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CHAPTER 7

Does Self-Disclosure on Social Networking Sites Enhance Well-Being? The Role of Social Anxiety, Online Disinhibition, and Psychological Stress

Tommy K. H. Chan

ABSTRACT:

The proliferation of social networking sites (SNSs) has drawn attention to different parties in realizing their goals. Advertisers utilize SNSs to promote new products and services; politics optimize SNSs to gather support from the public, while ordinary users use SNSs as a unique platform to practice self-disclosure, develop networks, and sustain relationships. This study explores how social anxiety affects self-disclosure on SNSs and well-being. It also examines the moderating effects of two contextual factors, namely, online disinhibition and psychological stress. Two hundred and thirty-four valid responses were collected via an online survey. A positive relationship between social anxiety and self-disclosure, and self-disclosure and well-being was found. Furthermore, a positive moderation effect among social anxiety, online disinhibition, and self-disclosure was revealed. This research contributes to the development of social networking literature. It also enhances the understanding of disclosure patterns on SNSs among socially anxious individuals, thereby providing important insights for practitioners, educators, and clinicians.

KEYWORDS: Self-Disclosure, Social Networking Sites, Social Anxiety, Well-Being, Online Disinhibition, Psychological Stress

1.   INTRODUCTION

Stepping into the new cyber era, social networking sites (SNSs) have undeniably transformed online interaction's nature and extent. SNSs such as Facebook, Twitter, and Instagram are online platforms that foster relationships and networking on the Internet. People with similar interests, views, and backgrounds can get connected via these platforms. Recent research revealed that the total number of social networking users worldwide is astonishing—more than half of the world now uses social media. SNS users have grown by more than ten percent over the past year, taking the global total to 3.96 billion by July 2020 (DataReportal, 2020). Social networking is one of the most popular online activities in 2019 among adult Internet users, soundly trouncing online shopping or using financial services, streaming or downloading music, radio, podcasts, etc. (Statista.com, 2020).

The proliferation of SNSs has drawn scholars' attention on whether SNSs could be an alternative medium for some individuals to practice self-disclosure, develop a more intimate relationship, thus achieve their interpersonal goals (Green et al., 2016; Luo & Hancock, 2020; Nguyen et al., 2012). Preliminary studies have advocated that the online context stimulates self-disclosure compared to its offline counterparts (McKenna & Bargh, 2000; Peter & Valkenburg, 2006). However, a systematic review conducted by Nguyen et al. (2012) suggested that self-disclosure was not consistently found to be greater in the online contexts. The tendency for one to engage in online self-disclosure is potentially altered by contextual factors such as the relationship between the communicators, the specific mode of communication, and the interaction's context.

The assumption that self-disclosure is enhanced in an online context is often explained with a number of computer-mediated-communication theories, models, and hypotheses (Walther, 2011), such as social presence theory (Short et al., 1976), the lack of social context cues hypothesis (Sproull & Kiesler, 1986), information richness theory (Daft & Lengel, 1983), the social identity model of deindividuation (SIDE model), with the most prominent one being the hyperpersonal communication model (Walther, 1996). According to the hyperpersonal communication model (Walther, 1996), online interaction can be hyperpersonal because it offers a sender various communicative advantages than face-to-face communication. Specifically, a message sender can strategically develop and adjust the content to be presented, which gives him/ her the opportunity to be engaged in a selective and optimized presentation of oneself to others without the need to look into others' eyes and fears of others' evaluation. As a result, it renders the feeling of online disinhibition—a psychological state when individuals become loosen up and feel less restrained to perform certain behaviours in the online environment (Cheung et al., 2020; Suler, 2004).

Performing self-disclosure has been linked to achieving interpersonal advantages and maintaining one's mental health state when under stress (Zhang, 2017). The research on offline self-disclosure has long recognized the importance and benefits of expressing oneself (Jourard, 1964; Moriwaki, 1973; Toukmanian & Brouwers, 1998). Jourard (1959) contended that the ability to disclose is one of the prerequisites for a healthy personality. Stiles et al. (1992) suggested that people need a higher disclosure level when under distress. As Sloan (2010) mentioned, "*Humans have a natural tendency to share their thoughts and feelings with others, and this tendency is even stronger when they experience a very unpleasant or pleasant life event* (p.212)". Self-disclosure is said to alleviate stress and improve well-being by promoting self-understanding and catharsis. It also allows one to receive supports from others who might be unaware of their needs and difficulties.

While the benefit of self-disclosure has been recognized in the literature, not everyone can disclose what he/she wants, particularly in a face-to-face situation. In the US, social anxiety is estimated to be affecting roughly 15 million adults, seriously affecting their daily activities (National Institute of Mental Health, 2013; Neuenschwander, 2013). In extreme cases, social anxiety could turn into a disorder—about 50% of children and 80% of the young adults experienced social anxiety disorder. Individuals suffer from social anxiety disorder fear and avoid the scrutiny of other people. Due to the fear of audience apprehension (i.e., saying or doing something that will result in embarrassment or humiliation in public), socially anxious individuals tend to avoid interpersonal encounters or endures such situations with intense discomfort. Social anxiety is not merely shyness but a risk factor for depressive illness and substance abuse (Stein & Stein, 2008).

The prevalence of SNSs and the practice of online self-disclosure in such platforms has shed light on new directions to address social anxiety as a form of technology-based interventions (Alden & Taylor, 2004; Heerey & Kring, 2007; Weidman et al., 2012). Specifically, when ordinary people could simply talk to their close friends and share the difficulties they have encountered, socially anxious individuals sometimes have nowhere or no way to seek support. Performing self-disclosure on SNSs might be an alternative for this group of individuals. SNSs unfetter unwanted non-verbal cues or multiple conversational demands that socially anxious individuals would generally encounter in face-to-face communication and allow them to communicate and interact with others more easily. A considerable number of studies on online self-disclosure have examined the factors that promote or inhibit the self-disclosure, such as perceived benefits and risks, individual differences, and social influence (Bateman et al., 2011; Cheung et al., 2015; Cho, 2007; Snell, 1989; Valkenburg et al., 2011). Potential individual and contextual variables, however, do not receive commensurate scholarly attention.

Against this backdrop, this study seeks to understand how SNSs could attenuate the failure in face-to-face communication encountered by socially anxious people and investigating how certain contextual variables might affect the relationship. This study advocates to answer two research questions (RQ).

> *RQ1: How does social anxiety influence self-disclosure on SNSs and well-being?*

> *RQ2: How do online disinhibition and psychological stress alter the relationships between social anxiety and self-disclosure on SNSs?*

The rest of the paper is organized as follows. First, the paper reveals the corresponding literature and discusses the hypotheses development. After that, the paper describes the research design and data collection. The paper then discusses the results of data analysis and model testing. Finally, the paper rounds off with the discussion, implications, limitations, and future research directions.

2.   LITERATURE REVIEW

2.1   Self-disclosure

"*A behaviour peculiar to and prototypical of humanity is our ability to disclose ourselves to others verbally*" (Omarzu, 2000, p. 174). Self-disclosure is defined as the "*process of making the self-known to others*" (Jourard & Lasakow, 1958, p. 91). People share things regarding their happiness, sadness, anger, and all sorts of things to someone they know, such as family member, friends, colleagues, or even the stranger on the train. Moreover, people sometimes uncover

individual particulars that would otherwise be unlikely to be known by the other, or which is of such a sensitive or private nature that the speaker would not disclose it to everyone who might ask for it (Cullbert, 1970). Even though they sometimes consciously attempt to hide their emotions and thoughts during communication, they unconsciously divulge (Ekman & Friesen, 1969). Although the need to share personal experiences appears to vary across cultures and genders (Rimé, 1995), the need to express oneself to others is suggested as a part of human heritage in the 30000-year-old Lascaus cave drawing—people are born with a certain need and tendency to disclose because they "*tend to disclose more about themselves simply because they have more to disclosure*" (Buss, 1980, p. 121).

Researchers across different disciplines have studied the concept of self-disclosure from various perspectives. In the psychology discipline, there are two predominant schools of thought regarding the nature and definition of self-disclosure. On the one hand, self-disclosure is viewed as a personality trait and is stable in various situations (Berg and Derlaga, 1987). It, however, varies among different people with different genders, backgrounds, and cultures. For instance, Papini et al. (1990) reported that female adolescents exhibited greater emotional self-disclosure to parents and peers than did males. On the other hand, other treats self-disclosure as an interpersonal process when individuals interact with each other (Dindia, 2002). Researchers from the information systems (IS) discipline explored the role of self-disclosure in the context of various online environments (e.g., Hann *et al.*, 2007, Hui *et al.*, 2007, Li *et al.*, 2011, Zimmer *et al.*, 2010, Shanyang, 2007, Chou *et al.*, 2009). Unlike the psychology discipline that treats self-disclosure as a personality trait, existing IS studies mostly explained self-disclosure behaviour as a rational decision-making social exchange process (Worthy *et al.*, 1969), involving a subjective evaluation of benefits and costs in an exchange relationship through the theoretical premises of social exchange theory (Blau, 1964) and privacy-calculus theory (Culnan and Armstrong, 1999). Particularly, some view privacy loss as the price of acquiring desired benefits (Smith *et al.*, 2011). Research on online information privacy has found that privacy risk has a negative impact on the intention to disclose personal information (Malhotra *et al.*, 2004). For instance, Hugl (2011) found that younger social networking sites users are less aware of potential privacy threats than adult users and urged online social network operators to be alarmed by the large part of users who underestimate the risks of their information privacy on SNSs.

2.2   Social anxiety

Social anxiety is described as the excessive fear of humiliating or embarrassing one's self, arises from the desire to create a positive impression in a social setting along with a general lack of self-presentational confidence (American Psychiatric Association, 1994; Leary & Kowalski, 1995). It is one of the dominant predictors that impedes self-disclosure in face-to-face situations (Jones et al., 2005; Mendlowicz & Stein, 2000; Segrin, 2001).

Socially anxious individuals generally suffer from a lack of self-presentation confidence, and their inability to reveal themself makes them difficult in disclosure during face-to-face interactions (Leary & Kowalski, 1995; Schlenker & Leary, 1982). Erwin and colleagues (2004) reported that 77% of respondents in their study who suffer from social anxiety socialize less than five hours a week and have no significant friendships and romantic relationships. (Leary & Kowalski, 1995; Schlenker & Leary, 1982); Wheeless et al. (1986) reported that socially anxious individuals tend to disclose lesser, reveal more superficial information, and their contents are comparatively more negative. Socially anxious individuals are generally weak in building and sustaining relationships. Apart from affecting daily social activities and works, social anxiety also increases their likelihood of being isolated as age grows. They also require

a longer time to respond, tolerate a long time of silence, and avert their gaze during interactions (Leary & Kowalski, 1995).

In general, people who are high in social anxiety generally worried about how people might view them in a social setting with the inability of self-presentation confidence (Schlenker & Leary, 1982). As a result, they tend to seek a safety or subtle avoidance communication style. They engage in self-disclosure only if they anticipate no adverse outcomes followed by the interaction (Arkin et al., 1986). Furthermore, they also seek platforms that allow interaction prepared ahead or postponed (Arkin & Grove, 1990), and are less threatening to disclose personal information, interests, emotions, and views (Leary & Kowalski, 1995). Prior studies regarding self-disclosure suggested that online self-disclosure has potentially transcended the obstacles people might encounter in face-to-face self-disclosure. McKenna and Bargh (2000) indicated that individuals with social anxiety might prefer online self-disclosure over face-to-face self-disclosure and form online relationships. Mazalin and Moore (2004) and (McKenna & Bargh, 2000) found that individuals level of social anxiety positively related to the time they spent in chat rooms. In the study of Caplan (2007), the sample of respondents who have a higher level of social anxiety revealed a higher preference for online social interaction than face-to-face interaction.

3.   HYPOTHESES DEVELOPMENT

This study draws on the hyperpersonal communication model of computer-mediated-communication (Walther, 1996) to understand how SNSs offer an alternative for socially anxious individuals to engage in self-disclosure and how such a relationship is altered by two contextual factors: (i) online disinhibition and (ii) psychological stress. The impact of self-disclosure on well-being is also explored. The hyperpersonal communication model suggests that computer-mediated-communication can become hyperpersonal because it exceeds face-to-face interaction, thus afford message senders a host of communicative advantages over traditional face-to-face interaction. In particular, the model argues that computer-mediated-communication facilitates impressions and relationships formation online, exceeding the desirability and intimacy that occur in parallel offline interactions. The model comprises four essential components of the communication process: (1) effects due to receiver processes, (2) effects among message senders, (3) attributes of the channel, and (4) feedback effects, and explain how computer-mediated-communication affect cognitive and communication processes relating to message construction and reception.

Disclosure on SNSs is one example of hyperpersonal communication. The SNS channel processes two structural attributes of hyperpersonal communication (namely reduced communication cue and controllability), giving the message senders advantages in communication (Walther, 1996). Specifically, communication on SNSs is different from face-to-face communication or other online communication tools (e.g., instant messaging). Indeed, it could be any form of presentation inside the site, such as profile pictures, hobbies, favourite songs, and all sorts of personal information. It could also be an update of status, a post describing an individual's experience, a picture that enlightened the user, or even a "share" of others' posts. The reduction in communication cue and capability to control the pace and dynamic of interaction could potentially surpass the level of affection and psychological tension that people would face during face-to-face interaction (Schouten et al., 2007; Walther, 1996) and have been viewed as a remedy to people who are suffering from social anxiety to engage in self-disclosure and improve their well-being.

3.1   Social anxiety and SNSs self-disclosure

People with a high level of social anxiety worry about how people view them in a social setting with a lack of self-presentation confidence (Schlenker & Leary, 1982). They tend to seek a safe, subtle, and avoidance communication style. Self-disclosure is practised only if they anticipate no adverse outcomes followed by the interaction (Arkin et al., 1986). Furthermore, they also look for communication model that allows interaction prepared ahead or postponed (Arkin & Grove, 1990), so that it is less threatening to disclose personal information, interests, emotions, and views (Leary & Kowalski, 1995).

Disclosure on SNSs deemed to transcend the obstacles that people might encounter during face-to-face interaction and encourage users to engage in personal and relational optimization. It allows individuals to "*self-actualize*" as they are freer to talk about their opinions, relieve their emotions, and connect with others (Suler, 2004), which is considered more socially desirable than people tend to experience in parallel face-to-face interaction, especially for socially anxious individuals. Such prediction is consistent with the social compensation hypothesis that the Internet mostly benefits individuals who feel uncomfortable communicating face-to-face (Weidman et al., 2012).

Prior studies also revealed that individuals' level of social anxiety is positively related to the time they spent in chat rooms (Mazalin & Moore, 2004; McKenna & Bargh, 2000), and individuals high in social anxiety generally have the preference for online self-disclosure over face-to-face self-disclosure (Caplan, 2007; McKenna & Bargh, 2000). Social anxiety has also been shown to be positively related to self-reported use of the Internet to regulate and compensate social fears (Shepherd & Edelmann, 2005). For instance, Weidman et al. (2012) reported that higher social anxiety respondents indicated greater feelings of comfort when socializing online than less socially anxious individuals. Tian (2013) reported that bloggers with higher social anxiety were more motivated to make new friends via blogs and disclose more personal information. Green et al. (2016) compared Facebook communication in both private and public modes. They found that private communication appeals to socially anxious individuals because it offers greater control over the people they are communicating with and can make sure their messages reach a targeted audience. As a result, it fosters a greater degree of privacy and trust for its users, both of which are imperative for self-disclosure, particularly for socially anxious individuals.

In short, socially anxious individuals might have the preference over SNSs disclosure to reveal their inner truth to get rid of the threats that will potentially encounter during face-to-face disclosure (McKenna et al., 2002; Weidman et al., 2012). Thus, it is hypothesized that:

H1: Social anxiety is positively related to self-disclosure on SNSs.

3.2   The moderating role of online disinhibition

Online disinhibition is defined as a less inhibited psychological state in which individuals could comfortably present certain behaviour in their minds in an online context (Jessup et al., 1990; Joinson, 2001; Kiesler et al., 1984; Matheson & Zanna, 1988). It is believed that online disinhibition could be a possible moderator of the relationship between social anxiety and self-disclosure on SNSs. The hyperpersonal perspective of computer-mediated communication (CMC) offers two distinct characteristics, reduced nonverbal cues, and controllability that facilitates the formation of online disinhibition (Walther, 1996). Reduced communication cue potentially minimizes the visual, auditory, and context cue, whereas controllability reduces an individual's cognitive load as more time is given to receive and edit the messages (Walther,

1996). These two attributes surpass the level of affection and emotion that people would face during face-to-face interaction (Schouten et al., 2007; Walther, 1996). Individuals could therefore participate in selective self-presentation, enacting exchanges more intimate than those of face-to-face interactions (Tidwell & Walther, 2002). By shifting their attention to the use of wording and pictures when socializing on SNSs, instead of keeping their facial expression and making responses simultaneously as demanded in face-to-face interaction, individuals would feel less constrained and inhibited to demonstrate disclosure (Suler, 2004). Yet, the feeling of disinhibition could be varied across individuals due to individual differences, different audiences in their SNS network, their privacy settings, and so forth. Socially anxious individuals are freed from the worries regarding self-presentation (Joinson, 1998), feel less constrained to practice self-disclosure on SNSs if they perceived a high level of online disinhibition. The "safer" they feel, the stronger tendency they would practice disclosure on SNSs. In contrast, if socially anxious individuals do not perceive SNSs as a "safe" place or they still have the feeling of being scrutinized by others, the tendency for them to disclose on SNSs will be weakened. Thus, it is hypothesized that:

H2: Online disinhibition moderates the relationship between social anxiety and self-disclosure on SNSs; specifically, social anxiety will be more strongly related to self-disclosure on SNSs under a high perception of online disinhibition than with a low perception of online disinhibition.

3.3   The moderating role of psychological stress

Psychological stress refers to the extent to which a person perceives (appraise) that the demands exceed their ability to cope. It is believed that psychological stress could be a possible moderator of the relationship between social anxiety and self-disclosure on SNSs. In general, people who are under psychological distresses, including anxious, depressed, frightened, and angry, need a higher level of disclosure. This phenomenon is described in the fever model of self-disclosure (Stiles, 1978). Stiles et al. (1992) suggested that the association between self-disclosure and psychological distress is similar to the relationship of fever to physical infection. These two circumstances are both indications of some disturbances and part of a restorative process. When socially anxious individuals are under distress, they seek alleviation by sharing personal feelings in status, posting pictures or videos, or messaging with friends on SNSs as they could be unfettered by unwanted cues or multiple conversational demands (Caplan, 2007; Walther, 1996). Therefore, if individuals are under a higher level of psychological stress, the tendency to practice self-disclosure on SNSs is stronger. In contrast, individuals with a lower level of psychological stress, the tendency of practising self-disclosure on SNSs is weaker. Thus, it is hypothesized that:

H3: Psychological stress moderates the relationship between social anxiety and self-disclosure on SNSs; specifically, social anxiety will be more strongly related to self-disclosure on SNSs under high psychological stress than low psychological stress.

3.4   Self-disclosure and well-being

As an old saying goes, "*A trouble shared is a trouble halved.*" An individual will have a chance to release from stress once he discloses to another individual regarding the problems or difficulties he had encountered. Self-disclosure, the ability to allow one's real-life to be known, is one of the prerequisites for a healthy personality (Jourard, 1959). Jourard (1964) reported a curvilinear relationship between self-disclosure and mental health. Hamid (2000) revealed a negative relationship between occupational stress and psychological stress symptoms, indicating that self-disclosure reduces stress among workers. Prior studies recognize non-

discloser are generally more stressful than disclosers and are more vulnerable to physical and psychological health issues (Pennebaker, 1989; Pennebaker & Hoover, 1985). The research suggested that it could be due to the additional psychological efforts needed to inhibit experiences, emotions, and thoughts, especially for those negative and devastating ones. It exerts pressure both cognitively and physically. On the other side, disclosing these experiences are said to be beneficial to individuals even the audiences are anonymous or just papers because it helps to develop and integrate the insights and experiences (Hemenover, 2003; Pennebaker, 1990; Silver et al., 1983; Suedfeld & Pennebaker, 1997).

Disclosing oneself online is found to be beneficial to individuals in prior studies. Donath and Boyd (2004) and Joinson (2008) suggested that a sense of belonging, information, and support could be obtained from SNSs, and individuals could feel linkage with others. Sheldon (2009) reported a positive relationship between social connection and the amount of individual disclosure in public space. Conversation in Instant Messaging is also found to significantly impact the well-being of distressed adolescents (Dolev-Cohen & Barak, 2012). Ledbetter et al. (2011) claimed that self-disclosure predicts relational closeness on Facebook. Lee et al. (2011) further reported that the amount of self-disclosure on SNSs is positively related to subjective well-being. Self-disclosure in the blog is also associated with the number of new friends made and a higher quality of friendship (Tian, 2013). Due to the tendency to be socially inhibited and withdrawn, socially anxious individuals often suffer from developing and sustaining a satisfying relationship, including family, friends, and romance partners (Leary & Kowalski, 1995). Disclose their feelings on SNSs serves as an alternative for them to relieve stress, develop a close relationship, and enhance social approval of one's ideas that are relatively difficult for them to achieve in face-to-face contexts. Thus, it is hypothesized that:

H4: Self-disclosure on SNSs is positively related to well-being.

4.   METHODOLOGY

4.1   Sample and Procedures

An online survey is employed for the current study. Data for testing the model is collected via Qualtrics, an online survey software (https://www.qualtrics.com/). Respondents are recruited via an event created on Facebook, which invites them to participate in an online research study regarding SNSs usage. Facebook is believed to be an appropriate platform for the current study due to its popularity globally. With over 2.7 billion monthly active users as of the second quarter of 2020, Facebook is the biggest social network worldwide. The highly diversified user group on Facebook also helps to present an overall picture of the population.

Interested respondents clicked on the link provided and were directed to the first page of the study and responded to the questions, assessing their demographic information, level of social anxiety, perceived online disinhibition and psychological stress, self-disclosure on SNSs, well-being, and other control variables. Before distributing the questionnaire in the main study, a pilot test with 100 Facebook active users was conducted to evaluate the reliability and validity, wordings, and presentation of the questionnaire. After all the necessary adjustments were made, the full-scale data collection was carried out. A total of 267 responses were collected during the two-week data collection period, and 243 complete and valid responses were retained for subsequent analysis.

4.2   Measurement

All measures were borrowed from prior literature, with appropriate modifications in wordings to suit the context of this study. Multi-item measures were used to ensure the validity and reliability of the constructs. All measures were taken on five-point Likert scales, from "1 = strongly disagree" to "5 = strongly agree". Table 7.1 presents a summary of the constructs and measures used in the current study. Details of the measurement items are listed below.

Social anxiety. To evaluate the respondents' anxiety level across interpersonal and social situations, they were asked to complete the Social Interaction Anxiety Scale (Mattick & Clarke, 1998). Respondents rated on a five-point Likert scale the extent to which they feel each statement is best describing them from 1 (completely disagree) to 5 (completely agree). Items include "I have difficulty making eye contact with others," "I find it difficult to mix comfortably with the people I work with," "I tense up if I meet an acquaintance on the street," etc. Cronbach's alpha of the scale was 0.87.

Self-disclosure on SNSs. To evaluate the respondents' level of self-disclosure on SNSs, they were asked to complete the Self-reported Self-Disclosure Inventory (Bateman et al., 2011). Items were modified to fit and capture the context of SNSs. Respondents rated on a five-point Likert scale the extent to which they feel each statement is best describing them from 1 (completely disagree) to 5 (completely agree). Items include "I frequently express my personal beliefs and opinions with my status, video, or sharing others' articles on Facebook," "I would often share my feelings and thoughts about myself with status, photos, or videos on Facebook," "I would often talk about myself by updating status, sharing photos, videos, or articles on Facebook," etc. Cronbach's alpha of the scale was 0.92.

Online disinhibition. Online disinhibition refers to the psychological state where individuals believe that they are less constrained to exhibit certain behaviour. Based on this definition, Schouten et al. (2007) operationalized a three-item scale to measure the construct. This scale and items were modified to fit the context of SNSs, and two more items were added in this study to improve the overall reliability. Respondents rated on a five-point Likert scale the extent to which they feel each statement is best describing them from 1 (completely disagree) to 5 (completely agree). Items include "I feel less constrained to use certain words than on Facebook in a face-to-face communication," "I feel less restricted to talk about certain things on Facebook than in a face-to-face communication," "I feel freer to talk about things on Facebook than in a face-to-face communication" etc. Cronbach's alpha of the scale was 0.88.

Psychological stress. To evaluate the respondents' level of psychological stress, they were asked to complete the Perceived Stress Scale (PSS) developed by Cohen et al. (1983). Items include a number of direct queries about current levels of experienced stress. Respondents rated on a five-point Likert scale the extent to which they feel each statement is best describing them from 1 (never) to 5 (always). Items include "In the past three months, how often have you… 'been upset because of something that happened unexpectedly?', 'felt that you were unable to control the important things in your life?', 'felt nervous and "stresses?"' etc. Cronbach's alpha of the scale was 0.90.

Well-being. To evaluate the respondents' level of well-being, they were asked to complete the General Health Scale developed by (Shamasunder et al., 1986). Items include a number of direct queries about current levels of psychological well-being. Respondents rated on a five-point Likert scale the extent to which they feel each statement is best describing them from 1 (not at all) to 5 (very much). Items include "In the past three months, how often have you… 'lost much sleep over worry?', 'felt constantly under strain?', ' been unable to enjoy your normal

day-to-day activities?' etc. Cronbach's alpha of the scale was 0.89. The respondents were also asked to complete the Life Satisfaction Scale developed by (Diener et al., 1985) and indicate the extent to which the statements describe their satisfaction with life in the past three months from 1 (not at all) to 5 (very much). Items include, "In most ways, my life is close to my ideal" and "The conditions of my life are excellent." etc. Cronbach's alpha of the scale was 0.87.

Table 7.1. Measurement items

Source	Item	Statement
Social anxiety (Peters et al., 2012)	SA01	I have difficulty making eye contact with others.
	SA02	I find it difficult to mix comfortably with the people I work with.
	SA03	I tense up if I meet an acquaintance on the street.
	SA04	I feel tense if I am alone with just one person.
	SA05	I have difficulty talking with other people.
	SA06	I find it difficult to disagree with another's point of view.
Self-disclosure on Social Networking Sites (Bateman et al., 2011)	SNSSD01	I frequently express my personal beliefs and opinions with my status, video, or sharing others' articles on Facebook.
	SNSSD02	I would often share my feelings and thoughts about myself with status, photos, or videos on Facebook.
	SNSSD03	I would often talk about myself by updating status, sharing photos, videos, or articles on Facebook.
	SNSSD04	My conversation with myself would usually be detailed on Facebook.
	SNSSD05	I would usually talk about myself for fairly long periods of time on Facebook.
	SNSSD06	I would intimately disclose who I really am, openly, and fully in my posts on Facebook.
	SNSSD07	I would intimately and fully reveal my feelings, thoughts, and values on Facebook.
	SNSSD08	I would often disclose my personal or intimate thing, such as feelings, thoughts, views, or ideas in status, photos, or shared articles without hesitation on Facebook.
	SNSSD09	I feel that I sometimes would not control my self-disclosure of personal or intimate things, such as feelings, opinions, and beliefs on Facebook.
	SNSSD10	My self-disclosure would be usually frequent on Facebook.
	SNSSD11	My self-disclosures would last a long time on Facebook.
Online disinhibition (Schouten et al., 2007)	OD01	I feel less constrained to use certain words on Facebook.
	OD02	I feel less restricted to talk about certain things on Facebook.
	OD03	I feel freer to talk about things on Facebook.
	OD04	I feel more comfortable revealing my mood on Facebook.
	OD05	I feel easier to share my thoughts on Facebook.
Psychological stress (Cohen et al., 1983)	In the past three months, how often have you...	
	ST01	felt that you were unable to control the important things in your life?
	ST02	felt unconfident about your ability to handle your personal problems?
	ST03	felt that things were not going your way?
	ST04	felt difficulties were piling up so high that you could not overcome them?

Well-being (General health) (Shamasunder et al., 1986)	In the past three months, how often have you...	
	GH01	lost much sleep over worry?
	GH02	felt constantly under strain?
	GH03	been unable to enjoy your normal day-to-day activities?
	GH04	been feeling unhappy or depressed?
	GH05	been feeling unreasonably unhappy, all things considered?
Well-being (Life satisfaction) (Diener et al., 1985)	In the past three months, how often have you...	
	LS01	In most ways, my life is close to my ideal.
	LS02	The conditions of my life are excellent.
	LS03	I am satisfied with life.
	LS04	So far, I have gotten the important things I want in life.
	LS05	If I could live my life over, I would change almost nothing.

4.3 Control variables

Face-to-face self-disclosure. Face-to-face self-disclosure is controlled for the possible confound in the model. An individual who is willing to disclose during face-to-face interaction might also be willing to disclose on SNSs. To evaluate the respondents' level of face-to-face self-disclosure, they were asked to complete the Self-reported Self-disclosure Inventory (Face-to-face) developed by Schouten et al. (2007). Respondents rated on a five-point Likert scale the extent to which they feel each statement is best describing them from 1 (completely disagree) to 5 (completely agree). Items include "I would often talk about myself," "I would usually talk about myself for fairly long periods of time.", "I would often share my feelings and thoughts about myself," etc.

Extroversion. The personality trait -extroversion is also controlled in the model. An individual who is more extroverted might have a stronger tendency to practice SNS self-disclosure as they treat socializing with friends as a way of re-energize themselves. To evaluate the respondents' trait extroversion, they were asked to complete the Big Five Personality Trait Assessment develops by Donnellan et al. (2006). Respondents rated on a five-point Likert scale the extent to which they feel each statement is best describing them from 1 (completely disagree) to 5 (completely agree). Items include "I see myself as someone who... is extraverted, enthusiastic, is reserved, quiet (Reverse code)".

Prior studies have found inconsistency regarding the impact of gender (Dimond & Hellkamp, 1969; Dindia & Allen, 1992; Jourard & Lasakow, 1958; Kobocow et al., 1983; Shapiro & Swensen, 1977). Studies regarding other demographic characteristics such as race, ethnic group, social class, and regions also yielded divergent findings (Jaffee & Polansky, 1962; Lewin, 1948; Mayer, 1967; Tulkin, 1970). Therefore, to avoid possible confounding effects, demographic variables (gender, age, work experience, job nature, and SNS experience) were controlled for the criterion variables.

5. MODEL ESTIMATION

5.1 Demographic data and correlations
Data analysis was performed using SPSS. Tables 2 and 3 reports the mean, standard deviation, and correlation of the demographic variables, focal constructs, and control variables.

Table 7.2. Demographic statistics of the respondents (n=234)

Measure	Value	Frequency	Percentage (%)
Gender	Male	120	51.3
	Female	114	48.7
Age	<18	8	3.4
	18-25	206	88.0
	26-35	13	5.6
	36-45	5	2.1
	46-55	2	.9
Working experience	<1year	87	37.2
	1-2year	92	39.2
	3-5year	46	19.7
	>6year	9	3.8
Job nature	Education	77	32.9
	Construction	5	2.1
	Wholesale & Retail Trade	10	4.3
	Hotels & Restaurants	8	3.4
	Information & Communications	13	5.6
	Financial Services	15	6.4
	Business Services	19	8.1
	Other	87	37.2
SNS experience	<1year	1	.4
	1-2year	14	6.0
	3-5year	151	64.5
	>6year	68	29.1

Table 7.3. Descriptive Statistics and Correlations

	Mean	SD	SA	OD	ST	SNSSD	GH	LS	GENDER	AGE	JOBEXP	SNSEXP	FTFSD	EX
SA	2.653	.836	1											
OD	3.181	.842	.254**	1										
ST	3.014	.907	.419**	.176**	1									
SNSSD	2.904	.850	.327**	.515**	.204**	1								
GH	2.764	.213	.367**	.166**	.608**	.206**	1							
LS	2.956	.845	0.002	.139*	-.240**	.220**	-.180**	1						
GENDER	0.51	.501	-0.059	-.039	-.062	-.051	-.013	.080	1					
AGE	27.678	5.678	0.057	.136*	.047	.112*	.113*	.065	0.1	1				
JOBEXP	3.372	.484	-0.084	.154*	.009	.137*	.076	.037	.192**	.448**	1			
SNSEXP	3.575	.407	-.193**	-.004	-.081	.038	-.101	-.041	.071	-.056	.117*	1		
FTFSD	2.305	.699	-.129*	-.015	-.063	.123*	-.026	.092	.141*	-.113*	.001	-.01	1	
EX	2.976	1.021	-.359**	.034	-.253**	.091	-.187**	-.176**	.120*	-.110*	.007	.083	.329**	1

Note: SA= Social Anxiety; OD=Online Disinhibition; ST=Psychological Stress; SNSSD=Self-disclosure on Social Networking Sites; GH=Well-being (General Health); LS=Well-being (Life Satisfaction); GENDER=Gender; AGE=Age; JOBEXP=Job Experience; SNSEXP=SNS Experience; FTFSD=Face-to-face Self-disclosure; EX=Extroversion

** Correlation is significant at the 0.01 level (1-tailed). * Correlation is significant at the 0.05 level (1-tailed).

5.2 Hypotheses testing

To test hypothesis 1, a hierarchical regression analysis was used. The result was reported in Table 7.4. In the M1 column, control variables were input, including gender, age, job experience, SNS experience, extroversion, and face-to-face self-disclosure. In the M2 column, social anxiety was input as the predictor. As shown in the M1 column, several control variables were significantly positively related to self-disclosure on SNSs, gender ($p<.01$), and age and face-to-face self-disclosure ($p<.05$). In the M2 column, social anxiety was significantly positively related to self-disclosure on SNS ($\beta=.367$, $p<.01$), hypothesis 1 is statistically supported.

Table 7.4. Results of Hierarchical Regression Analysis[a]		
	Dependent variable: Self-disclosure on Social Networking Sites	
	M1	**M2**
Control Variables		
Gender	.090**	.072
Age	.131*	.126*
Job experience	-.092	-.112
SNS experience	.096	-.103
Extroversion	.105	.213**
Face-to-face self-disclosure	.136*	.045*
Independent variable		
Social anxiety		.367**
d.f.	226	225
R^2	.128	.241
Adjusted R^2	.102	.214
ΔR^2	.128**	.113**

[a]Standardised regression coefficients are shown.
*$p<.05$
**$p<.01$

To test hypotheses 2 and 3, a moderated regression analysis was employed. Results were reported in Tables 7.5 and 7.6. In Table 7.5, control variables were input in the M1 column, including gender, age, job experience, SNS experience, extroversion, and face-to-face self-disclosure. In the M2 column, the main effect (social anxiety) and the moderator (online disinhibition) were entered, and in the M3 column, the interaction (social anxiety x online disinhibition) was input. The variables used in the interaction term were centred to reduce multicollinearity problems (Aiken & West, 1991) and facilitate interpretation of the interaction pattern (Cohen, Cohen, West, & Aiken, 2003).

As shown in the M1 column (in Table 7.5 and 7.6), several control variables were significantly positively related to self-disclosure on SNSs, age ($p<.01$), and face-to-face self-disclosure ($p<.05$). In the M2 column of Table 7.5, society anxiety ($\beta=.267$, $p<.01$) and online disinhibition ($\beta=.376$, $p<.01$) were significantly positively related to self-disclosure on SNSs, and in the M3 column, the interaction effect (social anxiety x online disinhibition) was also statistically significant ($\beta=.167$, $p<.01$), hypothesis 2 is statistically thereby supported.

Table 7.5. Results of Moderated Regression Analysis[a]

	Dependent variable: Self-disclosure on Social Networking Sites[a]		
	M1	M2	M3
Control Variables			
Gender	.090	.055	.042
Age	.131**	.054	.053
Job experience	-.092	-.056	-.039
SNS experience	.096	.113*	.127*
Extroversion	.105	.162**	.156*
Face-to-face self-disclosure	.136*	.133**	.162**
Independent variable & Moderator			
Social anxiety (IV)		.267**	.238**
Online disinhibition (M)		.376**	.384**
Independent variable x Moderator			
Social anxiety x Online disinhibition			.167**
d.f.	226	224	223
R^2	.128	.360	.385
Adjusted R^2	.102	.334	.357
ΔR^2	.128**	.232**	.025**

[a]Standardised regression coefficients are shown.
*$p<.05$
**$p<.01$

On the contrary, in Table 7.6, the moderating effect of psychological stress was not significant. In the M2 column, society anxiety ($\beta=.322$, $p<.01$) was significantly positively related to self-disclosure on SNSs, while psychological stress ($\beta=.118$, $p>.05$) was not significant. In the M3 column, the interaction effect (social anxiety x psychological stress) was also not significant ($\beta=.015$, $p>.05$). Hypothesis 3 is statistically not supported.

Table 7.6. Results of Moderated Regression Analysis[a]

	Dependent variable: Self-disclosure on Social Networking Sites[a]		
	M1	**M2**	**M3**
Control Variables			
Gender	.090	.055	.042
Age	.131**	.054	.053
Job experience	-.092	-.056	-.039
SNS experience	.096	.113*	.127*
Extroversion	.105	.162**	.156*
Face-to-face self-disclosure	.136*	.133**	.162**
Independent variable x Moderator			
Social anxiety (IV)		.322**	.321**
Psychological stress (M)		.117	.118
IV x MO			
Social anxiety x Psychological stress			.015
d.f.	226	224	223
R^2	.128	.223	.219
Adjusted R^2	.102	.223	.219
ΔR^2	.128**	.124**	.000

[a]Standardised regression coefficients are shown.
*$p<.05$
**$p<.01$

To test hypothesis 4, a hierarchical regression analysis was used. The result was reported in Table 7.7. In the M1 column, control variables were input, including gender, age, job experience, SNS experience, extroversion, and face-to-face self-disclosure. In the M2 column, self-disclosure on SNS was input as the predictor. As shown in the M1 column, several control variables were significantly positively related to self-disclosure on SNSs, gender, job nature (p<.01), and age and face-to-face self-disclosure (p<.05). In the M2 column, social anxiety was significantly positively related to self-disclosure on SNS (β=.367, p<.01), hypothesis 1 is statistically supported.

Table 7.7. Results of Hierarchical Regression Analysis[a]

	Dependent variable: Well-being		
	M1	M2a (General health)	M2a (Life satisfaction)
Control Variables			
Gender	.090**	.072	.072
Age	.131*	.126*	.126*
Job experience	-.092	-.112	-.112
SNS experience	.096	-.103	-.103
Extroversion	.105	.213**	.213**
Face-to-face self-disclosure	.136*	.045*	.045*
Independent variable			
Self-disclosure on Social Networking Sites		.206**	.220**
d.f.	226	225	225
R^2	.128	.203	.189
Adjusted R^2	.102	.183	.162
ΔR^2	.128**	.075*	.061*

[a]Standardised regression coefficients are shown.
*$p < .05$
**$p < .01$

6. DISCUSSION

This study explores the effects of social anxiety on self-disclosure on Social Networking Sites and how such a relationship could be altered by two contextual factors: online disinhibition and psychological stress. The data analysis shows that individuals with a higher level of social anxiety have a higher preference to practice self-disclosure on Social Networking Sites. The empirical result suggested that socially anxious individuals have a higher tendency to seek a communication platform that makes them feel safe. Since disclosures on SNSs could be prepared ahead or postponed, socially anxious individuals could choose the most favorable type of presentation to reveal their feelings or thoughts. Such communication mechanisms help individuals disclose more, seek affiliation, and build a closer relationship. As a result, practising self-disclosure on SNSs leads to well-being and mitigates social anxiety's negative impacts.

Empirical findings also support the proposed moderating effect of online disinhibition. The effect of social anxiety on self-disclosure is stronger when one has a high perception of online disinhibition than in a low perception of online disinhibition. The feeling of online disinhibition could suppress the level of affection and emotion that people would face during face-to-face interaction. In an SNSs setting, people could shift their attention from facial expression and make responses simultaneously to better use words, symbols, pictures, and videos. Such cognitive reallocation offers socially anxious users better control over their self-presentation, leading them to feel more secure in self-disclosing (Peter & Valkenburg, 2006; Schouten et al., 2007; Wang et al., 2011). As a result, it encourages users to engage in personal and relational optimization and allows individuals to "self-actualize." People become freer to talk about their opinions, relieve their emotions, and connect with others.

Empirical findings do not support the proposed moderating effect of psychological stress. The finding fails to confirm the assumption stated in the fever model of self-disclosure, which suggests that people disclosure more when they are under distress. Several possible explanations might address the result. First, this study adopted the general term "psychological stress" as the moderator and measured the respondent's general perception of stress without identifying the types of stressors. Such measurement might influence the result as people might have different approaches to deal with different stressors (i.e., academic, work, family conflicts, etc.). For example, people enter a flight-or-fight mode when they encounter distress. Some might opt to escape from the distress by engaging in other activities and distancing themselves from the stressor (rather than talk about it), while some might try to cope with it directly. In our sample, respondents might prefer the avoidance practice instead of practising disclosure to alleviate the distress. Furthermore, distress might obliterate the confidence of self-presentation and willingness to disclose among socially anxious individuals, exerting additional fear of humiliating oneself on them and discouraging their tendency to disclose. As a result, socially anxious individuals might hide their distress instead of seeking assistance from others. The proposed moderating effect is, therefore, not supported.

7.   IMPLICATIONS

7.1   Theoretical Implications

The current study has demonstrated a coherent result with prior studies (Caplan, 2007; Mazalin & Moore, 2004; McKenna & Bargh, 2000), confirming that social anxiety is one of the dominant factors influencing the pattern of online communication. People who are high in social anxiety generally have a preference towards online communication (Peter et al., 2005; Wang et al., 2011) and revealed that the boundary does not only limit to instant messaging, blogs, but also social networking sites.

The significant moderation result of online disinhibition confirmed that the characteristics of hyperpersonal communication in computer-medicated-communication (CMC) extend to SNSs and produce certain effects in the prediction of the association between social anxiety and self-disclosure on SNSs. The more socially anxious respondents are, the more likely they prefer online communication, and if there is a stronger feeling of disinhibition, a greater level of disclosure from socially anxious individuals is expected. In both illustrations, the findings align with the discussion that CMC helps alleviate the impact of social anxiety and enriches interpersonal interaction. These results provide certain supports to the general propositions of hyperpersonal communication and extend the generalizability of the theory, implying that hyperpersonal effects are built upon the disinhibition nature of the communication tools. Such implications could be used for predicting other communication technologies or Internet behaviours, such as cyberbullying (Chan et al., 2019) and sexting (Maheux et al., 2020).

On the other hand, the result failed to support the moderating effect of psychological stress on social anxiety, and self-disclosure on SNS is surprising. The hypothesis is built based on both real-world observation and the fever model's proposition, where distress would create a stronger impulse for people to practice self-disclosure to relieve stress. The fact that psychological stress has no effect on the relationship between social anxiety and SNS self-disclosure is inquisitive and warrants further exploration into the boundaries of such preposition.

7.2   Managerial Implications

This study has several implications for practice. The results suggested that socially anxious people would generally engage in self-disclosure on SNSs, as they feel less constrained and tense in an online context when comparing with face-to-face communication. Jourard (1959) commented that self-disclosure is one of the prerequisites for a healthy personality and should be encouraged. Self-disclosure generates social benefits for SNS users, especially for those socially anxious individuals. These advantages include intrinsic and extrinsic, such as being connected to sources of support, opportunities, information, creating shared identities, or feeling like users are part of a group. Practising self-disclosure on SNSs deemed an alternative for socially anxious individuals to develop intimate relationships and achieve a higher level of social interaction.

However, self-disclosure on SNSs might not necessarily be beneficial to individuals. Socially anxious individuals might become even more nervous if they fear negative feedback or criticism from others after sharing. Instead of integrating the interpersonal skills acquired from SNSs to real-world face-to-face interactions, people might just give up real-world interactions and focus only on online communications. Such kind of substitution is certainly unhealthy to the users and potentially leads to pathological uses. As the depth and amount of information disclosure are the essences of building trust and forming a relationship (Donath & Boyd, 2004), users might upload an excessive amount of personal information onto the sites, raising privacy and security concerns. Although disclosure on SNSs deemed a panacea for socially anxious people to connect, the potential problematic uses, privacy, and security problems credit the community, service providers, and scholar's attention.

8.   LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

As general with any empirical study, the results presented here suffered from several limitations. This study adopted convenient sampling, where respondents are invited and participated in the survey voluntarily. As the sample comprises self-selected respondents, it might not represent all SNS users and potentially suffer from common method biases (Podsakoff et al., 2003). Besides, as responding to the survey itself is an act of disclosure, respondents who chose to respond might bias those who chose not to respond. At the same time, respondents might consciously or unconsciously inflate or deflate their rating, revealing a self-reporting bias. Some might exaggerate their symptoms to make the problem seem worse, while some might under-report the severity or frequency of symptoms to minimize their problems. The convenient sampling method might add doubts to the generalizability of the research finding.

Self-disclosure has been suggested as a complicated and dynamic process and is affected by numerous individual, cultural and contextual factors (Harris et al., 1999). The cross-sectional nature of the current study does not claim the causality between the predictor (social anxiety), the criterion variable (self-disclosure on SNSs and well-being), and the moderators (online disinhibition and psychological stress). It does not reveal the potential benefits and drawbacks that might be encountered by the users when they engage in self-disclosure on SNSs. While there has been a stream of SNS research attempts to understand how individual differences influence self-disclosure patterns, this paper does not explicitly treat individual differences as variables of interest, but rather controls for them (i.e., age, gender, job experience, SNS experience, and extroversion). Certain important cues might be neglected in the current study, affecting the result and explanatory power. Past studies have devoted immense effort to identify

behavioural differences comparing individual differences. Future studies should build upon this by identifying specific behavioural differences and theorizing why such differences occur.

Besides, the hyperpersonal effect itself is not automatic. It is the people who take advantage of hyperpersonal communication and help them to achieve interpersonal goals. Communication in an online context does not always mean it is better than face-to-face communication. Do socially anxious people benefit from cognitive reallocating, optimizing self-presentation, or receiving social supports when they engage in self-disclosure on SNSs? Additional studies are necessary to understand the underlying mechanism regarding how socially anxious individuals could benefit from SNS self-disclosure and the boundary and condition where the hyperpersonal effect occurs.

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