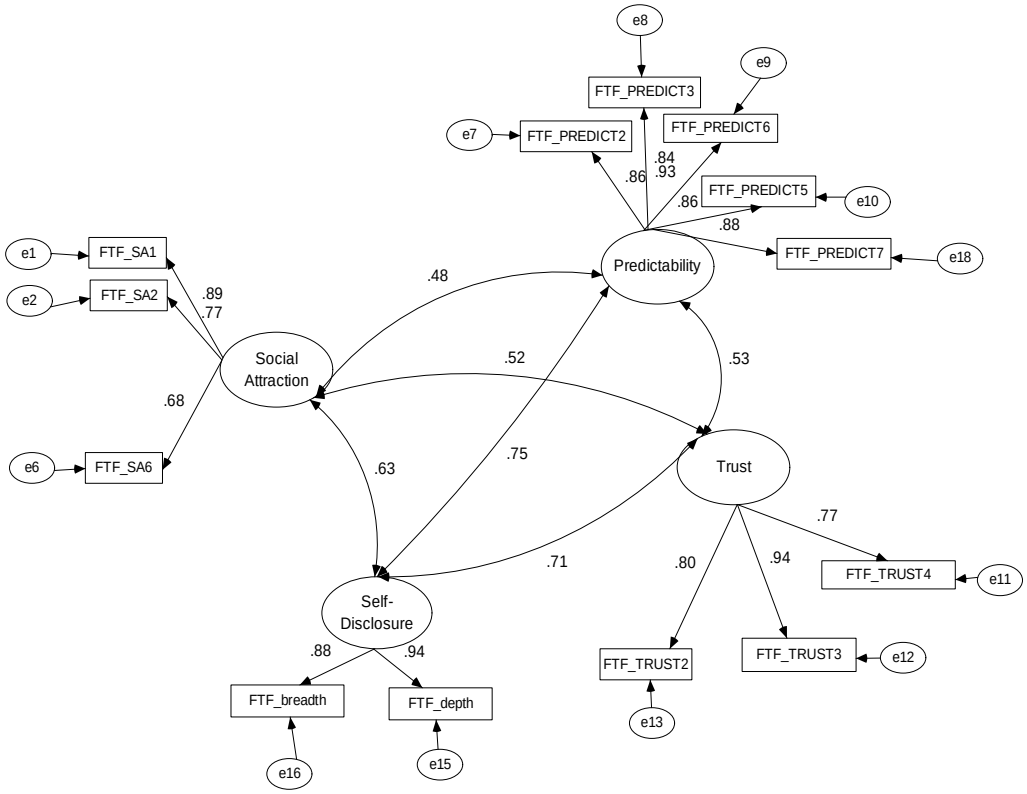
Goodness of fit summary: $\chi^2_{(317)}/df = 2.88$, CFI=.96, TLI = .95, RMSEA = .07

Figure 5
Final Structural Equation Model of Social Attraction Influence on Self-Disclosure, Predictability and Trust for an Exclusive Facebook Friend

A strong relationship ($\beta = .78$) was found between social attraction and self-disclosure, which suggests that individuals self-disclose to exclusive Facebook friends if they are socially attracted to them (H1 supported). A strong relationship existed between self-disclosure and predictability ($\beta = .81$) (H2 supported) and self-disclosure and trust ($\beta = .85$) (H4 supported), while no relationship existed between predictability of that friend's behavior and trust (H3 not supported). Table 6 (p. 64) summarizes the standardized coefficients for the relationship between these four variables.

Exclusive Face-to-Face Friendship

Figure 6 shows the results of the confirmatory factor analysis for the model representing the relationship between social attraction, self-disclosure, predictability and trust for exclusive face-to-face friends. The model showed an excellent fit, convergent and discriminant validity and all significant correlations between social attraction, self-disclosure, predictability and trust.



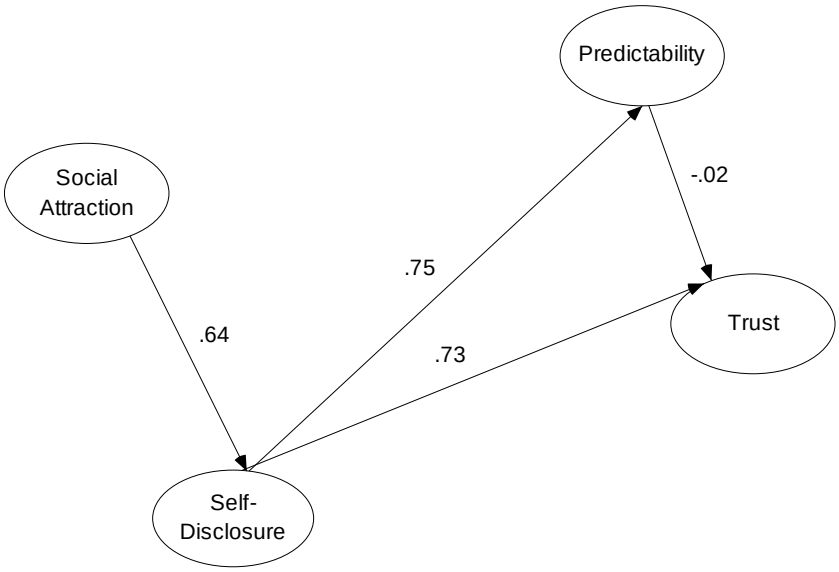
Goodness of fit summary: $\chi^2_{(317)}/df = 2.30$, CFI=.98, TLI = .97, RMSEA = .06

Figure 6
Final Confirmatory Factor Analysis of the Relationship between Social Attraction, Self-Disclosure, Predictability and Trust for an Exclusive Face-to-Face Friend

In order to test for structural or dependence relationship, a structural model was tested (Figure 7). A moderate relationship ($\beta = .64$) was found between social attraction and self-disclosure, which suggests that individuals self-disclose to exclusive face-to-face friends if they

are socially attracted to them (H1 supported). A positive and significant relationship existed between self-disclosure and predictability (β = .75) (H2 supported) and between self-disclosure and trust (β = .73), (H4 supported), while no significant relationship existed between the predictability of that friend's behavior and trust (Table 6, p. 64). (H3 not supported).

Table 7 (p. 64) summarizes the goodness of fit measures for all the models represented by Figures 3, 5 and 7.



Goodness of fit summary: $\chi^2_{(317)}$/df = 2.28, CFI=.98, TLI = .97, RMSEA = .06

Figure 7
Final Structural Equation Model of Social Attraction Influence on Self-Disclosure, Predictability and Trust for an Exclusive Face-to-Face Friend

Altogether, the results of conducting structural equation modeling (Figures 3, 5, 7) support the first and second, but not the third hypotheses. The first hypothesis predicted that individuals who report high levels of social attraction would also report greater breadth and depth of self-disclosure with their latest added Facebook friends, exclusive Facebook friends, and exclusive face-to-face friends. The SEM findings supported this hypothesis. The path

coefficients between social attraction and self-disclosure were significant in all three types of friendship (new Facebook, exclusive Facebook, exclusive face-to-face). The second hypothesis predicted that individuals who report greater breadth and depth of self-disclosure with their latest added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend would also report greater predictability of their friends' behavior. The results supported this hypothesis. Finally, the third hypothesis stating that predictability will mediate the relationship between self-disclosure and trust for both Facebook and face-to-face friends was not supported. However, this does not indicate that there is no relationship between predictability and trust. Separate correlations were conducted suggesting that there is a significant and positive relationship between predictability and trust for both recently added Facebook friends, exclusive Facebook friends and exclusive face-to-face friends. These findings supported the fourth hypothesis. In addition, there was a positive and significant relationship between self-disclosure and trust for all three types of relationship, which again supported the fourth hypothesis (see Table 8, 9 and 10).

Table 6
Summary of Path Coefficients for Models Representing Facebook and Face-to-Face Relationship Development in the Large Sample Study

Path Analysis	A New Facebook Friend	Exclusive Facebook Friend	Exclusive Face-to-face Friend
Social Attraction → Self-disclosure	.78**	.78**	.64**
Self-disclosure → Predictability	.73**	.81**	.75**
Predictability → Trust	ns	Ns	Ns
Self-disclosure → Trust	.74**	.85**	.73**

Note. ** $p < .01$; ns = not significant

Table 7
Summary of Goodness of Fit Measures in the Large Sample Study

Type of Friendship	χ^2/df	CFI	TLI	RMSEA
New Facebook Friendship				
Model 1	3.27	.95	.93	.08
Exclusive Facebook Friendship				
Model 1	2.88	.96	.95	.07
Exclusive Face-to-Face Friendship				
Model 1	2.28	.98	.97	.06

Note: CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation

Table 8
Correlations between Social Attraction, Self-Disclosure, Predictability and Trust for Recently Added Facebook Friends

Scale	1	2	3	4	5
1. Social attraction	-	.59**	.52**	.31**	.41**
2. Breadth of self-disclosure		-	.69**	.57**	.49**
3. Depth of self-disclosure			-	.68**	.58**
4. Predictability				-	.43**
5. Trust					-

** p <.001

Table 9
Correlations between Social Attraction, Self-Disclosure, Predictability and Trust for Exclusive Facebook Friends

Scale	1	2	3	4	5
1. Social attraction	-	.56**	.58**	.47**	.51**
2. Breadth of self-disclosure		-	.70**	.57**	.55**
3. Depth of self-disclosure			-	.75**	.69**
4. Predictability				-	.55**
5. Trust					-

** p <.001

Table 10
Correlations between Social Attraction, Self-Disclosure, Predictability and Trust for Exclusive Face-to-Face Friends

Scale	1	2	3	4	5
1. Social attraction	-	.57**	.52**	.41**	.47**
2. Breadth of self-disclosure		-	.82**	.63**	.62**
3. Depth of self-disclosure			-	.71**	.62**
4. Predictability				-	.53**
5. Trust					-

** p <.001

Test of Hypothesis 5

The fifth hypothesis predicted that there would be no significant difference in the breadth and depth of self-disclosure between exclusive Facebook friends and exclusive FTF friends. This

hypothesis was not supported. In the case of the breadth of self-disclosure, face-to-face friends reported larger variety of topics discussed than Facebook friends (M_{FTF} = 4.43; $M_{Facebook}$ = 3.94, t (316) = -9.15, $p < .001$) although respondents reported that they knew both their FTF and exclusive Facebook friends for an average of six years. In terms of the depth of self-disclosure, face-to-face friends discussed more intimate topics than Facebook friends, resulting in a statistically significant difference (M_{FTF} = 4.34; $M_{Facebook}$ = 3.67, t (316) = -10.25, $p < .001$).

Test of Hypothesis 6

The sixth hypothesis predicted that there would be less disclosure between recently added Facebook friends when compared to disclosure between exclusive Facebook friends and exclusive FTF friends. This hypothesis was supported. For the breadth of self-disclosure or the number of topics individuals discussed with each other, the mean for the latest added Facebook friend was 2.57, for the exclusive Facebook friend it was 3.94, and for an exclusive face-to-face friend, it was 4.43. Separate paired t-tests showed that those differences were all statistically significant ($p < .001$). Similar results were found for the depth dimension of self-disclosure. The mean depth score for the latest added Facebook friend was 2.00, for the exclusive Facebook friend it was 3.67, and for an exclusive face-to-face friend, it was 4.34. Again, these differences were all statistically significant ($p < .001$).

Test of Hypothesis 7

The hypothesis number seven predicted that there would be no significant differences in reported trust between exclusive Facebook friends and exclusive FTF friends. Again, paired sample t-tests were computed. This hypothesis was not supported. Participants reported significantly less trust in an exclusive Facebook friend (M_{face} = 3.85, SD = .83) than in an

exclusive face-to-face friend (M_{FTF} = 4.22, *SD* = .79, *t* (316) = - 6.25, *p* <.001). However they trusted their recently added Facebook friend the least (M_{late}=2.87, *SD* = .74).

Test of Hypothesis 8

Hypothesis 8 stated that women will self-disclose to their Facebook and face-to-face friends more than men. One-way MANOVAs were computed for the combination of dependent variables breadth and depth of self-disclosure to a recently added Facebook friend, an exclusive Facebook friend and for an exclusive face-to-face friend. For the recently added Facebook friend, a one-way MANOVA revealed a significant multivariate main effect for sex, Wilks' λ = .978, *F* (2, 314) = 3.48, *p* <. 05, η^2 = .02. Given the significance of the overall test, the univariate main effects were examined. Significant univariate main effects for sex were obtained for the depth dimension of self-disclosure to a recently added Facebook, *F* (1, 315) = 6.11, *p* <.05 , η^2 =.02, power = .69, but not for the breadth of self-disclosure. Mean comparisons revealed that men scored higher on the depth dimension of self-disclosure (M_{depth_m} = 2.15) to their recently added Facebook friend than women (M_{depth_f} = 1.91), which is opposite of hypothesis 8 that women will self-disclose more than men (see Table 8 for mean differences).

For the exclusive Facebook friend, analysis found a significant multivariate main effect for sex, Wilks' λ = .903, *F* (2, 314) = 16.80, *p* <. 001, η^2 = .10. Given the significance of the overall test, the univariate main effects were examined. Significant univariate main effects for sex were obtained for the breadth dimension of self-disclosure to an exclusive Facebook friend, *F* (1, 315) = 26.31, *p* <.001, η^2 =.077, but not for the depth dimension of self-disclosure. Mean comparisons revealed that women self-disclosed, in terms of breadth, to their exclusive Facebook friends more than men, while there were no significant difference in the depth of disclosures. Finally, for the exclusive face-to-face friend, a significant multivariate main effect for sex was

found, Wilks' $\lambda = .962$, F (2, 314) = 6.26, $p <. 05$, $\eta^2 = .038$. Again, given the significance of the overall test, the univariate main effects were examined. Significant univariate main effects for sex were obtained for both the breadth dimension of self-disclosure to an exclusive face-to-face friend, F (1, 315) = 10.17, $p <.05$, $\eta^2 =.031$, and for the depth dimension of self-disclosure, F (1, 315) = 12.20, $p <.05$, $\eta^2 =.037$. Mean comparisons revealed that women self-disclosed (in terms of both breadth and depth) to their exclusive face-to-face friends more than men (see Table 11). Therefore, results partially supported the hypothesis number eight.

Test of Hypothesis 9

The ninth hypothesis predicted that as the frequency of communication and the length of a relationship increase, the levels of self-disclosure and trust will increase for both Facebook and face-to-face friends. To test this hypothesis, correlations were first conducted. Table 12 and Table 13 show the results of correlations between self-disclosure, trust, frequency of communication and the duration of a relationship. Results indicated that the levels of self-disclosure for both an exclusive Facebook friend and an exclusive face-to-face friend increased as the frequency of communication increased. Trust increased in correlation with frequency of communication. This means that more often individuals communicated with each other through Facebook or face-to-face, the more they self-disclosed to that person and also more they trusted them. Duration of relationships was also related to self-disclosure to an exclusive Facebook and an exclusive face-to-face friend and trust in that friend. The longer individuals knew each other, the more they disclosed to each other and trusted each other. However, no relationship was found between the duration of the relationship and self-disclosure and trust for the recently added Facebook friends. Therefore, the hypothesis 9 was partially supported.

Table 11
Descriptive Statistics for Self-Disclosure and Trust across the Three Friendship Types

		Sex	Mean	SD
Breadth				
	Latest added Facebook friend	*m*	2.64	1.03
		f	2.53	.88
	Exclusive Facebook friend	*m*	3.66	.82
		f	4.10*	.68
	Exclusive face-to-face friend	*m*	4.28	.69
		f	4.52*	.65
Depth				
	Latest added Facebook friend	*m*	2.15*	.95
		f	1.91	.72
	Exclusive Facebook friend	*m*	3.55	.91
		f	3.74	.99
	Exclusive face-to-face friend	*m*	4.14	.79
		f	4.45*	.76
Trust				
	Latest added Facebook friend	*m*	2.94	.87
		f	2.83	.65
	Exclusive Facebook friend	*m*	3.80	.82
		f	3.88	.84
	Exclusive face-to-face friend	*m*	4.13	.71
		f	4.27	.83

*statistically significant difference between sexes

In addition to correlations, multiple regressions were conducted to examine the importance of frequency of communication and duration of relationship in self-disclosure and trust in Facebook or face-to-face friends. Results showed that the duration of relationship and the frequency of communication could explain 15% of variance in self-disclosure to a face-to-face friend and 7% of variance in trust to face-to-face friend. However, time was even more important variable in exclusive Facebook relationships, explaining 16% of variance in self-disclosure to a Facebook friend and 14% of variance in a trust to that friend.

Table 12
Large Sample Correlations between Frequency of Communication, Duration of Relationship and Self-Disclosure to Facebook and Face-to-Face Friends

Self-disclosure	Frequency	Duration
New Facebook Friend		
Breadth	-	-.10
Depth	-	.10
Exclusive Facebook Friend		
Breadth	.30**	.21**
Depth	.31**	.24**
Exclusive Face-to-Face Friend		
Breadth	.28**	.15**
Depth	.30**	.21**

Note. *Significance at $p < .05$
** Significance at $p < .01$.

Table 13
Large Sample Correlations between Frequency of Communication, Duration of Relationship and Trust to Facebook and Face-to-Face Friends

Trust	Frequency	Duration
New Facebook Friend	-	-05
Exclusive Facebook Friend	.27**	.28**
Exclusive Face-to-Face Friend	.19**	.16**

Note. *Significance at $p < .05$
** Significance at $p < .01$.

Summary

This chapter reported the results of the hypotheses testing in a full study. Of the nine hypotheses, four were fully supported, two partially supported, and three not supported, as shown in Table 14. The following chapter will discuss the results, examine study limitations and offer suggestions for future research.

Table 14
Results of Hypotheses Testing

H1:	Individuals who report high levels of social attraction with their most latest added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend will also report having greater breadth and depth of self-disclosure with those friends. SUPPORTED
H2:	Individuals who report greater breadth and depth of self-disclosure with their latest added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend will also report greater predictability of their friends' behavior. SUPPORTED
H3:	Predictability will mediate the relationship between self-disclosure and trust for

"(table continued)"

latest Facebook friend, exclusive Facebook friends and exclusive face-to-face friend. NOT SUPPORTED

H4: Individuals who report more predictability, breadth and depth of self-disclosure with their latest added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend will also report greater trust in that friend. SUPPORTED

H5: There will be no significant difference in the breadth and depth of self-disclosure between exclusive Facebook friends and exclusive FTF friends. NOT SUPPORTED

H6: There will be less disclosure between latest added Facebook friends when compared to disclosure between exclusive Facebook friends and exclusive FTF friends. SUPPORTED

H7: There will be no significant differences in reported trust between exclusive Facebook friends and exclusive FTF friends. NOT SUPPORTED

H8: Women will self-disclose to their latest added Facebook friends, exclusive Facebook friends, and exclusive face-to-face friends more than men. PARTIALLY SUPPORTED

H9: As the frequency of communication and the length of a relationship increase, the level of self-disclosure and trust will increase for both types of Facebook friends and also for face-to-face friends. PARTIALLY SUPPORTED

CHAPTER 6
DISCUSSION

Findings and Implications

The results of this study show that the process of relationship development and maintenance, in terms of the relationships between social attraction, self-disclosure, predictability and trust, are similar in both Facebook and face-to-face relationships. Regardless of the medium, individuals who are socially attracted to each other disclose to each other more, which influences the predictability of each other's behavior and trust in each other (see Figure 8). This supports Axiom 1 and Theorem 14 of Uncertainty Reduction Theory that was developed to explain face-to-face interactions, but was successfully applied to computer-mediated setting.

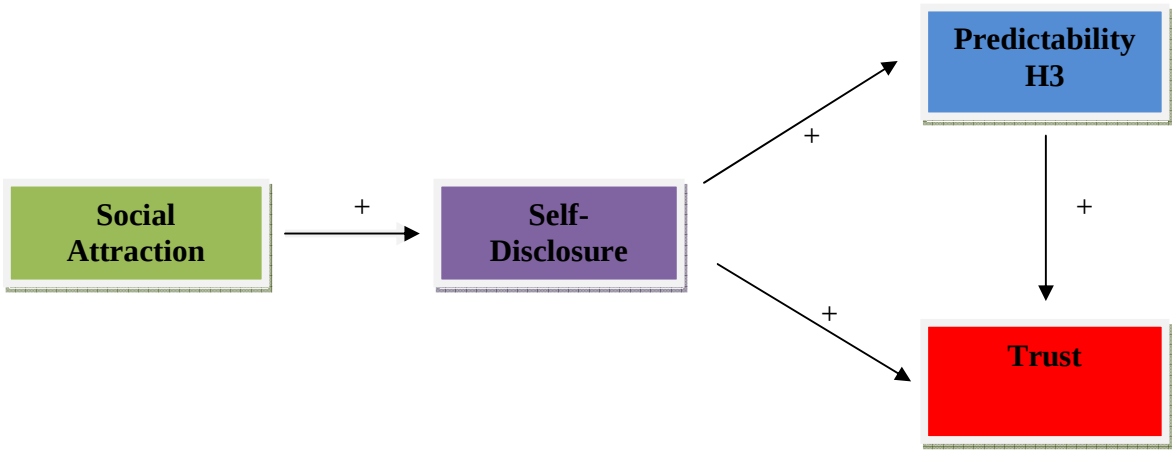


Figure 8
Relationship between Social Attraction, Self-Disclosure, Predictability and Trust in the Three Types of Friendships

The differences between three types of relationships examined in this dissertation are the amount of self-disclosure, predictability and mutual trust. Although Facebook is a social network that connects people to each other similarly to face-to-face networks, respondents indicate less self-disclosure, less predictability and less trust in their Facebook friends than face-

to-face friends. Sex differences emerged from the study analysis, suggesting that women disclose more to their face-to-face and exclusive Facebook friends, but less to their new Facebook friends when compared to men. The following sections discuss these findings in more detail, including the possible limitations of the study and suggestions for future research.

Testing Relationships among Social Attraction, Self-Disclosure, Predictability and Trust

The model suggests an explanation for the relationship development between three types of friends: exclusive Facebook friends, recently added Facebook friends and exclusive face-to-face friends. Results of structural equation modeling show support for three out of four hypotheses that explained the paths between variables in a model. First, findings indicate that there is a positive and significant relationship between social attraction and self-disclosure for face-to-face friends, exclusive Facebook friends and recently added Facebook friends (H1 supported). These findings are in line with Theorem 14 of Uncertainty Reduction Theory (Berger & Calabrese, 1975) which suggests that persons tend to disclose intimate information to persons they like and withhold intimate information from persons whom they do not like. Although Ramirez et al. (2002) and Levine (2000) supported the idea that similar things occur in a CMC setting, the novel findings of this study is the applicability of Uncertainty Reduction Theory to the recently established Facebook friendship as well as to an exclusive Facebook friendship. Therefore, Theorem 14 of Uncertainty Reduction Theory works for both online and offline relationships. Regardless the medium in which two persons interact, liking someone is an antecedent to high levels of disclosure. As Jourard (1959) suggested a half century ago, the act of self-disclosure is personally rewarding and cathartic, and such positive feelings lead to liking.

Secondly, the path coefficients between social attraction and self-disclosure suggests that the strongest relationship is between most recently established Facebook relationships, followed

by exclusive Facebook relationships and lastly face-to-face relationship. This is not surprising considering the fact that face-to-face relationships include more than self-disclosure; communicators can observe each others' behavior and nonverbal cues; social attraction may become less important than in a mediated setting, such as social networking sites. As most of the participants in this study reveal, their exclusive face-to-face friends are often their best friends, their family members, or romantic partners, all of whom they have known for an average of six years. It is possible that respondents who just added each other as Facebook friend, rely on the "liking" factor more than anything else, since they knew each other for the least amount of time. Future inquiry is needed to test if the tenets of Uncertainty Reduction Theory would also work in other CMC contexts.

By disclosing on Facebook, but also face-to-face, users not only disclose to those to whom they are socially more attractive, but they can predict each other's attitudes, values, and beliefs. Predictability is one of the basic premises of the Uncertainty Reduction Theory – the more friends talk to each other, the less uncertainty they experience (Axiom 1). In this study, the more topics that friends discuss, the more certain they feel about each other's behavior and attitudes. As the structural models in this study suggest, a positive and significant relationship between self-disclosure and predictability exists in all types of friendships studied (H2 supported). These findings are important as they support Walther's (1996) findings that CMC relational development and face-to-face relational development are very similar. Regardless the type of relationship and the medium through which participants interact, social attraction among friends is significantly related to self-disclosure to that friend (H1), which is significantly related to the prediction of that friends' behavior (H2) and trust (H4). How is this possible in a limited-cues environment? Tidwell and Walther (2002) explained that individuals adapt their

communicative behavior in limited-cue environments, utilizing different content and linguistic strategies.

Additional evidence that relationship development across different media is similar is the statistically significant relationship between the variables of self-disclosure and trust (H4 supported). This supports the tenets of Social Penetration Theory and previous studies that found self-disclosure to be important for the formation of online relationships (Cho, 2006) but also for the facilitation of developing mutual trust both face-to-face (Wheeless & Grotz, 1977; Larzelere and Huston, 1980) and CMC settings (Haider, 2002; McKenna et al., 2002). Although predictability is not a mediator between self-disclosure and trust (H3 not supported), results of correlations suggest that it is still positively and significantly related to trust in all of types of friendships examined (H4 supported). Regardless of the medium (face-to-face or Facebook), the type of relationship (sister, fellow classmate or a long-distant friend), and the stage in which relationship is (initiating vs. developed), the more topics individuals discuss with each other, and the more intimate those topics are, the more trust they have in each other. Therefore, the conclusion is that the tenets of Social Penetration Theory can be applied to relationships maintained online (Facebook) and offline. However, predictability did not mediate this relationship as predicted (H3). The possible explanation for the predictability variable not being a mediator between self-disclosure and trust may be in the fact that the definition of predictability is confused with trust. Rempel et al. (1985) actually suggested that predictability is one of the dimensions of trust.

The three types of relationships differ in the amount of self-disclosure, predictability and trust between friends. Although both Facebook and face-to-face networks connect people, respondents indicate less self-disclosure, less predictability and less trust in their Facebook

friends than face-to-face friends. The results indicate a significant difference in the breadth and depth of self-disclosure between exclusive Facebook friends and exclusive face-to-face friends. Respondents report that they know both their face-to-face and exclusive Facebook friends for an average of six years; however, face-to-face friends discuss a larger variety of topics among each other than Facebook friends. They also discussed more intimate topics than Facebook friends. These findings about offline friendships involving more breadth and depth than online friendship seem to support "cues-filtered-out approach," which although criticized in recent years, is also supported in Chan and Cheng (2004) study with Hong Kong residents. However, before jumping to a conclusion about online relationships' quality, it is important to notice that Facebook friendships in this study, as shown in Table 5 (p. 54), were not close friendships. In fact, most respondents indicated that their exclusive Facebook friend is their long-distance friend. On the other hand, their exclusive face-to-face friend is their best friend or their sibling. Therefore, rather than claiming that relationships developed and maintained through social network sites include less self-disclosure and trust because of the medium itself, it is important to remember that respondents had in mind two different types of friend. Therefore, the social medium might not be the reason for Facebook friendships involving less self-disclosure and trust, and the answer might be in the type of friendships (close vs. long-distance) studied. The null hypotheses (H5 and H7) might be supported if respondents were asked to think about their best friend that they communicate with through Facebook and their best friend that they communicate with face-to-face. Parks and Roberts (1996) argued that there is no difference in the depth and breadth of interaction between offline and online relationship.

Most of the individuals in this study actually report less frequent interaction with their exclusive Facebook friends than with their face-to-face friends although they report the average

length of the both relationships being 6 years. While McKenna and Bargh (2000) found that the sharing of intimacy causes people online to develop feelings of closeness more quickly than offline, this was not in case in this study. A possible explanation could be that it takes longer to develop online relationships as Walther's (1995) study found – more slowly and through different mechanisms than through face-to-face interaction.

In addition, there is less disclosure between recently added Facebook friends when compared to disclosure between exclusive Facebook friends and exclusive face-to-face friends (H6 supported). This finding is expected considering the tenets of Social Penetration Theory, which argues that in initial stages, relationships have narrow breath and shallow depth. As relationships move toward intimacy, a wide range of topics is discussed with some of those on an intimate level (Altman & Taylor, 1987). Social Penetration Theory can potentially explain the finding of hypothesis 5. Since exclusive Facebook friends do not communicate as often as face-to-face friends, they disclose less to each other and trust each other less.

Sex Differences in Facebook and Face-to-Face Relationship Development

Results of testing sex differences in self-disclosure suggest that women disclose to their exclusive face-to-face and exclusive Facebook friends more than men, but men have more intimate discussions with their recently added Facebook friends than women do. These results partially support H9 that women self-disclose more than men in all three types of friendship. This, however, was not the case with recently added Facebook friends.

Looking at the literature review, the findings about women self-disclosing to their existing face-to-face friends and Facebook friends more than men are not surprising. In face-to-face interactions, as well as in CMC, a number of studies (e.g., Buhrke & Fuqua, 1987; Dolgin & Minowa, 1997; Kleman, 2007; Peter et al., 2005; Petronio, 2002) proposed this previously.

However, a meta-analysis of 205 studies (Dindia & Allen, 1992) found that women disclose more than men when the target has a relationship with the discloser (in this study exclusive Facebook friend is a friend from high-school that lives far away, and exclusive face-to-face friend is the person's best friend, family member, or romantic partner).

Women in this study not only discuss more topics (greater breadth) with their exclusive Facebook friends and exclusive face-to-face friends, but also they discuss them more intimately (greater depth) than men. However, men and women do not differ in the breadth of self-disclosure to their recently added Facebook friend, but only in the depth dimension of self-disclosure to that friend. This means that both genders discuss about the same amount of topics with recently added Facebook friends, but men's discussions are more intimate. In fact, Dindia and Allen (1992) reported, based on their meta-analysis, that when the target is a stranger, men report that they disclose similarly to women. Although the recently added Facebook friend is not a complete stranger, it is the person whom both men and women know the least, "a new/fellow classmate" or "a friend's friend," as described by respondents in this study. As Jones (1991) suggested, women place more importance in trust and therefore disclose to trusted partners, while men place less importance on trust. Consequently, men disclose more intimate topics with a friend that they recently added on Facebook than women do.

In addition, both men and women in this study disclose more to their exclusive face-to-face friends than exclusive Facebook friends. They disclose the least to the recently added Facebook friend.

Time as an Important Mediator of Facebook and Face-to-Face Relationship Development

Regardless of the medium in which they develop, relationships require time. As this study indicates, as face-to-face and Facebook friends self-disclose to each other more and trust

each other more, the more often they communicate and the longer they know each other (H9). This is true for both face-to-face friends and exclusive Facebook friends, and supports previous studies (Chan & Cheng, 2004; Collins & Miller, 1994; Parks & Floyd, 1996; Peter et al., 2005; Sztompka, 1999) and mere exposure effect. The more time a person spends interacting with another person, the closer they become. Results of multiple regression suggests that "time" variables - duration of relationship and frequency of communication, are more important contributors to self-disclosure and trust in exclusive Facebook friendships than in exclusive face-to-face friendship. This goes back to studies of Bargh et al. (2002), McKenna et al. (2002) and Wellman and Gulia (1999), who argued that physical proximity is not important in online relationships, but rather, frequency of contact. If long-distant Facebook friends do not interact often through Facebook statuses and messages, it is unlikely that they will feel close and intimate.

The findings of this study did not find any relationship between duration of relationship and the self-disclosure and trust to a recently added Facebook friend. While this may seem surprising, Social Information Processing Theory of CMC (Walther, 1995) posits that time is an important element of developing online relationship. It takes longer to develop online relationships than face-to-face relationships (Walther, 1995). This may explain why there is no significant correlation between the duration of relationship and self-disclosure and between duration of relationship and trust among recently added Facebook friends.

Limitations and Future Research

There are several limitations of this dissertation: the lack of control over whom the participants select as their Facebook or face-to-face friend, and the lack of control through which media, except those tested in this study, individuals use to communicate with each other. The

first limitation to the present study is the lack of control over whom the participants chose as a "recently added Facebook friend," "exclusive Facebook friend," or "exclusive face-to-face friend." Although participants were offered an example of the type of friend who would belong in each of the category, individuals in the study might not choose a friend that would belong in desired categories. One way to deal with this problem is to delete a case if the participant describes a person who does not fit in the test category.

The second limitation of this study is the lack of control of other media that individuals in this study might use to contact their Facebook or face-to-face friends. It is possible that exclusive face-to-face friends would also talk regularly through cell phones. One way to deal with this problem is to ask individuals to report on a friend with whom they talk exclusively face-to-face and not through other media. In addition, participants were asked to think about an exclusive Facebook friend to whom they talk only through Facebook with the expectation that they have previously met face-to-face. Future studies could limit the choice of a friend by specifying individuals who interact with each other using only *one* medium during the course of their relationship.

Future studies should take these limitations into the consideration, especially the control over the participants' choice of "exclusive Facebook friend" or an "exclusive face-to-face friend." One way to control this would be to ask participants to access their Facebook page at the time of an experiment and record their interaction with a friend. Also, future work should differentiate between types of Facebook friends. Are "exclusive Facebook friends" individuals close or casual friends? Future studies should investigate the reason hypothesis 3 was not supported. Is predictability a mediator between self-disclosure and trust, or one dimension of trust, as suggested by Rempel et al. (1985)? Future research may also take advantage of alternative measures for the self-disclosure, thus expanding the concept by measuring not only

breadth and depth of self-disclosure, but also amount, honesty or accuracy and intentionality of self-disclosure with one or more Facebook or face-to-face friends.

Conclusion

This dissertation contributes to existing literature about relationship development in two distinct ways. First, the theoretical goal of this dissertation was to understand if the tenets of Social Penetration and Uncertainty Reduction Theory, initially developed to explain face-to-face interactions, can be applied to relationships maintained through social networking sites. Results confirmed this. Predictions about online relationships were obtained from theories of interpersonal communication and relationship development, which was initially proposed by Parks and Floyd (1996), and later expanded by Social Information Processing Theory. The process of uncertainty reduction and development of intimacy and trust follows similar patterns in both face-to-face and Facebook relationships. Digital Natives or emerging adults disclose to friends that they like, and therefore, they tend to trust those friends more, regardless the medium through which the relationship is developed or advanced. Social Penetration and Uncertainty Reduction Theory can be applied to Facebook relationships, the one in which individuals do not encounter each other physically when they interact.

A significant difference, however, exists in the amount that Digital Natives self-disclose and trust their Facebook friends as opposed to their face-to-face friends. Individuals report that they actually like, trust and self-disclose more to their face-to-face friends than Facebook friends. This finding is interesting considering that Facebook is a "social" network; it seems to be less personal than face-to-face network, in accordance with cues-filtered-out theories. Facebook friends did not compensate for the limitations of CMC by hyperpersonalizing their interactions. This study finds support for Ellison et al.'s (2004) argument that social network sites are useful

for expanding weak ties. However, Digital Natives in this study report that their interaction on Facebook is usually reserved for their long-distance friends who moved after high-school or for summer camp buddies, while they talk to their best friends and family members primarily in person. This might explain why there was less disclosure and trust between Facebook friends than face-to-face friends. The online medium might not be the reason for these findings, but rather the type of friendships reported (a long-distance friend versus a close face-to-face friend).

Methodologically, the contribution of this research is a successful application of social attraction and dyadic trust scale to study relationship maintenance through online social networks. In addition, self-disclosure and predictability scales were adapted and slightly modified to measure relationship development face-to-face. All four scales had very good reliabilities in both measuring Facebook and face-to-face relationship development.

This project also serves as a starting point for further examination of sex differences in self-disclosure online. In addition, future research could focus on social and psychological characteristics that influence relationship development and friendship maintenance through social network sites. For example, do shyness and introversion play any role in maintaining Facebook friendships?

The world of social network sites is rapidly changing. Facebook 2004 is not the Facebook 2010. As announced by Mark Zuckerberg on December 1, 2009, Facebook users will soon have the ability to control who sees each individual piece of content they create or upload. According to Facebook developers, this will help protect users' privacy. However, the real question is, how is it going to change the processes of self-disclosure and relationship development using Facebook?

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APPENDIX A
SURVEY INSTRUMENT

The purpose of this research is to better understand how college students develop and maintain online and face-to-face relationships. Hence, some questions are repeated three times to reflect your opinion about communicating with a close Facebook friend, a recently-added Facebook friend, and an offline friend. This survey requires participants who have active Facebook account.

PART ONE

1. Are you?

☐ Male ☐ Female

2. How old are you?

3. How many CLOSE friends (the one you regularly see face-to-face) do you have?

4. How many FACEBOOK friends do you have?

5. How many hours do you spend on Facebook on an average day?

Hours:

Minutes:

6. Are you?

☐ Senior
☐ Junior
☐ Sophomore
☐ Freshman
☐ Graduate student
☐ Other

please specify

7. Where are you from?

☐ United States

☐ Other

please specify

8. If your country of origin is the United States, please specify your ethnicity:

☐ African American
☐ Asian American
☐ European American/White
☐ Latino/a
☐ Middle Eastern American
☐ Native American
☐ Pacific Islander
☐ Other

specify

9. What is your major?

Think about a good friend (only ONE) who you contact EXCLUSIVELY through Facebook (through messaging, chat and posts on their wall) and never or rarely face-to-face (e.g, a friend that lives far away or is hard to reach).

DO NOT PROCEED until you have an exact person in mind. Remember – it has to be a friend that you contact EXCLUSIVELY through Facebook.

10. Now, explain in a few words, who this person is:

11. How close do you feel to that person you had in mind?

☐ Not close at all ☐ Not very close ☐ Undecided ☐ Close ☐ Very close

12. How long have you known each other?

YEARS
MONTHS
DAYS

13. How OFTEN do you talk to on Facebook?

- ☐ LESS THAN once a week
- ☐ Once a week
- ☐ Two-three times per week
- ☐ Every day
- ☐ Several times per day

14. How would you rate that person on a scale from 5 (strongly agree) to 1 (strongly disagree)?

He(she) is a friend of mine	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I have a friendly Facebook chat with him(her)	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
It is difficult to meet and talk with him(her) on Facebook	Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
He(she) just does not really fit into my circle of offline friends.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
We have never established a personal friendship with each other.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
He(she) is pleasant to talk with on Facebook.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

15. Think about your interactions with that person since you added him/her as a Facebook friend. How much do you agree with the following statements:

I have told this person what I like about her or him.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I would never tell this person anything intimate or personal about myself.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel quite close to this person.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

Our communication includes posting on each other's wall and commenting on their statuses and pictures.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I always feel I can post to this person's wall any kind of message and he/she won't get mad at me.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I usually tell this person exactly how I feel.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
This person and I do not have many common interests.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I have told this person things about myself that he or she could not get from any other source.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can chat with them about a variety of topics. Our conversation easily moves from one topic to another.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel I could confide in this person about almost anything.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

16. Think about your exclusive Facebook friend one more time. How much do you agree with the following statements:

I can predict this person's thoughts very well.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can accurately predict what this person's attitudes are.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can usually tell what this person is feeling inside.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can accurately predict how this person will respond to me in most situations.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I do not know this person very well.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

I can read this person like a book.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can predict this person's behavior very well.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

17. If you think about your Facebook friend, how much, on a scale from 1 (strongly disagree) to 5 (strongly agree), do you agree with the following statements:

There are times when my friend cannot be trusted.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
My friend is perfectly honest and truthful with me.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel that I can trust my friend completely.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel that my friend can be counted on to help me.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

PART TWO

Think about an individual (only ONE) who you added (or they added you) most RECENTLY as a Facebook friend although you do NOT seem to talk much face-to-face (e.g., you met at the friend's house party and decided to add them as a friend).
DO NOT PROCEED until you have an exact person in mind.

18. Now, explain in a few words, who this person is:

19. How close do you feel to that person you had in mind?

☐ Not close at all ☐ Not close ☐ Undecided ☐ Close ☐ Very close

20. How long have you known each other?

YEARS

MONTHS

DAYS

21. How would you rate that person on a scale from 5 (strongly agree) to 1 (strongly disagree)?

He(she) is pleasant to talk with on Facebook.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
It is difficult to meet and talk with him(her) on Facebook	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I have a friendly Facebook chat with him(her)	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
He(she) is a friend of mine	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
He(she) just does not really fit into my circle of offline friends.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
We have never established a personal friendship with each other.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

22. Think about your interactions with that person since you added him/her as a Facebook friend. How much do you agree with the following statements:

I have told this person things about myself that he or she could not get from any other source.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel I could confide in this person about almost anything.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
This person and I do not have many common interests.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I would never tell this person anything intimate or personal about myself.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I have told this person what I like about her or him.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

Our communication includes posting on each other's wall and commenting on their statuses and pictures.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I always feel I can post to this person's wall any kind of message and he/she won't get mad at me.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel quite close to this person.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can chat with them about a variety of topics. Our conversation easily moves from one topic to another.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I usually tell this person exactly how I feel.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

23. Think about the person that you added as a Facebook friend one more time. How much do you agree with the following statements:

I can read this person like a book.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can accurately predict how this person will respond to me in most situations.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can accurately predict what this person's attitudes are.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can predict this person's behavior very well.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can usually tell what this person is feeling inside.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I do not know this person very well.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I can predict this person's thoughts very well.	☐ Strongly	☐ Agree	☐ Neither agree, nor	☐ Disagree	☐ Strongly disagree

agree disagree

24. Analyses of human relations suggest that “trust” is an integral feature of such relationships. If you think about your Facebook friend that you recently added, how much, on a scale from 1 (strongly disagree) to 5 (strongly agree), do you agree with the following statements:

There are times when my friend cannot be trusted.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
My friend is perfectly honest and truthful with me.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel that I can trust my friend completely.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel that my friend can be counted on to help me.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

Think about an individual (only ONE) who is your good friend, but you talk to each other ONLY face-to-face and NEVER through your Facebook wall, statuses or messages (e.g. your best friend that does not have a Facebook account).

25. Now, explain in a few words, who this person is:

26. How close do you feel to that person you had in mind?

☐ Not close at all ☐ Not close ☐ Undecided ☐ Close ☐ Very close

27. How long have you been good friends?

YEARS

28. How often do you interact with each other face-to-face?

- ☐ LESS THAN once a week
- ☐ Once a week
- ☐ Two-three time per week
- ☐ Every day
- ☐ Several times per day

29. How would you rate that person on a scale from 5 (strongly agree) to 1 (strongly disagree)?

He(she) is a friend of mine ☐ Strongly agree ☐ Agree ☐ Neither agree, nor ☐ Disagree ☐ Strongly

			disagree		disagree
I have a friendly chat with him(her)	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
It is difficult to meet and talk with him(her)	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
He(she) just does not really fit into my circle of offline friends.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
We have never established a personal friendship with each other.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
He(she) is pleasant to talk with.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree

30. Think about your interactions with that person since you have met them. How much do you agree with the following statements:

I have told this person what I like about her or him.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
Once we get started we move easily from one topic to another.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
Our communication ranges over a wide variety of topics.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I feel I could confide in this person about almost anything.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I always feel I can talk to him/her about anything and they won't get mad at me.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I would never tell this person anything intimate or personal about myself.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I feel quite close to this person.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree

This person and I do not have many common interests.	. Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I usually tell this person exactly how I feel.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I have told this person things about myself that he or she could not get from any other source.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree

31. Think about your face-to-face friend one more time. How much do you agree with the following statements:

I can read this person like a book.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I can accurately predict how this person will respond to me in most situations.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I can predict this person's thoughts very well.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I can predict this person's behavior very well.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I do not know this person very well.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I can usually tell what this person is feeling inside.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
I can accurately predict what this person’s attitudes are.	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree

32. If you think about your face-to-face friend again, how much, on a scale from 1 (strongly disagree) to 5 (strongly agree), do you agree with the following statements:

There are times when my	Strongly	Neither agree,		Strongly

friend cannot be trusted.	agree	Agree	nor disagree	Disagree	disagree
My friend is perfectly honest and truthful with me.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel that I can trust my friend completely.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree
I feel that my friend can be counted on to help me.	☐ Strongly agree	☐ Agree	☐ Neither agree, nor disagree	☐ Disagree	☐ Strongly disagree

APPENDIX B
PILOT STUDY RESULTS

Test of Hypotheses 1-4

Hypotheses number one, two and four predicted that individuals who report high levels of social attraction with their most recently added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend will also report having greater breadth and depth of self-disclosure with those friends (H1), greater predictability of their friends' behavior (H2), and greater trust in them (H4). (see Figure 1) Hypothesis number three, however, posited that predictability will mediate the relationship between self-disclosure and trust for the three types of friendship.

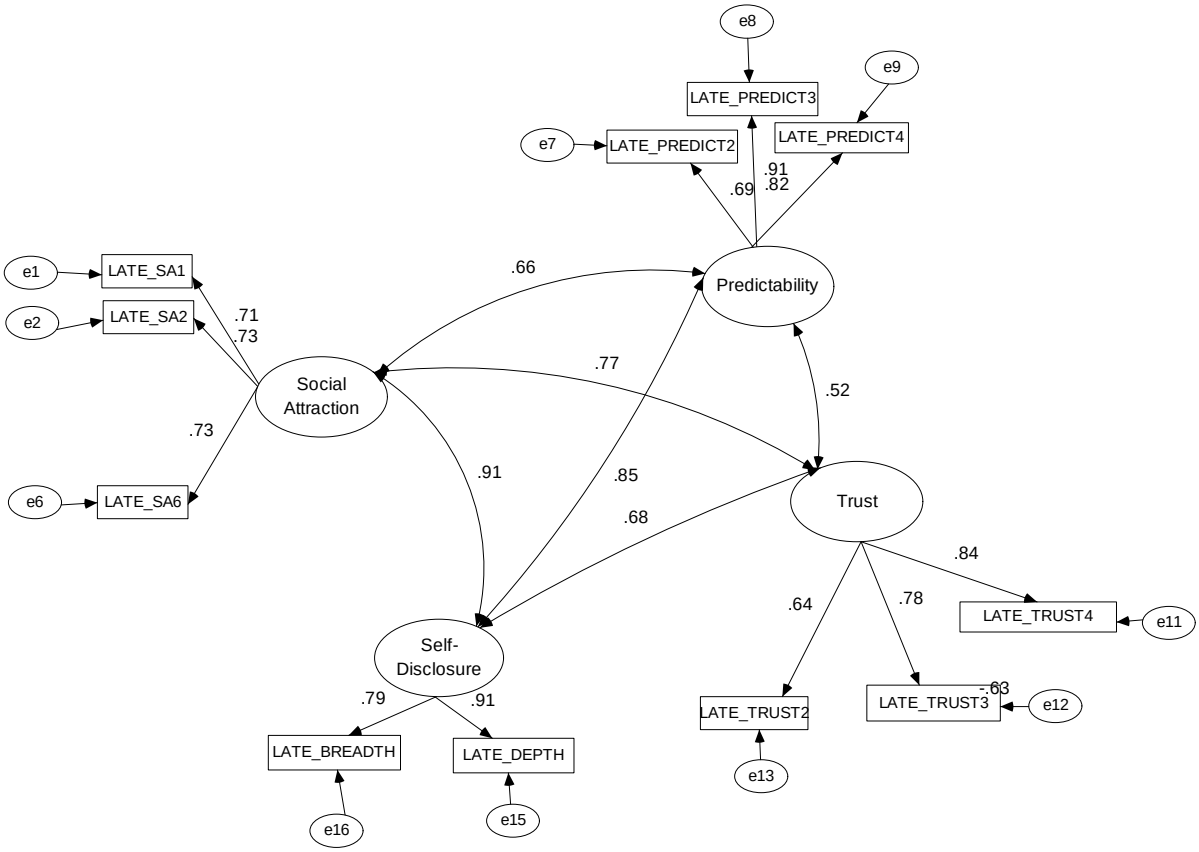
Three confirmatory factor analyses were conducted. Each CFA model included the same constructs and items' names, but represented a different type of relationship (latest Facebook, exclusive Facebook, exclusive face-to-face). Items that contributed to lower alpha reliabilities of the breadth and depth dimension of self-disclosure and predictability were excluded from the analysis. Subsequently, three structural equations were computed to test for the strength of the relationships between variables. Overall, 6 figures and 2 summary tables are reported.

New Facebook Friendship

Figure 9 shows the results of the confirmatory factor analysis for the model representing the relationship between social attraction, self-disclosure, predictability and trust for the new Facebook friend. The model has a good fit, with all goodness-of-fit measures larger than .90, a badness-of-fit measure smaller than .8, and all significant correlations.

Since the CFA cannot tell which construct is dependent upon another, dependent relationships between constructs had to be established. In the hypothesized model, self-disclosure is dependent on social attraction (H1), predictability is dependent on self-disclosure (H2), and trust is dependent on predictability and self-disclosure (H4). Although dependent

relationships in SEM are actually based on causation, Hair et al. (2006) suggested using the term *cause* with great care. SEM models are "typically used in nonexperimental situations in which the exogenous constructs are represented by indicator variable, not experimentally controlled variables, which limits the researcher's ability to draw causal inference" (p. 720). Although SEM alone cannot establish causality, it can provide some evidence necessary to support a causal inference (Hair et al., 2006).



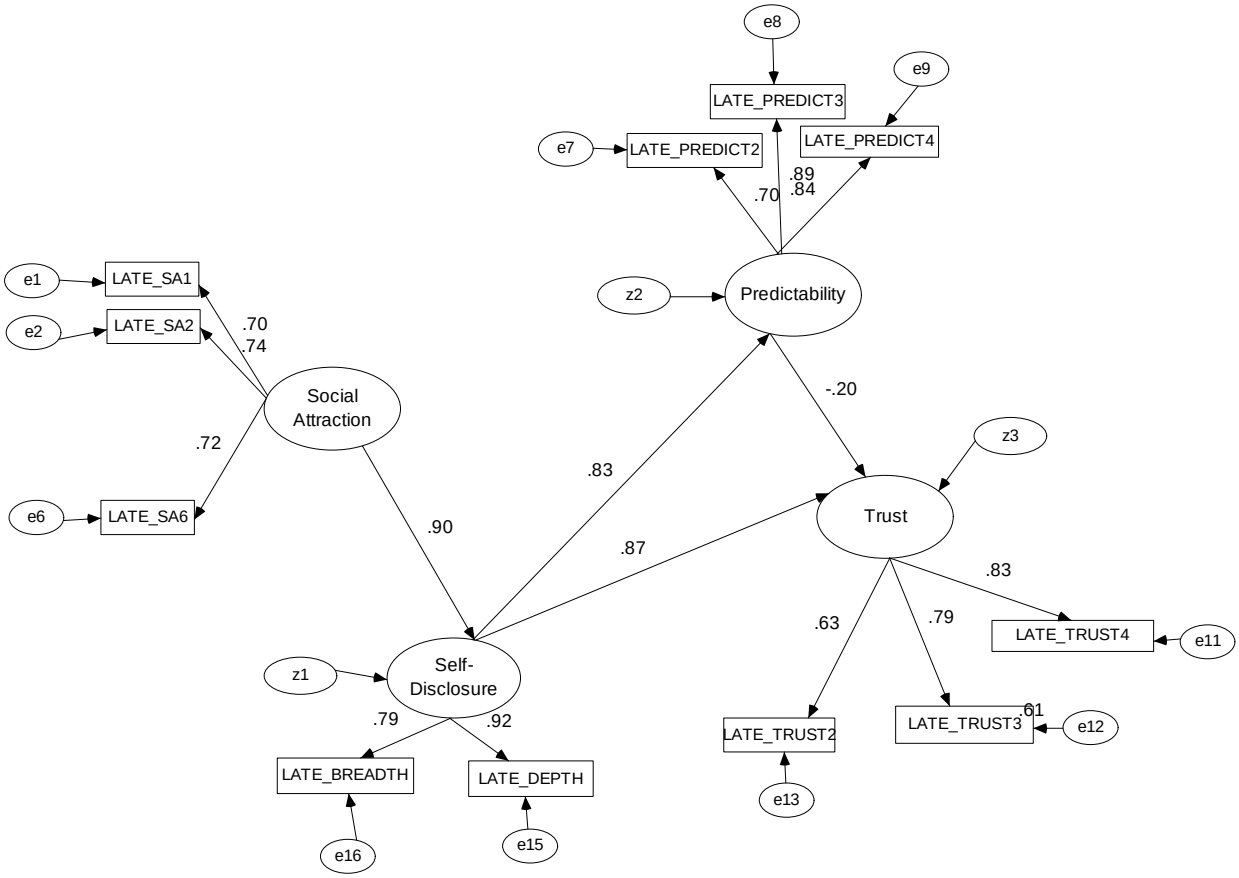
Goodness of fit summary: $\chi^2_{(107)}/df = 1.89$, CFI=.94, TLI = .93, RMSEA = .08

Figure 9
Confirmatory Factor Analysis of the Relationship between Social Attraction, Self- Disclosure, Predictability and Trust for a New Facebook Friend

Figure 10 shows the structural model relationships between variables. The χ^2/df ratio for the structural model was 2.04. For a model with a good fit, most empirical analyses suggest that the χ^2/df ratio should not exceed 3.0 (Tabachnick & Fidell, 1996). Therefore, the result demonstrated a good fit. In addition, the Comparative Fit Index (CFI) was .94, and the TLI was .91. The Root Mean Square Error of Approximation (RMSEA) was .08. In the case of the RMSEA, values less than .05 indicate a good fit, values as high as .08 represent reasonable, and values ranging from .08 to .10 indicate a mediocre fit (Byrne, 2001). Therefore, the results indicate the model was a good fit.

Next, the significance of path coefficients was examined for all variables in the model. The paths between social attraction and self-disclosure (H1), and between self-disclosure and predictability (H2), and self-disclosure and trust (H4) were all significant ($p < .05$). However, the relationship between predictability and trust was not significant ($p > .05$) (H3).

Table 15 depicts very interesting findings related to the influence of social attraction on self-disclosure, predictability and trust. A very strong relationship ($\beta = .90$) was found between the social attraction and self-disclosure, which suggests that individuals self-disclose to recently added Facebook friends if they are socially attracted to them (H1 supported). A strong relationship existed between self-disclosure and predictability ($\beta = .83$) (H2 supported), and self-disclosure and trust ($\beta = .87$) (H4 supported). This suggests that the perception of certainty of a recently added Facebook friend's behavior and trust in him or her is dependent upon self-disclosure between two friends. Predictability, however, did not mediate the relationship between self-disclosure and trust in a case of a recently added Facebook friend (H3 not supported).

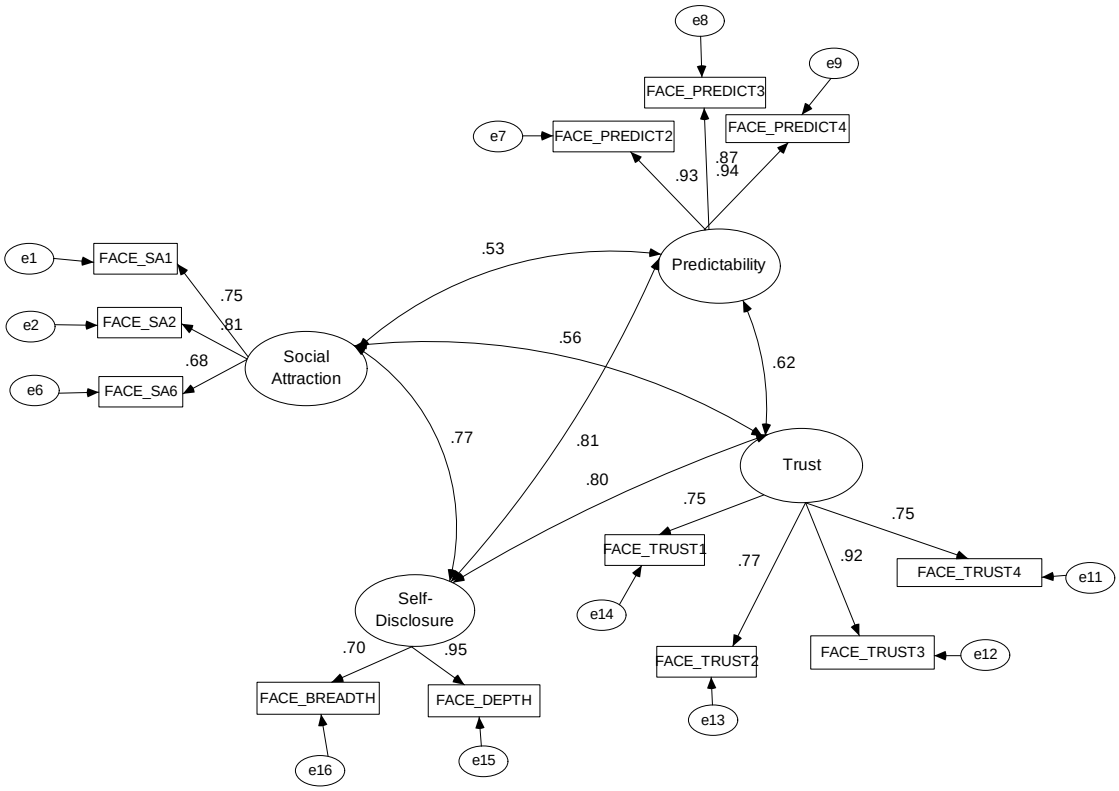


Goodness of fit summary: $\chi^2_{(107)}$/df = 2.04, CFI=.94, TLI = .91, RMSEA = .08

Figure 10
Structural Equation Model of Social Attraction Influence on Self-Disclosure, Predictability and Trust for a New Facebook Friend

Exclusive Facebook Friendship

Figure 11 shows the results of the confirmatory factor analysis for the model representing the relationship between social attraction, self-disclosure, predictability, and trust for exclusive Facebook friends. The model showed a good fit and all significant correlations between social attraction, self-disclosure, predictability, and trust.

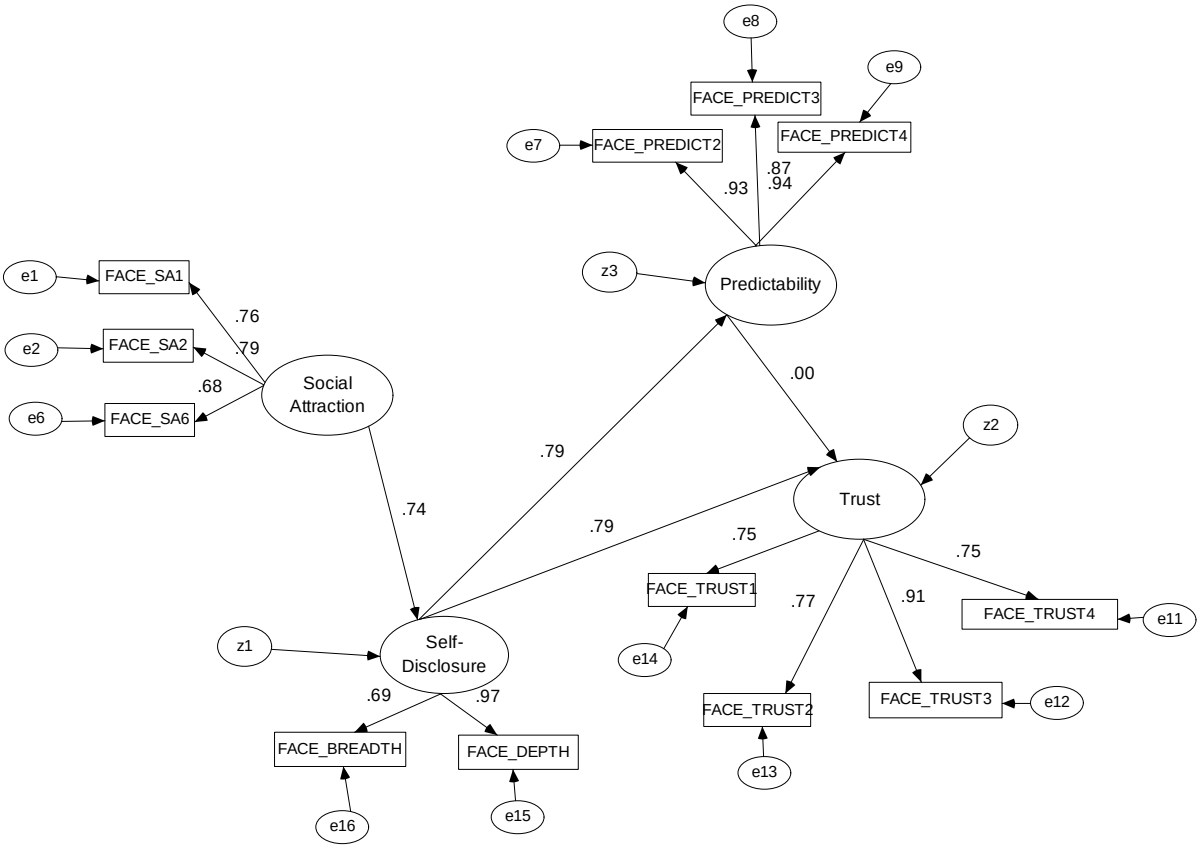


Goodness of fit summary: $\chi^2_{(107)}/df = 2.47$, CFI=.93, TLI = .90, RMSEA = .10

Figure 11
Confirmatory Factor Analysis of the Relationship between Social Attraction, Self-Disclosure, Predictability and Trust for an Exclusive Facebook Friend

In order to test for structural or dependence relationships between social attraction, self-disclosure, predictability and trust for two exclusive Facebook friends, a structural model was tested (Figure 12). A strong relationship (β = .74) was found between the social attraction and self-disclosure, which suggests that individuals self-disclose to exclusive Facebook friends if they are socially attracted to them (H1 supported). A strong relationship existed between self-disclosure and predictability (β = .79) (H2 supported), and self-disclosure and trust (β = .79) (H4 supported), while predictability was not a mediator between self-disclosure and trust (H3 not

supported). Table 15 summarizes the standardized coefficients for the relationship between these four variables.



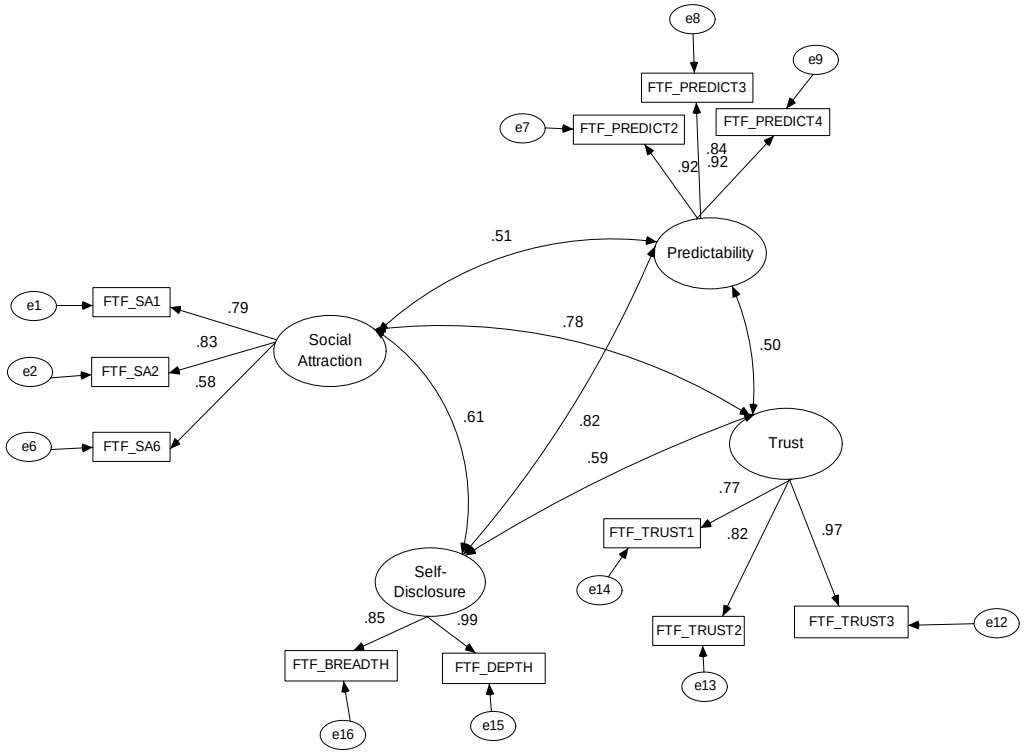
Goodness of fit summary: $\chi^2_{(107)}/df = 2.23$, CFI=.89, TLI = .87, RMSEA = .10

Figure 12
Structural Equation Model of Social Attraction Influence on Self-Disclosure, Predictability and Trust for an Exclusive Facebook Friend

Exclusive Face-to-Face Friendship

Figure 13 shows the results of the confirmatory factor analysis for the model representing the relationship between social attraction, self-disclosure, predictability, and trust for exclusive

face-to-face friends. The model showed a good fit and all significant correlations between social attraction, self-disclosure, predictability and trust.

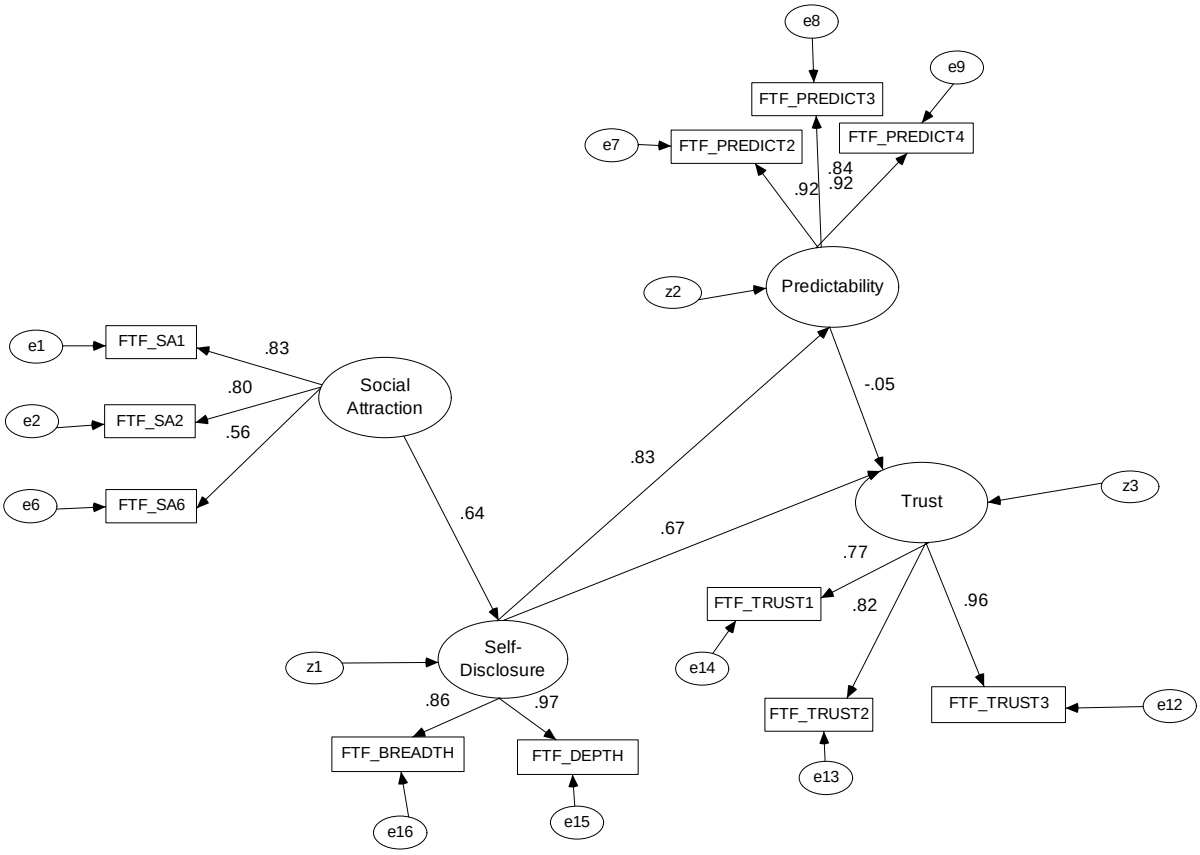


Goodness of fit summary: $\chi^2_{(107)}/df = 1.42$, CFI=.98, TLI = .97, RMSEA = .06

Figure 13
Confirmatory Factor Analysis of the Relationship between Social Attraction, Self-Disclosure, Predictability and Trust for an Exclusive Face-to-Face Friend

In order to test for structural or dependence relationships between social attraction, self-disclosure, predictability and trust for two exclusive face-to-face friends, a structural model was tested (Figure 14). A moderate relationship ($\beta = .64$) was found between the social attraction and self-disclosure (H1 supported), which suggests that individuals self-disclose to exclusive face-to-face friends if they are socially attracted to them. A strong relationship existed between self-disclosure and predictability ($\beta = .83$) (H2 supported), and a moderate relationship between self-disclosure and trust ($\beta = .67$) (H4 supported), while no relationship existed between the

predictability of that friend's behavior and trust (Table 15) when predictability was included as a mediator (H3 was not supported).



Goodness of fit summary: $\chi^2_{(107)}/df = 2.16$, CFI=.95, TLI = .93, RMSEA = .10

Figure 14
Structural Equation Model of Social Attraction Influence on Self-Disclosure, Predictability and Trust for an Exclusive Face-to-Face Friend

Table 16 summarizes the goodness of fit measures for all the models represented by Figures 10, 12 and 14. Overall, the comparison of the three structural models (Figures 10, 12, 14) representing a new Facebook relationship, an exclusive Facebook relationship and an exclusive face-to-face relationship support this study's first, second, and fourth hypotheses. The first hypothesis predicted that there will be a statistically significant relationship between social

attraction and self-disclosure for both Facebook and face-to-face friends. The SEM findings supported it. The path coefficients between social attraction and self-disclosure were significant in all three types of friendship (new Facebook, exclusive Facebook, exclusive face-to-face). The second hypothesis predicted that there will be a statistically significant relationship between self-disclosure and predictability for both Facebook and face-to-face friends. The results also supported it. The third hypothesis stated that the predictability will mediate the relationship between self-disclosure and trust for both Facebook and face-to-face friends was not supported. Finally, the fourth hypothesis about relationship between self-disclosure, predictability and trust, was supported. Individuals who reported greater breadth and depth of self-disclosure and greater predictability of their latest added Facebook friend, exclusive Facebook friend, and exclusive face-to-face friend behavior also reported greater trust in that friends.

Table 15
Summary of Path Coefficients for Models Representing Facebook and Face-to-Face Relationship Development

Path Analysis	A New Facebook Friend	Exclusive Facebook Friend	Exclusive Face-to-face Friend
Social Attraction → Self-disclosure	.90**	.74**	.64**
Self-disclosure → Predictability	.83**	.79**	.83**
Predictability → Trust	ns	ns	ns
Self-disclosure → Trust	.87**	.79**	.67**

Note. ** $p < .01$; ns = not significant

Table 16
Summary of Goodness of Fit Measures in a Pilot Study

Type of Friendship	χ^2/df	CFI	TLI	RMSEA
New Facebook Friendship	2.04	.94	.91	.08
Exclusive Facebook Friendship	2.23	.89	.87	.10
Exclusive Face-to-Face Friendship	2.16	.95	.93	.10

Note: CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation

Test of Hypothesis 5

The fifth hypothesis predicted that there would be no significant difference in the breadth and depth of self-disclosure between exclusive Facebook friends and exclusive face-to-face friends. This hypothesis was not supported. In the case of the breadth of self-disclosure, face-to-face friends reported a larger variety of topics discussed than Facebook friends (t (107) = -8.53, p < .001). In terms of the depth of self-disclosure, face-to-face friends discussed more intimate topics than Facebook friends and that difference was statistically significant (t (107) = -8.05, p < .001). See Table 3 (p. 50) for means and standard deviations of self-disclosure scale.

Test of Hypothesis 6

The sixth hypothesis predicted that there would be less disclosure between recently added Facebook friends when compared to disclosure between exclusive Facebook friends and exclusive face-to-face friends. This hypothesis was supported. Separate paired t-tests showed that those differences were all statistically significant (p < .001). Similar results were found for the depth dimension of self-disclosure (p < .001).

Test of Hypothesis 7

Hypothesis 7 predicted that there would be no significant differences in reported trust between exclusive Facebook friends and exclusive face-to-face friends. Again, paired sample t-tests were conducted. This hypothesis was not supported. Participants reported significantly less trust in an exclusive Facebook friend (M_{face} = 3.68, *SD* = .80) than in an exclusive face-to-face friend (M_{FTF} = 4.07, *SD* = .85), *t* (105) = - 4.16, *p* <.001.

Test of Hypothesis 8

To test the hypothesis number 8 that women will self-disclose to their Facebook and face-to-face friends more than men, independent sample t-tests were conducted. Sex was a grouping variable and the breadth and depth of self-disclosure to each type of friend were test variables. Results showed that women self-disclosed to their face-to-face friends more than men when self-disclosure was measured in terms of breadth or the number of topics discussed with each other, *t*(105) = -2.1, *p* = .04. Women discussed more topics then men. There was no statistically significant difference between women and men in the intimacy of self-disclosure to face-to-face friends. There was also no sex difference in self-disclosure between new Facebook friends or between exclusive Facebook friends. Therefore, the hypothesis number eight was partially supported. Women and men in the pilot study's sample differed in their amount of self-disclosure only when disclosing with their exclusive face-to-face friends.

Test of Hypothesis 9

Hypothesis 9 predicted that as the frequency of communication and the length of a relationship increase, the levels of self-disclosure and trust would also increase for both Facebook and face-to-face friends. To test this hypothesis, correlations were conducted (Tables 17 and 18). Results showed that the levels of self-disclosure for both an exclusive Facebook

friend and an exclusive face-to-face friend increased as the frequency of communication increased. As the frequency of communication increased, the trust also significantly increased, but only between face-to-face friends. Duration of relationships was related to self-disclosure only in the case of exclusive face-to-face friends. The longer face-to-face friends knew each other, the more they disclosed to each other. Duration of relationship was not related to self-disclosure between Facebook friends (recently added or established).

Table 17
Correlations between Frequency of Communication, Duration of Relationship and Self-Disclosure to Facebook and Face-to-Face Friends in a Pilot Study

Self-disclosure	Frequency	Duration
New Facebook Friend		
Breadth	-	-.03
Depth	-	.06
Exclusive Facebook Friend		
Breadth	.24**	.10
Depth	.27**	.10
Exclusive Face-to-Face Friend		
Breadth	.31**	.24*
Depth	.33**	.22*

Note. *Significance at $p < .05$
** Significance at $p < .01$.

Table 18
Correlations between Frequency of Communication, Duration of Relationship and Trust to Facebook and Face-to-Face Friends in a Pilot Study

Trust	Frequency	Duration
New Facebook Friend	-	-.08
Exclusive Facebook Friend	.09	.03
Exclusive Face-to-Face Friend	.29**	.06

Note. *Significance at $p < .05$
** Significance at $p < .01$.

VITA

Pavica Sheldon was born in a small town in the continental part of Croatia where she finished her primary school and high school. She then moved to a big city, Zagreb, to pursue her dream of being a journalist. Realizing her research interests, she decided to pursue a master's degree. Not having an opportunity to study communication on a graduate level in Croatia, she decided to apply to an American university. She came to the United States in 2004 to study mass communication at the Manship School at Louisiana State University and decided to stay in Baton Rouge to attend the doctoral program in communication theory. She is graduating from the Department of Communication Studies at LSU in May 2010 and still holds the American dream of finding the perfect job.