



The role of extraversion and neuroticism in influencing anxiety following computer-mediated interactions

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ABSTRACT

With the increasing popularity of the internet, online interpersonal interactions have become a popular method of communication. The current study examined whether individuals with certain personality characteristics felt less anxious after communicating via computer-mediated communication (CMC) than after face-to-face (FtF). To examine this issue, 80 female participants (M age = 18.88, SD = 1.10) completed a personality assessment and then interacted with a confederate for 15 min either using CMC or FtF. After the interaction, participants' current level of anxiety was assessed. Results indicated that participants tended to be less anxious after the CMC than after a FtF interaction. Subsequent analyses found that this effect was moderated by participants' extraversion and neuroticism. Specifically, introverted and neurotic participants tended to be more anxious communicating FtF than communicating using CMC whereas extraverts and stable participants tended to experience low amounts of anxiety irrespective of the interaction type.

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1. Introduction

Paralleling the growth of internet use in recent years, various forms of computer-mediated communication (CMC) has become a very popular source of interpersonal interactions. With the growing popularity of CMC (e.g., emailing, chat rooms, social websites, and instant messaging), it is important to examine various personality variables that may alter the experience of communicating via the internet. For example, it seems probable that those individuals who feel anxious during face-to-face interactions may find that they are at ease when communicating using CMC. To this end, the current study is interested in whether or not individuals with specific personality characteristics feel more or less anxious when communicating via CMC than face-to-face (FtF).

With the rising use of CMC for daily interactions, researchers have started to examine the possible negative psychological effects of CMC. For example, it has been suggested that because internet activities interfere with other social activities it can lead to addiction (Brenner, 1997). Previous research also suggests that relationships which are entirely based on CMC do not provide the same intimacy level as FtF relationships (Parks & Roberts, 1998). Increases in internet usage have also been linked to declines in communication with family and friends and overall smaller social circles for the user (Kraut et al., 1998). Finally, college students who frequently use the CMC to talk with their friends are likely

to have poorer academic performance and higher self-reported internet dependency than their peers who do not frequently use CMC (Kubey, Lavin, & Barrows, 2001).

In contrast to the findings that internet use can have negative psychological effects, other research suggests that internet use can be positive. Those individuals who use the internet frequently to socialize with their peers have been found to report equal depth in both CMC relationships and FtF relationships to those individuals that use the internet less frequently (Peris et al., 2002). Gross, Juvonen, and Gable (2002) found that adolescents who use instant messaging as a form of communication often chat with peers they see in their day-to-day life thereby encouraging these relationships to grow. Not only can CMC build deeper friendships, but Green et al. (2005) found that female participants who conversed with a stranger in a CMC environment reported more happiness and better moods than female participants who conversed with a stranger FtF.

In sum, past research suggests that CMC can sometimes be a positive experience (Brenner, 1997; Kraut et al., 1998; Kubey et al., 2001; Parks & Roberts, 1998) and can sometimes be a negative experience (Green et al., 2005; Gross et al., 2002; Peris et al., 2002). It has been suggested (e.g., Amichai-Hamburger & Ben-Artzi, 2000) that these seemingly conflicting findings may have occurred because much of this research failed to consider whether or not personality moderates the effect of CMC. Consistent with this notion, past correlational research indicates that the traits of extraversion and neuroticism might impact CMC. Research by Amichai-Hamburger and Ben-Artzi (2000) found that women

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who are introverted and neurotic are likely to utilize the internet in order to chat and join discussion groups. Building upon this research it was later found that neurotic women seem to utilize the internet more often in order to overcome feelings of loneliness (Amichai-Hamburger & Ben-Artzi, 2003). Similarly, research suggests that introverted and neurotic individuals are more likely to express their “true selves” during CMC than during FtF interactions (Amichai-Hamburger, Wainapel, & Fox, 2002). Furthermore, various other studies have found that constructs related to extraversion and neuroticism (e.g., shyness, social anxiety) are also linked to CMC use and its various outcomes (e.g., Curtis, 1997; McKenna, 1998; Ward & Tracey, 2004).

It seems likely that the environment created by CMC encourages introverts and neurotic individuals to feel more at ease when conversing. Introverted and neurotic individuals might feel at ease when interacting via CMC because it provides a sense of anonymity. These individuals might also be attracted to the substantial control of the interaction afforded by CMC which allows a person to respond at their own leisure, the ability to edit what is said, and the capability to simply end the interaction at any time.

In order to build upon previous literature examining CMC and personality, the current study experimentally manipulated how participants interacted with a stranger (CMC or FtF) in order to examine if these forms of communication differentially affected a participant's anxiety. More importantly, it was also examined whether or not extraversion and neuroticism moderated the effect of interaction type on participants' anxiety. Because previous research suggests that extraversion and neuroticism are important characteristics to consider when examining females' usage of CMC (Amichai-Hamburger & Ben-Artzi, 2000; Amichai-Hamburger & Ben-Artzi, 2003) the current study examined the interactions of female dyads. Based on previous research, it is hypothesized that during a FtF interaction, extraversion will be negatively related to anxiety (i.e., introverts will be more anxious during FtF interactions than extraverted individuals) but during CMC, extraversion will be unrelated to anxiety. It is also expected that during FtF interaction, neuroticism will be positively related to anxiety (i.e., neurotic individuals will be more anxious during FtF interactions than stable individuals) but during CMC this relationship will be greatly reduced.

2. Method

2.1. Participants

Eighty female undergraduates (M age = 18.88, SD = 1.10) enrolled in general psychology courses were recruited for the study. Participants completed the study individually. For completion of the study, the participants were awarded one research credit hour to help fulfill a course requirement.

2.2. Procedure

In order to assess the traits of extraversion and neuroticism subjects completed the big five inventory (BFI; John & Srivastava, 1999). The BFI is a 44-item questionnaire used to assess each of the five traits contained within the five-factor model of personality (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience; alphas ranged between .75 and .87). Although participants completed the entire BFI only the extraversion and neuroticism scales were utilized in the current research.¹

Following completion of the BFI, participants were informed that they would be interacting with another participant for 15 min. Each participant was randomly assigned to one of two interaction conditions. Participants in the first condition interacted with the confederate (a female undergraduate research assistant) over CMC while participants in the second condition interacted FtF with the confederate. In both situations the confederate was blind to the extraversion and neuroticism scores of the participants. Subsequent analyses revealed that participants in the CMC group did not differ from participants in the FtF group in terms of their age (M = 19.01 and M = 18.88, respectively, $t(78)$ = 1.35, p = .18), extraversion (M = 3.77 and M = 3.60, respectively; $t(78)$ = 1.12, p = .25), or neuroticism (M = 2.64 and M = 2.83, respectively; $t(78)$ = 1.48, p = .14).

Condition 1: computer-mediated communication (CMC): Participants in this condition were informed they would be talking with another participant utilizing the America Online Instant Messenger (AIM) program. AIM allows users to chat one-on-one in real time through computers. The participant was given a brief tutorial if she was unfamiliar with the program. The participant was then told she had 15 min to “talk” with the other participant (actually a confederate) through AIM using the screen name ‘participant 26’. The experimenter then left the room. During this time the participant was allowed to discuss any topic she desired. If the conversation lulled (defined as 30 s with no response), the confederate drew from a list of pre-scripted questions to restart the conversation (e.g., What classes are you taking this semester? What did you do over the summer?). Once 15 min had passed, the experimenter returned to the room for the final portion of the study.

Condition 2: face-to-face (FtF): After completion of the questionnaires, a female confederate was brought into the room to join the participant. The participants were told that the confederate was another participant also completing the study. Both participant and confederate were instructed to talk freely for 15 min. The experimenter then left the room. In the event that the conversation lagged, which was defined as 30 s of no conversation, the confederate drew from a list of memorized scripted questions which were also used in the CMC. After 15 min had passed the confederate was escorted from the room by the experimenter.

After the interaction portion was completed, the participant completed the tense-arousal scale from the UWIST Mood Adjective Checklist (Matthews, Jones, & Chamberlain, 1990). Using a two-factor structure of mood, the tense-arousal scale conceptually represents high levels of both energetic arousal and tense-arousal (i.e., anxiety; Matthews et al., 1990). The tense-arousal scale consists of 16 adjectives (e.g., anxious, stressed, and relaxed) that participants use to indicate how they are currently feeling (α = .77) on a 4-point Likert type scale. Mean scores on the tense-arousal scale could range from 1 to 4 with high scores reflecting high levels of anxiety (Gold, MacLeod, Frier, & Deary, 1995).

3. Results

To address the first aim of the study an independent t -test was used to determine whether or not interaction type (FtF versus CMC) affected the amount of anxiety a participant reported at the end of the interaction. Results indicated that participants reported significantly ($t(79)$ = -3.47, p < .01; r = .37) more anxiety at the conclusion of a FtF interaction (M = 2.10, SD = .47) than at the conclusion of a CMC (M = 1.80, SD = .25).

To address the second aim of the study analyses were conducted to determine whether or not extraversion and neuroticism interacted with interaction type when predicting anxiety. A hierarchical regression analysis was next computed to examine whether or not extraversion and neuroticism moderated the effect of interaction type on anxiety. In this analysis, Interaction type,

¹ As would be expected, analyses conducted on the other FFM scales found that none of them significantly predicted anxiety or moderated the effect of interaction type.

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