Compensatory internet use among individuals higher in social anxiety and its implications for well-being

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Abstract

The social compensation hypothesis states that the internet primarily benefits individuals who feel uncomfortable communicating face-to-face. In the current research, we tested whether individuals higher in social anxiety use the internet as a compensatory social medium, and whether such use is associated with greater well-being. In Study 1, individuals higher in social anxiety reported greater feelings of comfort and self-disclosure when socializing online than less socially anxious individuals, but reported less self-disclosure when communicating face-to-face. However, in Study 2, social anxiety was associated with lower quality of life and higher depression most strongly for individuals who communicated frequently online. Our results suggest that, whereas social anxiety may be associated with using the internet as an alternative to face-to-face communication, such a strategy may result in poorer well-being.

Keywords

Social anxiety; Internet socialization; Well-being; Social compensation hypothesis

1. Introduction

Individuals routinely use online social media, such as social networking sites, chat rooms, and instant messaging services, to maintain and expand their social circles, and such venues provide different social experiences than face-to-face conversations in three critical ways (McKenna & Bargh, 2000). First, the internet offers potentially increased anonymity and deindividuation; second, communicating online can render one's appearance largely irrelevant; third, online communication can be asynchronous in that individuals can deliberately craft responses without the pressure of face-to-face conversation. Thus, by eliminating the reliance on non-verbal cues and the spontaneity of face-to-face communication, the internet could plausibly facilitate self-disclosure and intimate socialization among individuals for whom face-to-face communication provokes anxiety and concern over evaluation. Such a viewpoint, termed the social compensation hypothesis (Valkenburg & Peter, 2009), suggests that individuals higher in social anxiety may use the

internet as a compensatory social medium. An important question examined in the current research is whether such compensatory internet use is psychologically beneficial.

Previous research has supported the social compensation hypothesis. For example, Schouten, Valkenburg, and Peter (2007) found that individuals who endorsed the importance of both reduced reliance on non-verbal cues (i.e., non-verbal anonymity) and controllability of the social situation (i.e., reduced spontaneity) felt more disinhibited when communicating online than when communicating offline. Social anxiety has also been shown to positively predict the extent to which individuals report using the internet to regulate and compensate for social fears (Shepherd & Edelmann, 2005). Importantly, perceptions of the internet as promoting more comfortable socialization may cause individuals higher in social anxiety to engage more in online communication than face-to-face communication (Erwin, Turk, Heimberg, Fresco, & Hantula, 2004), suggesting that the internet's unique benefits may make it an appealing compensatory social medium for individuals higher in social anxiety (Young & Lo, 2012).

Research supporting the social compensation hypothesis raises two additional questions which we attempted to answer in two studies. In Study 1, we examined whether or not the feelings of comfort prompted by online social media are associated with greater self-disclosure. The unique features of online communication seem likely to promote self-disclosure by assuaging the social-evaluative fears that are known to accompany social anxiety (Miller, 2009). Alternatively, individuals higher in social anxiety may tend to behave passively when online rather than actively engaging in online social media (Erwin et al., 2004), thereby mitigating the potential benefits of online socialization.

Even if individuals higher in social anxiety do communicate more frequently and more comfortably in online social settings, such communication habits may or may not translate into more satisfying social relationships and greater well being. We thus examined the relationship between social anxiety, internet use, and well-being in Study 2. On one hand, a recent study found that introverts exhibited higher levels of self-esteem and lower levels of depression over time when they communicated and engaged in supportive relationships with online friends and acquaintances (Van Zalk, Branje, Dennisen, Van Aken, & Meeus, 2011). Although related to introversion, social anxiety differs such that it is marked by pervasive concern and anxiety over the prospect of evaluation from others during social interactions (Miller, 2009). Such fear of evaluation may lead individuals higher in social anxiety to engage in compulsive and excessive internet use as they search for signs of social threat or approval (Lee & Stapinski, 2012), thus leading to poorer well-being. Additional dispositional factors, such as the tendency for individuals higher in social anxiety to appear aloof and distant during social interactions (Meleshko & Alden, 1993) and to show automatic vigilance for and reactivity to perceived threats from others (Miskovic & Schmidt, 2012), may lead them to experience less-satisfying interpersonal interactions online. If individuals higher in social anxiety do not find rewarding relationships online due to dispositional factors, they would not be expected to experience greater well-being to the extent that they communicate more frequently online.

We aimed to answer the two questions posed above in two studies. In Study 1, participants reported their levels of social anxiety, their feelings of comfort when communicating online, and their online and offline self-disclosure. We predicted that individuals higher in social anxiety, in addition to reporting feelings of comfort, would also report greater levels of self-disclosure online than offline. In Study 2, participants reported their levels of social anxiety and their online communication behaviors, in addition to reporting their well-being in a variety of domains. Given that past research indicates that compensatory internet use primarily impacts individuals higher in social anxiety, we predicted that social anxiety and

online communication behaviors would interact to predict well-being, such that social anxiety would negatively predict well-being most strongly for individuals who frequently engage in online communication.

2. Study 1

2.1. Methods

2.1.1. Participants—Undergraduate students at a large Midwestern university were recruited through an online human subjects pool and received partial course credit for participation ($n = 108$, Age: $M = 18.99$, $SD = 1.14$; 74.1 % female; 66.7% Caucasian, 19.4% Asian, 6.5% African-American, 1.9% Hispanic/Latino, 5.6% other race/ethnicity). Participants reported spending a total of 14.99 hours per week on the internet, though internet use varied widely ($SD = 16.63$; Range = 0–90).

2.1.2. Measures

2.1.2.1. Self-disclosure: Online and offline self-disclosure were assessed using the *online self-disclosure* and *offline self-disclosure* scales taken from Schouten et al. (2007); online: $M = 2.12$, $SD = 0.54$, $\alpha = .78$; offline: $M = 2.84$, $SD = 0.57$, $\alpha = .74$. Items assess the frequency with which individuals discuss certain topics (e.g., *sex, my personal feelings*, and *my secrets*) when communicating online or offline on a 1 (*Never*) to 5 (*Always*) scale.

2.1.2.2. Disinhibition: Feelings of disinhibition during online communication were assessed using the *online disinhibition* scale taken from Schouten et al. (2007); $M = 3.08$, $SD = 0.98$, $\alpha = .82$. Items assess the extent to which individuals feel less constrained and more at ease when communicating online compared to offline (e.g., During instant messaging, I feel more free to talk about things than in a face-to-face meeting). Items were altered to apply to all online social communication mediums assessed in the current study. That is, the question stem *during instant messaging* was changed to *when communicating online*. All items were assessed on a 1 (*Strongly disagree*) to 5 (*Strongly agree*) scale.

2.1.2.3. Reduced social pressure: Participants' feelings of reduced social pressure during online social communication was assessed using the *perceived relevance of reduced non-verbal cues* and *the perceived relevance of controllability* scales taken from Schouten et al. (2007); $M = 2.80$; $SD = 0.75$; $\alpha = .75$. Participants reported the extent to which reduced reliance of non-verbal cues (e.g., *Others cannot see what I look like*) and increased controllability (e.g., I have more time to think about what I am going to say) of online communication were important to their social experience on a 1 (*Not at all important*) to 5 (*Very important*) scale.

2.1.2.4. Social anxiety: Participants completed the 17 straightforward items of the Social Interaction Anxiety Scale (S-SIAS; Mattick & Clarke, 1998; Rodebaugh et al., 2011); items are on a 1 (*Very inaccurate*) to 5 (*Very accurate*) scale ($M = 2.38$; $SD = 0.62$; $\alpha = .88$; see Rodebaugh et al., 2011, for advantages to using the straightforward items).

2.1.3. Procedure—Participants entered the laboratory and provided consent to participate in a study regarding the internet and social behavior. Participants then reported social anxiety before completing measures of self-disclosure, disinhibition, and reduced social pressure.

2.2. Results and discussion

Social anxiety was positively correlated with measures of online disinhibition ($r = .42$; $p < .001$) and reduced online social pressure ($r = .43$; $p < .001$). That is, individuals higher in

social anxiety reported strong feelings of disinhibition when communicating online compared to offline, and placed greater importance on the reduced social pressure of online communication in enhancing their social experience than did individuals lower in social anxiety. Importantly, social anxiety was also positively correlated with online self-disclosure ($r = .28$; p = .003) and negatively correlated with offline self-disclosure ($r = -.20$; p = .04). Because these correlations significantly differ from zero in opposite directions, they are by definition significantly different from each other. That is, individuals higher in social anxiety self-disclose more online, and less offline, than do individuals lower in social anxiety.

These data answer our first question by suggesting that individuals higher in social anxiety, in addition to perceiving the internet as a more comfortable social forum, use the internet as a unique venue in which to engage in intimate self-disclosure. Perceptions of comfort and increased self-disclosure do not, however, necessarily entail that individuals higher in social anxiety will benefit psychologically or socially from their online communication. In fact, as noted above, these individuals' dispositional tendencies to engage in less satisfying interpersonal interactions may hinder their attempts to fruitfully socialize online. We thus hypothesized that social anxiety and compensatory internet use would interact, such that social anxiety will be negatively associated with well-being most strongly for those individuals who engage in high levels of compensatory internet use. We tested this possibility in Study 2.

3. Study 2

3.1. Methods

3.1.1. Participants—Undergraduate students from a large Midwestern university were recruited through an online human subjects pool and received partial course credit for participation ($n = 64$; mean age = 19.00; 63% female; 59% Caucasian, 30% Asian/Pacific Islander; 7.8% African-American; 3.1% multi-racial). Participant internet use was very similar to the Study 1 sample, as participants reported spending an average of 129.4 minutes per day—or 15.10 hours per week—on the internet ($SD = 89.85$; Range = 20-420). This participant data has also been reported on in a manuscript examining impressions formed from Facebook profiles of individuals higher in social anxiety (Fernandez, Levinson, & Rodebaugh, in press), but the results do not overlap with results presented here.

3.1.2. Measures

3.1.2.1. Social anxiety: Participants completed the 17 straightforward items of the S-SIAS ($a = .92$; $M = 15.44$, $SD = 10.59$) and the 20-item Social Phobia Scale ($a = .89$; $M = 12.36$; $SD = 9.19$; Mattick & Clarke, 1998). Given the high correlation between the S-SIAS and SPS ($r = .45$), scores were standardized and aggregated for subsequent analyses.

3.1.2.2. Depression: Participants completed the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) by responding to 20 items assessing severity of depressive symptoms over the past two weeks ($a = .84$; $M = 8.37$; $SD = 6.43$). The item assessing suicidal thoughts was not included per Institutional Review Board request.

3.1.2.3. Quality of life: Participants completed the Quality of Life Inventory (QOLI; Frisch, 1994), a 32-item measure broken down into 16 life domains (e.g., self-esteem, play, money). For each of the 16 subscales, individuals read a description of a particular life domain (e.g., play is what you do in your free time to relax, have fun, or improve yourself. This could include watching movies, visiting friends, or pursuing a hobby like sports or gardening) before rating the importance ascribed to (1 = "not important"; 3 = "extremely important"),

and satisfaction with (−3 = "very dissatisfied"; 3 = "very satisfied"), the domain. Subscale scores are formed by multiplying the important and satisfaction items for each domain (a = . 67; M = 113.59; SD = 23.49).

3.1.2.4. Internet usage: Participants completed the Internet Usage Questionnaire (IUQ), a 12-item measure of internet usage; details on the creation and subsequent validation of this measure are available in another study (Levinson, Fernandez, Rodebaugh, Menatti, & Weeks, in preparation). Eleven items assess quality of internet usage on a 1 (*Not true for me*) to 7 (*Extremely true for me*) scale, with 4 items assessing internet use as a positive substitute for face-to-face interactions (IUQ-Pos; e.g., My interactions on the Internet have led me to feel more confident and comfortable when interacting with people face to face; a = .81; M = 12.68; SD = 5.31) and 7 items assessing internet use as avoidance of face-to-face interactions (IUQ-Avoid; e.g., Spending time on the Internet makes it easier for me to avoid interacting with people face to face; a = .88; M = 13.74; SD = 5.71).

3.1.3. Procedure—Participants came into the lab and provided consent to participate in a study regarding online social media use. Participants completed a questionnaire packet containing a variety of measures assessing social anxiety, depression, quality of life, internet and Facebook usage. After completing the questionnaires, participants were debriefed and released.

3.2. Statistical analyses

We first examined bivariate correlations between social anxiety and internet use as in Study 1. To examine the relation between compensatory internet use and well-being at different levels of social anxiety, we ran hierarchical regression models predicting quality of life and depression from social anxiety and internet usage on step 1 (with separate models for IUQ-Pos and IUQ-Avoid as predictors), and their interaction term on step 2. All predictors and criterion variables were standardized before performing analyses. Based on our prediction that social anxiety would relate to lower levels of well-being most strongly for individuals who frequently engage in compensatory internet socialization, we would expect a significant and negative beta weight for the IUQ-social anxiety interaction term.

3.3. Results and discussion

Replicating the findings reported in Study 1, social anxiety positively predicted IUQ-Pos (r = .29) and IUQ-Avoid (r = .50), suggesting that individuals higher in social anxiety use the internet both as a positive substitution for face-to-face interactions and to avoid face-to-face interactions.

We next examined our regression models. We first tested whether or not social anxiety and IUQ-Pos interacted to predict quality of life and depression. When predicting quality of life, our model yielded no main effect of social anxiety (β = −.14; t = −.95; p = .346) or IUQ-Pos (β = −.02; t = −.17; p = .870), but a marginally significant interaction (β = −.25; t = −1.71; p = .094; F(1,50) = 2.92; adjusted $R^2\Delta$ = .054). Given that our measure of quality of life consists of many disparate facets (e.g., home ownership; children; relatives) that are likely to have little bearing on the quality of a young-adult's life, we next examined whether or not social anxiety and IUQ-Pos interacted to predict the facets most relevant to online socialization among our sample: self-esteem (i.e., liking and respecting oneself) and friendship (i.e., having well-known and cared-for friends). When predicting self-esteem, our model yielded a main effect of social anxiety (β = −.50; t = −4.34; p < .001), a marginally significant main effect of IUQ-Pos (β = −.20; t = −1.71; p < .093), and a significant interaction (β = −.34; t = −3.12; p = .003; F(1,54) = 9.75; adjusted $R^2\Delta$ = .101). Alternatively, social anxiety and IUQ-Pos did not interact to predict friendship (β = −.10; t =

−.715; $p = .478$). Similarly, social anxiety and IUQ-Pos did not interact to predict depression ($\beta = -.07$; $t = .50$; $p = .618$). The interaction predicting self-esteem (Fig. 1) indicates that social anxiety was most strongly and negatively associated with self-esteem for participants high in IUQ-Pos (i.e., those who frequently use the internet as a positive substitute for face-to-face interactions). Compensatory internet use was associated with low self-esteem satisfaction for individuals higher in social anxiety, but was associated with greater self-esteem satisfaction for individuals lower in social anxiety.

We next tested whether or not social anxiety and IUQ-Avoid interacted to predict quality of life and depression. When predicting depression, our model yielded a marginally significant main effect of social anxiety ($\beta = .29$; $t = 1.88$; $p = .065$), no main effect of IUQ-Avoid ($\beta = -.08$; $t = -.53$; $p = .598$), and a significant interaction ($\beta = -.36$; $t = 2.88$; $p = .006$; $F(1,53) = 8.31$; adjusted $R^2\Delta = .127$). Alternatively, social anxiety and IUQ-Avoid did not interact to predict quality of life ($\beta = -.02$; $t = -.10$; $p = .919$), self-esteem ($\beta = -.15$; $t = -1.34$; $p = .186$) or friendship ($\beta = .14$; $t = 1.07$; $p = .291$). The interaction predicting depression (see Fig. 2) indicates that social anxiety was associated with depression most strongly for participants high in IUQ-Avoid (i.e., those who frequently use the internet to avoid face-to-face interactions). Compensatory internet use was associated with higher scores on depression for individuals higher in social anxiety, but associated with lower scores on depression for individuals lower in social anxiety. In sum, results of Study 2 suggest that social anxiety, when combined with high levels of compensatory internet use, is associated with poorer well-being.

3.4. General discussion

Our findings across two studies suggest that, whereas individuals higher in social anxiety feel more comfortable when communicating online and use the internet as a place to self-disclose more than in offline contexts, such behavior may be associated with poorer well-being. Multiple possibilities may account for these findings. First, the social comfort and self-disclosure reported by individuals higher in social anxiety in Study 1 may not translate into the formation of satisfying social bonds. Internet engagement may take a largely passive form, such as displaying greater quantities of information on an online social profile (e.g., Facebook; Fernandez et al., in press). Second, attempted self-disclosure may cause individuals higher in social anxiety to anticipate rejection from others as a result (Erwin et al., 2004). This possibility is supported by research showing that individuals higher in social anxiety expect more extreme affective costs (e.g., increased shame and embarrassment) when contemplating social blunders than individuals lower in social anxiety (Moscovitch, Rodebaugh, & Hesch, 2012). Feelings of social inadequacy and anticipated negative evaluation may decrease active engagement in online social media for individuals higher in social anxiety, thus preventing them from reaping the unique benefits of online communication.

A third possibility is that social anxiety may manifest negatively online. Individuals higher in social anxiety tend to maintain a self-protective focus and to respond less to partners' disclosures during conversations, thereby presenting as aloof and distant (Meleshko & Alden, 1993) and often causing the people with whom they interact to experience less satisfaction and positive affect (e.g., Heerey & Kring, 2007; although see High & Caplan, 2009, for an alternative view regarding online contexts). To the extent that similar behaviors appear in online contexts (e.g., self-disclosure that is not sensitive to context; failure to respond to overtures from others), potential friends and acquaintances may feel less inclined to pursue relationships with individuals higher in social anxiety while also forming less positive impressions of these individuals (see Forest & Wood, 2012, for a similar argument regarding individuals with low self-esteem). Such negative reactions from potential online social partners may thus perpetuate a sense of social isolation and poorer well-being for

individuals higher in social anxiety. Importantly, however, Fernandez and colleagues (in press) found that the Facebook profiles of people with higher social anxiety garnered greater likeability judgments than those with lower social anxiety, suggesting that social anxiety may increase likability in online contexts. A crucial factor may be whether online behaviors are static (e.g., profile pages) or fluid (e.g., chatting, messaging); based on research reviewed above, we would expect social anxiety would particularly impair effective communication using fluid methods.

4. Conclusion

Our studies extended previous research by showing that individuals higher in social anxiety view the internet as a more comfortable social medium than offline interactions and self-disclose more online than offline. Yet, individuals higher in social anxiety who frequently engage in online communication report lower levels of self-esteem satisfaction and higher levels of depression, suggesting that their attempts to compensate for offline social inadequacies may fail to improve well-being. Future research should continue to explore the ways in which socially anxious behavior manifests in online contexts, the reactions such behavior elicits from others, and the implications of those interpersonal processes for the well-being of individuals higher in social anxiety.

Acknowledgments

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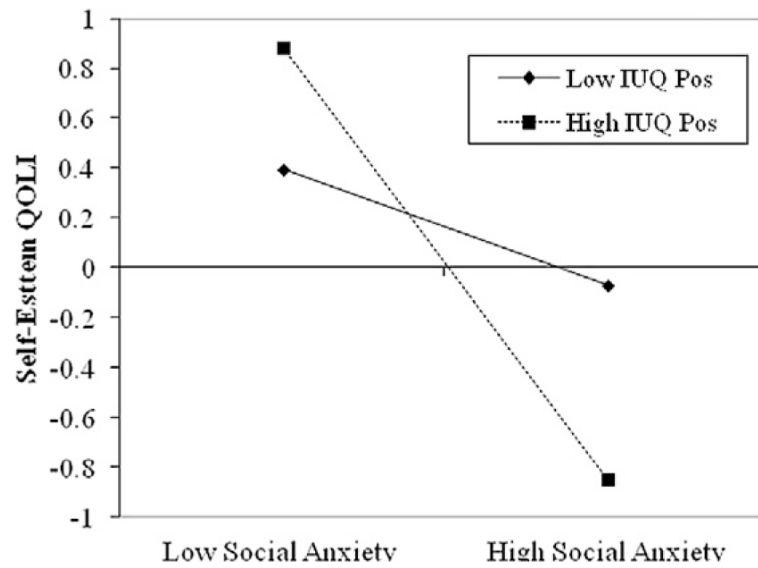
Fig. 1.
Interaction of social anxiety and IUQ-Pos predicting QOLI self-esteem. High and low values of predictors correspond to one standard deviation above and below the mean, respectively. Y-axis scores represent standardized values. Social anxiety = Composite formed by combining the straightforward items of the Social Interaction Anxiety Scale and the total score of the Social Phobia Scale; IUQ Pos = Internet use as a positive substitute for face-to-face interactions subscale of the Internet Usage Questionnaire; Self-esteem QOLI = Self-esteem subscale of the Quality of Life Inventory.
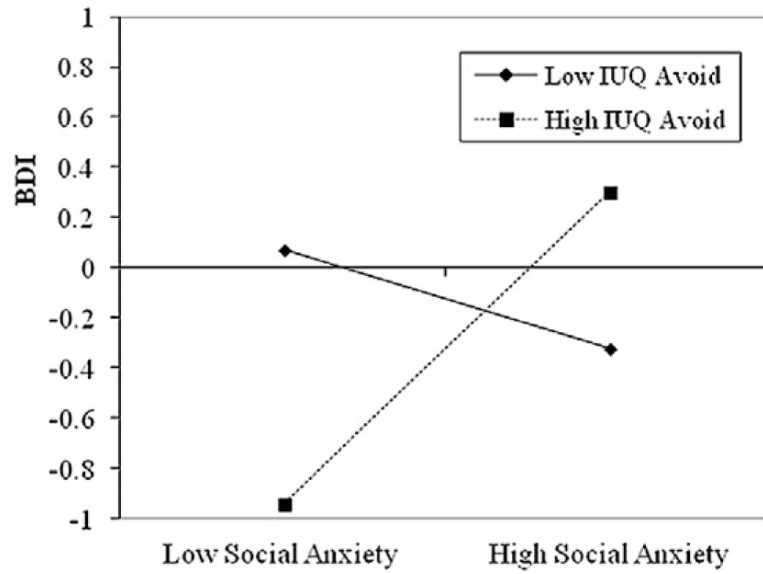
Fig. 2.
Interaction of social anxiety and IUQ-Avoid predicting BDI. High and low values of predictors correspond to one standard deviation above and below the mean, respectively. Y-axis scores represent standardized values. Social anxiety = Composite formed by combining the straightforward items of the Social Interaction Anxiety Scale and the total score of the Social Phobia Scale; IUQ Avoid = Internet use as avoidance of face-to-face interactions subscale of the Internet Usage Questionnaire; BDI = Beck Depression Inventory-II.