

**DOES COMMUNICATING VIA A MEDIATED ENVIRONMENT REDUCE  
THE DEBILITATING EFFECTS OF SOCIAL ANXIETY ON  
INTERPERSONAL IMPRESSION MANAGEMENT?**

by

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A thesis submitted to the Faculty of the University of Delaware in partial fulfillment  
of the requirements for the degree of Master of Arts in Communication

Summer 2006

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## ABSTRACT

The purpose of this study was to identify moderators of the impression management process. The research sought to determine if a mediated communication channel moderated the effects of social anxiety on interpersonal impression management. Furthermore, a mediated channel was posited as a relatively unthreatening environment where people with social anxiety would have more success managing their impressions. Lastly, the current study attempted to provide some of the first empirical support for the hyperpersonal perspective to online communication.

Two hundred and fourteen people ( $n= 214$ ) completed a pretest to assess their levels of trait anxiety. The participants were divided into 72 dyads and were asked to get to know a partner in either a face-to-face or computer mediated environment. Immediately after their conversations, participants completed a post-test instrument measuring their impressions of their partner and of their interaction. Results indicate that highly anxious individuals were perceived to be significantly less anxious after computer mediated conversations than following face-to-face interactions. The data also suggests that partners liked highly anxious subjects significantly more after mediated conversations than following face-to-face contact. Interestingly, the anxious participants were not more confident in either the mediated or face-to-face contexts.

Because people were not more confident online, it seems that mediated environments help people hide their anxious, socially debilitating symptoms rather than giving them more social skill. Finding that partners perceived anxious subjects as less anxious but more liked online than after face-to-face interactions lends support for the hyperpersonal perspective.

## Chapter 1

### *Introduction*

One potentially rewarding time for impression management is initial interactions. Impression management is especially salient in first encounters because people experience difficulty predicting and explaining their partner's behaviors in these meetings. Such predictions and explanations are important because first encounters, and the judgments made therein, often determine the course of a relationship (Berger, 1987). Significantly, the information people exchange in first meetings becomes the foundation for their inferences and ultimately their impressions of each other (Berger & Calabrese, 1975). Additionally, because reducing uncertainty is a primary concern in initial interactions, and a prerequisite for impression formation (Berger, 1987; Berger & Calabrese, 1975), difficulty predicting others' behavior leads to more work for interactants (Ramirez & Burgoon, 2004). Perhaps Charles Berger (1987, p. 42) said it best when he stated the following:

Given the many combinations of verbal and nonverbal behaviors and the ranges of subtle modulations of these behaviors available to most normal interactants, it is amazing that persons are able to carry out as many meaningful interactions with others as they apparently do.

Due to the lack of previously established impressions, initial interactions are ideal situations for studying the impression management process.

Initial interactions can be especially difficult to manage for socially anxious individuals (Leary & Kowalski, 1995). Given that first meetings are often important, some people feel that they lack the ability to foster a positive image in others' minds. Anytime people communicate, they open themselves to the chance that others will not listen or that others will think they are foolish or somehow offensive (Goffman, 1967). The socially anxious believe they lack presentational confidence, poorly manage their impressions, and often turn away from interactions with strangers (Leary & Kowalski, 1995). Such an aversion to interpersonal contact can have profound negative effects on impression formation. For example, McCroskey and Richmond (1977) observed that people with high levels of communication apprehension believed they disclose less and disclose more negative information than people with less communication apprehension.

Computer-mediated communication (CMC) offers a unique opportunity for impression management and could possibly moderate the negative effects of social anxiety on self-presentation. The rise of mediated interaction will become increasingly important in people's attempts at managing impressions. Specifically, computer-mediated contexts might ease one's social anxiety. In fact, CMC scholars have dubbed the Internet "the Prozac of social communication" (Morahan-Martin & Schumacher, 2000). If so, CMC might help the socially anxious establish positive impressions with others. Although some theorists emphasize the limited cues in CMC (Parks & Floyd, 1996), other researchers have

shown that “people cope with the lack of nonverbal cues online in the development of relationships in a variety of field and experimental contexts” (Walther, Loh, & Granka, 2005, p. 39). CMC can be a synchronous medium characterized by real dynamic conversations and immediate message exchange all without having to face a partner (Ramirez & Burgoon, 2004). Such a technology could help people with social anxiety manage impressions.

### *Purpose of the Current Study*

This study contributes to the literature by shedding light on factors that affect the impression management process. Knowledge of relevant moderators and mediators will increase our depth of understanding of this core communication process. Second, the study aims to obtain empirical data about channel effects in a domain of research that contains much speculation. CMC scholars (Ramirez & Burgoon, 2004; Spears & Lea, 1994; Walther, 1996) claim that mediated contexts are different from face-to-face interaction. Yet, very few CMC studies have reported clear and consistent support for such hypotheses (Bargh, McKenna, & Fitzsimons, 2002; Hobman, Bordia, Irmer, & Chang, 2002; Ramirez & Burgoon, 2004; Tidwell & Walther, 2002; Walther et al., 2005). It is important to gain knowledge of emerging communication contexts because the growth and development of new communication technology has outstripped theory and research in that area (O’Sullivan, 2000).

This study examines the influence of social anxiety and channel on impression management in initial interactions. This chapter advances an original model, which hypothesizes that both social anxiety and communication channel

moderate the impression management process in initial interactions. Beyond that, the proposed model also posits three possible mediators in the impression management process. The model presented here contributes to several branches of the communication discipline.

By summarizing prior research, the connections between the main components of the previously stated question are emphasized and the study is situated within established findings. In that light, the following section will focus on impression management because that subject is the foundation of the paper. The next section will deal with uncertainty reduction in order to explain how impression management leads to social goals. Later, the literature review will include relevant social anxiety research to demonstrate how this individual-difference variable can moderate the impression management process. Lastly, the final section will assess CMC research to present communication channel as a potential moderator of impression management. After one understands the potential moderators and the relevant research, the model proposed in this paper can be presented. The actual model and the study's specific hypotheses appear at the chapter's conclusion.

### *Impression Management*

Scholars note that, "Other than walking upright and producing speech, there are few qualities so manifestly human as impression management" (Metts & Grohskopf, 2003, p. 357). Impression management is a strategic goal-driven activity in which people act to convey an image of themselves that is in their best interests. To reap the greatest rewards from social interaction, individuals must

first enact favorable strategies of impression management to evoke positive impressions in the minds of others (Goffman, 1959; Metts & Grohskopf, 2003). As Goffman (1959) explains, “When an individual appears before others, he will have many motives for trying to control the impression they receive of the situation” (p. 15). Thus, people strategically manage impressions to attain social rewards such as trust, liking, or friendship. The purpose of this section is to demonstrate that positive impression management is one of the motivational forces in interpersonal interaction. People purposefully enact certain impression management behaviors in order to achieve social rewards.

When people perform well, their partners may form positive impressions. People want positive impressions because they need to experience smooth interactions with their partners and need to feel that their partners value them (Goffman, 1967). Conversely, if people evoke negative impressions, they can become lonely or socially isolated and will often have to reinforce their presentational confidence (Goffman, 1967; Metts & Grohskopf, 2003). From the strategic behaviors people exhibit in conversations, their interaction partners make inferences about corresponding internal attitudes and feelings (Goffman, 1959). Therefore, a competent impression manager adapts to situational cues to foster his or her desired impression that is most likely to lead to interpersonal rewards (Metts & Grohskopf, 2003).

One fundamental tenet of impression management is that everyone is concerned with advancing a certain face that they assume will grant them rewards. Face, as defined by Goffman (1967), is “a positive social value a person

effectively claims for himself by the line others assume he has taken during a particular contact” (p. 5). People manage their impressions in order to achieve the best possible interpersonal face. Because of the importance that surrounds it, people experience immediate emotional responses to their face in social situations. When face-threatening events occur, people are often embarrassed because they do not know what actions will save their face. They engage in corrective facework, the process of making one’s behavior consistent with a desired face, in order to repair the impressions others have of them (Goffman, 1967). In the end, people are worried about how others view them because they are concerned about presenting themselves in the best possible face.

#### *Uncertainty Reduction Theory*

Besides examining why people want to manage positive impressions of themselves, it is also important to consider why people want to form impressions of others. The impressions people form of their partners determine whether they will like their partners and whether they will grant them social benefits. Uncertainty reduction theory (URT; Berger & Calabrese, 1975) provides an answer to why people form impressions of others. URT offers a detailed account of the impression management process by positing patterns of interaction that people use to build understanding in initial interactions. These behaviors continue in ongoing relationships, as the theory explains how interactions produce liking. URT offers an explanatory account of the behaviors commonly employed in the management of impressions. Its axiomatic construction also makes URT a very testable theory. Thus, URT is a well-studied and well-supported theory (e.g.,

Berger, 1987) that provides substantial grounding for any impression management study. Additionally, researchers have recognized that URT is possibly the most heuristically provocative approach to studying impression formation and initial relationship development (Tidwell & Walther, 2002). URT plays a crucial role in this paper because it explains the behaviors needed to manage positive impressions and because it provides the link between favorable impression management behaviors and liking.

Berger (1987) posits that any relationship is subject to uncertainty producing events and that communication and uncertainty are always intertwined. Communication scholars have identified uncertainty reduction as “the exchange and collection of information that allows one to predict another’s attitudes or behaviors” (Tidwell & Walther, 2002, p.321). The infinite number of ways a person can act at the beginning of an encounter makes it difficult for a partner to predict the most likely behavior. Because inadequate impressions mean that people cannot accurately predict their partner’s behavior, high relational uncertainty strains relationships by making the interactions effortful (Berger, 1979). Later, interactants feel the need to retroactively explain their own as well as their partner’s behavior (Berger & Calabrese, 1975). Therefore, uncertainty is a function of people’s ability to predict or explain the actions of themselves and others (Berger, 1987). Importantly for this project, people base their predictions and explanations of their partners off of the impressions their partners manage.

There are two different types of uncertainty. First, cognitive uncertainty is a lack of knowledge about one’s own or another’s beliefs and attitudes. The

second type of uncertainty is behavioral uncertainty, or the lack of predictability of an individual's own or others' behavior in communication situations (Berger, 1979; Berger, 1987). The current study is concerned with cognitive uncertainty because that uncertainty influences people's interpersonal impressions. As Berger (1979, p. 125) states, "What gets said and the way it gets said may be highly predictable in formal role situations; however, the cognitive states of the actors in such situations may remain highly uncertain." If the roles in initial interactions are strictly scripted, there should be little behavioral uncertainty. On the other hand, initial interactants know very little about their partner's beliefs and attitudes, thus yielding high cognitive uncertainty. Generally, high levels of cognitive uncertainty correlate with less developed impressions. Therefore, this paper focuses on cognitive uncertainty.

Berger argues that reducing uncertainty about one's own and a partner's beliefs and behaviors is the primary goal for interactants in initial encounters (Berger 1987; Berger & Calabrese, 1975). Consistent with URT, Pratt, Wiseman, Cody, and Wendt (1999) noticed that people asked less questions of their partners as their interactions progressed, presumably because they had less uncertainty. URT envisions people as inquirers, trying to understand themselves and their interaction partners. Planalp, Rutherford, and Honeycutt (1988) determined that people actively dealt with uncertainty by thinking about the uncertainty-provoking issue, talking to others, and gathering information about their partner or the situation. Furthermore, Lalljee and Cook (1973) identified behavioral manifestations of uncertainty reduction when they found that speech rate

increased and pause rate decreased as conversations progressed. Importantly, Berger emphasizes that individuals do not reduce uncertainty for its own sake. Instead, people do it to optimize outcomes in relationships and to achieve social goals (Berger, 1987). As an example of a social reward, Clatterbuck (1979) reported that uncertainty negatively related to attraction. In all, people are not only motivated to form positive impressions in the minds of others, but they also work to form functional impressions of their partners.

More modern theories, most notably Sunnafrank's predicted outcome value (POV) theory, compelled scholars to modify some of URT's propositions (Sunnafrank, 1986; Sunnafrank, 1990). Sunnafrank (1986, 1990) argues that theorists should relegate uncertainty reduction to a support role subordinate to people's need to maximize relational outcomes because the goal of achieving positive outcomes leads to more complete accounts of communicative behaviors in initial interactions than does a drive to reduce uncertainty. Moreover, Sunnafrank noted an implicit positive bias in the original URT axioms whereby the original theory implied that uncertainty reduction always led to positive relational outcomes. In addition to positive results, Sunnafrank asserts that uncertainty reduction could lead to negative outcomes, especially when people project negative relational outcomes and attempt to terminate the conversation or relationship (Sunnafrank, 1986; Sunnafrank, 1990). Furthermore, Grove and Werkman (1991) published support for the claim that uncertainty reduction could lead to negative outcomes. Similarly, new conceptualizations of URT acknowledge that some forms of unexpected, unsettling communication may

actually increase uncertainty (Berger, 1987; Sunnafrank, 1990). Planalp and Honeycutt (1985) provided empirical support for this proposition. Regardless, it remains true that communication is a necessary, but not sufficient, condition for uncertainty reduction (Berger, 1987).

### *Uncertainty's Relationship with Impressions and Liking*

It is important to understand the relationship between uncertainty and impressions and liking because people reduce uncertainty as they manage their impressions to achieve liking. This process forms the basis for this paper's model. Initially, the information gained during the uncertainty reduction process provides the foundation for first impressions. Once people form impressions, they can determine whether they like their partners based on the quality of their impressions and the resulting predictions. The original version of URT posited that uncertainty mediated the relationship between similarity and liking (Berger & Calabrese, 1975). Implicit in this proposition is that people must first form interpersonal impressions. The more similar people's impressions of others are to their own self-perceptions, the less uncertainty there is about the other person and the more the person is liked. In support of this proposition, Byrne (1971) concluded that attitude similarity produced liking. Additionally, Byrne, Clore, and Worchel (1966) discovered that people liked others more when they were from similar economic backgrounds. When people's impressions of others are similar to their perceptions of themselves, there is less uncertainty and more liking (Duck, 1973; Heine & Renshaw, 2002).

Overall, uncertainty reduction is essential to the formation of impressions and subsequently to interpersonal liking. People strategically present themselves to manage favorable impressions while simultaneously attempting to reduce uncertainty about their partners. As partners reduce uncertainty, they form more detailed impressions of one another. If these impressions are similar to their own self-perceptions, people assume that there is little uncertainty and often like their partners. In sum, the reduced uncertainty people achieve through their interactions is necessary for positive impressions and social rewards. However, the interpersonal interaction that is necessary to establish impressions can be very difficult for some people.

### *Social Anxiety*

#### *Background of Social Anxiety*

This section advances the argument that social anxiety can moderate the impression management process. Scholars contend that social anxiety “arises from the prospect or presence of interpersonal evaluation in real or imagined social settings” (Leary & Kowalski, 1995, p. 8). Moreover, it is a potentially important moderator of the impression management process. Social anxiety affects most people to some degree and can occur in situations requiring informal speaking and interaction, such as initial interactions (Leary & Kowalski, 1995). According to Leary and Kowalski’s (1995) theory of social anxiety, a common theme running through all socially anxious situations is the risk of social evaluation. Specifically, two potentially threatening factors, the motivation to make a desired impression and the subjective probability of being able to do so,

are the basis for all socially anxious episodes (Leary & Kowalski, 1995). Furthermore, both of these feelings are common during attempts at impression management. In addition, most social anxiety involves a few common debilitating symptoms including apprehensive thoughts, subjective feelings, communication withdrawal, and communication avoidance, all of which are detrimental to impression management (Leary & Kowalski, 1995; Wheelless, Nesser, & McCroskey, 1986). As Goffman (1967) explained, “Fear over possible loss of his face often prevents the person from initiating contacts in which important information can be transmitted and important relationships re-established; he may be led to seek the safety of solitude rather than the danger of social encounters” (p. 39).

A person’s self-presentational confidence and his or her levels of social anxiety are inversely related (Leary & Kowalski, 1995). When people believe they cannot positively present themselves, they have difficulty managing impressions, and therefore achieving social rewards. People with high levels of social anxiety believe they cannot advance positive impressions, regardless of their actual level of social skill. Interestingly, people with social anxiety have tainted perceptions of their social skills and of their existing relationships. Others do not rate socially anxious people as less competent than less anxious people; however, people with social anxiety think of themselves as less skilled or efficacious. Furthermore, people with social anxiety interpret others’ reactions as less positive than they really are and feel rejected even in the absence of rejection (Leary & Kowalski, 1995). Too often, the socially anxious are preoccupied with

their perceived social deficiencies, and this leads to negative interpersonal impressions.

### *Social Anxiety and Impression Formation*

Given that they lack confidence in their self-presentational skills, the socially anxious avoid interpersonal interactions and experience difficulty when they do interact with others (Leary & Kowalski, 1995). For example, 77% of a sample of socially anxious people indicated that they socialized in person for less than five hours per week, 36% reported that they had no significant friendships, and 46% had no romantic relationships (Erwin, Turk, Heimberg, Fresco, & Hantula, 2004). Although these numbers may be extreme, they highlight the interpersonal costs of social anxiety and suggest that it is difficult to manage impressions if people avoid interaction. People with social anxiety also experience difficulty in their interactions with others. Rather than seeming anxious, people need to appear confident and at ease in a situation to manage positive impressions. In terms of actual behaviors, McCroskey and Sheahan (1978) noted that people with more anxiety talked less than people with less anxiety. Yet, people with high and low levels of communication apprehension did not differ in their need or desire for close relationships (McCroskey & Richmond, 1976). Although most people with social anxiety crave close, intimate relationships, their anxiety disables their situational confidence, hinders effective impression management, and may result in the formation of negative impressions in others' minds. If people felt more confident in their presentational abilities, they should be able to manage favorable impressions. However, people's social

anxiety makes them feel insecure in various situations. All of this implies that people's self-presentational confidence mediates the relationship between their social anxiety and the results of their impression management, such as liking. This proposition is advanced in this study's model.

Goffman (1959) theorized that the capacity to manage impressions involves two components. The first element is the impression someone gives, including all of a person's verbal symbols with the information that normally corresponds to those symbols (e.g. that an individual is a socially competent, skilled conversationalist). Second, is the impression a person gives off. This includes the range of actions that people think are symptomatic of the actor (e.g. nervousness, anxiousness) (Goffman, 1959). The impressions people with social anxiety give off often hinder their impression management efforts by leading others to form negative impressions. Often, the socially anxious appear nervous, withdrawn, or otherwise reluctant to interact (Leary & Kowalski, 1995). Regardless of the impression they strive to give, people's social anxiety harms the impressions they give off. For example, McCroskey and Richmond (1976) conducted a study in which they were concerned with communication apprehension, a quality that is highly correlated with social anxiety. They learned that people rated individuals with high levels of apprehension more negatively than they rated individuals with less apprehension on measures of sociability, composure, and extroversion. Respondents perceived people with lower levels of communication apprehension as more socially attractive than high apprehensives and were more likely to turn to individuals with less communication apprehension

for opinion leadership (McCroskey & Richmond, 1976). Since people with social anxiety are often hampered by the impressions they give off, they experience difficulty managing impressions. Therefore, social anxiety should moderate the impression management process.

### *Social Anxiety and Uncertainty*

If they experience presentational difficulty during conversations and shy away from interpersonal interactions, people with social anxiety have few opportunities to reduce uncertainty in their relationships. The link between social anxiety and uncertainty is a crucial one for the study proposed here because, like everyone else, people with social anxiety must reduce uncertainty to form interpersonal impressions. In spite of this, people's social anxiety makes it difficult to reduce relational uncertainty. The research reviewed in this section suggests that social anxiety moderates the impression management process by hampering people's ability to reduce uncertainty in their relationships. The socially anxious have difficulty disclosing personal information and therefore experience more uncertainty in their conversations than people without social anxiety (Leary & Kowalski, 1995). As Wheelless and Williamson (1992) note, "High levels of communication apprehension as it is experienced by the speaker may be debilitating and may interfere with fluent and comprehensible communication between the interactants" (p.250). People with social anxiety have difficulty engaging in fluent communication and thus fail to provide a basis for their partners to construct interpersonal impressions (McCroskey & Sheahan, 1978). Empirical research indicates that people with high and low levels of

anxiety differ in the amount and depth of their self-disclosure with a negative relationship between anxiety and disclosure (Wheeless et al., 1986). Less disclosure often means increased relational uncertainty.

When people or their partners cannot reduce uncertainty, they manage negative impressions and are deprived of social rewards, such as liking. Anxiety and uncertainty often covary, such as when scholars noted that both concepts were lower in the later stages of initial interactions than in the beginning stages (Wheeless & Williamson, 1992). Additionally, several studies have documented positive correlations between anxiety and uncertainty (Schumacher & Wheeless, 1997; Wheeless & Williamson, 1992). Importantly, research has also confirmed that anxiety leads to uncertainty (Schumacher & Wheeless, 1997; Wheeless & Williamson, 1992). The resulting uncertainty “mitigates against both communication between the people and the development of close or intimate relationships” (McCroskey & Sheahan, 1978, p.45).

Scholarly inquiry should examine variables that might moderate the positive correlation between anxiety and uncertainty in order to discover a way for people with social anxiety to reduce their partner’s uncertainty. In fact, Leary and Kowalski (1995) realized this possibility when they wrote that people with social anxiety would not have a problem managing impressions if there was a less threatening environment where they could comfortably disclose personal information. CMC might provide an environment similar to what Leary and Kowalski (1995) described.

### *Computer Mediated Communication*

CMC might be an effective environment for reducing or hiding social anxiety during impression management. This purpose of this section is to suggest CMC's benefits for managing impressions. Combined with social anxiety, the proposed model asserts that mediated communication should moderate the impression management process. Therefore, CMC provides an environmental moderating influence on impression management in this model. Past research (Hancock & Dunham, 2001, Leary & Kowalski, 1995; Tidwell & Walther, 2002) has laid the groundwork for theorizing that people, especially those with social anxiety, can more easily manage their impressions online than face-to-face. If this is true, their partners should have an easy time forming positive impressions of them. This project goes beyond CMC's cues filtered out theory, which posits that the lack of nonverbal cues and their corresponding functions yields an impersonal medium (Walther & Parks, 2002), to show that a mediated environment does not have to be socially limited. Early scholars thought CMC was only applicable for impersonal, task-oriented communication (Hiltz, Johnson, & Tuross, 1986; Parks & Floyd, 1996). However, contemporary research recognizes CMC's potential for managing positive impressions (Tidwell & Walther, 2002). Rather than an environment devoid of all social value, the Internet could be the ideal social lab where people with social anxiety can more effectively manage their impressions.

Moreover, this research focuses on initial social interactions in multiple channels. Scholars have focused little attention on initial interactions in CMC and

have devoted even less effort to socially-oriented interactions (Ramirez & Burgoon, 2004). The extant research had participants make decisions, solve problems, or complete tasks online (Hancock & Dunham, 2001; Hiltz, Johnson, & Turoff, 1986; Tidwell & Walther, 2002; Walther, et al., 2005) rather than focusing on the social aspects of CMC interaction (Ramirez & Burgoon, 2004). However, to more fully understand interpersonal processes, it is always important to examine variables that moderate or mediate the core processes. Lastly, this project is also theoretically important because, as stressed in past research (O'Sullivan, 2000; Ramirez & Burgoon, 2004), it places the user and individual differences, rather than the technology, at the center of the inquiry.

Describing consistent channel differences between CMC and face-to-face (FtF) contexts is a difficult task. Rather, the contradictory findings about channel differences suggest a lack of uniform effects. For example, Ramirez and Burgoon (2004) observed a significant main effect of communication channel on impressions of mutuality. However, Walther et al. (2005) reported that communication medium had no effect on the impression qualities of immediacy or affection. As another example, Adams, Roch, and Ayman (2005) concluded that CMC users were less satisfied with their interactions than were FtF participants. On the other hand, McKenna, Green, and Gleason (2002) found that people liked their partners significantly more after online conversations than FtF chats. Some of the only consistent findings are the general observations that both URT and impression formation operate in CMC (Ramirez & Burgoon, 2004; Tidwell & Walther, 2002). Importantly, mediated interactions might be too

complex and multifaceted for consistent main effects. Perhaps, however, communication channel interacts with individual differences in order to moderate certain processes.

### *CMC and Social Anxiety*

Social anxiety inhibits impression management in FtF situations because people lack the self-confidence to positively present themselves. Given that they fear receiving a negative evaluation from other people, individuals with social anxiety often lack confidence in their presentational skills. Alternatively, CMC should diminish these negative effects. People should be less anxious, or at least hide their feelings of anxiety better in mediated encounters. Once they are unhindered by anxiety, people will have the confidence necessary to manage impressions. A theoretical explanation for why the socially anxious might prefer CMC to FtF communication comes from Walther's (1996) hyperpersonal perspective, which posits that without nonverbal cues, people are better able to engage in personal editing and selective self-presentation. More positive self-presentation online should lead one's partner to form more positive impressions than in FtF settings. In CMC, the socially anxious can present positive information while hiding negative physical and behavioral cues (Hancock & Dunham, 2001). As Walther (1996, p.20) asserts, "such social evaluations as one is able to garner are not impeded by messy hair, lack of makeup, or normal imperfections, much less more pronounced physical distractors or disabilities." Therefore, people with social anxiety might not even appear anxious during CMC because they can hide all signs of nervousness or fear. More over, people might

actually be less anxious online because CMC affords them the confidence they lack in FtF encounters.

The hyperpersonal perspective was developed out of Social Information Processing (SIP) theory (Walther, 1992), which states that people take an active role in forming impressions online, and that communicators adapt their behaviors to limited online cues (Hancock & Dunham, 2001). The remaining cues fall under any type of content, linguistic, chronemic, or typographic cue (Tidwell & Walther, 2002). Thus, SIP theory contradicts the claims that CMC is an impersonal medium (Parks & Floyd, 1996) by asserting that people use whatever cues are available to present themselves. Most often, people employ CMC's verbal dimension to carry the relational information contained in nonverbal cues in FtF interactions (Walther, et al., 2005). SIP theorists acknowledge that CMC might slow the impression formation process; however, overtime, CMC will equal FtF in terms of impression management and formation (Hancock & Dunham, 2001; Tidwell & Walther, 2002). With enough time, even socially anxious people should be able to employ CMC's verbal cues to manage more positive impressions.

Scholars have documented empirical support for many of these hypotheses. McKenna and Bargh (2000), for example, noted that the socially anxious were more likely than non-socially anxious people to form relationships, including very close relationships, on the Internet. Mazalin and Moore (2004) reported that social anxiety was positively correlated with Internet use and interactive aspects of the Internet such as time spent in chatrooms, time spent

online browsing for personal information, and time spent playing online games. Such activities are attractions for the “identity poor,” like the socially anxious, who use them to experiment with new roles or new ways of behaving (Mazalin & Moore, 2004). In a finding that points to reduced social anxiety online, 50% of a sample reported that they Instant Messaged a stranger and 37% of the sample indicated that they used CMC to say something to a person they could not say FtF because they did not have to directly experience the person’s awkward or confused reaction (Lenhart, Rainie, & Lewis, 2001). Even more, introverted people, such as those with social anxiety, had greater difficulty on several measures of relational involvement including social support, satisfaction, number of friends, and interpersonal competence in FtF situations than in CMC encounters (Ward & Tracey, 2004).

The Internet might be an effective context for impression management because there can be more openness or sociability online than FtF. Ward and Tracey (2004) noted that shyness was associated with less inhibition online than in real world exchanges. McKenna et al. (2002) found that people who find FtF interactions difficult see the Internet as a means to express things they struggle to convey FtF. In fact, the socially anxious were more likely to communicate their true, inner selves online than FtF (McKenna et al., 2002). Bargh et al. (2002) noted that Internet interaction facilitated the expression of one’s true self. Moreover, Anolli, Villani, and Riva (2005) concluded that the Internet’s anonymity enabled people to reach high levels of disclosure without anxiety or fear. As Walther (1996, p. 33) concludes “CMC affords opportunities, however,

to communicate as desired; an impulse that seems to be inherently human yet may be more easily enacted via technology.” These findings show that it might be easier to disclose personal information and therefore reduce relational uncertainty online than FtF.

Mediated channels possess what certain scholars label the “buffer effect,” such that they insulate people from their partner’s distressing reactions to self-disclosures (O’Sullivan, 2000). CMC’s sheltering properties enable people to feel more comfortable disclosing information (Tidwell & Walther, 2002). As such, CMC should increase people’s presentational confidence by reducing the perceived threat of confronting a partner. After all, in CMC interactions, there is a small button in each conversation window that people can push to terminate the interaction if it becomes too intimidating. Interactants can also employ leaner channels, such as CMC, to obscure unattractive traits and regulate disclosure (O’Sullivan, 2000). Overall, CMC’s attributes can promote self-disclosure, reduce uncertainty, and lead to positive impression management. Thus, CMC might act as a social lubricant encouraging people to disclose.

There is no reason that impression management cannot function normally in different channels. As Pratt et al. (1999) wrote, “The relationships formed through CMC are influenced by, but not predicated on, the medium chosen to communicate people’s messages” (p. 48). Further, as Walther et al. (2005) concluded “very little motivation or identity issues need to be salient for communicators to adapt their relational behaviors effectively across channels” (p. 57). If people can effectively present themselves online, there should be a

positive relationship between Internet communication and impression formation (Bargh et al., 2002). O'Sullivan (2000) learned that people preferred mediated, as compared to FtF channels, when they were concerned with their self-presentation and when they believed that ambiguity would favor their own or their partners' presentations. Therefore, people recognized CMC's benefits for disclosing information and managing impressions.

An information management framework (O'Sullivan, 2000) provides an ideal explanation for how people, even those with social handicaps, can manage positive impressions in CMC. This perspective parallels Goffman's (1959) ideas because information management posits that people select optimal self-presentational behaviors to regulate what personal information others know about them. People should use CMC to convey the identity-important aspects of themselves that they have the greatest need to express (Bargh et al., 2002). Therefore, people will work hard to strategically present themselves in a positive light. If positive self-presentation occurs, people's partners should form positive impressions of them and may even grant them other social rewards, such as interpersonal liking. Yet, before interactants can form impressions or grant social rewards, uncertainty reduction processes must come into play. Given that reduced uncertainty is central to all well-developed impressions, it is useful to consider whether people can reduce uncertainty in CMC contexts.

### *CMC and Uncertainty Reduction*

Tidwell and Walther (2002) reported evidence of uncertainty reduction in CMC- they discovered that CMC interactants asked a higher proportion of questions and had a higher proportion of self-disclosure than FtF participants. In that study, questions were particularly valued in CMC because they were efficient, purposeful, and easily understood. Additionally, Ramirez and Burgoon (2004) realized that personal disclosure was one of the most efficient uncertainty reduction strategies in CMC. Tidwell and Walther (2002) also wrote that CMC users were more effective using these direct, interactive behaviors than were FtF partners. The authors believed that the FtF participants “diluted their use of interactive strategies with other conversational elements” by implementing more exclamations, more statements of fact, more statements of third parties, and more peripheral questions than did CMC partners (Tidwell & Walther, 2002, p. 332). Pratt et al. (1999) also studied uncertainty reduction behaviors in mediated contexts and observed that participants asked the most questions, or engaged in the most information seeking, during the beginning of the interaction when uncertainty was presumably at its highest. In the end, CMC interactants gain as much information about their partners as do FtF pairs (Tidwell & Walther, 2002). Lastly, even though SIP theory (Walther, 1996) posits that online communication takes longer than FtF communication because, if nothing else, typing takes more time than speaking, Berger (1987) believes that the quality, rather than the quantity, of the information exchanged is more important to reduce uncertainty.

By using direct strategies, people can effectively reduce uncertainty in mediated contexts.

### *CMC and Liking*

After people, even those with social anxiety, strategically disclose information online, there is less uncertainty in their interactions, and reduced uncertainty allows partners to form impressions. The next step in the process is the development of liking. Importantly, research has documented that people can develop liking for one another after online interactions (Bargh et al., 2002; McKenna et al., 2002). Liking is important for the proposed model because it serves as the model's dependent variable. If people, even those with social anxiety, can achieve social rewards and be liked after online conversations, they have effectively engaged in positive impression management.

Scholars offer two reasons why there should be greater liking in CMC than FtF interactions. First, it is easier to express one's true self online than in face-to-face encounters (Bargh et al., 2002). Second, participants are freer to perceive their CMC partners because they are unhindered by superficial information included in first exchanges in the FtF world, such as attractiveness, dress, and mannerisms (Bargh et al., 2002). Indeed, studies have shown that it is easier to make friends online because people in CMC focus on personality or intellect rather than attractiveness (Lenhart et al., 2001). Because people can express their inner selves online more than in FtF situations, and because CMC relationships are based on substantial information such as personality, online

interaction enables people to positively manage their impressions. Positive impressions then lead to liking.

Research indicates that partners who initially interacted online liked each other significantly more than couples who first met in FtF settings (Bargh et al., 2002; McKenna et al., 2002). McKenna et al. (2002) even had their participants unknowingly interact with the same person in CMC and FtF. Interestingly, they observed that people liked the same person significantly more after an online conversation than after a FtF meeting. Participants also felt they knew the same person significantly more after an online exchange than following a real life encounter and were more likely to tell the online version of the person specifically what they liked about him or her (McKenna et al., 2002). Similarly, Walther et al. (2005) found that CMC couples were as immediate and affectionate as FtF dyads. These studies all show that people do develop interpersonal liking via CMC. This is relevant given that liking is the dependent variable in the proposed model and that the development of interpersonal liking signifies effective impression management, the reduction of uncertainty, and the attainment of social rewards.

#### *Focus of the Current Study*

The central research question for the current study is whether social anxiety and channel moderate the impression management process in initial interactions. The model presented in this section brings together concepts from the impression management, social anxiety, URT, and CMC literatures. Impression management is an important interpersonal process that provides the foundation for the proposed model. It is an important process because it is the

means by which people present themselves to others. Impression management is also a relevant subject for scholarly inquiry because people need to effectively manage impressions in order to achieve desired social rewards. However, social anxiety can moderate impression management by making it difficult for some people to confidently present themselves. As Leary and Kowalski (1995) suggested, the socially anxious need to find an environment where they do not feel the threat of evaluation in order to effectively manage impressions. If the socially anxious feel safer and more efficacious in CMC, they should be able to foster positive impressions in their partners. Further, the current study incorporates uncertainty reduction theory as part of its explanatory framework, and as Berger and Calabrese (1975) designed URT for face-to-face interactions, this project also tests that theory's boundary conditions. URT is important in this study because it clearly explains the process of impression management. By thoroughly outlining the behaviors involved in managing impressions, URT lends the model its explanatory power.

The model proposed here offers a more thorough understanding of the impression management process than currently exists by presenting a detailed explanation of impression management. First, the model seeks to explain how communication channel and social anxiety combine to moderate the impression management process. It is with this moderation that people with social anxiety should form positive impressions online. Second, the proposed model attempts to highlight three possible mediators of impression management. Rather than self-presentation leading directly to liking, this model proposes a few intervening

variables. In this light, this paper offers three different versions of a moderated mediation model. By testing this model, impression management is more fully understood and theories of impression management have their boundary conditions tested. Additionally, the self-presentational benefits of CMC as an alternative communicative channel are tested.

The previously reviewed literature demonstrates that liking is often preceded by the establishment of positive interpersonal impressions. Yet, in order to fully explain the proposed model, it is necessary to note that there are some cases in which individual traits, such as social anxiety, lead directly to liking. Such instances are labeled snap judgments, and are immediate evaluations that do not involve complex cognitive processing or detailed accounts of a target person's motives (Schneider, Hastorf, & Ellsworth, 1979). Schneider et al. (1979) also explained that snap judgments are "elements of naïve psychological theories used to predict and explain the actions of others" (p. 121). Even more, Mehrabian (1972) concluded that stereotypes operate when people interpret others' behavior. Furthermore, Clore, Wiggins, and Itkin (1975) noted that people could easily rank a list of nonverbal behaviors in terms of positivity. They also learned that the more a stranger exhibited the positively ranked nonverbal behaviors, the more liked the person was. Additionally, snap judgments are almost always responses to relatively unknown people, often those who are being met for the first time. These reactions can be based off of nonverbal behaviors so a target does not even have to speak to render an evaluation. This fact highlights the importance of managing the impression one gives off (Goffman, 1959). Although CMC lacks

many of the nonverbal cues present in FtF situations, there are a few remaining cues off of which snap judgments can be based. For instance, Tidwell and Walther (2002) highlighted the importance of content, linguistic, chronemic, or typographic cues in making inferences about partners in CMC. These cues might be analogous to the nonverbal cues commonly found in FtF interactions. Lastly, snap judgments are often evaluative in nature such that they help form positive or negative judgments that can establish liking. Therefore, snap judgments provide the foundation for the first hypothesis as follows:

H1: Social anxiety is inversely related to liking.

Some theorists (Hancock & Dunham, 2001; Tidwell & Walther, 2002; Walther, 1996; Walther et al., 2005) contend that CMC benefits people's attempts at impression management, and may subsequently enhance liking. Other scholars suggest that mediated channels should make it easier or less threatening for certain people to communicate (O'Sullivan, 2000; Tidwell & Walther, 2002; Ward & Tracey, 2004). According to URT's theorem five, increased communication should correlate with more liking and therefore result in more positive impressions (Berger & Calabrese, 1975). However, Sunnafrank (1986, 1990) contends that increased communication does not necessarily lead to more liking because, for example, people can communicate with their partners and thereby discover negative information about them. Such communicate will not lead to increased liking. Given Sunnafrank's argument, Berger (1987) later revised URT so that reduced uncertainty might not lead to more liking and that people will only continue to reduce uncertainty about people they like. Modern

developments in URT also note that increased communication and more information does not always lead to reduced uncertainty. Therefore, the nature of a direct link between communication channel and liking is, as of yet, inconclusive. However, it is possible that communication channel will interact with other relevant variables to moderate the impression management process in certain situations. Such arguments provide the background for a research question and another hypothesis:

RQ1: What is the nature of the relationship between communication channel and liking?

H2: Communication channel serves as a moderator in the relationship between social anxiety and liking such that people with higher levels of social anxiety communicating in CMC should achieve greater liking than people with higher levels of social anxiety who communicate FtF.

Socially anxious people fear interpersonal evaluation during social exchanges. Although they are motivated to make desired impressions, people with social anxiety believe they are unable to form favorable impressions in their partner's eyes and experience difficulty in their conversations (Leary & Kowalski, 1995). Furthermore, because the socially anxious often cannot reduce uncertainty, McCroskey and Sheahan (1978) stated that the presence of uncertainty "mitigates against both the communication between the people and the development of close or intimate relationships" (p. 45). Little communication and undeveloped relationships imply negative impressions. Thus,

H3: Social anxiety is inversely related to impression positivity.

Although the Internet might be beneficial for impression management, the link between communication channel and impression positivity, similar to the relationship between channel and liking, is still unclear. Even though some channels might transmit more information than others, increased information does not always lead to positive impressions and liking. However, when combined with social anxiety, communication channel could moderate the impression management process. These arguments provide the rationale for another research question and hypothesis:

RQ2: What is the nature of the relationship between communication channel and impression positivity?

H4: Communication channel serves as a moderator in the relationship between social anxiety and impression positivity such that people with higher levels of social anxiety communicating in CMC should foster more positive impressions than people with higher levels of social anxiety who communicate FtF.

In the original formulation of URT, Berger and Calabrese (1975) noted that “decreases in uncertainty levels produce increases in liking” (p. 107) and that “amount of communication and liking are positively related” (p. 108). These propositions imply that people form positive impressions of their partners by gathering information about them. Berger (1987) later altered URT so that people would continue to reduce uncertainty about people they like and stop reducing uncertainty about people they dislike. Therefore, only favorably managed impressions will lead to liking. There has also been empirical research that

concluded that impression positivity related to liking. For example, Clore, Wiggins, and Itkin (1975) observed that strangers who exhibited more positive nonverbal behaviors were liked more than strangers with less positive cues. In addition, Anderson (1966) demonstrated that certain traits were liked more than other traits and that different trait combinations yielded different levels of liking. Lastly, Higgins and Rholes (1978) reported that participants provided more positive impressions of an imaginary person to a confederate who supposedly liked the imaginary person than they did to a confederate who disliked the person. In this light, the fifth hypothesis is as follows:

H5: Impression positivity is directly related to liking.

Based on the combination of the previous hypotheses, the processes that exist in H3 through H5 imply that there is mediation among the variables. The next hypothesis specifies this mediation:

H6: Impression positivity serves as a mediator in the relationships between the independent variables of social anxiety and communication channel and the dependent variable of liking.

Taken together, the six hypotheses presented above constitute the theoretical model illustrated in Figure 1. Specifically, the model is a moderated-mediation model (Baron & Kenny, 1986) of impression management and liking.

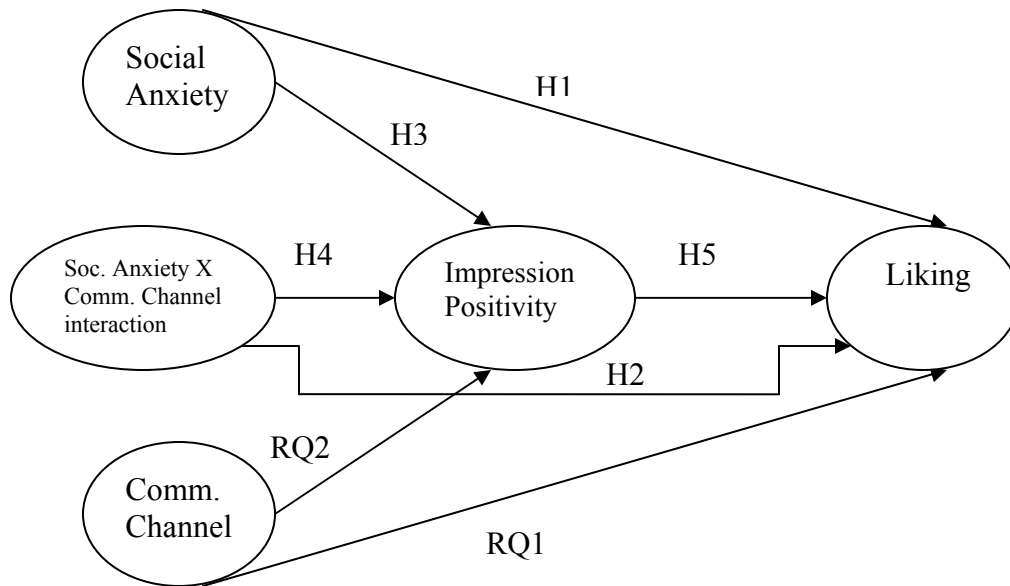


Figure 1: Theoretical Model 1

By definition, people with social anxiety lack confidence in their social skills (Leary & Kowalski, 1995). In fact, Leary and Kowalski (1995, p. 110) state “people who are generally anxious about one anxiety-producing stimulus tend to be more anxious than average about other things as well.” Therefore, people who have higher levels of social anxiety will have less self-presentational confidence in almost every situation. This proposition is supported by the specific findings that people with greater social anxiety often withdraw from interpersonal exchanges and have significantly lower levels of disclosure when they do interact than people with less social anxiety (Leary & Kowalski, 1995; McCroskey & Sheahan, 1978; Wheelless et al., 1986). Both withdrawing from interaction and disclosing less information points to a lack of self-presentational confidence:

H7: Social anxiety is inversely related to self-presentational confidence.

Similar to the relationships between communication channel and liking, and communication channel and impression positivity, the link between communication channel and self-presentational confidence is unclear. There might be some people who feel more confident with the limited cues and buffer effect of CMC. However, other people, such as those without technological competence, might prefer FtF interaction. It is difficult to believe that there are consistent channel differences that cut across all contexts and individual difference variables. Therefore, the association between communication channel and self-presentational confidence is best investigated with a research question:

RQ3: What is the nature of the relationship between communication channel and self-presentational confidence?

The Internet might be the ideal environment for the socially anxious to manage their impressions. Researchers have noted that individuals with high and low social anxiety did not differ in their desire for close relationships even though people with high social anxiety have difficulty attaining such relationships (McCroskey & Sheahan, 1978). If the Internet is truly the “ideal social laboratory” that scholars have labeled it, the socially anxious should feel comfortable managing impressions there (Bargh et al., 2002). Although they did not empirically test it, Tidwell and Walther (2002, p. 325) speculated that “mediated interactants may feel more comfortable disclosing more intimate information, with less self-consciousness” online than FtF. People with social anxiety should take this increased comfort and use it to strategically manage the ambiguity of mediated channels in order to confidently present themselves

(O'Sullivan, 2000). As such, communication channel and social anxiety should interact to moderate the impression management process for certain people:

H8: Communication channel serves as a moderator in the relationship between social anxiety and self-presentational confidence such that people with higher levels of social anxiety communicating in CMC should have more self-presentational confidence than people with higher levels of social anxiety who communicate FtF.

If people are not confident in their self-presentational skills, it is difficult for them to manage positive impressions (Leary & Kowalski, 1995; McCroskey & Richmond, 1977). A lack of confidence implies that people are reluctant to engage in significant disclosure. Low self-disclosure leads to poorly managed impressions, which, in turn, lead to less liking. In fact, in their original formulation of URT, Berger and Calabrese (1975) hinted at the fact that uncertainty might mediate the relationship between confidence and liking. Additionally, McCroskey and Richmond (1978) reported that people liked individuals with higher levels of social anxiety, and therefore less self-presentational confidence, less than they liked people with lower levels of social anxiety. Other researchers also reported similar findings (McCroskey & Sheahan, 1978; Wheelless, Nesser, & McCroskey, 1986). Thus, people must confidently present themselves to manage positive impressions and be liked by others. This provides the rationale for Hypothesis Nine:

H9: Self-presentational confidence is directly related to liking.

Based on the combination of the previous hypotheses, the processes that exist in H7 through H9 imply that there is mediation among the variables. The next hypothesis specifies this mediation:

H10: Self-presentational confidence serves as a mediator in the relationships between the independent variables of social anxiety and communication channel and the dependent variable of liking.

Hypotheses Seven through Ten are illustrated in Figure 2, which is Theoretical Model 2 as pictured below:

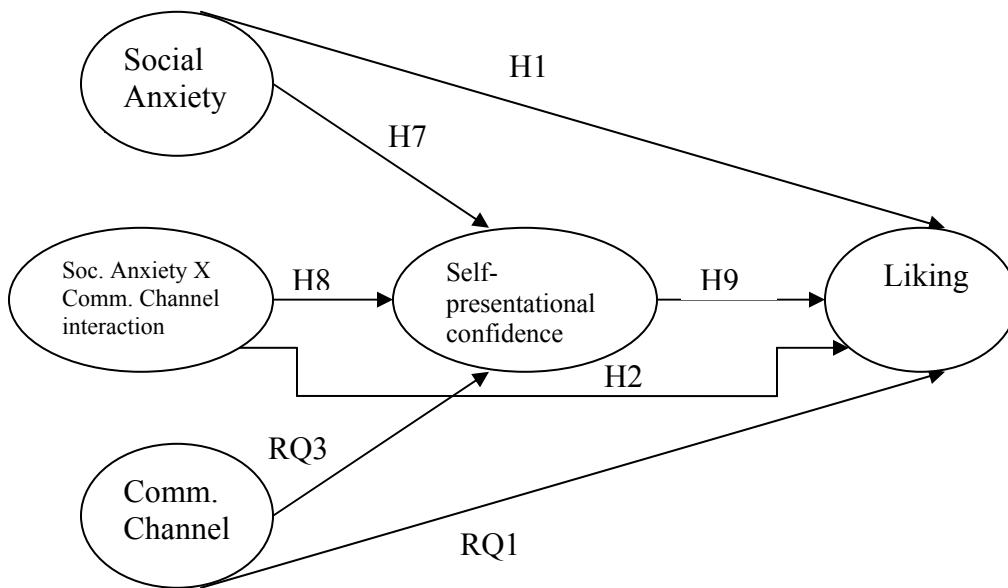


Figure 2: Theoretical Model 2

According to Goffman (1959), people must not only be concerned about the impression they try to give, but they must also be cognizant of the impression they give off. Regardless of how they intend to present themselves, the socially anxious often appear nervous, withdrawn, or otherwise reluctant to interact (Leary & Kowalski, 1995). Such behaviors can be perceived by people's partners. This is the relationship posited in the next hypothesis:

H11: People's social anxiety is directly related to their partner's perceptions of this social anxiety.

Scholars have speculated that CMC might buffer people from certain aspects of their partners (O'Sullivan, 2000) and that the lack of nonverbal cues in CMC provides a less rich medium than other media (Parks & Floyd, 1996; Walther, 1996; Walther & Parks, 2002). Anytime there is a less rich channel, there is less information in an interaction. If there are fewer cues in CMC, it seems logical that it would be harder to perceive a partner's anxiety in CMC than in FtF exchanges. Furthermore, communication channel might combine with other variables to moderate the relationship between social anxiety and perceptions of a partner's anxiety. The following two hypotheses investigate this relationship:

H12: It is more difficult to perceive a partner's social anxiety in CMC than in FtF contexts.

H13: Communication channel serves as a moderator in the relationship between social anxiety and perceptions of a partner's anxiety such that people with higher levels of social anxiety communicating in CMC will appear less anxious to their partners than socially anxious people using FtF contexts.

The previously mentioned research by McCroskey and Richmond (1978) noted that people with high levels of social anxiety were liked less than people with less social anxiety. Furthermore, there has been additional research that came to similar conclusions (McCroskey & Sheahan, 1978; Wheelless, Nesser, &

McCroskey, 1986). From this, it stands to reason that if people's partners perceive their anxious symptoms, then the anxious people will not be liked. From this argument, another hypothesis is presented as follows:

H14: Perceptions of a partner's anxiety are inversely related to liking.

Based on the combination of the previous hypotheses, the processes that exist in H11 through H14 imply that there is mediation among the variables. The next hypothesis specifies the nature of this mediation.

H15: Perceptions of a partner's anxiety serves as a mediator in the relationships between the independent variables of social anxiety and communication channel and the dependent variable of liking.

Similar to the previous two figures, H11 through H15 are illustrated in Figure 3 depicting Theoretical Model 3.

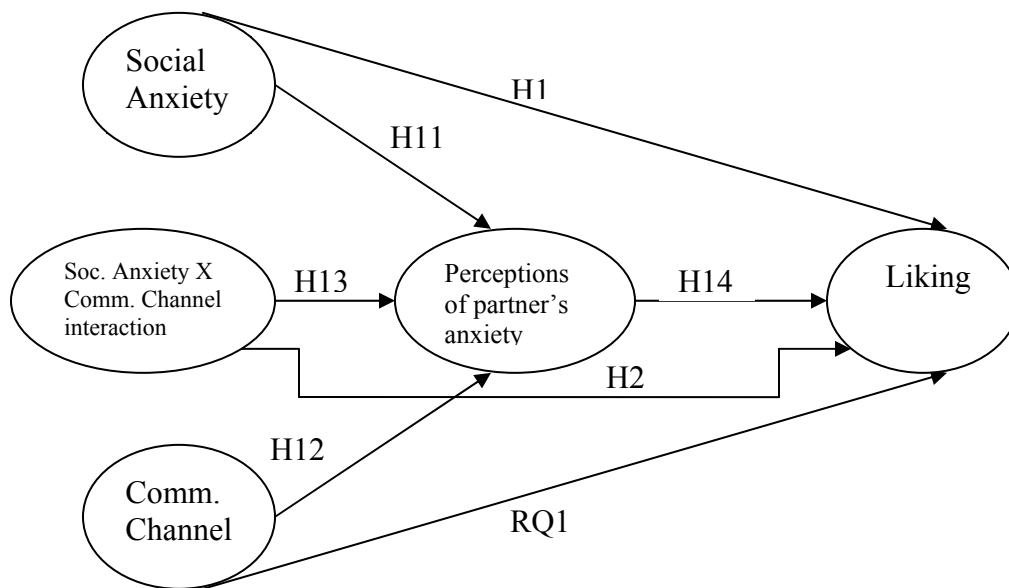


Figure 3: Theoretical Model 3

Scant research has investigated how individual difference variables and communication channels moderate or mediate the impression management process. Even more, little effort has been made to find a more suitable environment for the socially anxious to manage their impressions. The next chapter describes the methodology and research measures employed to test these hypotheses and research questions.

## Chapter 2

### *Method*

#### *Participants*

Participants for the proposed study were recruited from multiple sections of an undergraduate communication class at a moderately large Eastern university and received extra credit for their participation. The specific class was chosen because students from a wide variety of majors are required to take this oral communication course. Sampling from a variety of majors increased the likelihood of obtaining unfamiliar dyads. Furthermore, using undergraduates and offering extra credit for their participation is a well established practice within CMC research (O'Sullivan, 2000; Ramirez & Burgoon, 2004; Tidwell & Walther, 2002). The sample consisted of 214 people (54.7% male), or 107 dyads. A sample of this size would be comparable to, or larger than, the samples commonly used in CMC research (Hancock & Dunham, 2001; Ramirez & Burgoon, 2004; Tidwell & Walther, 2002; Walther et al., 2005)

Besides convenience, Caplan (2003) argued that there are methodological reasons for using undergraduates in CMC research. First, they attend institutions that rely heavily on the Internet for class-related, as well as professional, functions. Undergraduates also actively use the Internet to conduct their social lives. Thus, the respondents were already familiar with the relevant technology.

Second, social anxiety is a trait that should exist in any group of people. Therefore, the effects of social anxiety should be similar for both student and nonstudent Internet users (Caplan, 2003). All participants had e-mail accounts through the university. The university where the study was conducted has numerous on-campus computer labs, wireless Internet access, and multiple Ethernet connections in each dormitory room. The ubiquitous technological presence made it more likely that the participants knew how to use the chat software.

### *Procedures*

Participants completed a pre-test to assess their levels of social anxiety. The pre-test was administered about two weeks before the experimental manipulation. A pre-test was necessary in this instance to gauge participants' trait levels of anxiety given that having participants complete a measure of social anxiety during an experiment could yield artificial, heightened levels of anxiety because the respondents could be in an excited state due to the experimental context. Moreover, participants could be primed to figure out what the study is about if the pre-test was administered immediately before the experimental manipulation. Therefore, a pre-test was thought to yield a more valid measure of social anxiety. In addition, the pre-test included a series of questions that was used to track the participants in order to compare people's pre-test anxiety scores to their post-manipulation outcomes in a confidential manner. Specifically, participants were asked to record the first two letters of their last names, their birthdate, and the first two letters of their mothers' maiden name. These

responses were used to construct a unique six digit code for each participant without using anyone's name or personal identification.

Immediately after completion of the pre-test, participants signed up for times to engage in the experimental manipulation. Similar to past research (e.g., Tidwell & Walther, 2002), the respondents were told that the study is about how people get acquainted using different communication formats and that they will have a conversation with a stranger across one of two communication channels. After this brief description of the project, a sign-up sheet was circulated so that any interested people could choose a time slot that is convenient for them. The sign-up sheets were coordinated such that the volunteers from one section were "Person 1" of a dyad and the volunteers from another section were "Person 2" of the dyad. The first "Person 1" in one section was matched with the first "Person 2" in another section, and so on down the list, to form dyads. Pairing the sections was done on a completely random basis. The grouping of the dyads was done in this manner in order to increase the chances of achieving dyads containing people who do not know each other. Because the participants had no idea what section their class was paired with, they could not coordinate their schedules to sign up with a friend. By only asking people to indicate a time that fits their schedule and randomly pairing them with someone from another section, the dyads consisted of strangers. Then, the unacquainted dyads were randomly assigned to the FtF or CMC condition. They were notified of where to report via e-mail. Any dyads that contained people who knew each other were not used in data analysis.

The experimental phase of this project took place two weeks after the pre-test. At that time, participants in the CMC condition met at a campus computer lab where they were greeted by a researcher who signed them in and assigned them to a computer terminal. Each participant received an information sheet (see Appendix A) explaining relevant information about the study before partaking in the experiment. The CMC participants interacted in a unique, “V”-shaped computer lab. Besides its convenient location, this lab was used to prevent people from seeing their partners and forming impressions based on physical cues. One member of each dyad was seated on one wing of the “V”-shaped lab while the other member was seated out of sight on the other side of the lab. Once they were seated at their computers, participants received a login name and password to access a chat program located on a webserver. The chat software was configured such that each person could only enter one chatroom and that there could be only two people in each room.

Participants were instructed to get to know their partner as they would in any other interaction with a stranger. In order to increase validity, participants were simply told to get to know their partners so that they could freely behave in a natural manner. The researcher gave the participants the following instructions: “Please try to get to know your partner just like you would any other time you meet a stranger. In doing so, please assume that you will see this person again.” The researcher asked if the participants had any questions before leaving the room to let them interact. Consistent with prior research (Ramirez & Burgoon, 2005), the respondents were told to expect future contact because the anticipation of

future communication is necessary to activate uncertainty reduction processes (Berger, 1979; Sunnafrank, 1990; Walther, 1994). These directions were thought to yield more normal social behaviors than asking participants to discuss a moral dilemma (Walther et al., 2005), engage in a task (Hancock & Dunham, 2001), or find a solution to a problem (Tidwell & Walther, 2002). After these instructions, the participants were left to interact with their partners. Because SIP theory (Walther, 1996) posits that relationships take longer to develop over CMC than FtF, the CMC dyads were allowed to interact for 20 minutes whereas the FtF dyads only had 10 minutes. However, all participants were free to end their interactions at any time. After their conversations, CMC participants logged out of the chatrooms and completed a survey. The survey contained the scales needed to measure the variables in the previously listed hypotheses. Each of the survey's scales will be described later in this chapter. Assuming there were no other partners available, if only one member of a dyad reported to the experiment, he or she still received extra credit for participating but was unable to produce any data for the study. Similarly, if some of the participants already knew their partners, they received extra credit for their participation but were unable to yield any usable data.

In accordance with prior research (Hancock & Dunham, 2001; Tidwell & Walther, 2002), members of the FtF dyads were instructed to report to separate locations in order to remain strangers. Researchers took care to separate the interactants for as long as possible before the conversations to make sure that no prior judgments based on appearance or mannerisms affected their impressions.

Thus, the FtF interactants reported to one of two locations where they signed-in with a researcher. Then, the researcher took them to their designated conversation room at the appropriate time. In this manner, both members of the dyad ended up at the same room at the same time without previous contact that could bias their impressions. Once inside the room, a researcher instructed the participants to get to know each other as they would in any other interaction with a stranger. The researcher verbally delivered the same set of instructions that was given to the CMC dyads. Consistent with similar research (Hancock & Dunham, 2001), participants sat at a table across from one another to conduct their conversation. After their interactions, the FtF participants completed the same survey as the CMC participants. All respondents were asked to remain silent during the completion of the surveys so that one person's ideas would not influence another person's responses. Additionally, when the surveys were being completed, the participants were seated far apart from each other so that one person could see another person's answers. Furthermore, following past research (O'Sullivan, 2000), all participants were informed that their responses would be kept confidential. The post-interaction survey assessed participant's impression positivity, liking of their partner, self-presentational confidence, and their perceptions of their partner's anxiety. The next section presents these measures in detail.

### *Measures*

The use of self-report measures constructed of Likert-type scales parallels relevant CMC research (Ramirez & Burgoon, 2004; Tidwell & Walther, 2002).

Furthermore, self-report measures are a staple of URT research (Sunnafrank, 1990) and are especially useful in situations where people can hold individual definitions of constructs (Sunnafrank, 1990), such as liking, self-presentational confidence, or perceptions of a partner's social anxiety.

*Impression positivity.*

A new impression positivity scale was developed expressly for this study. The researcher concluded that any existing methods of assessing impression positivity (Anderson, 1968) would be either too old or not valid to adequately measure impression positivity in the current context. The researcher thought that making a new scale using a sample similar to the one used in the experimental phase of the study would yield the most accurate measure of impression positivity possible. A scale developed for the current study would yield items that are relevant and familiar to this sample. To develop the new scale, a sample of 44 students from a variety of majors taking an introductory communication course was offered extra credit for participation. The scale construction consisted of two phases. First, every participant received an information sheet that described the nature of their participation, the general purpose of their help, and the confidentiality of their results (see Appendix B). Next, half the sample completed a form that asked them to record the attributes of someone they liked or someone they disliked. An equal number of forms asking for like and dislike were distributed. Furthermore, the students who received the like or dislike version of the form were chosen on a random basis (see Appendix C for a copy of each form). Once the forms were completed, the researcher tabulated the number of

times each different attribute or quality was listed (for a complete list of responses and their occurrence, see Appendix D). From this frequency list of responses, the researcher included the 15 most common responses on the impression positivity scale while making an effort to include an equal number of positive and negative characteristics. Furthermore, any qualities that were based on physical presence (i.e. ugly, fat) were discarded because participants in the CMC group did not see their partners and were not exposed to such physical cues. In addition, synonyms were collapsed into a single term (i.e. funny, humorous, comical, and silly were all coded as funny, the most common of the four words) in order to achieve a wide variety of attributes rather than a list of synonyms.

In phase two of the scale development, the researcher asked the remaining half of the sample to complete a 15 item scale. Half of the phase two participants were asked to think about a person they liked and then rate how much they agreed that person exhibited the traits on the scale. The other half of the participants were asked to think of a person they disliked and complete the scale in the same manner (see Appendix E for a copy of the forms used in phase two). The respondents indicated how much their liked or disliked person matched the 15 attributes on five-point Likert-type scales. After the participants completed the surveys, each scale item was analyzed using an ANOVA in order to see if there was a difference on the item's score depending on whether the respondents thought about a liked or a disliked person. All of the variables were significantly different in the expected direction ( $p < .05$ ). When thinking of a liked person, the positive variables achieved high scores while the negative variables received low

scores. To make the final post-manipulation survey less time consuming, the researcher eliminated the five least significant attributes from the impression positivity scale. Thus, the final impression positivity scale consisted of 10 items, with an equal number of positive and negative qualities, that were all significant in the expected direction ( $p < .001$ ; see Appendix E for the final version of the impression positivity scale). To calculate the impression positivity index, the negative items were reverse coded and averaged with the positive items. However, after the scale was analyzed in an exploratory principal -axis factor analysis with oblimin rotation to assess the dimensionality of the data, the impression positivity scale yielded two solid factors (See Table 1). However, the present study used only one factor in its analyses because the researcher was interested in a range of impressions from positive to negative rather than two separate constructs. In all, the version of the scale which was used for statistical analysis consisted of seven items (four negative and three positive). The first factor accounted for 38.48% of the variance among the responses (Eigenvalue = 3.85) while the second factor accounted for 16.12% of the variance (Eigenvalue = 1.61). Importantly, the items retained for analysis yielded good reliability in the current study ( $\alpha = .81$ ,  $M = 4.22$ ,  $SD = .42$ ). Given that the researcher developed the scale using contemporary students, it was thought to yield a valid measure of impression positivity. Furthermore, because the sample of undergraduate students that helped to make the impression positivity scale was similar to the sample used in the actual experimental manipulation, the scale should generate an accurate measure of impression positivity for the students participating in this experiment.

**Table 1***Factor Analysis for the Impression Positivity Scale*

	Factor 1	Factor 2
Eigenvalues	3.85	1.61
Percentage of variance accounted for by factor	38.48%	16.12%
Friendly	.726	.335
Caring	.706	.251
Nice	.677	.360
Boring	.659	.448
Generous	.566	.210
Funny	.561	.217
Annoying	.455	.692
Rude	.256	.691
Fake	.276	.615
Deceitful	.241	.612

*Liking.*

McCroskey and McCain's (1974) Interpersonal Attraction Scale was employed to measure liking. The Interpersonal Attraction Scale (see Appendix F) measures social, task, and physical attraction; however, only the 5-item social attraction subscale was relevant to this study. Social attraction involves being fond of another person in social situations. The scale's authors viewed social

attraction and liking as one in the same (McCroskey & Rochmond, 1974). In addition, McCroskey and McCain (1974) calculated an internal reliability of .90 for the social dimension of the scale. The researcher chose this scale because of its extensive use in communication and other disciplines (Canary & Spitzberg, 1987; Clatterbuck, 1979; Sunnafrank, 1990). Such research provides support for the validity of this measure. The Interpersonal Attraction Scale is scored so that higher scores indicate greater attraction. For the present project, the social dimension of the Interpersonal Attraction Scale showed good reliability ( $\alpha = .83$ ,  $M = 3.86$ ,  $SD = .64$ ). Lastly, in order to examine the dimensionality of the data, the social subscale of the Interpersonal Attraction Scale was subjected to an exploratory principal -axis factor analysis with oblimin rotation. The factor analysis revealed only one factor that explained 61.37% of the variance in the data (Eigenvalue= 3.07). The specific items and factor loadings are listed in Table 2 presented below.

**Table 2**

*Factor Analysis for the Liking Scale*

	Factor 1
Eigenvalue	3.07
Percentage of variance accounted for by factor	61.37%
I would like to have a friendly chat with him/her	.775

We could never establish a personal .761  
friendly relationship with each other

I think he/she could be a friend of .728  
mine

It would be difficult to meet and talk .706  
with him/her

He/she just wouldn't fit into my .622  
circle of friends

*Social anxiety.*

The Social Avoidance and Distress scale (SAD; Watson & Friend, 1969) assessed participants' levels of social anxiety. Leary and Kowalski (1995, p. 191) contend the SAD scale "is perhaps the most widely used measure of dispositional social anxiousness. In fact, its publication may be partially credited with promoting research interest in social anxiety." Additionally, scholars describe the SAD as an "unusually well-designed measure, and its usefulness as a measure of social anxiety and avoidance has been demonstrated in a number of contexts" (Robinson, Shaver, Wrightsman, & Andrews, 1991). The 28-item instrument measures both one's feelings of anxiety or discomfort in social situations and one's avoidance of such situations (Appendix G). Despite its ability to measure two aspects of anxiety, most researchers have ignored the subscales and used the total of all the items (Robinson et al., 1991). Furthermore, Watson and Friend (1969) designed the scale to be a unidimensional measure. Although respondents answered the original scale's items as either "true" or "false," this project used a five-point Likert-type scale ranging from 1 (*disagree*) to 5 (*agree*) in order to

enhance variability in the data. Higher scores indicated more social anxiety. The SAD scale measures trait anxiety in general social situations rather than more specific state forms of anxiety (Watson & Friend, 1969). Past research (Watson & Friend, 1969) indicated the scale has good internal consistency ( $\alpha = .77$ ) and stability over time (test-retest reliability = .79). Indeed, the SAD scale achieved a very high reliability level in the current study ( $\alpha = .94$ ,  $M = 2.21$ ,  $SD = .58$ ).

Research also suggests the scale is valid. For example, Watson and Friend (1969) demonstrated that people who scored higher on the SAD scale reported more anxiety in social situations and were less interested in participating in group discussion than people who received lower scores on the assessment. Thus, the SAD scale is a reliable and valid instrument for the measurement of trait social anxiety. The SAD scale was also assessed with an exploratory principal -axis factor analysis with oblimin rotation in order to measure the dimensionality of the data. According to the factor analysis, the data broke into five factors. The eigenvalues, percent of variance explained by each factor, and factor loading of each item are included in Table 3 below. Despite the presence of multiple factors, the researcher averaged all the items to create a single social anxiety index because each factor was simply a slightly different dimension of the social anxiety construct. Additionally, past research (Robinson et al., 1991) claims that a single index can be derived from the SAD scale. Because the scale's authors (Watson & Friend, 1969) designed a unidimensional scale, it was employed as such in the current study. Lastly, the researcher's theoretical argument and rationale only involved a single social anxiety construct.

**Table 3***Factor Analysis for the Social Anxiety Scale*

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Eigenvalues	10.95	1.685	1.477	1.130	1.058
Percentage of variance accounted for by factor	39.12%	6.02%	5.28%	4.04%	3.78%
I usually feel relaxed when I meet someone for the first time	.715	-.379	.294	.487	.428
I feel relaxed even in unfamiliar social situations	.686	-.283	.129	.421	.378
It is easy for me to relax when I am with strangers	.685	-.408	.321	.437	.342
I find it easy to relax with other people	.672	-.568	.134	.527	.372
If the chance comes to meet new people, I often take it	.656	-.535	.209	.441	.207
I usually feel relaxed when I am with a group of people	.643	-.527	.013	.491	.465
I don't mind talking to people at parties or social gatherings	.639	-.617	-.040	.591	.277
Even though a room is full of strangers, I may enter it anyway	.565	-.325	.132	.475	.176

I would avoid walking up and joining a large group of people	.556	-.469	.330	.500	.184
I sometimes take the responsibility for introducing people to each other	.487	-.333	-.136	.372	.087
I try to avoid situations which force me to be very sociable	.516	-.771	.285	.547	.251
I tend to withdraw from people	.424	-.737	.328	.421	.391
I often think up excuses in order to avoid social engagements	.339	-.733	.181	.552	.077
I usually feel calm and comfortable at social occasions	.694	-.705	.132	.546	.422
I often find social occasions upsetting	.348	-.684	.053	.502	.221
I usually go to whatever social engagements I have	.469	-.653	-.107	.517	-.006
I often want to get away from people	.330	-.614	.168	.337	.247
I have no particular desire to avoid people	.415	-.609	-.133	.372	.295

I try to avoid talking to people unless I know them well	.457	-.522	.329	.445	.346
I usually feel uncomfortable when I am in a group of people I don't know	.277	-.274	.558	.224	.148
I often feel on edge when I am with a group of people	.491	-.472	.233	.671	.267
Being introduced to people makes me tense and nervous	.479	-.450	.332	.648	.287
I try to avoid formal social occasions	.434	-.526	.092	.630	.246
I am seldom at ease in a large group of people	.446	-.392	.107	.624	.261
I am usually nervous with people unless I know them well	.453	-.359	.465	.520	.341
When my superiors want to talk with me, I talk willingly	.335	-.307	-.170	.495	.123
I am usually at ease when talking to someone of the opposite sex	.486	-.351	.022	.361	.636
I often feel nervous or tense in casual get togethers in which both sexes are present	.323	-.411	.195	.503	.530

*Situational self-presentational confidence.*

After searching through existing scales, the researcher could not find a scale that adequately measured self-presentational confidence. Therefore, a unique measure was designed expressly for this study to appraise this concept (see Appendix H). Situational self-presentational confidence involves how comfortable people are communicating a positive view of themselves in a specific context. Rather than a stable trait, it is a state that varies from situation to situation. After thinking about relevant impression management, social anxiety, and hyperpersonal communication literature, several items were developed into a scale of situational self-presentational confidence. To test the reliability and validity of this scale, undergraduate students from a large introductory communication course were offered extra credit to complete the scale ( $N= 298$ ). The scale was posted on a website that students could access at their convenience. Once they retrieved the scale, the participants indicated on five-point Likert-type scales how much they agreed or disagreed with each item on the list of statements. Dimensionality of the scale was assessed by using an exploratory principal-axis factor analysis with oblimin rotation. The analysis produced a two factor solution that accounted for 54% of the total variance. In order to measure the scale's divergent validity in the current study, participants were asked to complete the Social Avoidance and Distress scale (Watson & Friend, 1969) at the same time they took the self-presentational confidence scale. The rationale behind this decision was that self-presentational confidence should be only

slightly correlated with social anxiety in a negative direction. There should be some correlation because the concepts are similar; however, too much correlation means that both scales are measuring the same idea. As expected, people scored differently on the social anxiety ( $M = 2.35$ ,  $SD = .59$ ) and self-presentational confidence ( $M = 4.14$ ,  $SD = .61$ ) measures. Because of this difference in scores, the two scales were only mildly correlated ( $r = -.40$ ). Therefore, the scales measured different concepts. The slight negative correlation between the social anxiety and self-presentational confidence scales signifies convergent validity because the two concepts are only slightly related without overlapping each other.

The situational self-presentational confidence scale divided into two clean factors (See Table 4). The first factor included items that related to confidently managing a positive impression and contained items such as “I could get my partner to think positively of me.” The items in the first factor all make theoretical sense because managing a positive impression leads directly to self-presentational confidence. The second factor incorporated items that had to do with self-disclosure, such as “I was expressing my true self.” The highest loading item on the second factor (“I could take a risk during my conversation”) seems slightly different than the rest of the factor’s items because it explicitly mentions nothing about self-disclosure. However, it is definitely related to self-disclosure because disclosing personal information can be an extremely risky activity (Goffman, 1967; Leary & Kowalski, 1995). The rest of the items on Factor 2 directly relate to self-disclosure. All of the items that comprise Factor 2 make theoretical sense in that having situational self-presentational confidence means

that one is willing to risk disclosing personal information in a specific context. The items that comprise Factors 1 and 2 signify that the self-presentational confidence scale has convergent validity. The specific items, the eigenvalues, and the percentages of total variance explained by each of the two factors are presented in Table 4. Despite the presence of multiple factors, this paper's theoretical model only included a single construct for self-presentational confidence. Furthermore, in the current study, the Situational Self-Presentational Confidence scale exhibited acceptable reliability ( $\alpha = .81$ ,  $M = 3.76$ ,  $SD = .41$ ).

**Table 4**

*Factor Analysis for the Self-Presentational Confidence Scale*

	Factor 1	Factor 2
Eigenvalues	4.00	1.42
Percentage of variance accounted for by factor	40.06%	14.21%
I could get my partner to think positively of me.	.749	.386
My partner would enjoy talking with me	.745	.388
I would be viewed in a positive light by my partner.	.734	.327

I would be able to make a good impression.	.723	.361
My partner would think highly of me.	.643	.332
I was expressing my true self.	.398	.270
I could talk about my personal qualities.	.493	.737
I could disclose personal information.	.236	.618
I could speak my mind.	.409	.591
I could take a risk during my conversation.	.254	.507

*Perceptions of a partner's anxiety.*

A modified version of the Communication Anxiety Inventory (CAI; Booth-Butterfield, 1986) measured perceptions of a partner's anxiety in the proposed study. The Communication Anxiety Inventory assesses both trait and state anxiety but only the state subscale was employed to measure perceptions of a partner's anxiety. The state form of the scale measures people's anxiety about communicating at a specific point in time in a given situation with specific people. The scale requests respondents to consider how they felt during a

communicative experience they just completed and can be used to measure anxiety at any point in time. Because the scale was designed for FtF conversations, a few items were eliminated or reworded to operate effectively in the CMC condition. Although the original version of the CAI used 4-item Likert-type scales, the current study employed five-item Likert-type scales to measure the frequency of communication-related anxiety where higher scores correspond with more anxiety. The basic questions and formatting of the scale remained unchanged; however, the questions were slightly reworded to account for perceptions of a partner. For example, “I worried about what others thought of me” was changed to “My partner seemed worried about what I thought of him or her.” This slight change in wording was necessary to accurately assess perceptions of a partner (see Appendix I for the reworded scale). Additionally, a few items were removed from the scale because they could not be adequately perceived in the realm of CMC. Furthermore, after assessing the dimensionality of the scale using an exploratory principal-axis factor analysis with oblimin rotation, a few more items were removed because they did not adequately load on either of two acceptable factors. The final version of the scale used in analysis contained 12 items. The first factor explained 48.24% of the variance (Eigenvalue = 5.79) of the responses while the second factor explained 9.01% of this variance (Eigenvalue = 1.08). The factor loadings of the specific items are presented in Table 5. Moreover, rewording a few items was not thought to alter the scale’s reliability or validity. Booth-Butterfield and Gould (1986) reported an alpha coefficient of .91 for the state form of the CAI, meaning that the scale is

internally consistent. Furthermore, Booth-Butterfield (1987) has supported the scale's validity by concluding that scores on the state form of the CAI reflected stress induced by public speaking. In this particular study, the adopted measure of the CAI had a high reliability score ( $\alpha = .89$ ,  $M = 1.95$ ,  $SD = .55$ ). In this light, the state form of the CAI seems to be an ideal measure to assess perceptions of a partner's anxiety after an initial interaction either online or FtF.

**Table 5**

*Factor Analysis for the Communication Anxiety Inventory*

	Factor 1	Factor 2
Eigenvalues	5.79	1.08
Percentage of variance accounted for by factor	48.24%	9.01%
My partner seemed relaxed when he/she was talking.	.822	-.558
My partner seemed tense and nervous.	.770	-.741
My partner seemed calm when he/she was talking.	.749	-.531
He/she seemed poised and in control while he/she was talking.	.644	-.435
My partner seemed self- confident while talking.	.587	-.454

While speaking, it seemed easy for my partner to find the right words to express himself/herself.	.332	-.297
My partner seemed to feel awkward when he/she was talking.	.745	-.807
My partner's words became confused and jumbled when he/she was speaking.	.474	-.751
My partner seemed unable to think clearly when he/she spoke.	.530	-.724
While talking, my partner seemed to be afraid of making an embarrassing or silly slip of the tongue.	.517	-.721
My partner seemed to feel like he/she had nothing worthwhile to say.	.588	-.630
My partner seemed worried about what I thought of him/her.	.534	-.594

## Chapter 3

### *Results*

This chapter will report the findings of the current study. It will begin with a discussion of nonindependent data and its implication for the current project. Second, multilevel data and its corresponding analytical issues will be considered. Finally, the results for this study's hypothesis tests will be presented.

#### *Interdependent Data*

When using the General Linear Model (GLM) to test hypotheses, researchers assume that each data point is independent of other responses. That is, how each participant answers a survey or completes a measure is presumed to be independent of other partner's responses. However, this assumption is often violated when dealing with dyads because dyadic data is commonly nonindependent (Kenny & Cook, 1999). In other words, one dyad member's responses to a question are often associated with his or her partner's responses. Empirically, failing to correct for interdependent data can bias tests of significance (Kenny, 1996). When scholars ignore the independence issue, results are found to be statistically significant too often, which leads to Type I error. As Kenny and Cook (1999) humorously summarize, interdependent data "is like a love song, perhaps a country-and-western one, which says 'I am who I am because of something about you'" (p. 435). Like the crises in many country-

western songs, the issue of interdependent data is one that can be overcome with a bit of thought and planning.

Anytime two people interact, their scores on outcome measures are likely to be correlated because one person's thoughts might be dependent on his or her partner's thoughts or actions (Kenny, 1996). In the current study, both members of each dyad experienced the same context, shared the same conversation, encountered the same influences, and completed the same tasks. With all these commonalities, it is logical to assume that their responses could be correlated. According to Kenny (1996), the participants in the present study experienced a source of nonindependence called mutual influence, where one member's score on a variable causes the other member's score and vice versa. Yet, rather than looking at this situation as an empirical roadblock, the presence of interdependent data is a confirmation that the participants followed their instructions to get to know their partners. Nonindependent data is one of the most fundamental signs of a developing relationship because "much of what we think, do, and feel is determined not by who we are but by whom we are with" (Kenny & Cook, 1999, p. 446). If each participant's responses were completely independent from those of his or her partner, the partner would be transparent, exerting no influence on his or her companion. Conversely, the presence of interdependent data serves as empirical validation for the existence of an interpersonal relationship (Kenny & Cook, 1999).

This study was conducted using what Kenny (1990) termed a standard dyadic design in that both members of the dyad were subjects, making the data

two-sided. A commonly used, but inadequate procedure for data collected in this manner is that it is often treated as one-sided (i.e. using only half of a sample), enabling the use of standard GLM procedures, such as regression and analysis of variance (ANOVA). However, one-sided procedures are very limited because they reduce the power of any statistical tests by cutting the sample size by half. Indeed, many social scientific studies focus on isolated individuals in order to comply with the assumptions of common statistical procedures, thereby neglecting social or dyadic effects (Kashy & Kenny, 2000; Kenny & Cook, 1999). However, handling data in this manner ignores the complex reality of social interaction. Theoretically, social scientists have intricate conceptual models of dyadic effects that are often not fully tested because of nonindependent data.

To test for interdependent data, Kashy and Kenny (2000) recommend using an intraclass correlation to assess whether there are non-random associations between partners' scores on relevant variables. This statistic reflects the amount of shared variance among two people's scores on a particular variable, or the extent to which one person's score is dependent upon the partner's response. In the present study, the liking variable exhibited a significant intraclass correlation ( $\rho = .215, p = .013$ ). Thus, 21.5% of the variance in one subject's liking score was due to their partner's score on the same variable. In addition, the self-presentational confidence variable also had a statistically significant intraclass correlation ( $\rho = .273, p = .002$ ). In other words, over one-fourth of one person's presentational confidence was based on his or her partner's confidence. Conversely, the impression positivity variable did not have a

significant intraclass correlation ( $\rho = .083, p = .196$ ). Lastly, the perceptions of a partner's anxiety variable did not exhibit a significant correlation either ( $\rho = .025, p = .400$ ). The intraclass correlations of the liking and self-presentational confidence variables were statistically significant and indicate that partners' data were not independent. Methods to correct for these dependent data are discussed later.

### *Multilevel Data and Multilevel Analysis*

Besides nonindependent data, another empirically relevant issue for this project is its multilevel or hierarchical data structure. For example, social anxiety is an individual-level variable while communication condition is a dyad-level variable. The defining feature of a multilevel data analysis is that there is a hierarchy of observations. In the current project, the individual represents the lowest level of analysis (level 1), which is nested within the dyad, level 2. Another aspect of multilevel analysis, which is present in the current study, is that each dependent variable is measured at level 1. Standard GLM statistical procedures cannot be employed with multilevel data because they assume that each variable comes from the same level of measurement (Kashy & Kenny, 2000). Malloy and Albright (2001) label this issue as the level of analysis problem. They claim that "social behavior is due to persons' individual characteristics, nested within specific dyadic combinations, nested further within social groups" (Malloy & Albright, 2001, p. 2). Like nonindependent data, scholars often mishandle this level of analysis problem. For example, Hox (2002) notes that many researchers aggregate their data, such that they variables at level

1 are combined or averaged together in order to function in level 2. This is a fallacy for two main reasons. First, when researchers aggregate data, much information is lost and statistical analyses lose power. Second, unless analysts are very careful, they can easily a fallacy of the wrong level by analyzing data at one level while developing conclusions at another level (Hox, 2002). Due to these issues, this study was analyzed using a multilevel method.

As Wendorf (2002) explains, an important benefit of multilevel model analysis “is the simultaneous incorporation of measurement error at the individual level into a model accounting for the matched-pairs design” (p. 128). Both the issue of multilevel data and the presence of nonindependent data can be overcome by using multilevel analytic techniques such as the SPSS MIXED command (Norušis, 2004). Such were the procedures employed to analyze the hypotheses in the current project. Results of the hypothesis tests are reported below.

#### *Hypothesis and Research Question Tests*

##### *H1, RQ1, and H2: Predictors of Liking*

H1 predicted that trait social anxiety would be inversely related to how much a person is liked by his or her partner. To test this hypothesis, the researcher employed the SPSS MIXED command with liking as the dependent variable and both condition and social anxiety as predictors. Contrary to prediction, the current study found no main effect between trait social anxiety and a partner’s liking of a subject. H1 was not supported. See Table 2 (included below) for the relevant statistics pertaining to H1. The first research question of this study asked about the nature of the relationship between communication

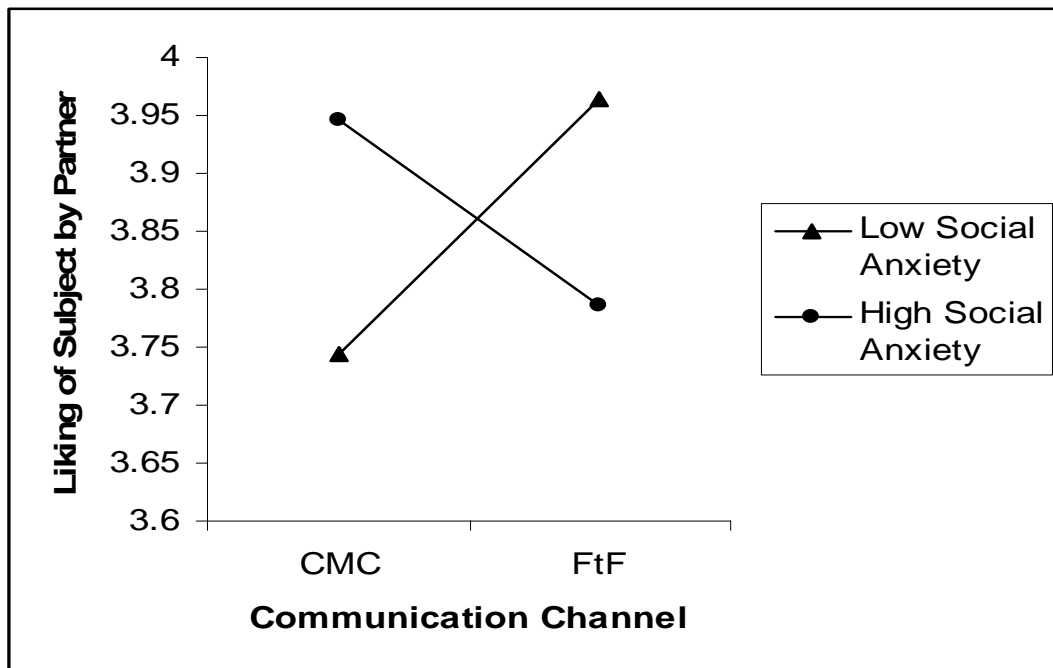
channel and liking of a partner. As Table 2 indicates, there was no main effect between channel and liking. H2 predicted an interaction effect where communication channel moderated the relationship between social anxiety and liking. People with higher levels of anxiety who communicated in CMC were predicted to be liked more by partners than people with high anxiety who conversed FtF. As Table 2 illustrates, this hypothesis was supported; people with greater levels of social anxiety received higher liking scores in CMC than did those in FtF conversations.

**Table 6**

*Estimates of Fixed Effects of Condition and Social Anxiety on Liking of Subject by Partner*

Parameter	Coefficient	SE	df	t	p
	Estimate				
Intercept	3.786	.086	209.597	44.148	.000
Condition	.162	.124	209.629	1.305	.193
Social Anxiety	.179	.121	209.206	1.484	.139
Condition x Social Anxiety	-.382	.175	209.192	-2.184	.030

Figure 4: Two-way Interaction of Social Anxiety and Channel on Partner's Liking of a Subject During an Initial Interaction Conversation



As depicted in Figure 1, people with high social anxiety were liked more in CMC than in FtF contexts. Additionally, in CMC, the people with higher levels of trait anxiety were actually liked more than people with low social anxiety. Conversely, in the FtF channel, people liked participants with lower levels of social anxiety more than they liked participants with high social anxiety.

*H3, RQ2, and H4: Predictors of Impression Positivity*

H3 posited that social anxiety and positivity of a partner's perception of a subject would be inversely related. As Table 3 depicts below, social anxiety was not related to impression positivity. Thus, H3 was not supported. The second

research question inquired about the relationship between communication channel and impression positivity. The lack of significant effects among these variables (see Table 3 below for specific results) suggests that there is no relationship between communication channel and impression positivity in the present sample. H4 hypothesized another interaction effect such that communication channel moderates the relationship between social anxiety and impression positivity. However, this moderation was not significant in the current study. Because of this, H4 was not supported. Table 3 displays the coefficient estimates, standard errors, *t*-scores, and significance levels pertaining to H3, RQ2 and H4.

**Table 7**

*Estimates of Fixed Effects of Condition and Social Anxiety on Partner’s Impression Positivity*

Parameter	Coefficient Estimate	SE	df	<i>t</i>	<i>p</i>
Intercept	4.475	.052	197.588	85.730	.000
Condition	-.037	.076	204.388	-.487	.627
Social Anxiety	.071	.074	205.694	.955	.341
Condition x Social Anxiety	-.188	.108	205.624	-1.743	.083

*H5 and H6: Establishing the Link between Impression Positivity and Liking as well as Testing the Mediation of Theoretical Model 1*

H5 proposed that the positivity of a partner’s impression of a subject was positively related to the partner’s liking of that subject. Next, H6 predicted that

impression positivity mediated the effects of the independent variables of social anxiety and communication channel on the dependent variable of liking. Despite their theoretical and conceptual relevance, these hypotheses cannot be tested in the current study because impression positivity and liking are too highly correlated ( $r = .557, p < .01$ ). Although a correlation of .5 might not normally be considered prohibitively large, it is quite large given that the highest possible correlation between impression positivity and liking is .68 (determined by multiplying the Chronbach's alphas of each variable). Therefore, there exists a near total correlation between impression positivity and liking. Even though impression positivity and liking are theoretically distinct concepts, they are empirically equivalent in the current study. Basically, the instruments employed to operationalize impression positivity and liking both measured the same construct.

#### *H7, RQ3, and H8: Predictors of Self-Presentational Confidence*

H7 predicted that an individual's levels of social anxiety and self-presentational confidence would be inversely related. The results from this study show that there is a significant relationship between a person's social anxiety and his or her self-presentational confidence. Because of this, H7 was supported. The final research question, RQ3 concerned the relationship between communication channel and self-presentational confidence. This study found no significant association between the two variables. H8 put forward another moderation effect where communication channel was thought to moderate the relationship between social anxiety and self-presentational confidence. The hypothesis speculated that

people with high levels of social anxiety who communicate in CMC should have more self-presentational confidence than highly anxious people who communicate FtF. Yet, the results revealed no significant moderating influence, meaning that H8 was not supported. See Table 4 below for a numerical summary of H7, RQ3, and H8.

**Table 8**

*Estimates of Fixed Effects of Condition and Social Anxiety on Self-Presentational Confidence*

Parameter	Coefficient Estimate	SE	df	t	p
Intercept	4.231	.138	204.379	30.655	.000
Condition	-.275	.207	199.886	-1.333	.184
Social Anxiety	-.188	.059	193.666	-3.183	.002
Condition x Social Anxiety	.075	.089	187.427	.838	.403

*H9 and H10: Establishing the Link between Self-Presentational Confidence and Liking as well as Testing the Mediation of Theoretical Model 2.*

H9 tried to link the final portion of Model 2 by proposing that a subject's self-presentational confidence is positively related to a partner's liking of that subject. The results showed that a subject's self-presentational confidence is positively related to a partner's liking of that subject (coefficient estimate= .430,  $t= 4.106$ ,  $d.f.= 212.000$ ,  $p< .001$ ). Thus, H9 was supported. H10 predicted mediation where self-presentational confidence mediated the relationship between

the independent variables of social anxiety and communication channel and the dependent variable of liking. To test the mediated hypothesis, researchers used the Asymmetric Confidence Limits approach recommended by Pituch, Whittaker, and Stapleton (2005; see also Krull & MacKinnon, 1999, 2001). This procedure corrects for interdependence among multilevel data. The results indicated there was a significant full mediation effect (CI 95%: -.107 to -.004).

*H11, H12, and H13: Predictors of Perceptions of a Partner's Anxiety*

H11 suggested that people's social anxiety was positively related to their partner's perceptions of this anxiety. This hypothesis was supported. People with higher anxiety levels were perceived to be more anxious by partners ( $M= 1.954$ ) than were people with lower anxiety levels ( $M= 1.932$ ; See Table 5 for significance levels). Next, H12 hypothesized that it would be more difficult for a partner to perceive a subject's anxiety in CMC than in FtF situations. In the current study, subjects were perceived to be more anxious in FtF contexts ( $M= 1.971$ ) than in CMC ( $M= 1.915$ ). Thus, H12 was supported.

H13 predicted another interaction effect where communication channel would moderate the relationship between social anxiety and perceptions of a partner's anxiety. Specifically, people with high anxiety levels who communicate in CMC should be perceived as less anxious by their partners than anxious people who converse in the FtF context. The results of this project indicate that communication channel did moderate the relationship between social anxiety and perceptions of a partner's anxiety. Multilevel  $t$ -tests were used to decompose the interaction effect. For participants with low anxiety, there was no difference ( $t=$

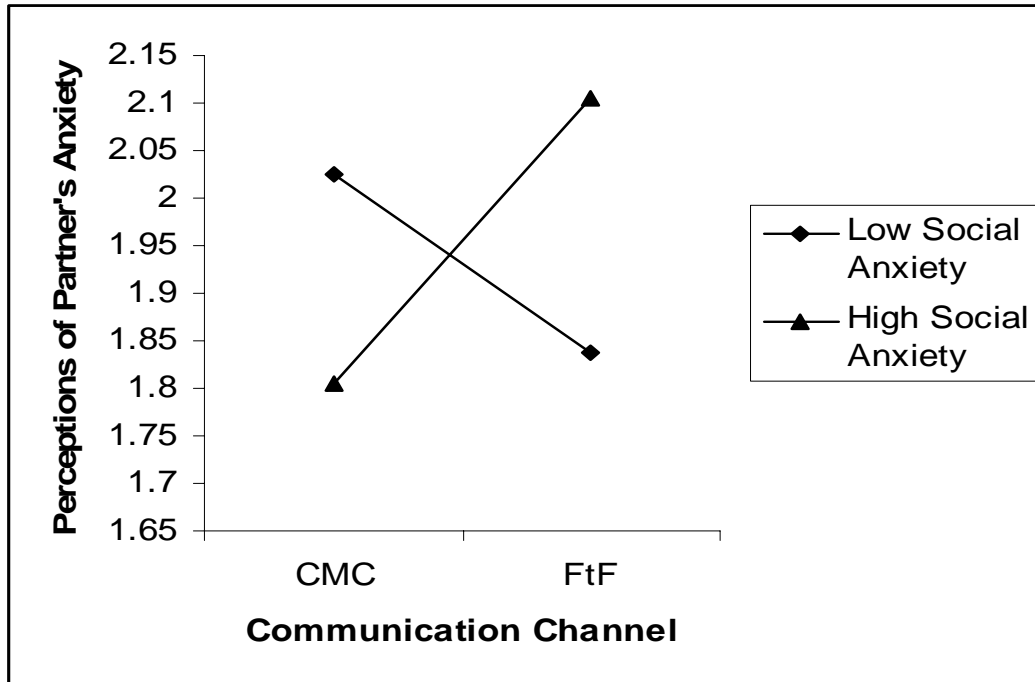
1.712,  $p = .090$ ) between CMC ( $M = 2.027$ ) and FtF ( $M = 1.846$ ). However, for people with high anxiety, the two conditions were significantly different ( $t = -2.743$ ,  $p = .007$ ). Specifically, as Figure 2 illustrates, among highly anxious people, partners perceived greater anxiety in the FtF condition ( $M = 2.096$ ) than in the CMC condition ( $M = 1.807$ ). Generally, people with high levels of social anxiety were thought to be significantly more anxious after FtF conversations than following CMC meetings. In this light, the interaction effect mentioned in H13 received empirical support. See Table 5 presented below for a statistical summary of H11, H12, and H13.

**Table 9**

*Estimate of Fixed Effects of Condition and Social Anxiety on Partner's Perceptions of Subject's Anxiety*

Parameter	Coefficient Estimate	SE	df	t	P
Intercept	2.104	.072	204.443	29.030	.000
Condition	-.299	.105	208.822	-2.838	.005
Social Anxiety	-.266	.103	209.396	-2.584	.010
Condition x Social Anxiety	.486	.149	209.386	3.262	.001

Figure 5: Two-way Interaction of Social Anxiety and Channel on Partner's Perception of Subject's Anxiety During an Initial Interaction Conversation



As pictured in Figure 2, people with high social anxiety were perceived to be more anxious than people with lower social anxiety in the FtF condition. Conversely, in CMC partners did not perceive subjects with low and high anxiety to be significantly different from each other. Trait anxiety did not affect partner's perceptions of anxiety in CMC.

*H14 and H15: Establishing the Link Between Perceptions of a Partner's Anxiety and Liking as well as Testing the Mediation of Theoretical Model 3*

H14 speculated that a partner's perception of a subject's anxiety would inversely relate to how much the partner liked the subject. H15, the final hypothesis, indicated that perceptions of a partner's anxiety would mediate the relationship between the independent variables of social anxiety and communication channel and the dependent variable of liking. Similar to H5 and H6, these hypotheses could not be tested in the current study because perceptions of a partner's anxiety and liking were too highly correlated ( $r = -.627, p < .01$ ). While perceptions of a partner's anxiety and liking are two theoretically distinct concepts, they function empirically in the same manner in this study. In other words, both variables measure the same dimension. The multicollinearity between perceptions of a partner's anxiety and liking supersedes an empirical test of H15. Statistical power for the current study was computed using the Optimal Design for Longitudinal and Multilevel Research software package (Scientific Software International, 2006). The analysis revealed a power estimate of .56 for effect sizes of .30, .29 for effect sizes of .20, and .12 for effect sizes of .10.

In summary, H2, H7, H9, H11, H12, and H13 were supported by the current data while H1, H3, H4, and H8 were not supported. Additionally, H5, H6, H14, and H15 could not be tested due to multicollinearity between the predictor and outcome variables in those hypotheses. In order to provide clarity of exactly which hypotheses were supported, Figures 4, 5, and 6 (presented below) present this study's three theoretical models originally presented in the first chapter. In

Figures 4, 5, and 6, the bold lines represent supported hypotheses while the dotted lines denote unsupported hypotheses. For ease of reference, the numbers of the supported hypotheses are also included in the models. The next chapter will discuss the implications of these findings for both practical and scholarly purposes. Furthermore, limitations of the current study and directions for future research will be mentioned.

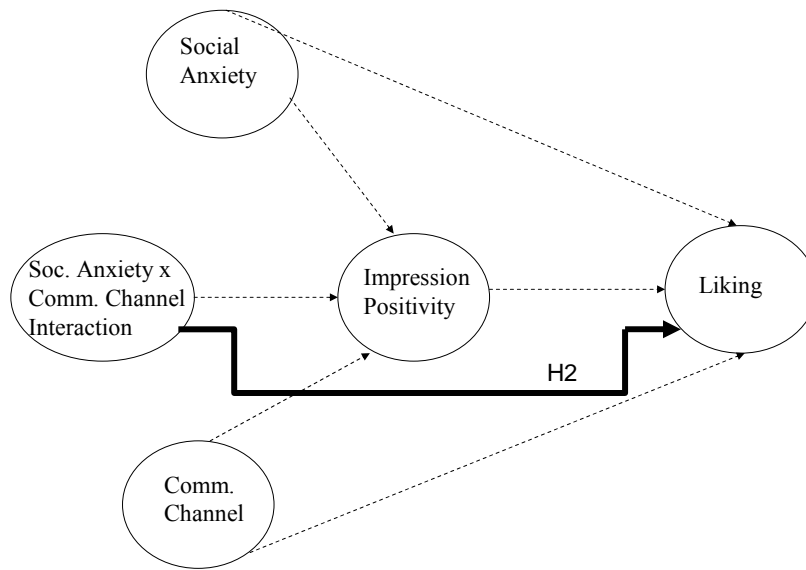


Figure 6: Supported Theoretical Model 1

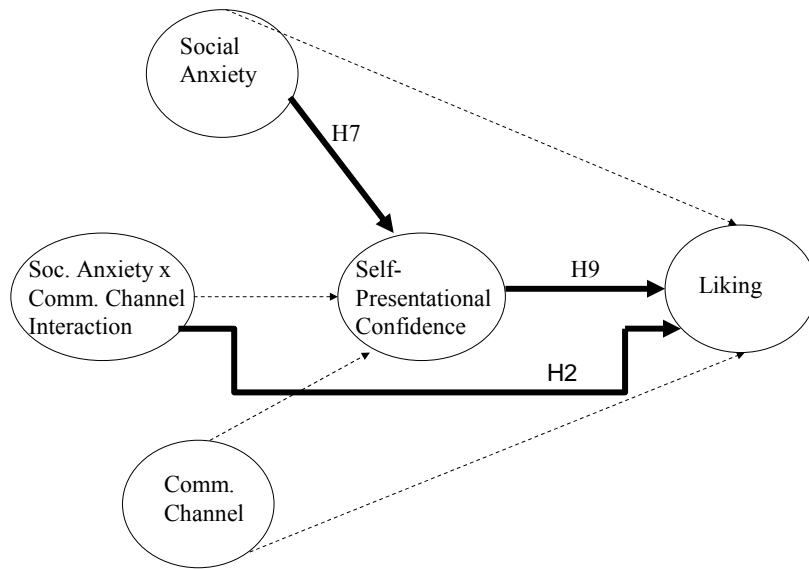


Figure 7: Supported Theoretical Model 2

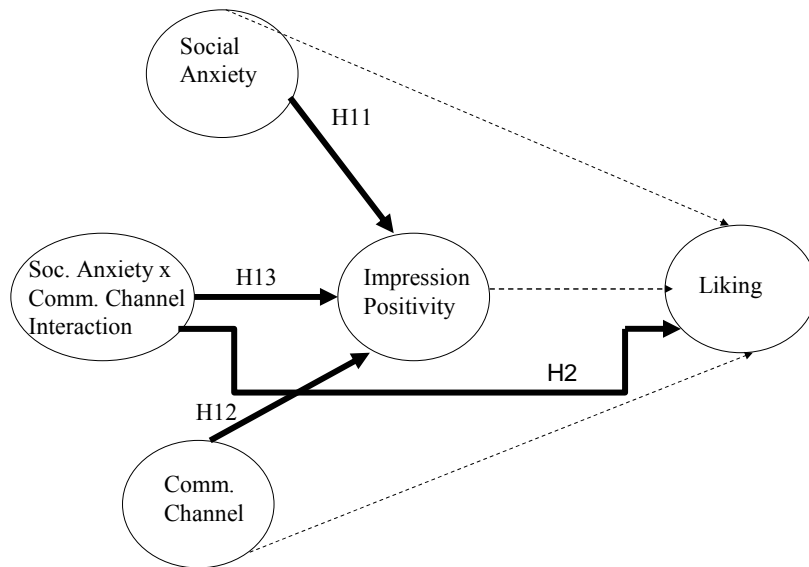


Figure 8: Supported Theoretical Model 3

## Chapter 4

### *Discussion*

This chapter summarizes and interprets the current study's findings and also offers suggestions and recommendations for future research. The first section discusses the present study's contributions to the relevant literature. Next, the author will summarize the results of the present project in addition to interpreting what those results mean in light of established theory and existing research. Finally, the conclusion identifies limitations of the project as well as directions for future studies on impression management and CMC.

The current study attempted to augment the explanatory power of impression management theories, especially in light of channel differences. The model presented in the first chapter hypothesized that communication channel moderated the effects of social anxiety on the process of impression management in first encounters. Thus, the current project sought to expand the understanding of impression management by identifying a relevant moderator of the relationship between social anxiety and impression management, communication channel. The study also explores a few mediators, such as impression positivity, self-presentational confidence, and perceptions of a partner's anxiety, in the impression formation process. Another goal of this study was to determine whether CMC is a less-threatening environment in which people with social anxiety might be able to comfortably manage their impressions and reduce

uncertainty in their interpersonal relationships. Social anxiety theorists (Leary & Kowalski, 1995) have suggested that there would be interpersonal benefits for people with social anxiety if they could manage their impressions in a more comfortable environment. This paper proposed CMC as such an environment. Finally, this study sought to provide some of the first empirical test of some aspects of the hyperpersonal perspective (Walther, 1996). Although there has been much hyperpersonal theorizing and speculation, this study represents one of the first empirical tests for the theory. Within this study's global contributions, many smaller, more specific findings correspond to the study's hypotheses. The next section will review and interpret such findings.

#### *Results Summary and Interpretation*

##### *Effects of communication channel and social anxiety on perceptions of a partner's anxiety.*

The last set of hypotheses (H11, H12, and H13) in this study ended up being the most fruitful and interesting group of hypotheses and, consequently, are discussed first. Both social anxiety and communication channel exhibited statistically significant main effects on perceptions of a partner's anxiety. Logically, people perceived highly anxious partners as more anxious than partners with less anxiety. In addition, people were perceived to be more anxious in the FtF condition than in CMC. Moreover, there was a significant interaction effect between social anxiety and communication channel on partners' perceptions of subjects' anxiety. Partners perceived highly anxious subjects as significantly more anxious in FtF conversations than in CMC episodes. Overall, communication channel moderated the effect of trait anxiety such that partners

perceived subjects with high anxiety much differently between the two communication channels. Because the presence of a significant interaction effect trumps any simple main effects, the remainder of this discussion will focus on the interaction.

Currently, there are three competing hypotheses to account for why anxious people appear less anxious online. First, the channel differences could bolster anxious people's confidence, leading them to feel less anxious online. Second, the buffer effect of CMC (O'Sullivan, 2000) enables people to hide their anxiety online. The third reason is a combination of the previous two hypotheses, speculating that anxious people are both more confident and able to hide their anxiety online. While different scholars support different sides of this debate in the literature, the current study offers empirical support for only one of the explanations.

The first hypothesis posited that people would gain the ability to manage favorable impressions online, thereby feeling more self-confident in CMC than FtF. From the relevant hypothesis tests, the current results indicate that that social anxiety was significantly inversely related to self-presentational confidence. On the other hand, there was no main effect of communication channel nor an interaction effect of social anxiety and channel on self-presentational confidence. Although a few studies have provided evidence of the presentational benefits of CMC (O'Sullivan, 2000; Tidwell & Walther, 2002), such gains might have been offset in the current project by the relatively unusual circumstances of having to meet a perfect stranger online. People might have been uncomfortable with the situation in which they found themselves, and this uneasiness materialized in how

they presented themselves. Perhaps a survey question assessing participants' comfort levels in mediated social encounters should be included in future research to determine whether interactants found their task and context tolerable. Overall, people were not more confident online, negating the first hypothesis presented above, which posited that people gained presentational abilities in mediated environments. Furthermore, this finding also contradicts the third explanation, that there was a combination of presentational benefits and the ability to hide online, because people were not more confident in CMC.

The data from the current study did support the second explanation presented above: that subjects can improve self-presentation in CMC by hiding their anxious symptoms. Goffman (1959) theorized that the impression someone gives off includes the statements and actions that people assume are symptomatic of the actor (e.g. nervousness, anxiousness). The absence of nonverbal cues in CMC severely reduces the salience of an impression someone gives off. Importantly, the current study supports this proposition. For example, any problems with eye contact, stuttering, appearance, or nervous mannerisms that normally plague people with social anxiety were nonexistent in CMC. Hancock and Dunham (2001) noted that people can present only positive information online while hiding negative cues. Similarly, O'Sullivan (2000) claimed that people can employ leaner channels, such as CMC, to obscure unattractive traits or to regulate disclosure. Walther's (1996) hyperpersonal perspective also notes that people can use mediated environments to filter out negative personal information. Thus, anxious people might not even appear anxious online because they can hide all signs of nervousness.

In addition, certain characteristics of mediated environments make it easy for people to hide in them. Some theorists (Daft & Lengel, 1984) have labeled CMC as a less rich medium than other media, while other scholars (Hiltz et al., 1986) claim that CMC lacks social presence. Due to its absence of nonverbal cues, CMC has less social presence or richness than other channels. All of this translates into making it harder to perceive a person's anxiety. Therefore, this study can also be viewed as support for the basic premises of media richness and social presence theories. Participants can use the reduced richness or decreased social presence to their advantage by hiding in the ambiguities of CMC.

Improving the impression someone gives off should be a benefit that is unique for people with high social anxiety. The highly anxious suffer more from the impression they give off than do people with low anxiety; therefore, any reduction of this impression helps people with high levels of social anxiety more than people with less anxiety. Furthermore, the reduction of a negative impression someone gives off is an obvious interpersonal benefit given the relational importance of first meetings and because the judgments made in such encounters often influence the course of a relationship (Berger, 1987; Berger & Calabrese, 1975). People certainly want to come off as socially competent, skilled communicators, so any environment that reduces perceptions of anxiety should positively impact a relationship.

The anxious people in the current project might have experienced a hyperpersonal interaction with their partners. Favorable impressions, such as the ones found in this study, where anxious people were perceived as less anxious online, should facilitate what Walther, Slovacek, and Tidwell (2001) describe as

“exaggerated intimacy.” Although the conversations in this study were of a relatively short duration, the participants were instructed to assume that they might interact with their partners in the future, thereby initiating the possibility of long-term interaction. Therefore, the anticipation of future interaction is not only necessary to activate uncertainty reduction processes (Berger, 1979; Sunnafrank, 1990; Walther, 1994) but also might be a requirement to experience hyperpersonal interactions.

Significantly, the present study is among the first studies to empirically test and support the hyperpersonal perspective. Perhaps because it is a young theory, there has been much theorizing (e.g. Walther, 1996, Walther et al., 2001), yet very little empirical support garnered for hyperpersonal theory. Nevertheless, this project provides empirical evidence that mediated channels can have meaningful interpersonal benefits for some people. Even more, the current study adds an element of specification and increases the explanatory power of the theory by specifying a specific type of individual who experienced a hyperpersonal interaction. In this study, the hyperpersonal effects of CMC occurred for the highly anxious members of the sample but not for participants with low levels of social anxiety. In this light, it appears as though hyperpersonal benefits were experienced by the socially disadvantaged portion of the sample, who truly needed such benefits to maintain meaningful interactions.

*Social anxiety and communication channel predicting liking.*

There was no main effect for either social anxiety or communication channel on liking. However, there was a statistically significant interaction between the two independent variables. Because the interaction effect subsumes

the two main effects, it will be the center of this discussion. In this interaction, conversational partners liked subjects with high levels of social anxiety more in CMC conversations than they liked them in FtF encounters.

The interaction lends support to the perspective that CMC is not an impersonal medium. The present data contradicts the cues filtered out theory (Walther & Parks, 2002) to show that even without nonverbal cues, a mediated environment does not have to be impersonal. Even people with high levels of social anxiety, who normally have difficulty managing favorable impressions, achieved greater liking in CMC than in FtF contexts. Furthermore, the greater liking in CMC developed after relatively short (20 minute) conversations during which participants never even saw their partners. Importantly, Berger (1987) asserts that the quality rather than the quantity of the information exchanged in an interaction is what is important in getting to know a partner. Existing CMC research has also noted that online participants can achieve levels of liking comparable to or greater than FtF interactants (McKenna et al., 2002).

The fact that people with high social anxiety were better liked in CMC than in FtF provides more support for Walther's (1996) hyperpersonal perspective. Partners perceived socially anxious subjects as less anxious online because the mediated context enabled anxious people to conceal symptoms of their anxiety. Furthermore, this perception of reduced anxiety might have made it easier to like anxious people in CMC than in FtF situations. In addition, perhaps the ability to selectively edit their self-presentations combined with CMC's buffer effect (O'Sullivan, 2000) made it easier for people with social anxiety to be liked online than in FtF situations. The mediated environment enabled socially anxious

individuals to hide their anxious symptoms and be better liked than they were FtF. If similar results are reported in future research, CMC could be the socially advantageous, less threatening environment about which Leary and Kowalski (1995) were theorizing.

Furthermore, hyperpersonal theory says that without the physical presence of a FtF interaction, subjects are able to idealize their partners in CMC episodes. In a way, people can fill in the gaps of CMC with positive, idealized images of their partners. In CMC, participants pictorialized their anxious, socially deficient partners as being more likeable than similar subjects in FtF interactions.

Proponents of hyperpersonal theory would explain this result in terms of an idealized image of the anxious partner. While this is a plausible explanation, findings presented in the next section refute this reasoning. Nevertheless, the existence of an idealizing effect is something that should be empirically tested in future research. In addition, past research (Bargh et al., 2002; McKenna et al., 2002) concluded that it is easier for partners to like subjects online. These scholars propose that people are freer to perceive their partner's self-presentation in CMC because they are unhindered by superficial information common in FtF meetings such as attractiveness, dress, or mannerisms. In other words, partners are freer to perceive an anxious subject's personality online because their interaction is unimpeded by the subject's social anxiety.

*Social anxiety and communication channel predicting impression positivity.*

In the current study, neither social anxiety nor communication channel predicted impression positivity. Both the two main effects and the interaction

effect were insignificant. In this light, it seems as though the participants with high levels of social anxiety were able to be better liked in CMC even though both channels were equal in terms of impression positivity. Therefore, an important question for future inquiry should ask about the nature of the relationship between social anxiety and communication channel on the outcome of liking. The current study predicted that impression positivity would mediate this relationship, but the previously presented results refute such an explanation. In reality, it is possible that another mediator occupies the place of impression positivity in the model presented earlier in this paper. Even more, an initial examination of the correlations between the impression positivity scores and liking scores indicate that the impression positivity measure was valid. Overall, because of the lack of effects on the impression positivity variable and the barely significant effects on liking, the interaction between social anxiety and communication channel on liking should be loosely interpreted.

Future research needs to more closely examine the nature of the interaction between social anxiety and communication channel on liking. Lastly, finding that channel did not exhibit a significant effect on impression positivity counters hyperpersonal theory's assertion of CMC's idealizing capabilities. If people really formed idealized images of their partners, scores on the impression positivity variable should have been significantly higher in CMC than in FtF. Thus, with the current data, hyperpersonal theory's proposal of CMC's idealizing effects seems to be false. Overall, channel did not predict impression positivity or idealization of a partner, but it did affect liking. Future research should more carefully refine the nature of the previously mentioned interaction on liking while

also testing for the presence of an idealizing effect. Perhaps future research could even develop an instrument to assess the existence of an idealizing effect in CMC.

*Impression positivity predicting liking and mediation.*

As expected, impression positivity was significantly related to liking in a positive direction. People who formed positive impressions of their partners liked them more than did people who had negative impressions of their partners.

Indeed, research in interpersonal communication supports the proposition that impression positivity relates to liking (Anderson, 1966; Clore et al., 1975; Higgins & Roles, 1978). In addition, more modern conceptualizations of URT (Berger, 1987) imply that positive impressions are required to continue reducing uncertainty about an individual. However, as discussed in the results section, it was impossible to test whether impression positivity mediated the development of liking because it was highly correlated with the liking variable. Although they were theoretically and conceptually distinct entities, they functioned empirically as the same construct in the current study. This represents a measurement problem and is something that should be rectified in future scholarship.

*Perceptions of a partner's anxiety predicting liking and mediation.*

Perceptions of a partner's anxiety were significantly inversely associated with liking that partner. Thus, when partners noticed a subject's anxiety, they did not like the subject. Furthermore, H15 predicted that perceptions of anxiety would mediate the relationship between the independent variables of social anxiety and communication channel with the dependent variable of liking. Similar to impression positivity mentioned above, this hypothesis could not be empirically tested due to a high correlation between perceptions of a partner's

anxiety and liking. Although the mediating variable and dependent variable were theoretically different entities, they functioned as the same concept in this study. Such a finding points to the need for better, more refined measurement tools in future research.

*Self-presentational confidence predicting liking and mediation.*

Self-presentational confidence was significantly related to liking in a positive direction. Therefore, people who felt confident presenting themselves were liked more than people who apprehensively presented themselves. This finding is consistent with past research. For example, McCroskey and Richmond (1976) documented that people liked partners with less communication apprehension, who presumably were confident in the self-presentation, more than they liked partners with greater apprehension. Furthermore, people with social anxiety, who are not confident presenting themselves, have difficulty achieving interpersonal liking (Leary & Kowalski, 1995). If people with social anxiety could feign presentational confidence or find a channel that bolsters their confidence, they would most likely experience more positive interpersonal interactions. In addition, self-presentational confidence mediated the relationship between social anxiety and liking, although it did not mediate the association between communication channel and liking. This finding adds little information to the domain of CMC, but it does represent a contribution to traditional interpersonal scholarship. Interestingly, the state-like self-presentational confidence variable mediated the relationship between trait anxiety and liking. This result implies that if people with high levels of trait anxiety can at least

appear self-confident in impression management situations, they should be able to manage favorable impressions.

### *Summary of Findings*

Overall, this study contributes two main findings to the body of CMC and interpersonal literature. First, the study sheds light on a moderator of the impression management process. Specifically, communication channel moderated the effect of social anxiety on liking, such that people with high levels of social anxiety were liked more after online conversations than following FtF interactions. Similarly, the same two independent variables produced another interaction effect on perceptions of a partner's anxiety so that participants with higher levels of anxiety were thought to be more anxious after FtF conversations than following CMC interactions. These two examples illustrate that CMC can be an environmental moderating influence on certain aspects of impression management for the socially anxious.

The second main finding gleaned from this project is that, compared to FtF settings, CMC might be a more effective environment for the socially anxious to manage their impressions. From the above presented results, it is clear that the socially anxious can have more success managing their impressions in mediated environments. Perhaps this is sufficient evidence to suggest that CMC represents an unthreatening, safe environment for the socially anxious to manage their impressions, much like the one for which Leary and Kowalski (1995) were speculating. In searching for this unthreatening environment, this study also offered some of the first empirical support for Walther's (1996) hyperpersonal perspective to mediated interaction.

Another significant contribution of this study was that it provided an opportunity to validate the SAD scale (Watson & Friend, 1969) and the self-presentational confidence scale with behavioral data. Rather than validating the scales by simply comparing them to similar self-report measures, this study validated the scales by comparing them to scores on the partner's perception of a subject's anxiety measure. Although there was no relationship between the SAD scale and perceptions of a partner's anxiety, it has been a successful predictor of anxiety in the past. However, the self-presentational confidence scale was validated by perceptions of a partner's anxiety such that more confident subjects were perceived as less anxious (coefficient estimate =  $-.265$ ,  $t = -2.885$ ,  $d.f. = 212.000$ ,  $p < .004$ ). Therefore, the self-presentational confidence scale is a valid measure of a person's situational confidence not only because it is properly related with other self-report measures but also because it is associated with an actual partner's rating of a subject's anxiety. While these are the main findings offered by this study, a few limitations exist and there remains plenty of work for future research.

#### *Some Current Limitations and Some Future Directions*

From a measurement standpoint, this study faced some serious roadblocks. There were high correlations among many of the project's dependent or mediating variables. Namely, the perceptions of a partner's anxiety, impression positivity, and liking variables were all highly correlated with one another. These correlations negated the testing a several hypotheses proposed at the outset of this paper. Because of this, these measures need to be operationalized more carefully so they assess the construct they are intended to measure while maintaining a

distinct relationship from other related concepts. Therefore, there should be a return to examining the measurement of such concepts. Researchers should work to find items that correspond to the conceptually distinct nature of the variables. For example, the impression positivity scale could be improved by including only positive items. If a scale is intended to solely measure how positive an interpersonal impression is, there is no need for negative items. On the other hand, if negative items are included in the scale, they should be bipolar opposites of the positive items rather than the different items used in this study. For example, the items “funny” and “boring” used in the present scale are not opposites, but merely different attributes of an impression. Including only positive items or using bipolar adjectives could improve the quality of the impression positivity scale by getting closer to the true conceptual nature of the concept.

In the same way, there are certain instances when the items that were highly correlated with one another in this project could be more distinct. For example, the research on snap judgment suggests that impression positivity and liking do not always have to be positively related. Because snap judgments are based on heuristics, it should be possible to like someone without establishing a favorable impression. On the other hand, if two people only met for a brief time, it would be possible for one person have a favorable impression of his/her partner without liking them. In addition, perceptions of a partner’s anxiety and liking do not always have to be highly intertwined. Surely people in established relationships could perceive their partners as anxious people and still like them. In a long-term relationship, people would look beyond a partner’s anxiety and

focus on other, more positive qualities. Future research should test the implications of these and similar situations when the aforementioned concepts are not highly correlated. Alternatively, if it is difficult or impossible to refine these measures, higher order constructs should be identified to account for the intercorrelations among these variables. Rather than concentrating on microlevel variables, it might be more fruitful to identify higher order constructs that account for the relationships between and among other lower-level measures.

Another limitation within the current project is that the researcher neglected to measure a few variables that could have played an important role in this study. For example, this study did not, but should have, included an assessment of computer or Instant Messenger usage. Such a measure could have explained why the anxious participants were liked more than unanxious people in CMC. Perhaps they use mediated social technologies more often than confident people, and therefore were more comfortable in the CMC condition. Other relevant variables that were omitted from this study include levels of uncertainty, tolerance for ambiguity, motivation to reduce uncertainty, communication adaptability, technological competence, perceived similarity, trust, self-consciousness, and one's motivation to manage favorable impressions or impress a partner. All of these variables could have played a role in the model of impression management advanced in the first chapter of this paper. Furthermore, each variable in that list could represent a valuable addition to future research that could help refine and explicate impression management as it occurs in mediated encounters.

One more limit of the current project deals with its lack of written instructions to direct the participants. Rather than having a consistent set of written instructions for all experimental helpers, the main researcher simply told the other experimenters what they should instruct the participants to do. However, it is possible that the experimenters forgot a portion of the directions so that some participants did not receive complete instructions. A better method would be to type out all instructions so that each experimenter says exactly the same thing to each participant. This methodological refinement could have important implications for achieving reliable results. Especially in CMC research, a domain of scholarship with few consistent, replicable results, every effort should be made to provide consistent methodology. Similarly, the lack of unified findings in the relatively young branch of CMC research signals the need for careful replication. Many studies in the CMC archives should be replicated to ensure their reliability. Furthermore, this replication needs to be completed with consistent analytical methods (i.e. Multi-level analysis) so a foundation of reliable and valid research exists.

Additionally, future CMC research should continue to test whether traditional aspects of interpersonal communication, such as impression formation, work in mediated contexts. Scholars often assume that FtF theories and processes will translate to CMC; however, research should be completed to test whether this speculation is accurate. On the other hand, it might turn out that entirely new theories, concepts, and processes will need to be developed to explain and predict interpersonal processes in CMC. Indeed, a researcher could develop a rich line of

research and theoretical inquiry by simply testing whether traditional FtF concepts apply to CMC.

Lastly, scholars should continue the search for moderators and mediators of impression management in order to expand their understanding of the process. Future research efforts could increase the sophistication of this core interpersonal process. Especially in mediated environments, there could be relevant moderators or mediators that have yet to be implicated in a model of impression management. Far from providing any seminal results, this study merely serves as a starting block for helping people with social anxiety achieve the interpersonal goals they long to reach but are often unable to grasp in FtF social encounters.

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## Appendix A

### Information Sheet about the Experiment

This survey asks about how you felt about yourself during the most recent conversation you had with another person. We will also ask you some questions about yourself. *You must be at least 18 years of age to participate in this study.*

We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Dr. Scott Caplan, a faculty member in the Department of Communication at the University of Delaware.

#### **Background Information & Procedures:**

If you agree to be in this study, you will be asked to have a conversation with another person and fill out a survey about your thoughts and feelings about your interaction. The entire conversation will last no more than 20 minutes and the entire survey should not take longer than 10 minutes to complete. Participation is strictly voluntary.

#### **Risks and Benefits of Being in the Study**

We do not foresee any psychological risks of being involved in this study.

You will receive extra credit in your communication class for participating in this study. You may also complete an alternative assignment that will take the same amount of time, for the same amount of credit, if you choose not to participate in this study. See your instructor for details.

### **Confidentiality**

Your name will not be used in any part of this study. You will receive your extra credit through a code name only. Your name will not be connected with your responses in any way at any time. Results from this study will be presented as statistical summaries, but no information will be presented about individual respondents. About 200 people will complete the survey.

### **Voluntary Nature of the Study**

Your decision whether or not to participate will not affect your current or future relations with the University of Delaware. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

### **Contacts and Questions:**

The researchers conducting this study are Dr. Scott Caplan, a faculty member in the Department of Communication and Andrew High, a graduate student in the department. If you have questions, you may contact Scott Caplan at (302)831-2958. If you have questions about the rights of research subjects more generally, you may contact the Chair of the Human Subjects Review Board at the University

of Delaware at (302) 831-2136.

## Appendix B

### Information about the Impression Positivity Survey

This survey asks about how you felt about yourself during the most recent conversation you had with another person. We will also ask you some questions about yourself. *You must be at least 18 years of age to participate in this study.*

We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Dr. Scott Caplan, a faculty member in the Department of Communication at the University of Delaware.

#### **Background Information & Procedures:**

If you agree to be in this study, you will be asked to fill out a survey about your thoughts and feelings about other people you know. The entire survey should not take longer than 10 minutes to complete. Participation is strictly voluntary.

#### **Risks and Benefits of Being in the Study**

We do not foresee any psychological risks of being involved in this study.

You will receive extra credit in your communication class for participating in this study. You may also complete an alternative assignment that will take the same amount of time, for the same amount of credit, if you choose not to participate in

this study. See your instructor for details.

### **Confidentiality**

Your name will not be used in any part of this study. To receive extra credit sign your name on your instructors' attendance list. Your name will not be connected with your responses in any way at any time. Results from this study will be presented as statistical summaries, but no information will be presented about individual respondents. About 50 people will complete the survey.

### **Voluntary Nature of the Study**

Your decision whether or not to participate will not affect your current or future relations with the University of Delaware. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

### **Contacts and Questions:**

The researchers conducting this study are Dr. Scott Caplan, a faculty member in the Department of Communication and Andrew High, a graduate student in the department. If you have questions, you may contact Scott Caplan at (302)831-2958. If you have questions about the rights of research subjects more generally, you may contact the Chair of the Human Subjects Review Board at the University of Delaware at (302) 831-2136.

Appendix C

Impression Positivity Scale Development Form

<p>Write down as many different terms as you can think of to describe someone you <b>like</b>.</p> <p>Please fill in as many of the blanks below as you can.</p>	<p>Write down as many different terms as you can think of to describe someone you <b>dislike</b>.</p> <p>Please fill in as many of the blanks below as you can.</p>
<p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>6. _____</p> <p>7. _____</p> <p>8. _____</p> <p>9. _____</p> <p>10. _____</p> <p>11. _____</p> <p>12. _____</p> <p>13. _____</p> <p>14. _____</p> <p>15. _____</p>	<p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>6. _____</p> <p>7. _____</p> <p>8. _____</p> <p>9. _____</p> <p>10. _____</p> <p>11. _____</p> <p>12. _____</p> <p>13. _____</p> <p>14. _____</p> <p>15. _____</p>

## Appendix D

### Frequencies of Impression Positivity Findings

#### Breakdown of “disliked” words:

Self-centered/snobby(1)/selfish(2)/close-minded(2)/conceited(1)/egotistical(2)=

15

Mean= 14

Annoying/pesky(1)/aggravating(1)= 9

Fake/Two-faced(3)= 8

Deceitful/conniving(2)/sinister(1)/crafty(1)/manipulative(1)= 8

Rude= 7

Boring/dull(1)=6

Arrogant/cocky(1)/snotty(1)/pretentious(1)= 5

Hurtful= 4

Stupid= 4

Back-stabber/traitor(1)= 3

Sarcastic/smart ass(1)= 3

Bitchy/Bratty(1)/catty(1)= 3

Superficial/Materialistic(1)= 3

Unfriendly= 3

Introverted/impersonal(1)= 2

Uptight/stuck-up(1)= 2

Stubborn= 2

Lazy= 2

Negative= 2

Repulsive/hated(1)= 2

Insecure= 2

Demearing/bully(1)= 2

Obnoxious=2

Possessive/exclusive(1)= 2

Evil= 2

Ugly= 2

All of the following were mentioned once: big-headed, bothersome, critical, crummy, dirt bag, shallow, inconsiderate, insincere, unsocial, disrespectful, dishonest, weird, slow, retarded, mind-numbing, smartass, smelly, cheap, lazy, fat, unsightly, punctual, serious, dependent, emotional, emotionless, careless, judgmental, impatient, interruptive, ignorant, paranoid, prissy, sexist, enemy, pessimistic, opinionated, psychotic, unfair.

#### Breakdown of "liked" words

Funny/humorous(2)/comical(1)/silly(1)= 15

Nice= 12

Caring/compassionate(2)= 12

Outgoing/personable(2)/social= 11

Friendly= 10

Smart/intelligent(4)= 9

Happy/cheerful(1)/cheery(1)= 8

Generous/giving(2)/sharing(1)/contributor(1)= 7

Honest/sincere(2)= 7

Pretty/attractive(1)/beautiful(1)/hot(1)/cute(1)/pretty(1)= 7

Fun= 6

Sweet= 6

Delightful/pleasant(1)/agreeable(1)/enjoyable(1)= 5

Attentive/good-listener(2)=5

Helpful= 5

Respectful/Open-minded(1)= 5

Considerate= 4

Thoughtful= 4

Independent/Self-determined(1)= 4

Kind= 3

Understanding/Open-minded(1)= 3

Relaxing/comforting(1)/warm(1)= 3

Optimistic/good-willed(1)/positive(1)= 3

Down to earth/real (1)= 3

Talkative= 3

Lively/playful(1)/enthusiastic(1)= 3

Loving= 3

Adventurous/exciting(1)= 3

Compassionate/affectionate(1)/warm(1)= 3

Polite= 2

Entertaining= 2

The following words were only mentioned once: Appreciative, confident, endearing, loyal, patient, gentle, interesting, trustworthy, sensitive, rich, sarcastic, organized, good-willed, concerned, peaceful, supportive, creative, empathetic, humble.

## Appendix E

### Impression Positivity Scale

Directions: Please think of a person that you like/dislike. Indicate the extent to which you agree that each of the following words accurately describes that person.

The person is: \_\_\_\_\_

	Strongly Agree	Agree Some	Agree Some and Disagree Some	Disagree Some	Strongly Disagree
1. Caring	5	4	3	2	1
2. Funny	5	4	3	2	1
3. Friendly	5	4	3	2	1
4. Deceitful	5	4	3	2	1
5. Rude	5	4	3	2	1
6. Fake	5	4	3	2	1
7. Boring	5	4	3	2	1
8. Annoying	5	4	3	2	1
9. Generous	5	4	3	2	1
10. Nice	5	4	3	2	1

## Appendix F

### Interpersonal Attraction Scale

Directions: Please indicate the degree to which you agree or disagree with the following statements as they apply to your partner in the conversation you just finished. Use the following scale and circle one number for each statement to indicate your feelings.

		Strongly Agree	Agree	Agree Some and Disagree Some	Disagree	Strongly Disagree
1.	I think he/she could be a friend of mine.	5	4	3	2	1
2.	It would be difficult to meet and talk with him/her.	5	4	3	2	1
3.	He/she just wouldn't fit into my circle of friends.	5	4	3	2	1
4.	We could never establish a personal friendly with each other.	5	4	3	2	1
5.	I would like to have a friendly chat with him/her.	5	4	3	2	1

## Appendix G

### Social Avoidance and Distress Scale

Directions: Circle the response that reflects your reaction.

		Strongl y Agree	Agree	Agree Some and Disagree Some	Disagree	Strongly Disagree
1.	I feel relaxed even in unfamiliar social situations.	5	4	3	2	1
2.	I try to avoid situations which force me to be very sociable.	5	4	3	2	1
3.	It is easy for me to relax when I am with strangers.	5	4	3	2	1
4.	I have no particular desire to avoid people.	5	4	3	2	1
5.	I often find social occasions upsetting.	5	4	3	2	1
6.	I usually feel calm and comfortable at social occasions.	5	4	3	2	1
7.	I am usually at ease when talking to someone of the opposite sex.	5	4	3	2	1
8.	I try to avoid talking to people unless I know them well.	5	4	3	2	1
9.	If the chance comes to meet new people, I often take it.	5	4	3	2	1
10.	I often feel nervous or tense in casual get togethers in which both sexes are present.	5	4	3	2	1
11.	I am usually nervous with people unless I know them well.	5	4	3	2	1
12.	I usually feel relaxed when I am with a group of people.	5	4	3	2	1
13.	I often want to get away from people.	5	4	3	2	1
14.	I usually feel uncomfortable when I am in a group of people I don't know.	5	4	3	2	1

		Strongl y Agree	Agree	Agree Some and Disagree Some	Disagree	Strongly Disagree
15.	I usually feel relaxed when I meet someone for the first time.	5	4	3	2	1
16.	Being introduced to people makes me tense and nervous.	5	4	3	2	1
17.	Even though a room is full of strangers, I may enter it anyway.	5	4	3	2	1
18.	I would avoid walking up and joining a large group of people.	5	4	3	2	1
19.	When my superiors want to talk with me, I talk willingly.	5	4	3	2	1
20.	I often feel on edge when I am with a group of people.	5	4	3	2	1
21.	I tend to withdraw from people.	5	4	3	2	1
22.	I don't mind talking to people at parties or social gatherings.	5	4	3	2	1
23.	I am seldom at ease in a large group of people.	5	4	3	2	1
24.	I often think up excuses in order to avoid social engagements.	5	4	3	2	1
25.	I sometimes take the responsibility for introducing people to each other.	5	4	3	2	1
26.	I try to avoid formal social occasions.	5	4	3	2	1
27.	I usually go to whatever social engagement I have.	5	4	3	2	1
28.	I find it easy to relax with other people.	5	4	3	2	1

## Appendix H

### Self-Presentational Confidence Scale

Directions: Please circle the response that best indicates how you felt during the conversation you just completed with your partner.

		Strongly Agree	Agree	Agree Some and Disagree Some	Disagree	Strongly Disagree
1.	I could get my partner to think positively of me.	5	4	3	2	1
2.	I would be viewed in a positive light by my partner.	5	4	3	2	1
3.	My partner would think highly of me.	5	4	3	2	1
4.	I would be able to make a good impression.	5	4	3	2	1
5.	My partner would enjoy talking with me.	5	4	3	2	1
6.	I could take a risk during my conversation.	5	4	3	2	1
7.	I was expressing my true self.	5	4	3	2	1
8.	I could speak my mind.	5	4	3	2	1
9.	I could disclose personal information.	5	4	3	2	1
10.	I could talk about my personal qualities.	5	4	3	2	1

## Appendix I

### Communication Anxiety Inventory

Directions: The following items describe how people communicate in various situations. Choose the number from the following scale that best describes how your partner felt during the communication experience you *just completed*.

		Strongly Agree	Agree	Agree Some and Disagree Some	Disagree	Strongly Disagree
1.	My partner seemed tense and nervous.	5	4	3	2	1
2.	My partner seemed self-confident while talking.	5	4	3	2	1
3.	While talking, my partner seemed to be afraid of making an embarrassing or silly slip of the tongue.	5	4	3	2	1
4.	My partner seemed worried about what I thought of him/her.	5	4	3	2	1
5.	My partner seemed calm when he/she was talking.	5	4	3	2	1
6.	My partner seemed unable to think clearly when he/she spoke.	5	4	3	2	1
7.	He/she seemed poised and in control while he/she was talking.	5	4	3	2	1
8.	My partner's words became confused and jumbled when he/she was speaking.	5	4	3	2	1
9.	My partner seemed relaxed when he/she was talking.	5	4	3	2	1

		Strongly Agree	Agree	Agree Some and Disagree Some	Disagree	Strongly Disagree
10	My partner seemed to feel like he/she had nothing worthwhile to say.	5	4	3	2	1
11	While speaking, it seemed easy for my partner to find the right words to express himself/herself.	5	4	3	2	1
12	My partner seemed to feel awkward when he/she was talking.	5	4	3	2	1