The relationship between self-reports of personality and computer mediated interactions

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ABSTRACT

Social networking sites such as Facebook have become some of the most popular means of communication to date; with 37.5% of the U.S. population being active users, as well as accounting for around 17.9% of all time spent online (Moore & McElroy, 2012). These online interactions are not subject to the same limitations as face-to-face interactions, specifically increases in time spent interacting and the presentation of alternate selves, because of the ease of access. Online communications have become an essential way for adolescents to communicate. An individual’s involvement in such sites may influence the manner in which they present themselves, as well as their reports of personality when interacting online. The present study examines the differences in self-reports of personality between online and offline environments. The purpose of this paper is to explore the differences in personality presentation, not the possibility of personality change due to the Internet. Data was collected from 288 undergraduate participants using a 1.5 hour long questionnaire that included the Big Five Inventory (BFI) regarding offline and online self-reports of personality, as well as Internet use questions. Individual differences, such as gender and the level of online interactions, were explored. Results showed that those participants considered as either high or low extraverts and high or low neurotics, provided significantly different online self-reports of personality compared to their offline self-reports. Significant differences were also present among women, but not among men.

Keywords: Personality, Internet, self-presentation, BFI, true-self, extroversion, neuroticism.

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Based on her training in cognitive development, Professor Richert has developed various lines of research into how children’s developing social cognition influences their understanding of religion, fantasy, and media.

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Israel Flores is a fourth-year honors student majoring in Psychology. He joined Dr. Rebekah A. Richert’s Childhood Cognition Lab shortly after transferring to UCR in winter of 2012. Here his interests in media and its influence on cognitive processes was encouraged by his current mentors, Dr. Richert and graduate student Rachel Flynn. The focus of his research is on the influence of the Internet on self-reports of personality, specifically social networking sites such as Facebook or blogging. Thanks to the support and guidance of his mentors, Israel plans to continue onto graduate school to focus on the relationship between technology and the development of cognitive processes.
The relationship between self-reports of personality and computer mediated communications

Current research regarding social site use and personality has found that the Big Five traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience can, in part, predict an individual’s online interactions (Guadagno, Okdie, & Eno, 2008; Moore & McElroy, 2012; Orchard & Fullwood, 2010). There are five major dimensions of the BFI. Extraversion refers to the extent to which individuals are social and cheerful. Agreeableness is the tendency to be sympathetic, trusting, and forgiving. Conscientiousness is the tendency to be organized and self-disciplined. Neuroticism refers to the display of negative attributes such as distrustfulness, anxiety, embarrassment, and difficulty managing stress. Openness to experience represents an individual’s willingness to explore new ideas. Currently, there is a lack of research that examines the Internet’s influence on an individual’s personality. The purpose of the current study is to examine the possibility that the Internet not only allows for the true self to be expressed, but it also influences the expression of personality traits.

Moore and McElroy (2012) sought to understand which traits can be used to predict online use among college students. Their data indicated that individuals considered high neurotics spend more time on Facebook as compared to those less neurotic, similar to the results of McElroy, Hendrickson, Townsend, and DeMarie (2007). Openness to experience was also found to be a good predictor of general Internet use. To further understand why these traits are related to Internet use, Orchard and Fullwood (2010) conducted a meta-analysis and found that those who scored low on extraversion generally showed a preference for computer-mediated communications (online gaming, social sites, and online studying) compared to those who scored high on extraversion. However, low neurotic individuals and extraverted users reported frequently going on social sites such as Facebook to keep up with friends.

When examining gender differences, Guadagno, Okdie, and Eno (2008) indicated that women who were high in neuroticism were more likely to maintain a blog as compared to women low in neuroticism. Hamburger and Ben-Artzi (2000) also found that among women, extraversion was negatively related to the use of social services such as chat rooms, whereas neuroticism was positively related to use of chat rooms. Among men, extraversion was positively related to using leisure services such as random browsing and neuroticism was negatively related to information services such as studying. One possible explanation set forth by Orchard and Fullwood (2010) was that highly neurotic individuals want to know more about the world to give them a sense of security, and thus may be more inclined to blog and be online.

Personality has been shown to be a predictor of online activities, but the question remains if online activities influence personality or the way an individual presents him or herself. This is an important topic because of the popularity in use of the Internet, not only among adults but also among children and adolescents. Anolli, Villani, and Riva (2005) found that the high level of anonymity online allowed people to portray themselves without anxiety or fear. Suler (2004) concluded that a possible reason people felt they can express themselves better online than in face-to-face interactions is the online disinhibition effect which has two opposing outcomes. Benign disinhibition is the possibility for personal growth, whereas toxic disinhibition can be classified as giving into one’s impulses (also expressed by Freudian concept of the id).

Orchard and Fullwood (2010) examined literature on personality in regards to Internet use and employed the disinhibition effect to explain their findings. They concluded that introverts may feel more comfortable engaging in online communication with others due to the reduced level of stress. Suler (2004) emphasized that disinhibition should not be confused with the idea of the true self, first theorized by Carl Rodgers in 1951, which views personality as constructed in layers that keeps the true self hidden beneath the learned roles social interactions.

Looking further into the possibility of the true self being expressed online as opposed to offline, Bargh, McKenna, and Fitzsimons (2002) found that traits participants considered part of their true self (chosen by the participant, such as bossy or wise) were more accessible in memory following an interaction with a stranger over the Internet,
compared to after a face-to-face interaction. Similarly, Amichai-Hamburger, Wainapel, and Fox (2002) found that introverts and neurotics found it much easier to open up to their friends online as opposed to a face-to-face interaction. However, this can lead to potential negative outcomes, such as overreliance on the Internet leading to addictive tendencies.

Past research has shown that personality can be used to predict Internet use (Guadagno, Okdie, & Eno, 2008; Moore & McElroy, 2012; Orchard & Fullwood, 2010). It is also possible that online environments may facilitate the presentation of the true self in regards to personality expression (Suler, 2004). The current paper examines the relationships between personality traits and Internet use as well as possible differences in the presentation of the Big Five personality traits during online and offline interactions. The purpose of this paper is to explore the differences in personality presentation, not the possibility of personality change due to the Internet. The current research is structured by two hypotheses:

Hypothesis 1: Given the concepts of the true self and the online disinhibition effect, we expect there will be a significant mean difference between the Big Five traits in regards to online and offline interactions, possibly due to a better representation of the true self while online. Specifically: Extraversion and openness to experience will be self-reported as higher online when compared to offline. However, conscientiousness, agreeableness, and neuroticism will be rated as lower online than offline.

Hypothesis 2: Significant gender differences will be present in regards to online and offline personality reports. Given the results of previous research, we expect to see more differences within women more so than men.

**METHODS**

**Participants**

Participants in this study included 288 undergraduate students (53.8% female) enrolled in one of two lower division introductory psychology courses, recruited from the University of California, Riverside. This included 145 freshmen, 92 sophomores, 40 juniors, 9 seniors, and one 5th year senior. Participants’ age ranged from 17 to 24 years old ($M = 19.12, SD = 1.15$). Self-reported ethnicity included 31.3% Hispanic/Latino, 30.2% Asian, 12.8% Caucasian, 4.5% African American, 1.7% Native Hawaiian or Pacific Islander, 17% other or multiple ethnicities, 0.3% American Indian or Alaska Native, and 2.1% declining to state.

**Materials and procedures**

Each participant completed a 1.5-hour computer-based survey ($M = 43.71$ minutes, $SD = 19.81$) measuring aspects of their personal life both online and offline. The survey included questions about their current and past Internet use, the Big Five Personality Test (BFI) in relation to online and offline personality, and a demographics section.

**Internet use.** Time online was measured by asking how many hours per day do you spend visiting an online social community. Participants responded on an 8-point scale from 0 hours to 7 or more hours.

**Big Five Personality Test (BFI).** The Big Five Inventory (BFI) is a brief multidimensional personality inventory dependent on self-reported data (John, Donahue, & Kentle, 1991; John & Srivastava, 1999; John, Naumann, & Soto, 2008). The inventory is based on the Big Five model of personality, which suggests that the differences in personality among individuals can be classified into five expansive and bipolar factors (Gosling, Rentfrow, & Swann, 2003). The inventory is scored on a five-point Likert scale from 1 (disagree strongly) to 5 (agree strongly) and has participants rate themselves on characteristics such as “is talkative” and “is depressed, blue”. The inventory included 44 items. The offline worded version of the BFI began with the phrase “In general I see myself as someone who...” whereas the online worded version included questions such as “In general when online I see myself as someone who...”. BFI versions were administered successively, beginning with the offline. The inventory included 44 items. Extraversion is represented by 8 items, agreeableness by 9 items, conscientiousness by 9 items, neuroticism by 8 items, and openness by 10 items.
RESULTS

Hypothesis 1: suggests that there would be a significant mean difference between the BFI traits in regards to online and offline interactions. In order to test this hypothesis, analyses examined the mean differences between online and offline trait reports. Paired-samples t-tests results revealed that the BFI scores for neuroticism, t(287) = 4.873, p < 0.000, and conscientiousness, t(287) = 3.046, p < 0.003, were significantly different in online and offline environments (see Table 1). In online environments, individuals reported significantly less neuroticism (M = 3.13, SD = .45) than in offline environments (M = 3.26, SD = .45). Individuals also reported significantly more conscientiousness (M = 3.59, SD = .46) in online than in offline environments (M = 3.66, SD = .44). There were not significant differences between the traits of extraversion, agreeableness, and openness to experience. These results indicate that participants rated themselves as less neurotic and more conscientious while online as opposed to in offline environments.

Significant mean gender differences in reports of personality were also present within men and women. For men, paired samples t-tests revealed the BFI scores for neuroticism, t(129) = 3.21, p < 0.002, were significantly different in online and offline environments (see Table 2A). Men reported significantly less neuroticism online (M = 3.13, SD = .42) than in offline environments (M = 3.24, SD = .40). This indicates that that men view themselves less neurotic while online.

For women, paired samples paired samples t-tests revealed the BFI scores for BFI scores for agreeableness, t(152) = 2.55, p < 0.012, conscientiousness, t(152) = 4.23, p < 0.000, and neuroticism, t(152) = 4.27 p < 0.000, were significantly different in online and offline environments (see Table 2B). In online environments, women reported significantly less agreeableness (M = 3.34, SD = .41) than in offline environments (M = 3.41, SD = .36). Individuals also reported significantly less conscientiousness (M = 3.56, SD = .44) in online than in offline environments (M = 3.69, SD = .38). Women also reported significantly less neuroticism online (M = 3.13, SD = .45) than in offline environments (M = 3.27, SD = .43). These results indicate that women rated themselves as less agreeable, conscientious, and neurotic while online as opposed to in offline environments.

DISCUSSION

Previous research has suggested that personality traits can be used to predict online interactions (Guadagno, Okdie, & Eno, 2008; Moore & McElroy, 2012; Orchard & Fullwood, 2010). The question proposed by this research is how new environments, specifically the Internet, can influence the presentation of our personality. The purpose of the two BFI questionnaires used in this study is to further examine the possibility of trait expression.

As expected there was a significant decrease in conscientiousness and neuroticism online when compared to offline. Given that individuals scoring low on conscientiousness use the Facebook wall post system far more than those scoring higher on the trait (Moore & McElroy, 2012); it is possible that participants rated themselves as lower in conscientiousness online because there is less need to be conscientious. The Internet provides a level of order and reliability for most people in the form of applications such as the wall post system. Similarly, indulging in online communications with others is a central aspect of social media sites. This may reduce the perception of conscientiousness when engaged in online communications.

Orchard and Fullwood (2010) suggested that highly neurotic individuals may be more inclined to use computer-mediated interactions because it provides them with a sense of security when exploring and gaining knowledge. Our findings support previous research which suggests that the Internet may play an important role in providing a means of communication for those who have difficulties in offline interactions without the fear of reprisal from others for their lack of emotional control (Hamburger & Ben-Artzi, 2000). Participants may have rated themselves lower online in neuroticism because they feel more emotionally stable or at least less likely to be judged when interacting online as opposed to offline.
In this study, gender differences were found with regards to self-reports of personality while online as opposed to offline. We found that women reported lower agreeableness, conscientiousness, and neuroticism online; men only reported lower neuroticism. These results suggest that the presentation of the personality is much more influenced by the Internet among women than it is among men. This may indicate that online interactions may be better suited for the presentation of the true self among women.

Initial analysis of these results may suggest that the true self is better facilitated online possibly due to the online disinhibition effect. However, it is very unlikely that participants presented the true self because of the consistencies across the different groups (overall decreases in neuroticism or no changes in personality reports). Another explanation for the variance from offline to online is the possibility that participants presented themselves as less neurotic because emotional instability or neuroticism is a negative trait. Given that all participants came from an introductory psychology course, it is possible they were biased in their responses since they have good background knowledge of the measures. This negative connotation and a second opportunity to adjust scores may be a better explanation for the differences among offline and online personality reports.

The major limitation in this study is the low cronbach’s alphas for the BFI traits, both offline and online. For this study reliability among the traits of extraversion, agreeableness, conscientiousness, and neuroticism fell below the .7 cutoff. The only trait to poses an alpha over the acceptable cutoff value of .7 was openness to experience for both the offline (α = .74) and online (α = .73) inventory. The purpose of the alpha is to demonstrate that the interrelated items used to measure an underlying construct are reliable across a sample, in this case the personality traits among our participants (Bland & Altman, 1997). The lack of internal consistency among both inventories (offline and online versions) may be due to the length on the survey, which spanned 1.5-hours. Since the BFI’s were both presented along with other measures, it is possible that participants were not consistent across their responses, if so this would account for the unreliability of the measures as cited by Fong, Ho, and Lam (2010).

To better understand the influence of the Internet on personality, future research should focus on younger individuals than our college sample, such as those is late childhood. Bargh, McKenna, and Fitzsimons (2002) suggested that even adults feel they can better represent themselves over online interactions that in face-to-face interactions with strangers. With the growing use of the Internet among developing age groups, it is important to understand if this medium is influencing the presentation of the true self. Allowing children to engage in a system that provides them with a better outlet for self-presentation and exploration carries positive and negative consequences that can influence their psychological health. As suggested by Lee (2009), those high in sociability can benefit much more from the Internet by using it to maintain relationships, while those low in sociability gain very little from Internet use. Similarly, those who feel they require the Internet to present their true selves adequately can be put at an even greater disadvantage from those who are able to present themselves effectively otherwise.

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REFERENCES


**APPENDIX**

| Table 1: Descriptive Statistics and t-test Results for Offline and Online Personality Traits |
|-----------------------------------------------|-----------------|-----------------|---------|---------|-----------------|--------|
| Trait                                      | Offline M | SD | Online M | SD | t | p         |
| Extraversion                               | 3.53      | 0.47 | 3.50      | 0.45 | 1.41 | 0.16        |
| Agreeableness                              | 3.41      | 0.41 | 3.37      | 0.42 | 1.79 | 0.07        |
| Conscientiousness                          | 3.66      | 0.44 | 3.59      | 0.46 | 3.05 | 0.003*      |
| Neuroticism                                | 3.26      | 0.45 | 3.15      | 0.46 | 4.87 | 0.000*      |
| Openness                                   | 3.66      | 0.57 | 3.67      | 0.55 | -0.44| 0.66        |

* p < .05.

| Table 2: Descriptive Statistics and t-test Results for Offline and Online Personality Traits within Men and Women |
|---------------------------------------------------------------|-----------------|-----------------|---------|---------|-----------------|--------|
| Trait                                      | Offline M | SD | Online M | SD | t | p         |
| Extraversion                               | 3.48      | 0.45 | 3.46      | 0.44 | 0.954| 0.342        |
| Agreeableness                              | 3.41      | 0.37 | 3.39      | 0.39 | 0.654| 0.514        |
| Conscientiousness                          | 3.63      | 0.41 | 3.61      | 0.46 | 0.608| 0.544        |
| Neuroticism                                | 3.24      | 0.4  | 3.13      | 0.42 | 3.213| 0.002*      |
| Openness                                   | 3.65      | 0.5  | 3.64      | 0.52 | 0.132| 0.895        |

* p < .05.

| B. Women |
|-----------------------------------------------|-----------------|-----------------|---------|---------|-----------------|--------|
| Trait                                      | Offline M | SD | Online M | SD | t | p         |
| Extraversion                               | 3.59      | 0.41 | 3.54      | 0.42 | 1.52 | 0.13        |
| Agreeableness                              | 3.41      | 0.36 | 3.34      | 0.41 | 2.55 | 0.012*      |
| Conscientiousness                          | 3.69      | 0.38 | 3.56      | 0.44 | 4.23 | 0.000*      |
| Neuroticism                                | 3.27      | 0.43 | 3.13      | 0.45 | 4.27 | 0.000*      |
| Openness                                   | 3.68      | 0.54 | 3.68      | 0.53 | -0.12| 0.90        |

* p < .05.