The Socially Poor Get Richer, the Rich Get Poorer: The Effect of Online Self-Disclosure on Social Connectedness and Well-Being is Conditional on Social Anxiety and Audience Size

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Abstract

Self-disclosure taking place in computer-mediated communication (CMC) is generally associated with enhanced well-being because it evokes a greater sense of connectedness. It has been established that the magnitude of the benefits reaped from online self-disclosure is conditional on social anxiety (under the lens of the poor-get-richer vs. rich-get-richer hypotheses) or audience size. What remains to be understood is whether those with low (compared to high) social anxiety experience greater social connectedness and subjective well-being in dyadic and/or masspersonal CMC. A sample of 411 Canadian undergraduate students (aged 17–21 years old) self-reported their anxiety in social situations, online self-disclosure in dyadic and masspersonal communication, current feelings of social connectedness, and subjective well-being. Model 7 of the PROCESS macro for SPSS was used to test the indirect effect of online self-disclosure on subjective well-being through feelings of social connectedness, conditioned on values of social anxiety. The model was run separately for dyadic and masspersonal CMC. Online self-disclosure was associated with positive outcomes only for those with high social anxiety. In both contexts, online self-disclosure was associated with enhanced social connectedness and in turn more positive subjective well-being. In contrast, for those with low social anxiety, increases in self-disclosure in masspersonal CMC was associated with decreases in social connectedness and poorer well-being. The indirect effect was not significant for dyadic CMC. Overall, the findings contribute to a more informed understanding of online self-disclosure as a double-edged sword. Theoretical implications for the poor-get-richer and rich-get-richer perspectives are discussed.

Introduction

Computer-mediated communication (CMC) has been appreciated for its potential to enrich relationships and well-being for adolescents and young adults (Verduyn et al., 2017). CMC refers to communication in the form of broadcasting, direct messaging, or liking and commenting that occurs between individuals or social networks

using computer-mediated platforms. Examples of CMC include instant messaging, email, chat rooms, online forums, social network services, and texting (D. Liu et al., 2019). Mirroring offline interactions, sharing personal information about oneself online is generally associated with perceptions of social connectedness and consequently more positive subjective well-being (D. Liu et al., 2019; Verduyn et al., 2017). Considering the variability observed within these effects, however, scholars have claimed that the magnitude of advantages accrued from online self-disclosure varies among users (O'Day & Heimberg, 2021) and social contexts (D. Liu et al., 2019).

Social anxiety has been an important consideration for human-computer interaction. A clear theme apparent in the literature is that people with social anxiety place great value on CMC for alleviating feelings of discomfort in social interactions (Hutchins et al., 2021). Nonetheless, the actual psychological benefits incurred from online encounters, for individuals with low or high social anxiety, are less reliable (Desjarlais et al., 2015). Evidence supports both a poor-get-richer effect (i.e., socially anxious benefit most; Indian & Grieve, 2014) and rich-get-richer effect (i.e., socially comfortable benefit most; Cheng et al., 2019). It is plausible that both effects are accurate, merely in different social contexts. An important distinction in online interactions to consider is dyadic versus masspersonal CMC (Frison & Eggermont, 2016; D. Liu et al., 2019). Under the lens of the many minds problem, as the number of people privy to the message increases so does the level of perceived social risk associated with sharing personal information (Cooney et al., 2020). As group size increases, people are less willing to disclose (Bazarova & Choi, 2014) and their disclosure has less effect on relational outcomes (Desjarlais & Joseph, 2017; Utz, 2015).

What remains to be understood is how audience size influences the benefits reaped by young adults with low and high social anxiety. In other words, do young adults with low (or high) social anxiety experience more positive social connectedness, and in turn subjective well-being, in response to their personal disclosures when messages are sent directly to a friend or when information is shared through masspersonal communication? To address this question, the current study examined if the relationship between online self-disclosure and subjective well-being through social connectedness was stronger for young adults with low or high social anxiety. Online self-disclosure was considered separately for dyadic interactions and masspersonal communication.

It is important to consider young adults' CMC experiences given their prevalent use of CMC, the significance of self-disclosure for maintaining close friendships, and the saliency of social anxiety in this developmental stage. First, CMC is ubiquitous in the social interactions of young adults. In annual surveys from 2015 onwards, approximately nine out of 10 American young adults admitted to using at least one social media site (Auxier & Anderson, 2021). Approximately 70% of 18- to 28-year-olds report accessing social networking sites daily, with half logging on several times a day (Hruska & Maresova, 2020). For young adults, CMC has become a customary means of staying in touch with friends. Socializing and maintaining relationships are the top adopted motives for CMC, which predict greater use of social networking sites and instant messaging (Kircaburun et al., 2020) and online self-disclosure (Hollenbaugh & Ferris, 2014). Moreover, as adolescents approach adulthood their friendships become increasingly intimate in that more and more of their thoughts, feelings, and experiences are shared with friends (Bauminger et al., 2008). Self-disclosure then becomes central to maintaining close friendships. Over and above face-to-face interactions, CMC contributes to social success (Chan, 2015). Online self-disclosure can also promote offline self-disclosure among close friends, which in turn is linked to more positive friendships for young adults (Desjarlais & Joseph, 2017). Alongside the popularity of CMC, the heightened prevalence of social anxiety during young adulthood (Jefferies & Ungar, 2020) makes the potential for online self-disclosure to compensate for social anxiety especially relevant for young adults.

Overall, the findings will contribute to a more profound understanding of the internal and situational factors that influence the psychological consequences of CMC particularly for young adults and refine the poor-get-richer and rich-get-richer hypotheses.

Social Benefits Associated With Positive Online Self-Disclosure

Humans have a basic motive to establish and maintain close relationships and connections with others (Baumeister & Leary, 1995). Close friendships are said to be characterized by a feeling of closeness and connectedness that develops through communication (Perlman & Fehr, 1987; Reis & Patrick, 1996). According to the interpersonal model of intimacy (Reis & Patrick, 1996), this communication is a dynamic process involving self-disclosure and partner responsiveness. The disclosing partner shares personally relevant facts, thoughts, emotions, and experiences with the listening partner. The listening partner responds through reciprocating or

emitting behaviours that convey understanding, validation and caring for their partner. If the disclosing partner perceives the responses as demonstrating understanding, acceptance, validation and care, then the interaction is perceived as intimate (Reis & Patrick, 1996). Such feelings of acceptance and inclusion, which can be termed social connectedness, have strong implications for positive psychological well-being (Luo & Hancock, 2020; Santini et al., 2021).

CMC is designed for individuals to disclose information with members of their social network and for recipients to respond. CMC users are afforded the opportunity to engage in communication that has the potential to enhance social connections and well-being (D. Liu et al., 2019). Over the past two decades scholars have attempted to understand the implications of CMC through the lens of the displacement-stimulation hypotheses (Desjarlais et al., 2015). The displacement hypothesis states that CMC hinders well-being because it redirects time that could have been spent in more meaningful interactions with friends, thereby reducing the quality of those friendships. In contrast, the stimulation hypothesis postulates that CMC is designed to encourage meaningful communication and thus online encounters can be used to maintain and further develop friendships that enhance well-being (Desjarlais et al., 2015). Early studies indicated that time spent online was associated with greater loneliness or depression and thus argued for the displacement hypothesis (Kraut et al., 1998). As CMC became more popular for connecting with offline friends, scales have since tipped in favour of the stimulation hypothesis. Relatively recently, researchers have reported more positive effects of CMC for well-being (D. Liu et al., 2019; Verduyn et al., 2017). This has been attributed to increased self-disclosure when communicating online with friends and the accompanying increase in feelings of social connectedness (Desjarlais & Joseph, 2017; Frison & Eggermont, 2016; Joseph et al., 2019; Utz, 2015).

In summary, self-disclosure is central for the building and maintenance of relationships. It is well established that heightened online self-disclosure with close friends is associated with increased social connectedness and in turn more positive subjective well-being. Accordingly, this positive mediation effect (online self-disclosure on subjective well-being through social connectedness) comprises the core of the hypothesized models (see Figure 1). What is less clear, however, is for whom and under what conditions these benefits are most prevalent. The next sections consider the influence of social anxiety and audience size on this indirect effect.

The Benefits Associated With Self-Disclosure are Qualified by Social Anxiety

Cheng and colleagues (2019) argue that there is a distinction between those who enjoy being with people but are overwhelmed by their heightened concern for unfavorable peer evaluations and those who have a low preference for interpersonal relationships and enjoy being alone. It is the person who is interested in social interactions but who shies away from them that has driven interest in CMC as a potential compensatory tool. Alongside introverted (Dolev-Cohen & Barak, 2013), lonely (Pouwels et al., 2021b) and those with low self-esteem (Valkenburg et al., 2017), people who desire but avoid social interactions can be conceptualized as socially anxious (Lundy & Drouin, 2016). Because of the prevalence of relatively high levels of social anxiety in the general population (about one in three individuals; Jefferies & Ungar, 2020) and the potential of CMC to compensate for their interpersonal difficulties, the current study considered if those with high (or low) social anxiety benefit most from their online self-disclosure.

One category of situations that induces social anxiety involves informal speaking and interaction, or the kind of social encounters that involve conversations with other people (Leary & Kowalski, 1997). Social anxiety is characterized by discomfort, a preoccupation with self-presentation and withdrawal. Those with high social anxiety experience discomfort or apprehension in interpersonal situations, and a strong concern for how they are being perceived and evaluated by others in real or imagined encounters (Leary & Kowalski, 1997). In addition to feelings of anxiety, social anxiety is associated with a range of physiological symptoms, such as blushing, sweating and increases in heart rate (Shalom et al., 2015). The physical signs of anxiety can be detected by others and thus act as an additional source of anxiety within face-to-face interactions. In effect, individuals may avoid engaging (Batool & Zubair, 2018) or withdraw altogether from social situations (Leary & Kowalski, 1997). To avoid humiliation and embarrassment, socially anxious individuals strategically adopt a self-protective communication style typified by a paucity of self-disclosure (Batool & Zubair, 2018), even when with close friends (Li et al., 2020). Potentially, as a result of diminished self-disclosure, those with high social anxiety generally report lower levels of friendship quality (Freitas et al., 2019) and well-being (O'Day et al., 2021).

In contrast to face-to-face interactions, CMC affords users more control of personal information and their self-presentation. The scarceness of nonverbal cues, lack of eye contact and asynchronicity of CMC are relevant for all

users (Shalom et al., 2015). However, those with high social anxiety place greater value on CMC's features for reducing discomfort in social interactions compared to sociable users, facilitating less preoccupation with impression management (Forest & Wood, 2012; Hutchins et al., 2021). In effect, a prominent goal of research has been to understand if CMC is particularly beneficial for those with high social anxiety, often under the lens of two hypotheses (Desjarlais, 2020). In general, the poor-get-richer hypothesis argues that the heightened value that those with high (compared to low) social anxiety place on CMC translates to greater relational and psychological outcomes. The rich-get-richer hypothesis postulates that people behave online much the same way as they behave in real life. Thus, the stronger social skills characteristic of sociable individuals are expected to transfer online resulting in more positive outcomes compared to that which is experienced by their more socially anxious peers (Desjarlais, 2020).

The extant research, however, does not offer a clear position on who reaps the greatest benefits from CMC. Systematic reviews of the literature reveal more support for the rich-get-richer hypothesis (Bowden-Green et al., 2020; Cheng et al., 2019; O'Day & Heimberg, 2021). The synthesis of research indicates that individuals with high social anxiety were less likely to display social activity on their profiles and shared less about their personal lives than those who were less socially anxious (O'Day & Heimberg, 2021) or more extraverted (Bowden-Green et al., 2020). Observers can also pick up on posters' social anxiety. Based on their Facebook profiles, viewers rated individuals with high social anxiety as more socially anxious compared to the profiles of those with lower social anxiety (O'Day & Heimberg, 2021). O'Day and Heimberg (2021) claim that social experiences in the online world mirror that of face-to-face interactions. Similarly, Cheng and colleagues (2019) concluded that although socially anxious individuals may use social networking sites to compensate for their social deficits, their use does not increase social capital. Sociable individuals, on the other hand, were more profitable.

Other researchers argue in support of the poor-get-richer hypothesis (e.g., Desjarlais & Willoughby, 2010; Indian & Grieve, 2014). Differences that are typically observed when face-to-face between those with high and low social anxiety, regarding how often they self-disclose or how personal the information is that they do disclose, disappeared when considering interactions that take place in a digital platform (Caci et al., 2019; Scott et al., 2018). In terms of the benefits reaped from online self-disclosure, researchers have demonstrated situations where those with high social anxiety benefitted while CMC was inconsequential for those with low social anxiety (Desjarlais & Willoughby, 2010; Indian & Grieve, 2014). Results from a longitudinal research study indicate that among adolescents with relatively high social anxiety, boys who engaged in online chat reported more positive friendship quality than those who did not chat (Desjarlais & Willoughby, 2010). Online chat was not related to friendship quality for more sociable adolescent boys. In a cross-sectional survey study, Indian and Grieve (2014) examined if perceptions of social support resulting from Facebook use uniquely influenced subjective well-being separately for groups with low and high social anxiety. For the group with low social anxiety, perceptions of social support derived offline but not on Facebook positively contributed to their subjective well-being. In contrast, only Facebook social support accounted for a significant amount of variance in subjective well-being for the high social anxiety group. Indian and Grieve (2014) concluded that online social support has limited utility in contributing to well-being for those with low social anxiety, but may have a distinctive role for those with high social anxiety. Moreover, comparisons of CMC and face-to-face conversations in the lab have revealed notable differences between those with high and low social anxiety. In two different studies, undergraduate students were asked to get acquainted with a partner face-to-face and/or using CMC (Lundy & Drouin, 2016; Shalom et al., 2015). Participants with high social anxiety perceived CMC to be more successful than face-to-face; whereas, such differences were not observed for those with low social anxiety (Shalom et al., 2015). Similarly, those with high (compared to low) social anxiety experienced greater connectedness within the instant messaging condition, whereas the reverse was observed in the face-to-face condition (Lundy & Drouin, 2016).

Collectively, this body of literature indicates that the relational benefits of online self-disclosure (i.e., friendship quality, connectedness and social capital) are qualified by social anxiety. Although social anxiety was found to moderate the positive effect of online self-disclosure on subjective well-being (Indian & Grieve, 2014), this effect is likely a product of social anxiety's influence on the relationship between online self-disclosure and relational benefits which in turn affect well-being. Accordingly, the current study investigated the indirect effect of online self-disclosure on subjective well-being through social connectedness conditional on social anxiety (see Figure 1). The incongruence in the extant literature, however, signals a need to consider situational factors in this model. It is plausible that the socially "poor" and "rich" may both get richer, just within different online social contexts.

The Effects of Online Self-Disclosure on Social Connectedness: Dyadic vs. Masspersonal Communication

Digital media researchers have indicated a need to segregate dyadic interactions from masspersonal communication (Frison & Eggermont, 2016; Green et al., 2016; Utz, 2015). In the context of the current study, dyadic CMC refers to conversations between the user and a select member of their social network, usually a friend. While dyadic conversations primarily occur through instant messaging or texting, other possible modes of communication include email and direct messaging on social networking sites (Utz, 2015). These one-to-one interactions are generally perceived to be private (Utz, 2015). On the other hand, masspersonal CMC, also known as one-to-many, includes communication that is visible by a much broader and unrestricted audience, such as all friends or followers on social networking sites (Utz, 2015). In masspersonal CMC, a post can be directed toward a single person or multiple people within one's online social network. Unlike dyadic CMC, most or all of one's social network is privy to the information (Utz, 2015). This relatively public method of sharing includes, for example, posting status updates, sharing images, or liking/commenting to an online social network that includes multiple social relationships (Utz, 2015). These messages can reach true friends, acquaintances, classmates, colleagues, teachers, employees or employers, celebrities, and strangers (Utz, 2015).

According to the many minds problem, conversations involving more than two people elicit challenges not apparent in dyadic encounters (Cooney et al., 2020). Participants must negotiate many different relationships (where some topics are appropriate to discuss for one relationship but too intimate for another), manage competing goals for the conversation, and are subject to a greater number of judges. The many minds problem can lead to greater perceived social risk, causing people to be less willing to disclose personal information as group size increases (Cooney et al., 2020). Extending to the virtual world, the number of people privy to shared information appears to influence the degree of online self-disclosure and the intensity of associated benefits. Young adults are more willing to share personal information when instant messaging (which is typically directed to a single person) compared to posting status updates on social networking sites that are visible by a much larger audience (Bazarova & Choi, 2014; Utz, 2015). Even in masspersonal communication fora, as the size of a person's network increases, one's willingness to disclose personal information when posting status updates decreases (Wang et al., 2016). Despite differences for disclosure, enhanced online self-disclosure has been associated with greater feelings of connectedness across the different communication modes, albeit to varying degrees (D. Liu et al., 2019). That is, positive associations were observed when users conversed in relatively private online contexts (Amosun et al., 2021), or more publicly on social networking sites (Utz, 2015) and blogging sites (Z. Liu et al., 2016). The positive effects were found to be stronger for more private venues (Desjarlais & Joseph, 2017; Utz, 2015).

Although there is strong evidence that self-disclosure is positively related to well-being by increasing social connectedness for both dyadic and masspersonal CMC, it is less clear if this is true for all users. To refine the poor-get-richer and rich-get-richer hypotheses, it is crucial to consider the influence of social anxiety on the indirect effect of dyadic and masspersonal CMC on subjective well-being.

The Effects of Online Self-Disclosure on Social Connectedness in Dyadic and Masspersonal Communication are Qualified by Social Anxiety

A clear theme from the aforementioned literature is that the benefits reaped from online self-disclosure are influenced by internal (social anxiety) or situational (audience size) factors. The next step is to understand how internal factors influence psychological benefits within different social contexts. To fill this gap in the literature, the current study addressed the outstanding question: Do individuals who exhibit (low/high) anxiety in social situations experience enhanced social connectedness from online self-disclosure, and in turn more positive subjective well-being, within dyadic and/or masspersonal CMC?

As mentioned earlier, socially anxious individuals tend to place great value on the features of CMC (Hutchins et al., 2021). While some researchers have claimed that this belief does not lead to disinhibition online (O'Day & Heimberg, 2021), Green et al. (2016) demonstrates that these conclusions are a product of the communication channel. The greater value socially anxious individuals placed on online attributes, compared to those with lower social anxiety, did not in turn predict how personal the information was that they posted on their Facebook wall. Conversely, in the context of directly messaging a friend, social anxiety predicted greater value of reduced social cues and controllability which facilitated the disclosure of more personal information. The researchers concluded that CMC which was directed only to a single friend was meaningful for socially anxious individuals in terms of relational outcomes (Green et al., 2016). Similarly, researchers who argued for the rich-get-richer hypothesis based

on their systematic reviews of the literature (Cheng et al., 2019; O'Day & Heimberg, 2021) have based their conclusions on findings primarily from social networking sites (or masspersonal CMC). Conversely, studies of direct messaging offer support for the poor-get-richer hypothesis (Desjarlais & Willoughby, 2010; Lundy & Drouin, 2016; Shalom et al., 2015).

The maintenance of close relationships is dependent not only on self-disclosure, but also on partner responsiveness (Reis & Patrick, 1996), which in masspersonal CMC can take the form of virtual likes and comments. On average, positive status updates elicit more likes compared to negative updates, an effect that is more pronounced for those with high social anxiety (große Deters et al., 2016) or low self-esteem (who, like those with high social anxiety, tend to be hesitant to self-disclose and fear rejection; Forest & Wood, 2012). Because of a tendency to express less positivity and more negativity in their posts, those with low self-esteem are less likely to receive responses from their online social network than those with high self-esteem (Forest & Wood, 2012). Given that responsiveness from one's online social network is associated with an enhanced sense of belonging (Chua & Chang, 2016), those who struggle socially may benefit more in dyadic CMC—where negative posts are less frowned upon (B. Liu & Kang, 2017).

In sum, although the literature is mixed, more evidence supports the rich-get-richer hypothesis when considering masspersonal CMC, but the poor-get-richer hypothesis in the context of dyadic CMC.

Hypotheses

The current study examined if social anxiety moderated the indirect effect of online self-disclosure on subjective well-being through social connectedness. This model was tested separately for dyadic CMC and masspersonal CMC within a sample of young adults (see Figure 1). Young adults' CMC experiences were of particular interest given their prevalent use for maintaining close friendships (Chan, 2015), the significance of self-disclosure for maintaining close friendships (Bauminger et al., 2008), and the saliency of social anxiety in this developmental stage (Jefferies & Ungar, 2020). Collectively, the extant literature proposes that personal information shared with others in both dyadic and masspersonal CMC is positively related to subjective well-being by increasing social connectedness (D. Liu et al., 2019). One purpose of the present study was to test the reliability of this mediation effect. The following were predicted:

H1: Dyadic online self-disclosure positively influences young adults' subjective well-being through its positive influence on social connectedness.

H2: Masspersonal online self-disclosure is positively associated with young adults' subjective well-being through its positive influence on social connectedness.

To extend the previous research, the current study also investigated if the positive indirect effects of self-disclosure in dyadic and masspersonal CMC on subjective well-being were stronger for those with high or low social anxiety. Under the lens of the poor-get-richer and rich-get-richer hypotheses (Desjarlais, 2020) in combination with the many minds problem (Cooney et al., 2020), the following hypotheses were generated:

H3: The indirect effect of online self-disclosure on young adults' subjective well-being through its influence on social connectedness (as outlined in H1) in the context of dyadic CMC will be stronger for people with higher (compared to lower) social anxiety (see Figure 1A).
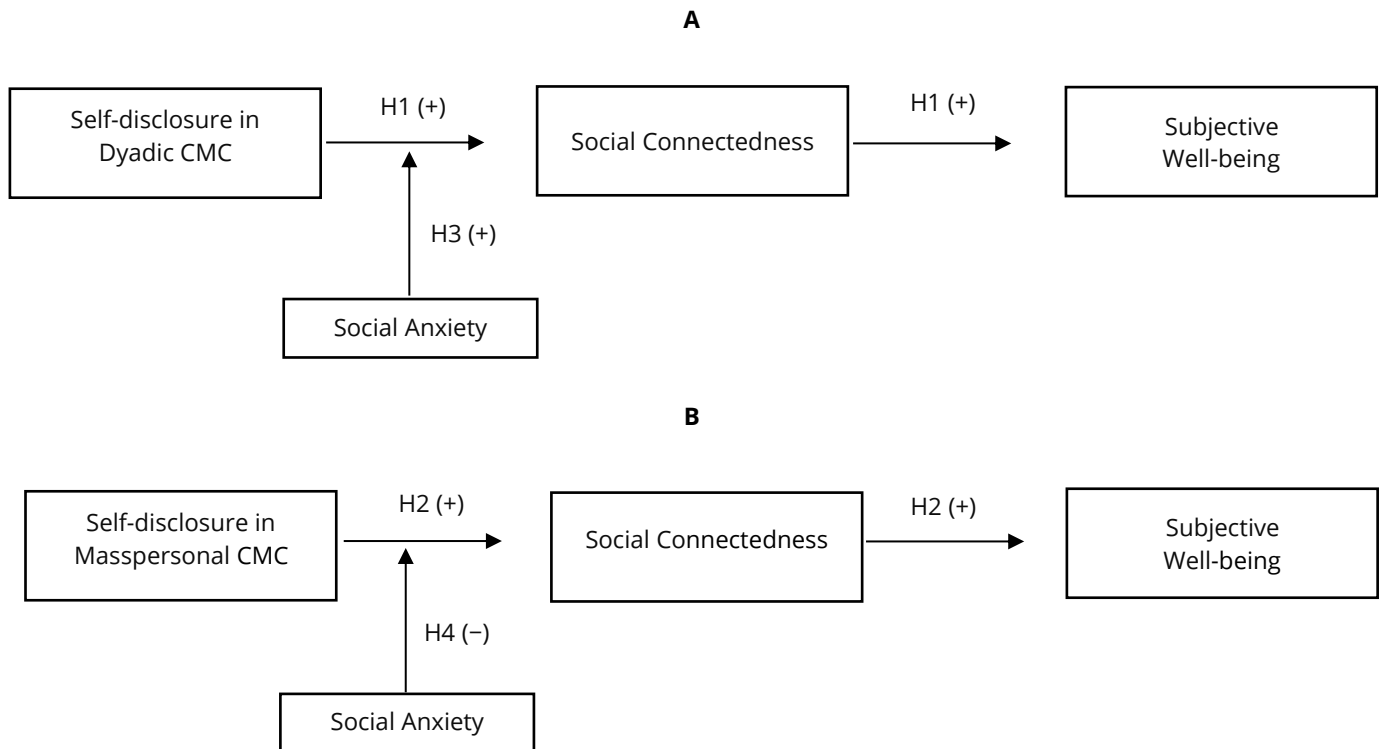
H4: The indirect effect of online self-disclosure on young adults' subjective well-being through its influence on social connectedness (as outlined in H2) in the context of masspersonal CMC will be stronger for people with lower (compared to higher) social anxiety (see Figure 1B).

Methods

Participants

A convenience sample of 427 undergraduate students between the ages of 17[1] and 21 years old (*M* = 19.22, *SD* = 1.15) provided consent to participate in the current study. In the end, 411 young adults (332 females, 79 males[2]) provided data across all measures for the study and thus comprised the final sample included in the analyses.

A

| Self-disclosure in Dyadic CMC | → H1 (+) → | Social Connectedness | → H1 (+) → | Subjective Well-being |

H3 (+)

Social Anxiety

B

| Self-disclosure in Masspersonal CMC | → H2 (+) → | Social Connectedness | → H2 (+) → | Subjective Well-being |

H4 (−)

Social Anxiety

Note. Panel A: Illustrates the hypothesized model of the indirect effect of online self-disclosure dyadic CMC on subjective well-being through social connectedness conditional on social anxiety. Panel B: Illustrates the hypothesized model of the indirect effect of self-disclosure within masspersonal CMC on subjective well-being through social connectedness conditional on social anxiety.

Procedure

The current study is part of a larger project designed to examine online interactions among close friends, which obtained approval from the Human Research Ethics Board of the corresponding author's institution. Data collection occurred between February 2017 and December 2017. Participants between the ages of 17 and 21 years of age who were completing an introductory psychology course at the time were recruited from a Western Canadian undergraduate university. A recruitment script was posted on an online participant pool management platform (SONA). Interested students who clicked the provided web link were directed to the online survey. Respondents first reported their age to ensure they met the inclusion criteria, provided informed consent, and then were directed to the survey. To maintain participant anonymity, the pre-screening information (age and consent) was recorded and maintained separately from responses pertaining to self-identified gender and the scales of interest. The scales were presented in the order in which they are described below. All participants took less than 20 min to complete the entire survey. Course credit was provided in return for volunteering to take part in the present study.

Measures

Table 1 presents the reliability indices (Cronbach's α) of the scales included in the current study.

Social Anxiety

Social anxiety was assessed using the 13-item revised Cheek and Buss Shyness Scale (Cheek & Buss, 1981). Although titled as shyness, the scale captures subjective anxiety and social awkwardness, which are key aspects of social anxiety (Leary & Kowalski, 1997). Participants rated how characteristic each item was on a scale from 1 (*very uncharacteristic or untrue of me*) to 5 (*very characteristic or true of me*). An example item on the scale was *I am often uncomfortable at parties and other social functions*. Scores were averaged and higher scores indicated greater discomfort with social situations.

Self-Disclosure

Online self-disclosure was assessed using a 5-item questionnaire from Valkenburg and Peter's (2009) study, which was refined to assess the depth of personal information that young adults share with their close friends in dyadic and masspersonal CMC. The scales asked to what degree respondents disclosed with close friends across five relatively intimate topics, including personal feelings, worries, love, secrets, and shame. Participants were asked how much they usually tell their close friends, on a scale from 1 (*nothing about it*) to 5 (*everything about it*), regarding each of the five topics, first during dyadic CMC (one-to-one messaging) and then masspersonal CMC (one-to-many messaging). Participants were presented with the following definitions of the social contexts: *ONE to ONE MESSAGING refers to instances where you are using text-based technology to communicate privately with one person, where only the person that the message is sent to can view and respond to you (e.g., text messages, e-mail, Facebook messenger, Snapchat).* In contrast, *ONE TO MANY MESSAGING refers to instances where you share information, either to one friend or many friends, where the information is posted publicly. Multiple people are able to view and may respond to it (e.g., Facebook, Instagram or Snapchat community posts, Tweets).* The items were averaged to provide a self-disclosure score for each social context, with higher scores indicating deeper levels of self-disclosure.

Social Connectedness

The 7-item alienation subscale from the Peer Attachment Scale (Armsden & Greenberg, 1987) was used to assess feelings of social connectedness with close friends. Participants rated how true each statement was of them (on a scale from 1 = *almost never/never true* to 5 = *almost always/always true*). An example of the items is: *My close friends don't understand what I'm going through these days*. All items were reverse coded and then averaged so that higher values represent stronger feelings of social connectedness with close friends (or lower levels of alienation).

Subjective Well-Being

Cognitive subjective well-being was assessed using Chan's (2015) adaptation of Diener et al.'s (2009) Psychological Well-being Scale. Participants were asked to indicate the degree to which they agreed or disagreed with each of the eight statements (e.g., *I lead a purposeful and meaningful life*) on a scale from 1 (*strongly disagree*) to 6 (*strongly agree*). The scores were averaged resulting in higher scores indicating more positive subjective well-being.

Approach to Analysis

The data were analyzed using SPSS 26 and PROCESS 3.5, which is an add-on macro for SPSS developed by Hayes (2020). PROCESS uses the principles of ordinary least squares regression to establish unstandardized coefficients as indicators of the strength of relationship between variables. Using Model 7 (see Hayes, 2017), social anxiety was included as moderator of the first stage (self-disclosure → social connectedness) in the mediation model (refer to Figure 1). Due to the unequal distribution of males and females, gender was included as a covariate. As PROCESS only allows for a single predictor variable (online self-disclosure), the analysis was run separately for dyadic (see Figure 1A) and masspersonal (see Figure 1B) CMC. Bootstrapping analyses used 5,000 samples at the 95% confidence interval. The variables were mean centered prior to entering them into the models.

Conditional indirect (moderated-mediation) effects would be supported by a non-zero index of moderated mediation, in which the 95% confidence interval does not contain zero. Significant moderation effects were probed using the pick-a-point method prescribed by Hayes (2017). To probe the moderation of the indirect effect, the bootstrap method provides estimates of the conditional indirect effect of self-disclosure on subjective well-being through social connectedness at various values of social anxiety and conducts inferential tests of the effect at those values. Specifically, the indirect effect would be considered at low (16th percentile), medium (50th percentile) and high (84th percentile) levels of social anxiety. Note, a significant index of moderated mediation also indicates that the indirect effects are statistically different from each other.

Model 7 also tests a direct effect of online self-disclosure on subjective well-being. The direct effect represents how much two people (equal in social anxiety and social connectedness) that differ by one unit in self-disclosure in dyadic/masspersonal CMC are estimated to differ in their subjective well-being. The purpose of the current study was not to derive a complex model, but rather to specifically test social anxiety as a moderator of the indirect

effect. In accordance with this purpose and Hayes (2017), the direct effect was not hypothesized to be moderated and thus not estimated as such.

Results

Descriptive Statistics

Table 1 presents the means, standard deviations, and correlations among the variables in the models. According to the means, participants reported moderate levels of self-disclosure when conversing with a single friend, social anxiety, social connectedness, and subjective well-being. Self-disclosure was relatively infrequent during masspersonal CMC. A paired-samples t-test was performed as an a posteriori test to determine if the difference between self-disclosure rates was statistically significant. Online self-disclosure was greater when sharing with a single friend than to a larger audience, $t(411) = 18.98$, $p < .001$, $d = .99$. The correlations highlight the bivariate relationships between variables in the models (see Table 1). Social connectedness was related to online self-disclosure in dyadic CMC ($r = .13$, $p = .008$) but not in masspersonal CMC ($r = .02$, $p = .658$). Social connectedness was positively associated with subjective well-being ($r = .44$, $p < .001$).

Table 1. *Descriptive Statistics, Correlations and Reliability Indices for Study Variables.*

	1	2	3	4	5	M (SD)	Range
1. Dyadic CMC Self-disclosure	.87					2.76 (0.94)	1.00–5.00[a]
2. Masspersonal CMC Self-disclosure	.40**	.91				1.83 (0.86)	1.00–5.00[a]
3. Social Anxiety	−.09	−.08	.88			2.79 (0.72)	1.00–4.77[a]
4. Connectedness	.13**	.03	−.37**	.75		3.60 (0.68)	1.86–5.00[a]
5. Well-being	.12*	.06	−.45**	.43**	.91	4.76 (0.88)	1.63–6.00[b]

Note. N = 411. Italicized values in the diagonal represent Cronbach's α for the scale in the present study. [a] The potential range for scores on the scale was 1 to 5. [b] The potential range for scores on the scale was 1 to 6. *$p < .05$. **$p < .01$.

Table 2. *Results of Moderated-Mediation Models.*

Online Context	Connectedness				Subjective well-being			
Variables	B	SE	95% CI	p	B	SE	95% CI	p
Dyadic CMC	$R^2 = .16$, $F(4, 406) = 18.60$, $p < .001$				$R^2 = .19$, $F(3, 407) = 33.30$, $p < .001$			
Gender	.01	.08	[−.15, .16]	.937	.23	.10	[.03, .43]	.025
Self-disclosure	.07	.04	[.01, .14]	.031	.05[a]	.04	[−.03, .13]	.263
Social anxiety	−.34	.04	[−.42, −.26]	<.001				
Disclosure X Anxiety	.10	.04	[.02, .18]	.020				
Connectedness					.55[b]	.06	[.43, .66]	<.001
Masspersonal CMC	$R^2 = .16$, $F(4, 406) = 18.92$, $p < .001$				$R^2 = .20$, $F(3, 407) = 33.18$, $p < .001$			
Gender	.04	.08	[−.11, .20]	.570	.25	.10	[.05, .44]	.014
Self-disclosure	.01	.04	[−.06, .08]	.705	.05[a]	.05	[−.04, .13]	.323
Social anxiety	−.35	.05	[−.43, −.26]	<.001				
Disclosure X Anxiety	.15	.05	[.06, .24]	.001				
Connectedness					.55[b]	.06	[.44, .67]	<.001

Note. Gender (0 = male, 1 = female) was included as a covariate. Effects values are represented by unstandardized regression coefficients based on variables that were mean centered. Self-disclosure = predictor (X); Connectedness = mediating factor (M); Social anxiety = moderating factor (W). [a] The coefficient pertaining to self-disclosure as a predictor of subjective well-being represents the direct effect. [b] The coefficient pertaining to the second stage of the mediation model.

Testing the Moderated-Mediation Models

Results of the moderated-mediation analyses pertaining to the individual path coefficients in the two models are detailed in Table 2. For significant moderation effects, the estimates of the conditional indirect effects at various values of social anxiety are presented in Table 3. Estimates for the effect of online self-disclosure in dyadic and

masspersonal CMC on social connectedness at low, moderate, and high levels of social anxiety are presented in Table 4.

Table 3. *Conditional Indirect Effects of Online Self-disclosure on Subjective Well-Being (Through Social Connectedness) at Values of Social Anxiety.*

Online Context			
Values of Moderator	Index	*SE*	95% CI
Dyadic CMC			
Low Social Anxiety	.001	.02	[−.04, .04]
Moderate Social Anxiety	.04*	.02	[.001, .08]
High Social Anxiety	.08*	.03	[.02, .14]
Masspersonal CMC			
Low Social Anxiety	−.05*	.02	[−.10, −.01]
Moderate Social Anxiety	.006	.02	[−.04, .04]
High Social Anxiety	.07*	.03	[.002, .12]

Note. Effects values are represented by unstandardized regression coefficients based on variables that were mean centered. Values for social anxiety were as follows: Low (16th percentile) = −.71; Moderate (50th percentile) = −.01; High (84th percentile) = .75. *95% CI that do not contain zero are statistically significant.

Table 4. *Conditional Effects of Online Self-Disclosure on Social Connectedness at Values of Social Anxiety.*

Online Context			
Values of Moderator	*B*	*SE*	95% CI
Dyadic CMC			
Low Social Anxiety	.002	.04	[−.08, .09]
Moderate Social Anxiety	.07*	.03	[.01, .14]
High Social Anxiety	.15*	.05	[.05, .24]
Masspersonal CMC			
Low Social Anxiety	−.09*	.05	[−.18, −.0002]
Moderate Social Anxiety	.01	.04	[−.06, .08]
High Social Anxiety	.12*	.05	[.02, .23]

Note. Effects values are represented by unstandardized regression coefficients based on variables that were mean centered. Values for social anxiety were as follows: Low (16th percentile) = −.71; Moderate (50th percentile) = −.01; High (84th percentile) = .75. *95% CI that do not contain zero are statistically significant.

Dyadic CMC: Testing H1 and H3

Online self-disclosure in dyadic CMC did not directly predict subjective well-being but did predict higher social connectedness. More positive social connectedness was associated with enhanced subjective well-being (see top-half of Table 2). However, adding the interaction to the model (self-disclosure x social anxiety) significantly increased the amount of variance explained in social connectedness (ΔR^2 = .011, F(1, 406) = 5.42, p = .020). In addition, controlling for gender, the index of moderated mediation was statistically significant (B = .055, SE = 0.022, 95% CI [.01, .10]). Thus, the indirect effect of online self-disclosure in dyadic CMC on subjective well-being through feelings of connectedness operates differently depending on the level of social anxiety. The indirect effect was statistically significant and positive for those with moderate and high levels of social anxiety, but not significant for those with low social anxiety (see the top-half of Table 3). Also, the indirect effect was strongest for those with high levels of social anxiety, where a case 1 unit higher for online self-disclosure in dyadic CMC is estimated to be .08 units higher on subjective well-being.

The following elaborates on the effect of online self-disclosure on social connectedness across the three levels of social anxiety (see the top-half of Table 4 for estimates). At moderate and high levels of social anxiety online self-disclosure in dyadic CMC significantly predicted increased social connectedness. However, for those with low

levels of social anxiety, the effect was not different from zero and online self-disclosure did not affect sense of social connectedness.

Masspersonal CMC: Testing H2 and H4

Online self-disclosure in masspersonal CMC did not directly predict subjective well-being or social connectedness, but more positive social connectedness predicted enhanced subjective well-being (see bottom-half of Table 2). Adding social anxiety as a moderator to the model significantly increased the amount of variance accounted for in social connectedness (ΔR^2 = .02, F(1, 406) = 10.34, p = .001). Controlling for gender, the index of moderated mediation was statistically significant (B = .08, SE = 0.02, 95% CI [.03, .13]), indicating that the first stage of the mediation model was moderated. In other words, the indirect effect of online self-disclosure in masspersonal CMC on subjective well-being through feelings of connectedness was conditional on social anxiety. As outlined in the bottom-half of Table 3, the indirect effect was statistically significant for those with low and high levels of social anxiety. The indirect effect did not differ from zero for those at moderate levels. While the indirect effect was positive for those with high social anxiety, a negative effect was observed when social anxiety was low. A case 1 unit higher for online self-disclosure in masspersonal CMC is estimated to be .05 units lower on subjective well-being for those with low social anxiety, but .07 units higher on subjective well-being when social anxiety was high.

The following elaborates on the conditional effect of online self-disclosure on social connectedness (see the bottom-half of Table 4). The effect of masspersonal CMC on social connectedness was different at all three levels of social anxiety. When social anxiety was high, online self-disclosure in masspersonal CMC significantly predicted increases in social connectedness. In contrast, online self-disclosure in masspersonal CMC was associated with decreased levels of social connectedness for those with low social anxiety and did not affect a sense of social connectedness for those with moderate social anxiety.

Discussion

To fine-tune the rich-get-richer and poor-get-richer hypotheses, the current study investigated the indirect effect of self-disclosure in dyadic and masspersonal CMC on subjective well-being through social connectedness for young adults (17–21 years of age) with low and high levels of social anxiety. As youth heavily rely upon CMC for connecting with friends (Kircaburun et al., 2020) and social anxiety is most prevalent during young adulthood (Jefferies & Ungar, 2020), understanding the conditions in which online self-disclosure may support those with high social anxiety is especially relevant for young adults. According to the extant literature, personal information shared with others in dyadic and masspersonal CMC increases social connectedness and in turn enhances subjective well-being (Amosun et al., 2021; D. Liu et al., 2019; Utz, 2015). The current study not only identified constraints for the benefits associated with online self-disclosure but also unveils potential hampering effects for young adults. Specifically, the predicted positive effect of self-disclosure in dyadic and masspersonal CMC on subjective well-being through its positive influence on social connectedness (H1 and H2, respectively) was observed; however, this effect was restricted to those with high social anxiety (supporting H3 and the poor-get-richer hypothesis). Unexpectedly, for those with low social anxiety, social connectedness was unrelated to online self-disclosure in dyadic CMC and negatively related in masspersonal CMC, refuting the rich-get-richer hypothesis (and H4). In effect, the current study contributes to a more profound understanding of the poor- versus rich-get-richer hypotheses.

First, the findings in the current study validate the poor-get-richer hypothesis across multiple online social contexts commonly used by young adults. The positive effect of online self-disclosure on subjective well-being through increases in social connectedness was strongest for those with high social anxiety in both dyadic and masspersonal CMC. Based on the correlation analyses, however, increases in social anxiety were associated with decreases in self-disclosure in dyadic CMC. Mirroring face-to-face interactions among close friends (Li et al., 2020), those with high social anxiety were still more withdrawn when communicating online compared to those with lower anxiety. Despite such discrepancies, one possible explanation is that sharing personal information with close friends online carried more meaning for socially anxious young adults. This is in line with previous reports that have shown that both direct messaging (Green et al., 2016) and posting on social networking sites (große Deters et al., 2016) were especially meaningful for socially anxious individuals. The visual anonymity afforded by CMC may reduce or eliminate concerns regarding nonverbal self-presentation that socially anxious individuals have within face-to-face interactions. In effect, socially anxious young adults may be able to be present in and

enjoy the social situation when online, resulting in positive effects for their social connectedness and subjective well-being.

Second, the findings reveal potential hampering effects of online self-disclosure for some users. Not only was the rich-get-richer hypothesis unsupported, but more personal disclosure in masspersonal CMC was associated with poorer social connectedness, and in turn less positive subjective well-being for the socially rich. Although unexpected, these findings are consistent with a very recent report in which psychosocial outcomes were compared between the socially rich and poor as determined by their level of loneliness (Pouwels et al., 2021b). They found that adolescents who were less lonely were more likely to experience decreases in friendship closeness after using social media than lonelier peers. Reminiscent of early CMC studies (Kraut et al., 1998), the current findings suggest a social displacement effect for those with low social anxiety. Why may the scales have tipped from social stimulation back to displacement in this context? According to the interpersonal model of intimacy, feelings of closeness derive from a combination of self-disclosure and partner responsiveness (Reis & Patrick, 1996). Some of the purported benefits of social sharing imply the need for an audience that is familiar and responsive (Lin et al., 2014). On the one hand, masspersonal messaging may not prompt the level of response equivalent to when information is shared face-to-face. Forest and Wood (2012) suggest that friends on social networking sites respond through likes and comments more to messages that are out-of-character for posters. Applying this logic, since those with low social anxiety likely disclose information to their friends when one-on-one (offline and online), the further disclosure of information on masspersonal CMC may be considered as part of their character. Masspersonal online self-disclosure may induce relatively low engagement from their close friends, resulting in posters feeling disconnected.

Moreover, most of the research supporting benefits for the socially rich has been based on Facebook use (Bowden-Green et al., 2020). However, the number of Facebook users in Canada have been declining over the past few years (Pokrop, 2019); while about 70% of respondents admit to still checking Facebook, 90% regularly visit Instagram (Desjarlais, 2021). Pouwels et al. (2021a) reported that adolescents felt less close to their friends after using Instagram in the past hour compared to times when they had not used Instagram. While Facebook is a platform intended for connecting with friends and networking, Instagram's focus is on capturing moments and sharing them with the world. Therefore, one's audience on Instagram generally includes many more strangers than that on Facebook (Lup et al., 2015), having implications for a feeling of community and support. Responses to personal information shared on currently popular social networking sites are more likely to come from people with whom the poster does not share a close friendship. Since those who are more sociable maintain a larger online social network (Bowden-Green et al., 2020), the likelihood of these young adults receiving responses from people other than their close friends is heightened further. For a more profound understanding of why those with low social anxiety experience decreases in social connectedness, additional research regarding the effect of social reward in response to posts on social networking sites is required.

Beyond the proposed models, the current study also underscores the importance of audience size for online self-disclosure. Consistent with previous reports (Bazarova & Choi, 2014), the comparison of self-disclosure across CMC contexts revealed that disclosure was less personal when shared in masspersonal compared to more private dyadic online contexts. These observations suggest that young adults perceive boosts in social risk as the number of people privy to the shared message increases, even if the information is targeted toward close friends. Not only do individuals face the many minds problem during in-person interactions (Cooney et al., 2020), but this is evidence that the problem also extends to the virtual world.

Strengths, Limitations, and Directions for Future Research

This is the first study to examine the poor- and rich-get-richer hypotheses within different online social contexts. Separating dyadic from masspersonal CMC and investing social anxiety as a moderating factor resulted in a clearer picture of the various psychological constructs at play. This study provides valuable insight into the differing effects of online self-disclosure depending on social anxiety: Although the socially poor may get richer, similar online behaviours appear to result in the socially rich getting poorer. These findings pave the way for CMC to be used as a tool to support those with high social anxiety. During their regular use of CMC, socially anxious young adults could make the effort to share something personal (and positive) about themselves with a close friend. Instead of refraining from sharing with one's social network, sociable young adults could consider making better use of CMC. Using existing functions present in masspersonal communication apps, such as tagging, users can target

messages to close friends. This may facilitate friend responsiveness and be a step toward making online self-disclosure meaningful again.

The relationships in the current study should be interpreted with respect to some limitations. First, the current study focused solely on self-disclosure directed toward close friends. Since the purpose of the present study was to evaluate the behaviour of socially anxious and non-socially anxious young adults as a function of audience size, the measure of online self-disclosure alone is appropriate here. Nonetheless, partner responsiveness that conveys understanding, acceptance and caring is equally important for social connectedness (Perlman & Fehr, 1987; Reis & Patrick, 1996). Social feedback online, which can take the form of direct replies, comments or likes, is often regarded as an indicator of social acceptance and has been found to influence both feelings of belonging and well-being (Chua & Chang, 2016). Also, focusing on close friendships makes it impossible to be certain of the benefits (or pitfalls) users may experience in terms of social connectedness in larger social networks. Future research could address these more completely by examining both self-disclosure and corresponding social feedback in additional social contexts. Second, the cross-sectional nature of the current study means that the direction of effects and longer-term processes cannot be identified with certainty. Research has identified bi-directional relationships regarding CMC use and well-being (Nesi et al., 2017). While this supports the causal relationships presented in the current study, it also suggests that the current study refers to a segment of a more complex model. Future work that incorporates longitudinal and experimental methods would clarify the causal nature of the relationships investigated in the current study.

The online social contexts and the composition of the sample included in the current study have implications for the generalizability of the findings. CMC was classified into two relatively broad categories, distinguishable primarily by the number of people privy to the personal information. As such, conversations taking place among small groups of friends were not represented here. Furthermore, the sample was composed of young adults (17-21 years old) who predominantly self-identified as female. The study intentionally focused on a sample of young adults because of their heavy use of CMC, the importance of self-disclosure for maintaining close friends and heightened social anxiety compared to other developmental stages. Given that most research cited here reported similar effects of online behaviours on psychosocial outcomes for adolescents and young adults, the current findings may extend to adolescents. On the other hand, young adults possess higher levels of privacy concern than older and younger (adolescent) users (Dhir et al., 2017), resulting in a tendency to disclose less information online (Nosko et al., 2010) and greater use of privacy-preserving strategies (Madden & Smith, 2010). In effect, self-disclosure in masspersonal CMC would, on average, reach a broader audience for adolescents than young adults. The negative effect of self-disclosure in masspersonal CMC for social connectedness observed among sociable young adults may be even more pronounced for adolescents. Investigations of age differences or levels of privacy concerns as a moderating factor would further clarify the rich-get-poorer perspective identified in the current study. To address the unequal distribution of males and females, gender was controlled for in the models. Although gender was not a statistically significant predictor of social connectedness, females reported more positive levels of subjective well-being. There is a potential for the observed relationships to be driven by the nature of women's self-disclosure which may not extend to online disclosures shared by men. Overall, more research is needed to determine if the nuances of CMC platforms influence the benefits (and disadvantages) reaped for a broader user base.

Conclusion

The present study refines the social compensation-enhancement literature by considering situational and internal factors that influence the benefits users reap from online self-disclosure. Sharing personal information online can be both enriching and unexpectedly hampering for social connectedness (and subjective well-being), depending on the social anxiety of the person who is sharing and how many people are privy to the shared information. The findings corroborate the poor-get-richer hypothesis and propose reconsideration of the social displacement hypothesis for those who are sociable (or a rich-get-poorer hypothesis). Resurgence of this latter negative effect may be explained by the nuances of everchanging popular social networking sites. A clear theme from the present findings is that a one-size-fits-all perspective is not appropriate when we consider the benefits of online self-disclosure.

Footnotes

[1] Based on ethics protocols at the author's institution, university students can consent on their own behalf even though they may not yet be 18 years old. It is deemed that they have sufficient capacity to make this determination.

[2] The distribution of females and males represent that which is present in the university's undergraduate introductory psychology courses.

Conflict of Interest

The author does not have any conflicts of interest to report.

Author's Contribution

This study was devised and conducted by Malinda Desjarlais.

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