

**Patterns and effects of self-disclosure in computer mediated vs face to face interactions**

Joshua D. Lipsitz, PhD<sup>1</sup>

Haggar Israeli, M.A.

Jonathan Shalom, PhD

Department of Psychology

Ben Gurion University of the Negev, Beer Sheva Israel

To be submitted to the Journal Cyberpsychology

(Internal copy. Not for distribution or citation without authors' permission)

<sup>1</sup>Corresponding author. Professor Joshua D Lipsitz, PhD, [joshual@bgu.ac.il](mailto:joshual@bgu.ac.il)

972-8-6428516

Room 213 Building 98 Marcus Campus Rager Street Beer Sheva Israel

Research supported by an unrestricted grant from the Israel Internet Society (ISOC-IL) to Professor Lipsitz

## **Effects of Self-disclosure in Computer Mediated vs. Face to Face Interactions**

- **Introduction**

Social anxiety disorder (SAD) is a uniquely interpersonal condition in which anxiety disrupts the individual's interactions and relationships with other people. Interpersonal models of SAD highlight interpersonal processes which contribute to development and maintenance of this disorder (Alden, 2004). SAD is associated with a range of problems in relationships including smaller social networks, fewer close friends and fewer romantic relationships (e.g., Montgomery, Haemmerlie & Edwards, 1991).

Several empirical studies have shown that social anxiety is related to negative interpersonal outcomes (eg., Meleshko & Alden, 1993; Creed & Funder, 1998; Taylor & Alden, 2006), even in very brief initial interactions (eg., Voncken & Dijk, 2013). Studies show, for example, that socially anxious participants, as opposed to non-anxious participants, evoke significantly more negative reactions from their conversational partners in a "getting-acquainted" interaction. Following such interactions, others viewed socially anxious participants as less friendly (Taylor & Alden, 2006), less likable (Voncken & Dijk, 2013), as cold, aloof and uninterested in the interaction (Creed & Funder, 1998). In addition, conversational partners are less likely to desire future interaction with the socially anxious (Papsdorf & Alden, 1998; Alden & Wallace, 1995) and described themselves as being more uncomfortable during the conversation with them (Meleshko & Alden, 1993).

The literature suggests that socially-anxious individuals are motivated by the desire to avoid negative social outcomes (Arkin, 1981; Meleshko & Alden, 1993) and maintain positive impressions in the eyes of those with whom they interact (Schlenker & Leary, 1982). In other words, socially-anxious individuals are characterized by a desire to make good impressions on others, but ironically, are paralyzed or inhibited by the fear that they will not be able to do so (Creed & Funder, 1998). In order to decrease the risk of negative evaluation from others, socially anxious individuals engage in various 'safety behaviors,' subtle behaviors designed to reduce the chance of negative consequences in social situations (Arkin, Lake & Baumgardner, 1986, Kim 2005), which produce the very outcome they are trying to avoid; social disapproval and withdrawal (Meleshko & Alden, 1993; Alden & Bieling, 1998). Sadly, others' withdrawal and disapproval confirm the worst fears of socially anxious individuals by reaffirming his or her lack of self-efficacy (Creed & Funder, 1998). This helps maintain a vicious self-perpetuating interpersonal cycle (Alden, 2004).

Safety behaviors of the socially anxious include image protection strategies (e.g., covering hands or face to avoid shaking or blushing) as well as disaffiliative behaviors—behaviors that decrease the individual's social contact with others (e.g., keeping statements brief) (Schlenker & Leary, 1982). One such disaffiliative safety behavior, found to be associated with other's disapproval and rejection, is low level of self-disclosure – minimizing sharing regarding one's own personal history, thoughts, and feelings.

## 1.1 Social Anxiety and Self Disclosure

Self-disclosure is a process that occurs during an interpersonal interaction, and may be defined as any information about oneself which Person A communicates verbally to a Person B (Cozby, 1973). Self-disclosure is often studied along three dimensions; (1) Frequency/quantity-amount of personal information revealed in context of other information, (2) Breadth- the range or diversity of self-disclosure topics, and (3) Depth-intimacy of personal information divulged (Nguyen, Bin & Campbell, 2012). The ability to reveal one's feelings and thoughts to another is a basic skill for developing close relationships (Altman & Taylor, 1973). Self-disclosure is associated with the "liking-effect", such that people report greater liking for those who self-disclose to them (Cozby, 1973). Reciprocal self-disclosure (the act of matching a partner's level of disclosure) is viewed as a crucial process in the development and maintenance of close relationships and a foundation of the social penetration theory of friendship (Altman & Taylor, 1973).

Even though disclosures of personal information usually lead to positive social outcomes, they also raise the possibility that one's personal revelations will create an undesired impression. For individuals high in social anxiety, who are excessively worried about other's impressions and who overestimate negative consequence, the perceived rewards of expressing personal information fail to outweigh the perceived risk (Leary, Knight & Johnson, 1987). Indeed, several studies indicate that socially anxious individuals display non normative patterns of self-disclosure during social interactions.

They tend to spend less time talking, reveal relatively superficial information, disclose less positive self-relevant information, and fail to reciprocate to their partner's level of disclosure (Leary, Knight & Johnson, 1987; Meleshko & Alden, 1993; Voncken & Dijk, 2013).

However, results are not entirely consistent and some studies have failed to find distinctive patterns of self-disclosure in socially anxious individuals (eg., Jacobson & Anderson, 1982; Papsdorf & Alden, 1998) or lower self-disclosure only under certain conditions (Alden & Wallace, 1995; Alden & Bieling, 1998). This suggests a complex relationship between social anxiety and self-disclosure (Papsdorf & Alden, 1998), which requires further study. It is possible that maladaptive behavioral patterns of the socially anxious, such as low levels of self-disclosure, emerge only when certain contextual cues are present (Alden, 2004). For example, Alden and Bieling (1998) concluded that socially anxious individuals are capable of appropriate verbal behavior, but in situations they judge to be too risky they elect to talk briefly about non-revealing conversational topics in order to avoid disapproval. When social conditions are more conducive, people with SAD appear able to overcome negative tendencies and are to be capable of behavior that elicits positive interpersonal responses (Alden, 2004).

## **1.2 The potential moderating effects of mode of communication on self-disclosure**

Leary and Kowalski (1995) note that socially anxious individuals seek out less threatening contexts to more comfortably disclose their personal information. As such,

some of the distinct characteristics of Computer mediated communication(CMC) (e.g., greater anonymity, control over self-presentation, and absence of non-verbal cues) compared to face to face (FTF) interactions (Leung, 2004; Tidwell & Walther, 2002; McKenna, Green & Gleason, 2002), makes CMC (including text based chat, Facebook, WhatsApp, and other social media) a less threatening interaction context, leading to more intimate and self-disclosing exchanges than FTF for the socially anxious who experience difficulties with traditional modes of interaction, such as face to face and telephone contact (Reid & Reid, 2007).

Findings from survey studies indicate that socially anxious individuals perceive CMC as a safer mode of communication, due to greater control over self-presentation and decreased risk of negative evaluation (e.g., Lee & Stapinski, 2012). Furthermore, individuals high in social anxiety placed greater importance on the reduced social pressure of online communication in enhancing their social experience than individuals lower in social anxiety (Weidman et al., 2012). They furthermore found that reduced non-verbal cues and controllability provided in CMC were self-relevant (Schouten, Valkenburg & Peter, 2007). These findings raise the possibility that CMC's distinct characteristics, although relevant for everyone, may have special implications for the socially anxious.

The possibility that CMC provides differential attraction and comfort for the socially anxious is supported by evidence from survey studies indicating that individuals higher in social anxiety report greater preference for online self-disclosure over FTF

self-disclosure (Strizke, Nguyen & Durkin, 2004; McKenna, Green & Gleason, 2002), experiencing greater ease and less inhibition interacting online as compared to offline (Erwin et al., 2004; Schouten, Valkenburg & Peter, 2007), and accordingly, greater utilization of the internet as a place to disclose and portray their "true self", compared to offline contexts (McKenna, Green & Gleason, 2002; Weidman et. al, 2012). As for non-anxious individuals, findings are inconclusive, with studies pointing to greater self-disclosure frequency in CMC, a lack of difference between the two modalities regarding breadth of self-disclosure, and to mixed findings concerning disclosure depth (Nguyen, Bin & Campbell, 2012). The above seems to establish a preference for and sense of comfort in CMC interactions among those high in social anxiety.

### **1.3 The complexity of the CMC experience for the socially anxious**

A more complex question is if and how increase comfort and self-disclosure for socially anxious in CMC may influence impact social anxiety and behavior in subsequent FTF interaction. As discussed above, safety behaviors (such as inhibited self-disclosure) play a critical role in maintaining SAD. Experimental studies have shown that exposure to an anxiety arousing situation while also reducing safety behaviors produces greater reduction in anxiety compared to exposure while maintaining safety behaviors (Wells et al., 1995; Kim, 2005; Taylor & Alden, 2010). To the extent that CMC is somewhat anxiety arousing, but also allows for decreased safety behaviors (e.g., increased self disclosure) CMC might have a facilitative effect, decreasing anxiety and use of safety behaviors in a

subsequent FTF interaction. Along these lines, Markovitzky, Anholt and Lipsitz (2009) examined direct effects of a brief CMC interaction (vs. FS; Free internet surfing) on social anxiety of socially anxious and non-anxious individuals, in a subsequent FTF interaction. They found that highly anxious participants who previously engaged in CMC expected to be more successful in the subsequent FTF interaction, reported a decreased desire to avoid and less anxiety during the FTF interaction, than highly anxious participants who previously engaged in FS.

An alternative possibility is that CMC in itself constitutes a form of safety behavior through which socially anxious individuals avoid threatening aspects of social interactions (Salkovskis, Clark & Gelder, 1996). In this case, the positive experience CMC provides for the socially anxious will likely have limited benefit for subsequent FTF interactions. A third possibility is that experiencing "success" - a positive social interaction - in a less threatening mode of communication such as CMC, might lead socially anxious individuals to perceive a subsequent FTF interaction as even more threatening than usual, thereby increasing their social-anxiety and use of safety behaviors after a CMC than FTF initial interaction, or a control session of internet surfing. This possibility goes along with findings regarding socially anxious men who following an experience of interpersonal success, rated their expected ability in a subsequent interaction significantly lower than their perceptions of other's standards for their behavior (Wallace & Alden, 1995).

## **1.4 The Current Study**

As reviewed above, evidence from survey studies suggests that level of self-disclosure for the socially anxious may differ across different modes of communication. Specifically, socially anxious individuals report being higher in self disclosure when engaging in computer mediated communication (CMC). However, differences between self-disclosure in CMC vs. face to face (FTF) have yet to be examined experimentally. With the growing centrality of CMC (Rice & Markey, 2009), and in light of the problematic self-disclosure patterns found in initial FTF interactions and their negative interpersonal outcomes (as mentioned above), it seems crucial to empirically investigate: 1) If self-disclosure of socially anxious individuals differs in CMC vs. FTF, and 2) If negative intrapersonal and interpersonal outcomes of lack of self -disclosure differ between CMC and FTF interactions.

Hypothesis (1): CMC will be associated with greater self-disclosure frequency, depth and breadth, than FTF in socially anxious but not in non-socially anxious participants.

### **Method**

## **2. METHODS**

### **2.1 Design**

We used a two by two between subjects design. The first factor was the participants level of social anxiety as assessed prior to the experiment (high anxiety group/low

anxiety group). The second factor is the condition: CMC and FTF. Self-disclosure was assessed by self-reported a) Frequency, b) depth and c) breadth of self-disclosure during the brief interaction in the lab. Other outcomes measured include self-reported measures: (a) anxiety, (b) and perceived success and interpersonal measures: confederate's (e) feelings of comfort (f) rating of likeability, in both conditions.

- **Participants**

At the beginning of this academic year, a questionnaire containing the Mini-SPIN (Connor et al., 2001) was administered as a screening tool to 300 first year undergraduate psychology students from the department of psychology in Ben-Gurion University and Achva, in order to identify the two anxiety groups. Following Connor et al. (2001) participants who scored 6 or greater on the Mini-SPIN (0-12), were categorized as the high social anxiety group (HA), and participants who scored 0-1 were recruited for the low social anxiety group (LA). As a result, 88 students satisfying screening criteria (41-HA, 47-LA), were eligible to participate in the study.

- **Measures**

*Mini-SPIN (Connor et., 2001)*

The Mini-SPIN is a self-administered screening tool derived from the Social Phobia Inventory (SPIN; Connor et al., 2000). It is comprised of three items and has good test-retest reliability ( $r = 0.70$ ) and construct validity ( $r = 0.77-0.81$ ) (Seeley Wait,

Abbott, & Rapee, 2009). The Mini-Spin has demonstrated high sensitivity, specificity, and diagnostic efficiency for the diagnosis of generalized SAD (Connor et al., 2001; Osório, Crippa, & Loureiro, 2007; Seeley-Wait et al., 2009), and is comprised of three items that are evaluated on five-point (0-4) Likert scales, with items such as "I avoid activities in which I am the center of attention."

*Liebowitz Social Anxiety Scale – Self Report Version (LSAS-SR; Liebowitz, 1987)*

The LSAS-SR is a widely used 24- item questionnaire assessing severity of social anxiety. It covers 24 situations including 13 social-interactional and 11 performance situations. Each situation is rated independently for fear and avoidance on a 4-point scale ranging from absent to severe (Liebowitz, 1987). The LSAS-SR has high internal consistency (Cronbach's  $\alpha=.95$ ), correlates highly with other measures of social anxiety, and is sensitive to change (Heimberg et al., 1999; Baker, Heinrichs, Kim & Hofmann, 2002). In the present study we used the validated Hebrew translation (Levin, Marom, Gur, Wechter, & Hermesh, 2002).

*FNE (Watson & Friend, 1969)*

The Fear of Negative Evaluation Scale is a widely used measure of social-evaluative anxiety. It contains 30 items and employs a true/false response format with items such as "I worry a lot of what my superiors think of me". Internal consistency of the FNE is high (Cronbach's  $\alpha = 0.94-0.98$ ) and one-month test-retest reliability is adequate to good (0.78-0.94) (Watson & Friend, 1969).

*Self-Disclosure*

All measures of self-disclosure were rated based on self-report immediately following the interactions.

Subject's *general level of self-disclosure* was rated by the on a 6-point scale (no disclosure to extreme disclosure) (Mallen, Day & Green, 2003).

*Frequency, depth and breadth of self-disclosure* will be analyzed using analysis of the content of the discussions between the subject and the confederate. Following Kiesler, Zubrow, Moses and Geller (1985), The CMC discussions will be recorded directly into computer files after the interaction, and the FTF discussion video-tapes will be transcribed into computer files. Then, the transcripts will be formatted identically (by a research assistant blind to subject's anxiety group) to disguise the mode of communication without altering the content of the conversation. Each discussion text will be divided into remarks, by defined as "a single thought or message contained in a word, phrase or sentence(s)" (Kiesler et al., pg. 89). Two research assistants blind to subject's anxiety group and condition will independently rate each discussion remark, resulting in three measures of self-disclosure.

- *Frequency*: Following Kiesler et al, (1985), frequency of self-disclosure was scored as the percentage of self-disclosing remarks; remarks which reveal intimate and personal information about the subject, out of the total number of subject's remarks.
- *Depth*: Following Coleman, Paternite and Sherman (1999), depth of each self-disclosing remarks was scored according to the amount of personal risk to which the subject exposed him or herself. Expressions of fact which did not

contain deeply held beliefs or opinions will be rated as 1; statements that expressed personal opinions which invited responses were scored as a 2; and statements which strongly expose personal beliefs or emotions will score a 3. The mean score of all self-disclosing remarks will constitute a final measure of self-disclosure depth.

- *Breadth*: was scored as the number of topics the subject discussed, out of the total number of self-disclosing remarks (Chiou & Wan, 2006).

- **Dependent Variables**

*Subject self-ratings*

Immediately after each task (CMC/FTF/Control) participant's subjective level of anxiety during the tasks was assessed using the Subjective Units of Distress Scale (SUDS) (0-100), and perceived success will be rated using the same metric (0- not at all successful, 100-completely successful).

*Partner (confederate) subject-ratings*

Immediately after each task, confederates rated participant likeability ratings using a modified version (Taylor & Alden, 2006) of the original *Desire for future interaction scale (DFI; Coyne, 1976)*, in which confederates rate how much they are willing to engage in a variety of social activities with the participant or someone similar to the participant, on a 7 point Likert scale. Cronbach alpha coefficient for Taylor and Alden's sample was .93. Also, confederates completed a measure of *Comfort* (Meleshko & Alden,

1993) in which they were asked to rate on a 7 point Likert scale how they felt during the interaction across 3 bipolar adjectives: comfortable/uncomfortable, inappropriate/appropriate, anxious/calm. Higher scores in this measure indicate greater discomfort.

## **2.5 Procedure**

Study procedures are summarized in Table 1. Selected participants, based on their Mini-SPIN ratings from the pre-screening, were invited by phone to participate in a 40-minute study on "social relationships and the internet" in return course credit points. Participants who responded to this invitation were be randomly assigned to one of the two experimental conditions: CMC or FTF. Upon arriving to the laboratory, participants were greeted by an experimenter and seated in a room with an internet connected- PC. The experimenter explained that the study-session includes a few tasks and computerized questionnaires. The participants then provided written informed consent for the experimental phase and completed two additional confirmatory measures of social anxiety. Then, according to study conditions, participants were informed about the situation they are about to encounter (FTF/CMC). The specific details of instructions given before each condition are based on earlier work by Meleshko and Alden (1993), and depicted in table 1. After completing the experimental condition and study measures, the experimenter will hand the subject a debriefing form and thank him/her for participating in the study. See table 1 for study conditions and procedure.

## **2.6 Experimental conditions**

In the experimental conditions, subjects participated in a "getting acquainted" conversation, with a confederate from the opposite sex posing as another subject. CMC interactions will be conducted using SKYPE chat, in two separate rooms with internet-connected PCs. FTF interactions will take place in a comfortable and naturalistic room (originally used for therapy sessions), and will be videotaped. All social interactions will last 7 minutes, though participants will only be told to keep the conversation going until the experimenter returns. Confederates were trained to provide natural and consistent verbal and non-verbal behavior across subjects.

## **3.RESULTS**

3.1 Group comparisons. HA and LA groups differed on both LSAS ( $M=55.5$  vs  $M=28.5$ ;  $F=48.3$ ;  $p<.001$ ) and FNE ( $M=22.4$  vs  $M=12.6$ ;  $F=45.3$ ;  $p<.001$ ) measures, validating the selection of these groups using the briefing Mini-SPIN screening procedure.

### **3.2 Test of hypothesis regarding self-disclosure**

As shown in FIGURE 1 There was a significant increase in self-disclosure in CMC and in FTF for those with high social anxiety who in initially underwent CMC. Differences in level of comfort and social anxiety during the FTF task did not differ significantly. Differences in self-disclosure for the lo anxiety group were not significant.

## **4. DISCUSSION**

Our hypothesis that a brief CMC introduction would lead to increased self-disclosure was supported/ As predicted, there was an interaction so that this effect was significant for the high social anxiety group but not the low social anxiety group.

#### **4.1 Limitations**

Some limitations should be note. First, the experimental task was a brief interaction which bears some resemblance to real interactions in terms of effects of self-disclosure but also differs in many respects. For example, one perceived danger and also motivation for sharing personal information in friendship formation is the consequences on future interactions. In the experimental procedure participants knew that this was a time-limited experience and that they were not forming friendships with the confederate. On the other hand, many experimental studies using similarly artificial procedures (e.g., Alden & Beiling, 1998) have yielded clinically relevant results. Future studies should expand on current findings by examining CMC in real online environments and in the process of actual friendship formation. In addition, the high social anxiety group is not a clinical group seeking treatment for social anxiety disorder. However, mean scores on social anxiety measures, including the LSAS, approach those found in clinical samples and Stopa and Clark ( ) and others have argued that findings in nonclinical analogue samples with high social anxiety such as the current student sample, are clinically relevant.

#### **4.2 Conclusions**

Current findings from this experimental study add to a growing body of knowledge regarding effects of CMC for those with social anxiety.

#### **4.3 Future directions.**

As CMC has become more ubiquitous and pervasive in more countries, understanding general effects and effects on specific populations should be a research priority. To date much of the research base has relied on survey reports only. Experimental approaches, such as the one used in the current study, should be applied to more naturalistic settings and with real clinical populations. This will allow for more informed evaluation of the benefits and costs of increasing dependence on CMC. Furthermore, experimental results can inform modifications and enhancements of the CMC experience for special populations such as those with social anxiety, depression, and attention deficit and other cognitive challenges.

## 5. References

- Alden, L. E., & Bieling, P. (1998). Interpersonal consequences of the pursuit of safety. *Behaviour research and therapy*, 36(1), 53-64.
- Alden, L. E., & Taylor, C. T. (2004). Interpersonal processes in social phobia. *Clinical Psychology Review*, 24(7), 857-882.
- Alden, L. E., & Wallace, S. T. (1995). Social phobia and social appraisal in successful and unsuccessful social interactions. *Behaviour Research and Therapy*, 33(5), 497-505.
- Altman, I., & Taylor, D. A. (1973). *Social penetration: The development of interpersonal relationships*. New York: Holt, Rinehart & Winston.
- Arkin, R. M. (1981). Self-presentation styles. In J. T. Tedeschi (Ed.), *Impression management theory and social psychological research* (pp.311-333). New York: Academic Press.
- Arkin, R. M., Lake, E. A., & Baumgardner, A. H. (1986). *Shyness and self-presentation*. In *Shyness* (pp. 189-203). Springer US.
- Baker, S. L., Heinrichs, N., Kim, H. J., & Hofmann, S. G. (2002). The Liebowitz social anxiety scale as a self-report instrument: a preliminary psychometric analysis. *Behaviour Research and Therapy*, 40(6), 701-715.
- Chiou, W. B., & Wan, C. S. (2006). Sexual self-disclosure in cyberspace among Taiwanese adolescents: gender differences and the interplay of cyberspace and real life. *CyberPsychology & Behavior*, 9(1), 46-53.
- Coleman, L. H., Paternite, C. E., & Sherman, R. C. (1999). A reexamination of deindividuation in synchronous computer-mediated communication. *Computers in Human Behavior*, 15(1), 51-65.

Connor, K. M., Davidson, J. R., Churchill, L. E., Sherwood, A., Weisler, R. H., & Foa, E. (2000). Psychometric properties of the Social Phobia Inventory (SPIN) New self-rating scale. *The British Journal of Psychiatry*, *176*(4), 379-386.

Connor, K. M., Kobak, K. A., Churchill, L. E., Katzelnick, D., & Davidson, J. (2001). Mini-Spin: a brief screening assessment for generalized social anxiety disorder. *Depression and Anxiety*, *14*, 137-140.

Cozby, P. C. (1973). Self-disclosure: a literature review. *Psychological Bulletin*, *79* (2), 73-91.

Coyne, J. C. (1976). Depression and the response of others. *Journal of Abnormal Psychology*, *85*(2), 186-193.

Creed, A. T., & Funder, D. C. (1998). Social anxiety: From the inside and outside. *Personality and Individual Differences*, *25*(1), 19-33.

Erwin, B. A., Turk, C. L., Heimberg, R. G., Fresco, D. M., & Hantula, D. A. (2004). The Internet: home to a severe population of individuals with social anxiety disorder? *Journal of anxiety disorders*, *18*(5), 629-646.

Heimberg, R. G., Horner, K. J., Juster, H. R., Safren, S. A., Brown, E. J., Schneier, F. R., et al. (1999). Psychometric properties of the Liebowitz Social Anxiety Scale. *Psychological Medicine*, *29*, 199-212.

Jacobson, N. S., & Anderson, E. A. (1982). Interpersonal skill and depression in college students: An analysis of the timing of self-disclosures. *Behavior Therapy*, *13*(3), 271-282.

Kiesler, S., Zubrow, D., Moses, A. M., & Geller, V. (1985). Affect in computer-mediated communication: An experiment in synchronous terminal-to-terminal discussion. *Human-Computer Interaction*, *1*(1), 77-104.

Kim, E. J. (2005). The effect of the decreased safety behaviors on anxiety and negative thoughts in social phobics. *Journal of Anxiety Disorders*, *19*(1), 69-86.

- Leary, M. R., & Kowalski, R. M. (1995). *Social anxiety*. New York: The Guilford Press.
- Leary, M. R., Knight, P. D., & Johnson, K. A. (1987). Social anxiety and dyadic conversation: A verbal response analysis. *Journal of Social and Clinical Psychology, 5*(1), 34-50.
- Lee, B. W., & Stapinski, L. A. (2012). Seeking safety on the internet: Relationship between social anxiety and problematic internet use. *Journal of anxiety disorders, 26*(1), 197-205.
- Leung, L. (2004). Net-generation attributes and seductive properties of the Internet as predictors of online activities and Internet addiction. *CyberPsychology & Behavior, 7*(3), 333-348.
- Levin, J. B., Marom, S., Gur, S., Wechter, D., & Hermesh, H. (2002). Psychometric properties and three proposed subscales of a self-report version of the Liebowitz Social Anxiety Scale translated into Hebrew. *Depression and Anxiety, 16*, 143-151.
- Liebowitz, M. R. (1987). Social phobia. *Modern Problems in Pharmacopsychiatry*,
- Mallen, M. J., Day, S. X., & Green, M. A. (2003). Online versus face-to-face conversation: An examination of relational and discourse variables. *Psychotherapy: Theory, Research, Practice, Training, 40*(1-2), 155-163.
- Markovitzky, O., Anholdt, G., & Lipsitz, J.D. (2012) Haven't we met somewhere before? The effects of a brief internet introduction on social anxiety in subsequent face to face interaction. *Behavior Research and Therapy, 50*, 359-365.
- McKenna, K. Y., Green, A. S., & Gleason, M. E. (2002). Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues, 58*(1), 9-31.
- Meleshko, K. G., & Alden, L. E. (1993). Anxiety and self-disclosure: toward a motivational model. *Journal of Personality and Social Psychology, 64*(6), 1000-1009.
- Montgomery, R. L., Haemmerlie, F. M., & Edwards, M. (1991). Social, personal, and interpersonal deficits in socially anxious people. *Journal of Social Behavior & Personality 6*(4), 859-872.

Nguyen, M., Bin, Y. S., & Campbell, A. (2012). Comparing online and offline self-disclosure: A systematic review. *Cyberpsychology, Behavior, and Social Networking*, *15*(2), 103-111.

Papsdorf, M., & Alden, L. (1998). Mediators of social rejection in social anxiety: Similarity, self-disclosure, and overt signs of anxiety. *Journal of Research in Personality*, *32*(3), 351-369.

Rice, L., & Markey, P. M. (2009). The role of extraversion and neuroticism in influencing anxiety following computer-mediated interactions. *Personality and Individual Differences*, *46*(1), 35-39.

Reid, D. J., & Reid, F. J. (2007). Text or talk? Social anxiety, loneliness, and divergent preferences for cell phone use. *CyberPsychology & Behavior*, *10*(3), 424-435.

Salkovskis, P. M., Clark, D. M., & Gelder, M. G. (1996). Cognition-behaviour links in the persistence of panic. *Behaviour Research and Therapy*, *34*(5), 453-458.

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization model. *Psychological bulletin*, *92*(3), 641-669.

Schouten, A. P., Valkenburg, P. M., & Peter, J. (2007). Precursors and underlying processes of adolescents' online self-disclosure: Developing and testing an "Internet-attribute-perception" model. *Media Psychology*, *10*(2), 292-315.

Seeley-Wait, E., Abbott, M. J., & Rapee, R. M. (2009). Psychometric properties of the Mini-Social Phobia Inventory. *Primary Care Companion, Journal of Clinical Psychiatry*, *11*, 231-236.

Stopa, L., & Clark, D. M. (2001). Comments on the viability and validity of an analogue research strategy and British norms for the fear of negative evaluation questionnaire. *Behavioral and Cognitive Psychotherapy*, *29*(4), 423-430. Tian, Q. (2013).

Veljaca, K., & Rapee, R. M. (1998). Detection of negative and positive audience behaviours by socially anxious subjects. *Behaviour Research and Therapy*, *36*(3), 311-321.

Watson, D., & Friend, R. (1969). Measurement of social evaluative anxiety. *Journal of Consulting*

and *Clinical Psychology*, 33(4), 448–457.

Weeks, J. W., Spokas, M. E., & Heimberg, R. G. (2007). Psychometric evaluation of the mini-social phobia inventory (Mini-SPIN) in a treatment-seeking sample. *Depression and Anxiety*, 24(6), 382–391.

Wilhelm, F. H., Kochar, A. S., Roth, W. T., & Gross, J. J. (2001). Social anxiety and response to touch: Incongruence between self-evaluative and physiological reactions. *Biological Psychology*, 58(3), 181–202.

Yoon, K. L., & Quartana, P. J. (2012). Post-evaluative biases toward somatic stimuli and cardiovascular responses in social anxiety. *Journal of Psychopathology and Behavioral Assessment*, 34(4), 451–457.

Stritzke, W. G., Nguyen, A., & Durkin, K. (2004). Shyness and computer-mediated communication: A self-presentational theory perspective. *Media Psychology*, 6(1), 1-22.

Taylor, C. T., & Alden, L. E. (2006). Parental overprotection and interpersonal behavior in generalized social phobia. *Behavior therapy*, 37(1), 14-24.

Taylor, C. T., & Alden, L. E. (2010). Safety behaviors and judgmental biases in social anxiety disorder. *Behaviour Research and Therapy*, 48(3), 226-237.

Tidwell, L. C., & Walther, J. B. (2002). Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations: Getting to know one another a bit at a time. *Human Communication Research*, 28(3), 317-348.

Voncken, M. J., & Dijk, K. F. L. (2013). Socially anxious individuals get a second chance after being disliked at first sight: The role of self-disclosure in the development of likeability in sequential social contact. *Cognitive Therapy and Research*, 37(1), 7-17.

Wallace, S. T., & Alden, L. E. (1995). Social anxiety and standard setting following social success or failure. *Cognitive Therapy and Research, 19*(6), 613-631.

Watson, D., & Friend, R. (1969). Measurement of social evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*, 448-457.

Weidman, A. C., Fernandez, K. C., Levinson, C. A., Augustine, A. A., Larsen, R. J., & Rodebaugh, T. L. (2012). Compensatory internet use among individuals higher in social anxiety and its implications for well-being. *Personality and Individual Differences, 53*(3), 191-195.

Wells, A., Clark, D. M., Salkovskis, P., Ludgate, J., Hackmann, A., & Gelder, M. (1996). Social phobia: The role of in-situation safety behaviors in maintaining anxiety and negative beliefs. *Behavior Therapy, 26*(1), 153-161.

**Table 1: Study conditions and procedure**

Condition	<b>CMC</b>	<b>FTF</b>
Initial Assessment	<p>no continuity</p> <p>n=20HA/20LA</p> <p>FNE + LSAS</p>	<p>no continuity</p> <p>n=20HA/20LA</p> <p>FNE + LSAS</p>
Task Instructions	<p>"You are about to have a chat conversation via SKYPE with another subject. Your task is to get to know each other, to talk about yourself and listen as you partner talks about himself so that you become better acquainted. The conversation will be saved on the computer. Observers will, later on, evaluate the conversation."</p>	<p>"You are about to have a face-to-face conversation with another subject. Your task is to get to know each other, to talk about yourself and listen as you partner talks about himself so that you become better acquainted. The conversation will be video-taped. Video observers will, later on, evaluate the conversation."</p>
Subject's self-ratings	<p>Anxiety + Perceived success</p>	<p>Anxiety + Perceived success</p>
Confederate's Ratings	<p>DFI + Comfort + Subject's general level of self-disclosure</p>	<p>DFI + Comfort + Subject's general level of self-disclosure</p>

Figure