

# **Link between Social Distancing, Cognitive Dissonance, and Social Networking Site Usage Intensity: A Country-Level Study during the COVID-19 Outbreak**

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## **Abstract**

### **Purpose**

Social distancing is an important strategy to control the spread of the COVID-19 pandemic, so it is imperative to understand the behavioral impact of social distancing on individuals. This research studied social distancing from a cognitive appraisal of voluntary social distancing compliance (CAVSD) point of view and a non-medical perspective, specifically the psychological impact (PI) of social distancing on the usage intensity of social networking sites (SNS) during the COVID-19 outbreak in India.

### **Methodology**

The study was conducted on 477 SNS users as a full sample and groups based on age, sex, and work status. The model was empirically investigated using structural equation modeling.

### **Findings**

CAVSD was negatively associated with PI although not a significant predictor, while CAVSD and PI were significant predictors of SNS usage intensity; moreover, SNS usage intensity differed between groups of people.

### **Practical implications**

These findings are significant for organizations, corporations and educational institutions in both the public and private sectors. There is a need to identify subsections of individuals in

need of social support and relief from isolation and loneliness. Individuals are relying on social media to handle social distancing and the pandemic and this shows up in an increase in social networking activity.

### **Novelty**

This study posits that networking on social media platforms is a virtual manifestation of a basic need for socialization. This study is the first to examine the effect of social networking during a pandemic.

### **Keywords**

Social network intensity, COVID-19, social distancing, psychological impact, cognitive appraisal.

### **Paper type**

Research paper

## **1. Introduction**

Information and communication technology (ICT) have transformed the ways in which individuals connect with one another. ICT and computer-mediated communications now dominate global communication. When people have less opportunity to communicate face-to-face, dependence on technology-based interaction is heightened (Barnes, 2020; Cocosila and Turel, 2019; De' *et al.*, 2020; Dwivedi *et al.*, 2020; Menon, 2011; Nabity-Grover *et al.*, 2020). In January 2020, an outbreak of the highly contagious coronavirus disease (COVID-19) spread across the globe, compelling the World Health Organization (WHO) to declare it a pandemic. The Indian government announced several preventive measures, including social distancing, to minimize the spread of COVID-19. This was followed by a lengthy lockdown or home quarantine. Many people, excluding those in essential services, had to work from home and students were required to study online.

Social distancing required schools to close (Qualls *et al.*, 2017) and measures to avoiding person-to-person spread of the disease were introduced (Wilder-Smith and Freedman, 2020). From a health perspective, social distancing helped to reduce pressure on health services and inhibited the spread of COVID-19 (Koo *et al.*, 2020). Voluntary social distancing was impacted by the membership and the extent of media consumption (Andersen, 2020).

People understood the health threat posed by COVID-19 but at the same time found it challenging to maintain social distance. Social distancing created an attitude-behavior discrepancy in individuals and this generated a form of *cognitive dissonance*. The term cognitive dissonance was originally coined by Festinger (1957) and refers to a perceived inconsistency in the perceptions an individual has about an object or phenomenon. The individual consequently seeks to implement a strategy to minimize the discomfort that arises from this inconsistency. As a natural response to dissolving the cognitive dissonance during the COVID-19 pandemic, individuals either adopted extreme caution, embraced social distancing (voluntary or compliance), or they engaged in social distancing involuntarily (forced social distancing). The higher the extent of the dissonance, the higher the need to lessen it. In the case of social distancing, as a coping mechanism to combat isolation stress,

individuals responded to their cognitive dissonance by increasing virtual networking to negate feelings of isolation. Therefore, it becomes important to study if social network sites (SNS) usage during periods of enforced/voluntary isolation, as in the case of a pandemic, changes. Furthermore, it is also important to note that during a pandemic, long-term social needs are not just personal, but also extend to corporate and academic lives.

Social networking is a common phenomenon in society. Social networks (e.g., Twitter, Facebook, and Instagram) have disrupted the way people network, converse, and engage in their day-to-day life. Media capabilities and the media richness of devices, such as smartphone-based SNS, now determine social relations (Choi, 2019). Researchers have found other motivating factors such as individual factors, organizational factors and interpersonal factors also lead to increased SNS use (Lee, 2020). The social networking platforms have given individuals a new way to “hang out” in society. Some motivation and technical factors maintain social media use and addiction among people (Cao *et al.*, 2020). These platforms are not an unalloyed blessing as they have both good and bad effects (Arora *et al.*, 2019; Dwivedi *et al.*, 2018). Social distancing is like a nudge that is beneficial to society at large. Nudges are applied for the well-being of society (Cioffi *et al.*, 2015; Graham *et al.*, 2017; Kallbekken and Sælen, 2013; Momsen and Stoerk, 2014; Vallgård, 2012). At the end of 2019, the number of social media users in India was estimated to grow to 351.4 million. During a pandemic, the number of people who become media dependent and engage in SNS usage is high and represents a significant proportion of a country’s population.

Though every individual in the country was expected to engage in social distancing, the perception of social distancing, cognitive dissonance, psychological impact of social distancing, and coping by social networking might not be taken equally seriously by different groups of people: sex, age, and during social distancing, people who work from home (WFH), those who stay at home but do not work from home (NWFH), and the cohort of students learning online (SLO).

One report (Hoof, 2020) opined that lockdown would lead to a secondary epidemic of burnout and psychological stress coupled with absenteeism from work in the second half of 2020. As most people were not able to engage publicly, there was an increase in the usage of the Internet and social media. People turn to online platforms for all kinds of purposes: entertainment, conversation, shopping, and networking. The COVID-19 outbreak also saw an increase in incidences of anxiety, insomnia, fear of financial crises, stress, and sleep disorders (O’Dair and Fazel, 2020). Behavior on social media platforms differed between older groups of people and youngsters (Zaphiris and Sarwar, 2006; Lipsman 2006; Wright, 2000), between men and women (Herring, 1993; Verhaagen, 2005, Thompson and Loughheed, 2012), and in some cases, because of individual differences. Against such a backdrop, it is crucial to study the impact of imposing restrictions on people’s movement and increased SNS usage among different groups of people. Very few studies have looked at the psychological toll of social distancing in the general population, let alone specific groups of people.

This pandemic has created a new “normal” and with it the implications and motivational aspects of SNS use. This study attempted to understand its implications from both an academic and an industry perspective. This is doubly important for a developing economy like India, where SNS usage is widely prevalent. This study covered the period of the COVID-19 outbreak and enforced social distancing and lockdown, and endeavored to explore the relationship between CAVSD and PI on individuals from the perspective of voluntary/forced compliance; examined the relationship between PI and SNS usage intensity among social network users; and finally, probed the relationship between CAVSD and SNS

usage intensity in groups categorized by sex, age and work status by exploring the characteristics of these groups and how they connected to others using SNS.

Therefore, the study investigated the following research questions:

1. How does CAVSD affect the various groups categorized by sex, age, and work status?
2. How does PI affect SNS usage intensity in the groups categorized by sex, age, and work status?
3. How does CAVSD affect SNS usage intensity in the groups categorized by sex, age, and work status?

The data used in this study were collected from India only. While this may be viewed as a limitation of the study, this was also the first attempt to study the effects of a pandemic, specifically social distancing, on psychological health and social networking behavior.

The manuscript is structured in the following manner: Section 2 provides a brief review of the related work, Section 3 focuses on the theoretical background and hypothesis development, Section 4 presents the research methodology and data collection, Section 5 reports on the findings and the results of the study, Section 6 contains the discussion about theoretical and practical implications of the research, while Section 7 reports on the conclusion, limitations, and future research directions.

## **2. Review of literature**

### *2.1 Social networking*

Social networking brings people closer together and people across the globe spend a lot of their time on social networks (Roberts *et al.*, 2005; Nielsen, 2006; Ellison *et al.*, 2007), moreover, social media can help with self-disclosure, can be instrumental to the development of self-concept and identity (Matsuba, 2006), and is at the epicenter of human communication (Boyd and Ellison, 2007). Social networking has been adopted by people for a variety of reasons (Wilson *et al.*, 2012). Research suggests that there is a sex difference in social media usage (Lai *et al.*, 2019). SNS is used more frequently by women (Kimbrough *et al.*, 2013); men and women are differently motivated to use the internet (Fallows, 2005). Facebook is used equally by both men and women (Hargittai, 2008), although Taylor (2009) found that more women use Facebook than men. Contrarily, Benson *et al.* (2019) proposed there was no difference in SNS use between men and women. Studies have found that older adults are more inclined to use SNS to re-establish lost connections (Pew Research, 2010), although Nielsen (2009) asserted that older people engage quite well in SNS use. One study found that adults over the age of 50 years made use of social networking to strengthen their social connections (Hogeboom *et al.*, 2010), while another study found that age had no impact on internet behavior (Hawi and Samaha, 2019). All these studies lead to an inconclusive result.

When people work from home during social distancing and a lockdown, increased bonding has been reported using SNS with team mates (Tolette, 2020). Related to work-from-home habits, one study found that WFH habits did not match regular office schedules and people kept flexible work hours (Sproull *et al.*, 1984). While working from home, people have an opportunity to engage in social networking at their own convenience because their work schedules are more flexible (Chakraborty, 2020). However, there have been no studies that explore psychological dimensions related to WFH, and more so during a crisis situation. Further, nothing has been reported about SNS behavior of any of the groups discussed above,

viz., age, sex, and work status, during a situation where people are required to maintain social distancing, voluntarily or involuntarily, during epidemics and pandemics, or during natural disasters such as cyclones, earthquakes, and other natural disasters.

## 2.2. Psychological factors and social networking

Research suggests there is a connection between social networking and psychological correlates, with specific reference to computer-mediated communication. It was indicated that in general, internet usage impacts social relationships and engagement in physical interactions with others (Sideri *et al.*, 2019; Whelan *et al.*, 2020). This study asserts that the more an individual becomes attached to internet-based communication, the lower his sense of well-being and the poorer his relationship with family members or friends and that this in turn will impact the individual's feelings of depression and loneliness (Kraut *et al.*, 1998; Putnam, 1995). Studies have shown the negative impact of social exclusion, denial, and ostracism (De Wall and Baumeister, 2006). Social networking provides a substitute for physical proximity and helps people to stay connected in a virtual world. When individuals are deprived of social engagement, they have a poorer quality of life and health, both physically and psychologically (Cohen and Wills, 1985; Wellman and Tindall, 1993; Katz and Aspden, 1997). Social networking and psychological factors are correlated. A study by Ponnusamy *et al.*, (2020) found that the well-being of individuals negatively moderated the association between social needs and individuals' addiction to social media platforms like Instagram. In another study, the authors found that WhatsApp and Snapchat increased individuals' information overload, which in turn amplified depressive symptoms that affected their well-being (Matthes *et al.*, 2020). Loneliness has also been found to be linked to social media use and social networking. Individuals' continuous Facebook usage was found to be linked with loneliness; at the same time, the higher the number of friends on Facebook, the less users' loneliness (Phu and Gow, 2019). Individuals also use smartphones as means to escape loneliness (Shen and Wang, 2019) and lonely and neurotic individuals who make greater use of social networking become more stressed. Cabin fever syndrome (Seitz, 2019) is a term used to describe a common reaction pattern in individuals when they are isolated at home or in a building for a certain length of time. In the context of the COVID-19 pandemic, cabin fever syndrome might be experienced by quarantined individuals under stress due to social distancing. Research has found a link between the psychological framework of an individual and social networking.

Table 1 depicts on analysis, that there is a clear gap in literature with respect to the cognitive appraisal of social distancing, the role of cognitive dissonance, the psychological impact felt, and the impact on SNS usage during a crisis situation like a pandemic (Table 1).

**Table 1. An overview of prior studies related to this research context**

Source	The focus of the prior study	Critical finding	Basic theory	The variable used (exogenous/ intervening/ dependent)
Li <i>et al.</i> (2020); Zhou <i>et al.</i>	Stress in social networks, social media diffusion in crisis situations, and propensity of social	Use of social networks to estimate and track mental health transition in adolescents under	These papers used subjective self-reporting and continuous	Peer relationships, romantic relationships, family life, self-cognition, and school

(2020); Dou <i>et al.</i> (2020);	network.	stress.	tracking research	life.
Zhang and Smith (2019)	Relationship between bonding and dissonance	Emotional engagements are dependent on emotional intelligence	This study is ontologically and epistemologically based within critical realism, which recognizes that while epistemologically knowledge is neither theory nor value neutral, there is, nevertheless, an ontological reality independent of the conceptualization.	Emotional engagement, social Impact, social interactions, and collective effort
Shelton <i>et al.</i> (2019)	Measuring and applying social network analysis (SNA) to public health	The most commonly described measures were network density, size, and degree centrality	Literature review	Social network intensity, social network analysis, and sustainability of health behavior interventions
Li <i>et al.</i> (2019)	Multi-layer local community detection model	The model utilizes node attribute information and the similarity strength information revealed by social exchanges to improve the accuracy of community detection in a social media network.	Network theory	Network Models
Bhimani <i>et al.</i> (2019)	Social media's potential for innovation	Social media is seen as an <i>enabler</i> and a <i>driver</i> of innovation, with behavioral and resource based perspectives being the most popular theoretical lens used by researchers.	Systematic literature review	Marketing innovation, social innovation, product innovation, process innovation, technical innovation, and service innovation
Vaidis and Bran (2019)	Cognitive dissonance theory (CDT)	Focus on operational distinctions between	Cognitive dissonance theory (CDT)	Cognitive dissonance

		the elements of CDT: inconsistency, dissonance (CDS) and regulation strategies.		
Carpenter (2019)	Cognitive dissonance	Motivation creates a set of constraints on the kinds of beliefs they are willing to accept. Beliefs that are constrained by their connection to the individual's self-concept as a reasonable and moral person are difficult to change because their connection to the self-concept gives them more weight such that the individual will be motivated to satisfy those constraints on their cognitive network rather than others.	Cognitive dissonance, ego-involvement, and motivated reasoning	Cognitive dissonance, ego-involvement, and motivated reasoning
Jost <i>et al.</i> (2018)	How does social media facilitate the exchange of information? Evidence from studies of protest movements in the United States, Spain, Turkey, and Ukraine using social media.	Social media platforms facilitate the exchange of information that is vital to the coordination of protest activities, such as news about transportation, turnout, police presence, violence, medical services etc.	Content analysis of tweets from an Occupy Wall Street Demonstration	Social media, information, motivation, and social networks
Liu and Wang (2018)	Boundary coordination and boundary turbulence can influence individuals' self-disclosure decisions on social network sites	Uncertainty avoidance moderated the path from role conflict, privacy risk, and privacy control	Communication privacy management (CPM) theory	Self-disclosure, privacy control, privacy risk, and social rewards
Leonardi (2018)	This study explores whether employees who have access to social media are more likely than employees who do not to develop shared cognition—similar perceptions of what and who coworkers know.	Shared cognition developed much more strongly over six months in the group that used the social networking site than the group that did not use it.	Shared cognition	Shared experience, shared cognition, and social media use, cognitive knowledge, treatment condition, tenure dissimilarity, hierarchical dissimilarity, proximity, common team

				membership, friendship relationship, advice relationship
Hernández-Ortega (2018)	Social psychological distance	Social psychological distance mediates the effect of online consumer reviews (OCR) on the receiver's responses. Less psychological distance between strangers improves the receiver's responses.	Construal level theory (CLT)	Social psychological distance
Tsovaltzi <i>et al.</i> (2017)	Preparation and argumentation scripts on social network sites	Negative effects of individual preparation, ascribed to lack of knowledge co-construction and knowledge convergence that point to knowledge consolidation.	Learning and instruction	Individual preparation and argumentation
Tsovaltzi <i>et al.</i> (2017)	Social network site usage (discussions)	Group awareness tools (GATs) and argumentation script influence group processes, but argumentation script shows more substantial influence.	Socio-cognitive conflict awareness	Attitude conflict awareness, argumentation scripts and cognitive guidance
Kaplan <i>et al.</i> (2016); Tokunaga (2016)	Migration intentions of current and future knowledge workers	Migration intentions positively associate with social networks in other cities, subjective norms that West- is better than East-Germany, and that other regions provide better life opportunities; staying intentions positively relate to having origins, close friends and family in Saxony	Theory of Planned behavior	Migration intention, social networks, subjective norms, staying intentions, structure of the social networks, socio-economic characteristics, travel habits, and on-line social networks
Marcy (2015)	Social innovations	Leading a radical social innovation is no small task and requires help.	Case study approach and drawing from the historic record	Cognitive attributes, mental model, social relationships
Han <i>et al.</i> (2015)	Antecedents of social presence and gratification of social connection needs	Users are drawn to SNS to fulfill their social connection needs and that the	Usage and gratification theory	Immediate feedback, feeling of privacy, responsiveness, social presence, gratification



	in SNS	sense of social presence SNS engender plays a significant role in fulfilling these needs		of social connections need, continued usage intention.
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### 3. Theoretical foundation and hypotheses formulation

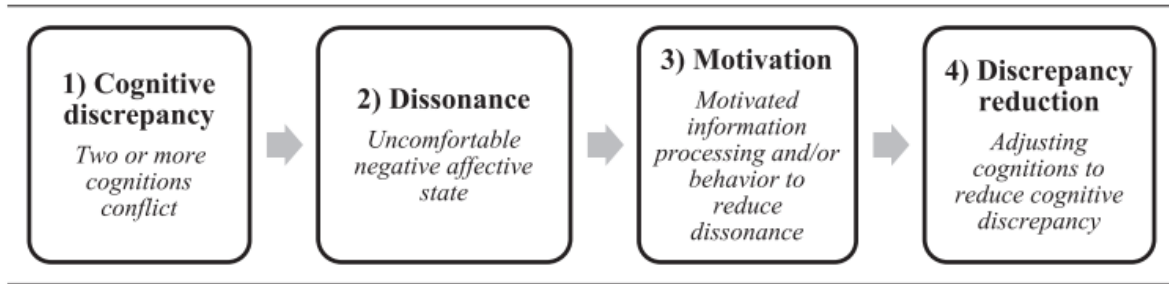
For this study, the authors relied on cognitive dissonance theory (CDT) to explain social distancing and CAVSD. The motivation for this study was adapted from discontinuity theory, which is defined as a violation of any domain of functioning highly valued by individuals and causes cognitive dissonance (Zimbardo, 1999). To measure cognitive dissonance in social network usage behavior, the authors adapted social network intensity as an indicator (Shelton *et. al.*, 2019).

#### 3.1. Cognitive dissonance theory (CDT)

Festinger (1957) theorized that cognitive dissonance develops in the presence of multiple cognitive inconsistent elements. Under conditions of cognitive dissonance individuals find it difficult to take a stance on the side of one particular cognitive element. Cooper (2012) stated that cognitive discrepancy results when one cognition is the opposite of the previous cognitions. Cognitive dissonance can be lessened by eliminating dissonant cognitions, or adding more consistent cognitions, or lessening the significance of dissonant cognitions, or escalating the significance of consistent cognitions. Dissonance causes psychological discomfort and the individual is motivated to reduce it (Figure 1a). Festinger (1957) advocated the same expression of dissonance, to explain the inconsistency between individual cognition and the psychological uneasiness felt by individuals, namely, that behavior is attuned to line up with an individual's attitude, principles, or previous experiences. When individuals do not reduce this discrepancy, they experience an extended negative affective result and have a lingering psychological impact (Hinojosa *et al.*, 2016). In the case of the COVID-19 outbreak and related social distancing, cognitive dissonance will have a psychological impact.

We tend to depend on CDT to describe individuals' social distancing due to regulatory norms. We examined how individuals' reluctance or willingness to distance from others has a psychological impact on them. The crux is that the cognitive appraisals of imposed social distancing will either be willingly accepted by individuals or unwillingly complied with, and will have some psychological impact that will find its expression in SNS usage intensity (Figure 1b).

### The Four-Step Process of Dissonance Arousal and Reduction

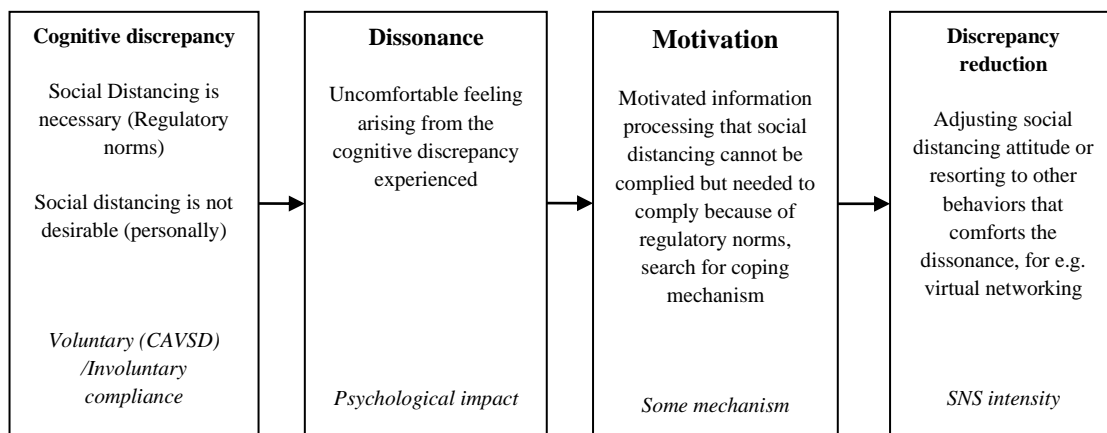


**Figure 1a: The four-step process of dissonance arousal and reduction** (Source: Authors' compilation adapted from Festinger's (1957) cognitive dissonance theory)

### 3.2 Construct identification and description

The review of the literature shows a clear gap in research in the area of social distancing from a non-medical psychological perspective. This study examined the networking behavior of people under the influence of social distancing during the COVID-19 pandemic and psychological impact of fear, loneliness, and stress in groups of people categorized by sex, age, and work status.

Lending from the four-step model of dissonance arousal and reduction, we present our study constructs as follows (Figure 1b):

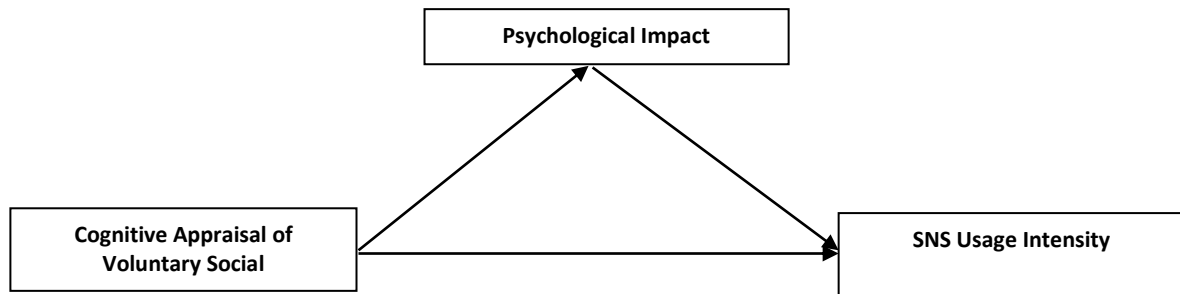


**Figure 1b: The authors' adaptation of the four-step process of dissonance arousal and reduction**

Since we were interested in the SNS usage intensity of individuals and how that is impacted by CAVSD mediated by the PI that individuals face due to social distancing, we constructed measures for each one of the variables based on an extensive review of literature. We first started with our predictor variable, CAVSD, for which we have identified social distancing attitude (SDA) and social distancing intention (SDI) as first-order latent variables. As a mediator variable we had PI as it could cause the incidence of the relationship between CAVSD and SNS usage intensity. We postulated that PI could be measured by the first-order latent variables: loneliness, cabin fever syndrome, COVID-19 fear, and traumatic stress (taken from literature, Appendix I). The outcome variable SNS usage intensity (first-order latent variable) was impacted by CAVSD. In a pandemic situation and a mandatory

lockdown, people are psychologically impacted by the disruption to their normal life. This PI is affected by the individual's cognitive appraisal (voluntary/forced) of social distancing (Appendix I).

Prior research referred to the differential nature of SNS usage intensity for various categories of individuals based on sex, age, and work. Therefore, we endeavored to analyze the role of CAVSD on PI and SNS usage intensity on social network users (base model, shown in Figure 2) in a COVID-19 pandemic situation in India. Further we repeated the analysis for the same base model for subgroups, sex, age groups, and work status.



**Figure 2: Proposed base model explaining the relationship between constructs**

The summarized form of the constructs along with their definition and the measuring items are in Appendix I.

### ***3.3. Cognitive appraisal of voluntary social distancing compliance***

Cognitive factors impact behavioral intentions (Virick *et al.*, 2015; Hewett *et al.*, 2018); cognitive appraisal has a relationship with avoidant emotional coping (Alhurani *et al.*, 2018); quarantine impacts psychological stress (Wang *et al.*, 2011); and quarantine leads to distress (Wu *et al.*, 2009). Cognitive appraisal is a core element of stress models. Cognitive dissonance leads to attempts to manage the stress arising from dissonance and leads to PI. The psychological demands of a particularly stressful situation result in coping mechanisms. Individuals' available choices of behavior are impacted by the resulting gains or losses from the choice.

In the context of social distancing, an individual's requirement to distance from people to combat the COVID-19 outbreak is appraised negatively, as this preventive measure brings challenges with it (Aravind, 2020, March 29). Individuals might respond to regulatory social distance willingly (when they support social distancing as a means to combat the spread of COVID-19) or are forced to do so (forced compliance). Forced compliance leads to a higher PI. Therefore, the construct draws from the four-step process of dissonance arousal and reduction, as stated above, i.e., first, cognitive discrepancy occurs, followed by dissonance, leading to motivated information processing, and finally resulting in discrepancy reduction. Mandatory social distancing is appraised as forced and creates a psychological impact. Therefore, in the context of mandatory social distancing, we hypothesize that:

***H1: CAVSD is negatively related to the PI with respect to sex, age, and work status.***

### ***3.4 Cognitive appraisal and PI***

SNS assists individuals to unite, connect, interact, interrelate and share various information with their associates (Cheng *et al.*, 2017), and communicating over SNS is considered as significant in the regular life of individuals (Alalwan *et al.*, 2017). Research confirmed a positive relationship between psychological health and the use of smartphones by individuals (Rotondi *et al.*, 2017). SNS paves the way for mass communication. Psychological distance is handled by bridging the gap of physical distances and social media help individuals to collaborate. Social media use has a relationship with depression (De Choudhury, 2013). The market research firm Nielsen posited that social media presence through SNS up-surged by 50% and COVID-19-related conversations reached 22.3 million by March 24 in India (Balram, 2020, March 28) as SNS users shared their fears and worries, psychological discomfort, and post photographs of family times and home-cooked meals over SNS (Guynn, 2020, April 3).

Social distancing creates a discomfort in the populace and results in coping mechanisms. Because of the COVID-19 outbreak, psychological impacts on the population have accentuated incidents of anxiety, insomnia, fear of financial crises, and stress and sleep disorders are common (O'Dair and Fazel, 2020). People are social beings that become psychologically distressed when confined at home so consequently reach out to people through social media platforms. To stay connected, people engage in Facebook, WhatsApp, Twitter, LinkedIn, and organize Zoom happy hours with their social network (Dolgin and Fazel, 2020). Thus, we hypothesized that:

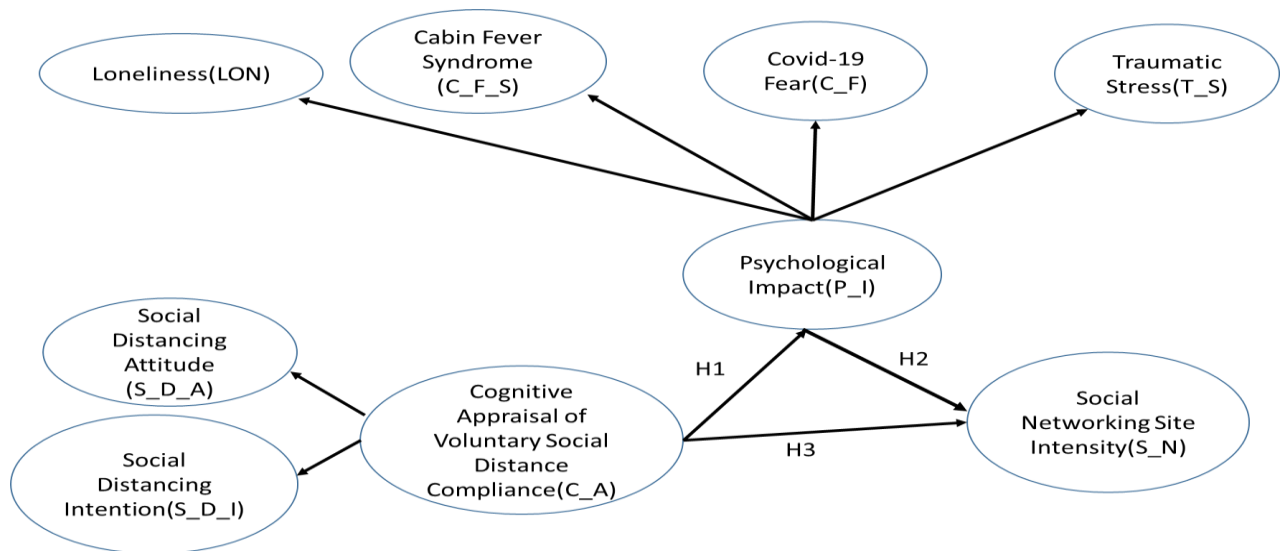
***H2: PI partially mediates CAVSD and SNS usage intensity with respect to sex, age, and work status.***

#### ***3.2.3 CAVSD and SNS Usage Intensity***

Social distancing involves purposely increasing the physical distance between individuals in the society, to avoid spreading illness and at the same time causing psychological discomfort. In such a scenario, instead of meeting people in person, people choose to meet their associates using electronic devices (Lockerd Maragakis, 2020, March 10). Tensions and anxiety pile up into an unhelpful range during social distancing, and people are affected by an information overload or infodemic (Ajmal, 2020, April 10). There is also a fear of missing out. CDT could also explain people's search for more information on SNS to resolve dissonance discomfort, although a reduction in dissonance may not always yield good results (Beauvois and Joule, 2019). The immersion into stories of the pandemic to learn how others are behaving in the situation across the globe leads to social media concentration; this was marked by a bump in searches for the keyword 'coronavirus' in Google and discussions about this soared on SNS (Banerjee 2020, March 27). The pandemic increased the need to share information. There was a rise in social media posts sharing messages, photographs, and news items (Parikh *et al.*, 2020) and the intention to remain connected increased. Hence, we hypothesized that:

***H3: CAVSD positively impacts SNS usage intensity with respect to sex, age, and work status.***

Based on the literature review and the hypotheses presented above, the proposed model of this study is depicted in Figure 3 below. The model explores the inter-relationship between the three main constructs used in this study, viz., the relationship between CAVSD, SNS Usage Intensity, and PI. The development of all the first order variables have been taken on the basis of literature review as presented above.



**Figure 3: A proposed conceptual model** (Source: Authors' compilation based on a literature review)

## 4. Methodology

### 4.1 Questionnaire development

An extant literature review was done to develop the questionnaire using the constructs identified earlier. A 5-point Likert scale (strongly disagree to strongly agree) was used throughout the questionnaire. Data were collected from social media users in major cities across India during the COVID-19 outbreak using a snowball sampling technique. Since our research methodology required us to elicit responses with an interval of ten days, we had to stop looking for additional responses at a particular point in time and to allow the snowball technique to continue indefinitely. This resulted in a total of 486 responses collected through an online survey platform. Out of these, 477 responses were complete in all the aspects, and nine responses were incomplete and discarded. We considered this an adequate sample size (Westland, 2010). Further, since all the subgroups we analyzed exceeded the minimum number of ten (Roscoe and Byars, 1971), we felt our goodness-of-fit tests for Chi-square were valid.

### 4.2 Participants

For the subgroup study, we divided the respondents into three age groups, viz., 0–20 years old, 21–35 years old, and above 35 years old. Our sample comprised 10.1% in the 0–20 years old group (with 17 years being the minimum age), 64.1% in the 21–35 years old group, and 25.8% in the >35 years old group. We also analyzed the sample by sex: 52.83% female and 47.17% male participants (Table 2). To determine if there were significant differences between respondents based on their work status, we divided the whole sample into three groups: WFH, NWFH and SLO. Our sample consisted of 35% WFH, 16.4% NWFH, and 48.6% SLO. We excluded people working in essential services, who had to leave home for work during the pandemic, as this group was not subject to confinement at home. Table 2 provides a summary of these demographic variables. After analyzing the tabulated data, we found that there was a concentration of respondents in the 21–35 years group and in the SLO categories, with a relatively even distribution among men and women.

### 4.3 Data Analysis

The data were analyzed using structural equation modeling (SEM). Confirmatory factor analysis (CFA) was used to measure the latent variables. *CAVSD* was the second-order latent variable, which was measured by the first-order latent variables social distancing attitude and social distancing intention. Loneliness, cabin fever syndrome, fear of COVID-19, and traumatic stress (Figure 3) were the first-order latent variables for the second-order latent variable *PI*. The dependent variable was a first-order latent variable called *SNS usage intensity*. The loadings of the measurement of the latent variables showed adequate factor loadings (Table 3).

Cross-sectional studies, where data are collected for respondents through questionnaires tend to exhibit common method bias (CMB) (Podsakoff *et al.*, 2003). To reduce the CMB effect, we first developed the observed variables in a way that it included reverse item questions, which are a good method of reducing CMB. Furthermore, we collected our data so that only independent variables were collected at one point in time. Data on the measured mediator variable and the dependent variable were collected after a gap of 10 days. This also reduced CMB (Atwater and Carmeli, 2009). Since we collected data for the mediator and dependent variables from respondents at the same point in time, we tested for residual effects of CMB in the data. We conducted a Harman's single-factor analysis (Shkoler and Tziner, 2017) and exploratory factor analysis (EFA) to confirm that CMB was absent.

**Table 2: Demographic representation of the number of respondents (N=477) in terms of the overall sample, sex, age and work status**

	Total N	0 to 20 years old	21 to 35 years old	36 to 50 years old	WFH	NWFH	SLO
Male	225	17	139	69	78	40	107
Female	252	31	167	54	89	38	125
Total	477	48	306	123	167	78	232
Respondents %	100	10.1	64.1	25.8	35	16.4	48.6

### 4.4 Path model testing

The Lavaan package was used to analyze the data in R Studio (Oberski, 2014; Rosseel *et al.*, 2017). Structural equation modelling was used to analyze the measurement model as well as a path model for testing the hypotheses. There were seven first-order and two second-order constructs used in the model.

#### 4.4.1 Measurement model

The objectives of this research were to explore the effect of *CAVSD* on *SNS usage intensity*, to examine the impact of *PI* on *SNS usage intensity*, and the effect of *CAVSD* on *PI*. Before applying structural equation modelling to test the hypothesis, we performed a measurement analysis to check the constructs' reliability, uni-dimensionality, convergence validity, and discriminant validity, as well as the goodness-of-fit indices. EFA was used to measure the constructs and the factor loadings, and other fit indices were as per standards (Tables 3 and 4).

**Table 3: Measurement model**

Constructs	Items	Estimates	Std. error	Z-value	P (> z )
<b>Loneliness (LON)</b> First-order latent variable	L1	1.000			
	L2	1.290	0.070	18.469	0.000
	L3	1.195	0.068	17.611	0.000
	L4	1.097	0.669	15.994	0.000
<b>Cabin fever syndrome (C_F_S)</b> First-order latent variable	CFS1	1.000			
	CFS2	0.992	0.056	17.800	0.000
	CFS3	0.634	0.059	10.753	0.000
	CFS4	0.839	0.053	15.963	0.000
	CFS5	0.830	0.055	15.059	0.000
<b>COVID-19 fear (C_I)</b> First-order latent variable	COVID1	1.000			
	COVID2	0.748	0.048	15.710	0.000
	COVID3	1.016	0.054	18.783	0.000
	COVID4	1.126	0.058	19.334	0.000
<b>Traumatic stress (T_S)</b> First-order latent variable	TS1	1.000			
	TS2	1.141	0.071	16.116	0.000
	TS3	1.086	0.067	16.098	0.000
	TS4	0.846	0.064	13.249	0.000
	TS5	0.447	0.060	7.404	0.000
<b>Psychological impact (P_I)</b> Second-order latent variable	Loneliness (LON)	1.000			
	Cabin fever syndrome (C_F)	1.372	0.148	9.257	0.000
	COVID-19 fear (C_I)	0.944	0.116	8.138	0.000
	Traumatic stress (T_S)	1.157	0.132	8.171	0.000
<b>Social distancing attitude (S_D_A)</b> First-order latent variable	AT1	1.000			
	AT2	1.072	0.072	14.822	0.000
	AT3	1.121	0.053	21.105	0.000
<b>Social distancing intention (S_D_I)</b> First-order latent variable	IN1	1.000			
	IN2	0.920	0.055	16.659	0.000
	IN3	0.994	0.050	20.036	0.000
<b>Cognitive appraisal of voluntary social distance compliance (C_A)</b> Second-order latent variable	Social distancing attitude (S_D_A)	1.000			
	Social distancing intention (S_D_I)	0.790	0.206	3.833	0.000
<b>SNS usage intensity (S_N)</b> First-order latent variable	SNI1	1.000			
	SNI2	0.961	0.049	19.434	0.000
	SNI3	0.777	0.061	12.676	0.000
	SNI4	0.743	0.062	11.977	0.000

#### 4.4.2 Model validity

To confirm the absence of CMB, Harman's single-factor resulted in a total of 15.8% of the explained variance which was far below the expected 33% (MacKenzie and Podsakoff, 2012). The reliability test of the scale showed adequate reliability (Appendix I). The fit indices of the measurement and path models (Table 4) showed a good model fit for the prediction. The values of the construct reliability (CR), average variance extracted (AVE), maximum shared variance (MSV), and average shared variance (ASV) were as per the expected cut-off values.

Reliability:  $CR > 0.7$

Convergent Validity:  $AVE > 0.5$

Discriminant Validity:  $MSV < AVE$ ;  $ASV < AVE$

Square root of AVE greater than inter-construct correlations (see Table 5).

**Table 4: Model fit indices**

Fit indices' analysis of the research model	Model fit	Reference index (Upadhyayand Kumar, 2020)	Source
$\chi^2/df$	2.16	<3	(Barrett, 2007; Falke <i>et al.</i> , 2020; Oberski, 2014; Rosseel <i>et al.</i> , 2017)
Goodness-of-fit index (GFI)	0.911	>0.9	(Barrett, 2007; Falke <i>et al.</i> , 2020; Oberski, 2014; Rosseel GTM ., 2017)
Adjusted goodness-of-fit index (AGFI)	0.921	>0.9	(Barrett, 2007; Falke <i>et al.</i> , 2020; Oberski, 2014; Rosseel <i>et al.</i> , 2017)
Normed fit index (NFI)	0.913	>0.9	(Barrett, 2007; Falke <i>et al.</i> , 2020; Oberski, 2014; Rosseel <i>et al.</i> , 2017)
Bentler–Bonnet non-normed fit index (NNFI)	0.933	>0.9	(Barrett, 2007; Falke <i>et al.</i> , 2020; Oberski, 2014; Rosseel <i>et al.</i> , 2017)
Tucker–Lewis index (TLI)	0.933	>0.9	(Barrett, 2007; Falke <i>et al.</i> , 2020; Oberski, 2014; Rosseel <i>et al.</i> , 2017)
Comparative fit index (CFI)	0.94	>0.9	(Barrett, 2007; Falke <i>et al.</i> , 2020; Oberski, 2014; Rosseel <i>et al.</i> , 2017)
Standardized root mean square error of approximation (SRMR)	0.049	<0.08	(Barrett, 2007; Falke <i>et al.</i> , 2020; Oberski, 2014; Rosseel <i>et al.</i> , 2017)

**Table 5: Constructs correlation matrix (diagonal values represent square roots of AVE)**

	Loneliness (LON)	Cabin fever syndrome (CFS)	COVID-19 fear (CI)	Traumatic stress (TS)	Psychological impact (PI)	Social distancing attitude (SDA)	Social distancing intention (SDI)	Cognitive appraisal of voluntary social distance compliance (CA)	SNS usage intensity (SN)
Loneliness (LON)	<b>0.93</b>								
Cabin fever syndrome (CFS)	0.52	<b>0.75</b>							
COVID-19 fear (CI)	0.38	0.45	<b>0.96</b>						
Traumatic stress (TS)	0.48	0.57	0.426	<b>0.87</b>					
Psychological impact (PI)	0.66	0.78	0.58	0.735	<b>0.95</b>				
Social distancing attitude (SDA)	-0.04	-0.055	-0.041	-0.052	-0.07	<b>0.96</b>			
Social distancing intention (SDI)	-0.03	-0.042	-0.032	-0.04	-0.054	0.802	<b>0.97</b>		
Cognitive appraisal of voluntary social distance compliance (CA)	-0.04	-0.05	-0.04	-0.051	-0.069	0.68	0.78	<b>0.81</b>	
SNS usage intensity (SN)	0.21	0.25	0.19	0.24	0.32	0.15	0.12	0.15	<b>0.87</b>

#### 4.5 Results of the path model

The path model represents the linear regressions of the hypotheses; its effect size and p-values are shown in Figure 4.

The three regression equations for the full sample of 477 respondents are reported in Table 6. The first regression equation shows the results of the dependent variable PI regressed on the CAVSD. The second regression equation shows the results of the dependent variable SNS

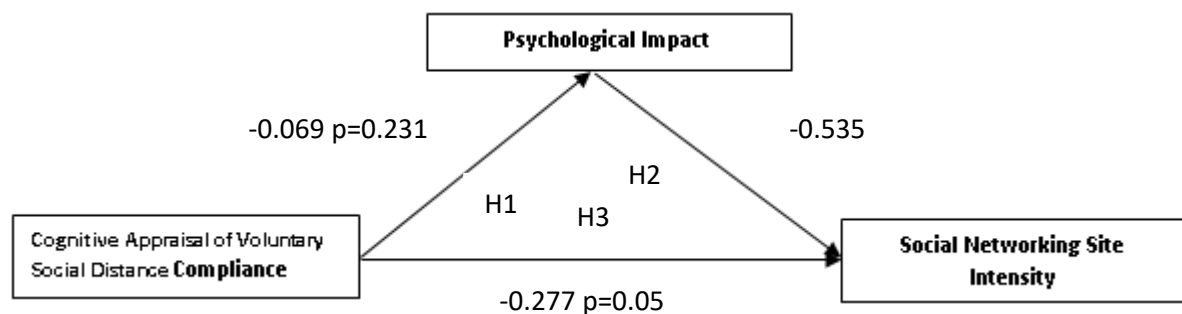


Usage Intensity regressed on the independent variable PI. The third regression equation shows the results of the dependent variable SNS usage intensity regressed on the independent variable CAVSD.

We found that the first hypothesis (H1) was not supported, although the effect size (-0.069) was in the predicted direction (negative). We found support for both the second (H2) and third hypotheses (H3) with effect sizes of 0.535 for PI and 0.277 for CAVSD, respectively (Figure 4, Table 6). These results implied that PI was a partially mediating variable between CAVSD and SNS usage intensity.

**Table 6: Regression of the path model, overall sample**

	Estimate	Std. error	z-value	P(> z )
<b>Psychological impact predicted by</b>				
1. CAVSD (H1)	-0.069	0.057	-1.198	0.231
<b>SNS usage intensity predicted by</b>				
2. Psychological impact (H2)	0.535	0.095	5.625	0.000
3. CAVSD (H3)	0.277	0.100	2.781	0.005



**Figure 4: Path model for the overall sample**

#### 4.5.1 Group analysis

##### 4.5.1.1 Sex

Next, based on our literature review (Section 2), we investigated if these results held for the various categories identified in previous research. Kimbrough *et al.* (2013) found that SNS was used more frequently by women, while Fallows (2005) posited that this difference could be due to the different motivations men and women have to use the internet. Similarly, Taylor (2009) found higher usage of Facebook by women. Accordingly, we repeated our testing on the men and women in the sample to see if COVID-19 presented a similar pattern. The results of this analysis are given in Figure 5. The model used the Lavaan CFA function grouped by the variable “Sex” in the data set. The modified path analysis by sex (male, n=225 and female, n=252) revealed that for women, the PI was affected by CAVSD with an effect size of -0.221, which was statistically significant at the 5% level. However, in the case of men, we

found that CAVSD had an opposite affect on PI to what was hypothesized, although not statistically significant (effect size=0.009). Thus, H1 held for women but not for men.

Looking at the results of the second hypothesis (H2) we found statistically significant effect sizes for both men (0.562) and women (0.452), which supported H2 and showed that PI partially mediated CAVSD and SNS usage intensity for both men and women. Considering the result for the third hypothesis (H3), we found that the results supported the hypothesis for women with an effect size of 0.279, which was statistically significant at 5%. However, for men, the effect size was smaller and marginally significant ( $p=0.075$ ). CAVSD, therefore, positively impacts SNS usage intensity even when the sample is divided by gender. The fit statistics and the  $R^2$  values of the model are listed in Tables 7 and 8. The fit statistics showed adequate model fit for sex.

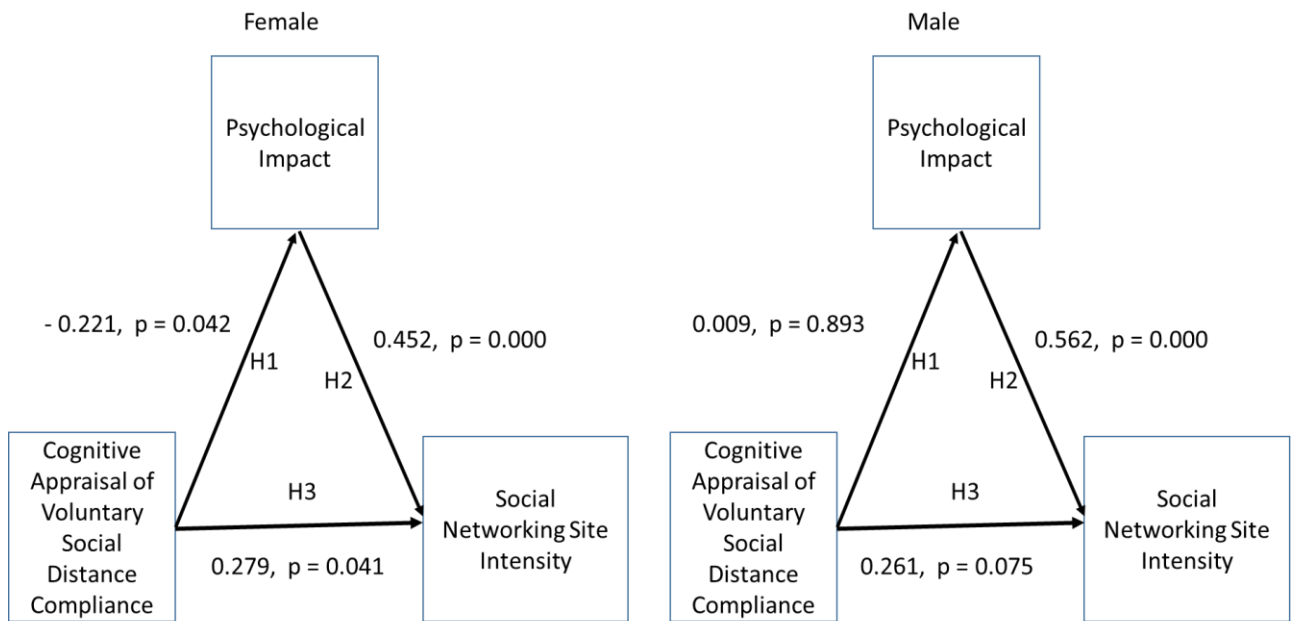
**Table 7. Model fit statistics of the path model group, Sex**

<b>Model test baseline model:</b>	
Minimum function test statistic	7498.404
Degrees of freedom	756
P-value	0.000
<b>User model versus baseline model:</b>	
Comparative fit index (CFI)	0.929
Tucker-Lewis index (TLI)	0.921
<b>Root mean square error of approximation:</b>	
RMSEA	0.054
P-value RMSEA $\leq$ 0.05	0.0504
<b>Standardized root mean square residual:</b>	
SRMR	0.076

**Table 8.  $R^2$  values of the path model group, Sex**

<b>Variables</b>	<b>Female</b>	<b>Male</b>
Psychological impact~Cognitive appraisal of voluntary social distance compliance	0.829	0.398
SNS usage intensity~Cognitive appraisal of voluntary social distance compliance	0.68	0.555
SNS usage intensity~Psychological impact	0.287	0.377

Group Analysis of Model (Gender)



**Figure 5. Path model by sex grouping**

**4.5.1.2 Age**

Concerning age groups, we tested the first hypothesis (H1), that CAVSD was negatively related to PI. The effect direction was negative as hypothesized, for the age groups <20 years old and 21–35 years old, but not statistically significant. The effect direction was positive for the third age group, but again not statistically significant. Concerning our second hypothesis (H2), we found strong support for the 21–35 years old group, with an effect size of 0.752 and statistical significance. While the effect direction was positive, as hypothesized for the other age groups, they were not statistically significant (Figure 6). Thus, we found partial support for H2, that PI partially mediates CAVSD and SNS usage intensity. Regarding our results for the third hypothesis (H3), we found support for the age group <20 years old, with an effect size of 1.319 and statistic significance. Similar to the results for the second hypothesis, in H3 the other age groups had an effect direction as predicted, but not statistically significant. Again, we had partial support for H3: CAVSD positively impacts SNS intensity. The fit statistics and the R<sup>2</sup> values of the model are listed in the Tables 9 and 10. The fit statistics show adequate model fitness for the group Age.

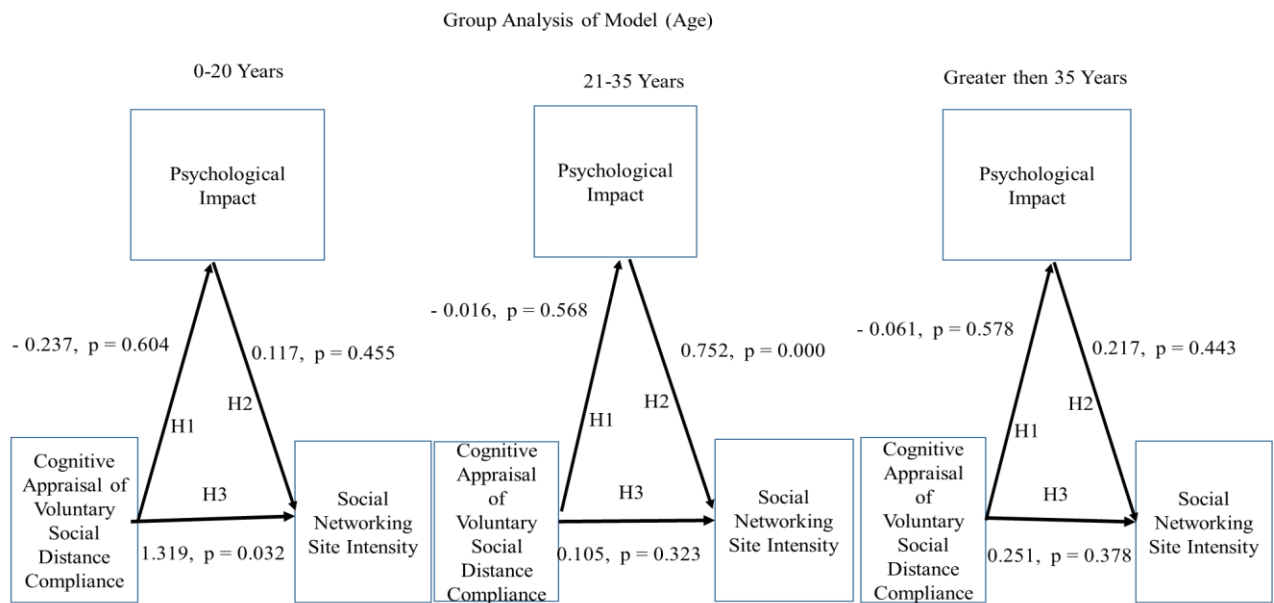
**Table 9. Model fit statistics of the path model group, Age**

Model fit test statistic	2401.559
Degrees of freedom	1364
P-value (Chi-square)	0.000
Model test baseline model:	
Minimum function test statistic	8934.227
Degrees of freedom	1512

P-value	0.000
User model versus baseline model:	
Comparative fit index (CFI)	0.96
Tucker-Lewis index (TLI)	0.945
Root mean square error of approximation:	
RMSEA	0.06
Standardized root mean square residual:	
SRMR	0.07

**Table 10. R<sup>2</sup> values of the path model group, Age**

Variables	0 to 20 years old	21 to 35 years old	>35 years
Psychological impact~Cognitive appraisal of voluntary social distance compliance	0.211	0.36	0.366
SNS usage intensity~Cognitive appraisal of voluntary social distance compliance	0.401	0.668	0.552
SNS usage intensity~Psychological impact	0.768	0.349	0.22



**Figure 6. Path model by age grouping**

#### 4.5.1.3 Work status

Our third grouping was based on work status. Since our sample consisted of 48% of students learning online and this demographic had a higher propensity to utilize SNS. We decided to analyze the data based on whether the respondent was a student learning online or not. However, since the non-student respondent would either be working from home or not, we

decided to divide the full sample into three categories, 1) working from home (WFH), 2) not working from home (NWFH), and 3) students learning online (SLO).

The H1 was related to the impact of CAVSD on PI. We found the effect to be in the hypothesized direction but not statistically significant in any sub-group, as in the full sample. Regarding our second hypothesis (H2) on the effect of PI on SNS Usage Intensity, we found that the result for the full sample held for each subset of work status sub-samples although the effect sizes differed (0.453 for WFH, 0.862 for NWFH, and 0.511 for SLO). The NWFH respondents appeared to be more affected by PI than the other two categories of respondents. Thus, PI partially mediated CAVSD and SNS Usage Intensity. Regarding the results for the test for the third hypothesis (H3), we found the effect size for SLO was 0.268, which was statistically significant, while the effects of the other two groups were in the hypothesized direction (positive), but not statistically significant (Figure 7). Therefore, CAVSD positively impacted SNS Usage Intensity for the SLO group. The fit statistics and the  $R^2$  values of the model are listed in the Tables 11 and 12. The fit statistics show adequate model fitness for the group work status.

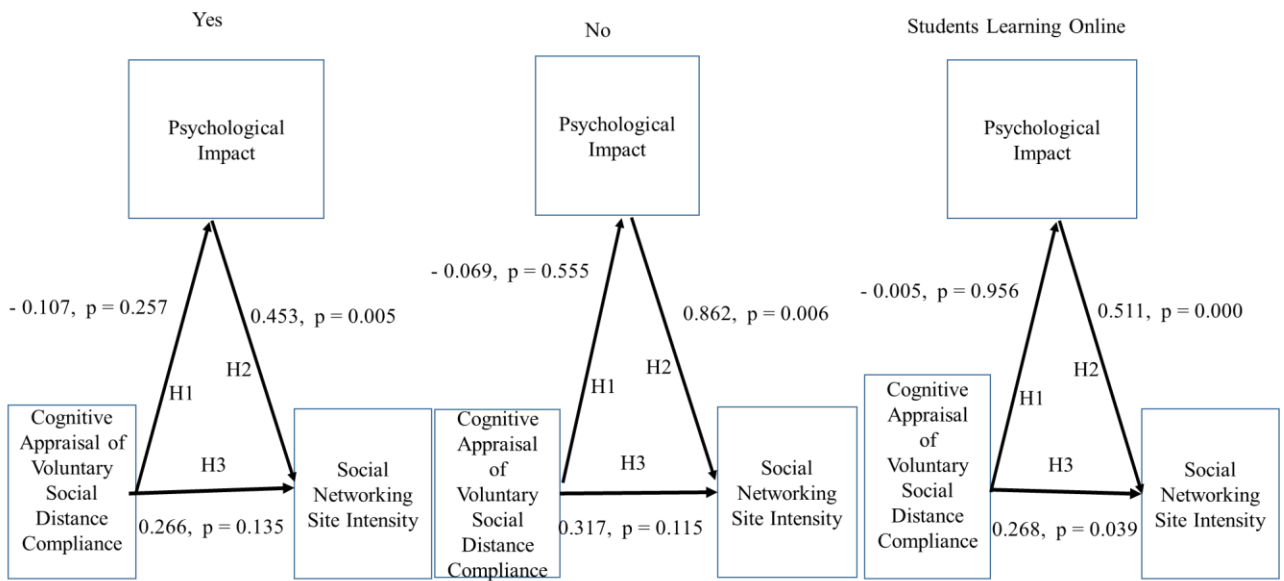
**Table 11. Model fit statistics of the path model group, Work Status**

Model fit test statistic	1707.34
Degrees of freedom	1023
P-value (Chi-square)	0.000
User model versus baseline model:	
Comparative fit index (CFI)	0.902
Tucker-Lewis index (TLI)	0.90
RMSEA	0.065
P-value RMSEA $\leq 0.05$	0.000
Standardized root mean square residual:	
SRMR	0.082

**Table 12:  $R^2$  values of the path model group, Work Status**

	WFH	NWFH	SLO
Psychological Impact~Cognitive Appraisal of Voluntary Social Distancing	0.414	0.365	0.534
Social Networking Intensity~Cognitive Appraisal of Voluntary Social Distancing	0.621	0.588	0.768
Social Networking Intensity~Psychological Impact	0.77	0.952	0.768

Group Analysis of Model ( Work From Home)



**Figure 7. Path model by Work Status grouping**

**Table 13. Results of hypotheses**

Hypothesis no.	Hypothesis statement	Results
H1	CAVSD is negatively related to PI with respect to gender, age, and work status.	Not significant
H2	PI partially mediates CAVSD and SNS usage intensity concerning gender, age, and work status.	Supported
H3	CAVSD positively impacts SNS usage intensity with respect to sex, age, and work status.	Supported

**5. Discussion**

The present study investigated the relationship between CAVSD and PI on individuals (H1), examined the relationship between CAVSD and SNS usage intensity (H2), and studied the mediating role of PI in CAVSD and SNS usage intensity (H3). Participants were 477 Indian social network users categorized by sex, age, and work status. The results of our analysis are summarized in Table 13.

Pandemics and preventive social distancing have been studied from a medical perspective regarding disease containment (Reluga, 2010; Valdez *et al.*, 2012; Adolph *et al.*, 2020; Sharma *et al.*, 2020; Wilder-Smith and Freedman, 2020), but few studies have focused on ethnic or racial social distancing (Yogeeswaran and Dasgupta, 2014; Ramasubramanian *et al.*, 2017) and social distancing concerning mental illness (Seaton and Piel, 2017; Lundquist and Gurung, 2019), and even less have looked at social distancing and human PI.

This study is the first attempt to explore how CAVSD affects individuals psychologically. But, we found that CAVSD was not a significant predictor for PI (H1) in our full sample. In terms of sex grouping, we found support for H1 in that CAVSD's impact on PI was statistically significant in women, while for men, we found the effect was in the opposite direction, although not statistically significant. As CAVSD was supposed to determine how social distancing was adopted by individuals, the present study could not link CAVSD to PI. Considering a classification based on age groups, we did not find any statistically significant results for H1, moreover, results were in the opposite direction to what we hypothesized for older respondents, i.e., those >35 years old. The results for younger respondents were as hypothesized but not statistically significant.

In the work status categories we found that CAVSD had a negative impact on PI as hypothesized, albeit, without statistical significance. The effect sizes across work status categories were quite different from each other. Social distancing intention and attitude in the form of cognitive appraisal were related to individual psychology. There is a chance that people perceive these differences and feel the psychological impact differently. One of the most significant factors that health behavior models propose is that the relationship between perceived risk and intention to avoid risk might be positive or negative (Brewer *et al.*, 2007). The present study found that CAVSD had not been effective in determining the PI of people during the COVID-19 pandemic, probably because people accepted the hazards of social proximity and accepted social distancing for health reasons. This implies that respondents in the study accepted that, as a containment strategy, social distancing was an effective measure to contain an epidemic (Lewnard and Lo, 2020). Attitude towards social distancing by a population might be affected by their perceived risk of disease occurrence (Reluga *et al.*, 2006) or it might be a result of what individuals learn from their neighbors (Chen, 2009); this eventually impacts the psychological framework of individuals.

The COVID-19 pandemic created a perception of risk and so accepting social distancing voluntarily was not psychologically impactful. This is in line with previous studies that talk about social distancing intention as a valid reaction to the hazards of an infectious disease (Maharaj and Kleczkowski, 2012). Thus, a cognitive appraisal determines whether social distancing is favorably supported or forcibly imposed. Though Cacioppo *et al.* (2011) advocates that social isolation coupled with or without loneliness has serious health effects, our study could only find a connection between CAVSD and PI in women. For social control and context, there appears to be a difference between men and women (Brody and Hall, 2008). Women also have a stronger social network (Veroff *et al.*, 1981), which was confirmed by H1 being significant only for women. Mehta *et al.*'s (2002) claim that loneliness leads to depression (psychological impact) was found to be applicable only for women. Similarly, Booth (1972) advocated that women are more emotionally connected in a social network while men are more formal. Social control theory (Travis, 1969) advocated the influence of the network, namely, that friends and relatives encourage healthy behaviors and refrain people from adopting unhealthy behaviors. To summarize: H1 was supported for women only in the categories studied, implying that CAVSD has a differential or no PI for different groups.

As for H2, we found the results applied to the full sample as well as the individual categories, with similar effect sizes for both sexes. For the full sample, this study found that PI was a significant predictor of SNS usage intensity (H2). We also established a link between PI and SNS usage intensity in both men and women. Social distancing caused economical and psychological damage that results in social disconnectedness. According to Faris (2020), quarantine enhanced psychological anxiety and isolation and led to depression. Regarding

H2, we found statistically significant results only for the 21–35 years old group. The psychological impact on this group was greatest. This young adult group was more likely to be worried about being away from the workplace, family, and isolated from friends and because they showed a statistically significant relationship between CAVSD and SNS usage intensity mediated by PI. Thus, we had evidence that PI affected SNS usage intensity in the 21–35 years old group. Hill (2020) reported that older people who are more prone to the risk of infection during a pandemic had lower conformity to social distancing. Considering our H2, that is, the impact of PI on SNS intensity for work status, we found a statistically significant effect for each category, although the effects sizes for the NWFH group were much higher than for the other two groups (WFH and SLO). Another study revealed a positive correlation between an individual's psychological depression and the amount of time he/she engaged in social networking (Pantic *et al.*, 2012). Studies found that students who had depressive symptoms engaged in SNS more than those who were without psychological symptoms (Campbell *et al.*, 2006; Morrison and Gore, 2010). One study found that online chatting was perceived by SNS users to be of assistance to cope with social fearfulness (Campbell *et al.*, 2006). Some researchers also argued that there are therapeutic benefits of the usage of SNS (LaRose *et al.*, 2001). To this effect, Hamman (1999) asserted that ethnographic research found that on-line interaction supplemented physical real-world relationships. Thus, we claimed that the PI of social distancing leads to social networking intensity in the full sample, in both sexes, all work statuses, but not in the age group 21–35 years old during a pandemic.

In the context of the third hypothesis (H3) we found CAVSD positively impacted SNS intensity in the full sample and had similar effect sizes for both sexes. The results of the tests for H3 also showed that CAVSD had a significant effect on SNS usage intensity only for the youngest age group, with an effect size that was much larger than for the other age groups. CAVSD was also a significant predictor of SNS usage intensity (H3). Our third hypothesis, how CAVSD impacts SNS usage intensity yielded statistically significant results for the SLO group alone. To summarize, the SLO group showed results similar to the full sample in terms of effect sizes and significance, while WFH and NWFH showed support only for H2. This study found that the PI of social distancing impacted social networking intensity. Social networks have been referred to as a world of connectivity (Turkle, 2017) and during periods of social distancing people want to be connected virtually through social media. In a similar line, one study found that updating statuses on SNS reduced loneliness and that individuals felt less lonely when they participated in social networking through social media (Deters and Mehl, 2013). When physical proximity is not possible, computer-mediated communication helps to maintain and solidify relationships (Ellison *et al.*, 2007). Self-disclosure behavior on SNSs in the form of sharing and updating impacts psychological health (Lee *et al.*, 2011). This study asserts that social distancing distress is reduced by increased social media engagement. Social networking in this study replaced physical proximity. Due to social distancing, people experienced a form of social disconnectedness. Social distancing creates a feeling of social disconnectedness, which is a subjective experience when people feel scarcity in terms of companionship and thereby SNS usage intensity increases. This was statistically significant in the SLO group, as students who were studying online had to be on social network platforms for their classes, to attend webinars, stay in touch with their friends, and to stay connected. People working from home (WFH) were more engaged in their official work platforms than those who were staying at home but not working (NWFH).

The present study was a countrywide study in India where there was social distancing and lockdown at a country level during the COVID-19 pandemic, as in other countries. Social



networking platforms provided a means for social interaction. Thus, our study contributes to the social exchange model (Blau, 1964) in a virtual social network. Social networking during a pandemic-related lockdown paved the way for a personal cost-benefit analysis of human interaction as other alternatives were not available. The perceived benefit of social networking is higher than the cost of physical networking in a pandemic situation. Considering the above results for the full sample and the different subsets of the sample, we saw concentrations of the following groups driving the results: a) women, b) SLO and c) the 21–35 year old group. The hypotheses were also differently supported by the different groups of samples. Thus, it can be said that, although the boon of internet technologies and social media platforms were indeed the same for all, the usage and benefits reaped from these platforms were perceived differently by different individuals. Social networking is therefore different for different groups of people and led by push-pull factors (Lin *et al.* 2020) that still need to be studied.

### **5.1 Theoretical contributions**

This study contributes to the existing literature by positing social networking as a basic virtual need for socialization and that social media platforms assist in that. Cognitive appraisal is an important determinant of individual response (Roesch *et al.*, 2005) and leads to health outcomes (O'Connor *et al.*, 2010). During periods of social distancing, people's need for physical socialization is not met and results in PI. The results also indicate that the PI of social distancing increased SNS usage intensity that may be critical to combat extreme levels of uncertainty and complexity during a pandemic (Yoo *et al.*, 2016; Kim *et al.*, 2018). The results of the study validate the theory of new-generation virtual needs, which states the major motivation for people to social networking is the need to retain citizenship in the virtual society (Krishen *et al.*, 2016).

The results of the study also contribute to the theories of psychological coping. To alleviate the psychological impact of social distancing during a pandemic (Montemurro, 2020; Pakpour and Griffiths, 2020) social networking and internet usage have been identified as coping responses to psychological problems (Bernardi and Pallanti, 2009; Morrison and Gore, 2010).

This study also contributes to the literature of cognitive dissonance as it is linked to internet use (Jeong *et al.*, 2019). As social animals, people favor social gatherings and social proximity, so supporting social distancing when faced with a health threat creates cognitive dissonance. In light of cognitive dissonance, CAVSD can be stressful and this stress expresses itself in the form of PI. Thus, a discrepancy in social proximity intention and the adoption of social distancing is psychologically impactful. People respond to this stress by adopting coping strategies for social networking.

This study has been able to link the PI of social distancing with social networking and show how effectively social media platforms and social networking can be used during a crisis for positive activities such as learning, creating awareness, and information dissemination (Kim *et al.*, 2018; Manika *et al.*, 2017; Martin *et al.*, 2020; Qiao *et al.*, 2019). On a learning and development level, social networking enhances learning (Valdez *et al.*, 2020), moreover, during the COVID-19 pandemic SNSs also offered free training and certification courses and webinars. Social networking contributed by offering virtual audiences an opportunity to learn and acquire knowledge and skills in their areas of interest at their own pace.

Increased social networking during social distancing impacts well-being and reduces depression (Chopik, 2016), and online games can have a positive effect on users' mood (Hassan *et al.*, 2019). From a social-psychology perspective, forced physical isolation increases virtual social bonding by helping people to stay connected. No longer busy in self-orientated "normal" life, people reach out to friends and relatives, and engage in more calls, chats, video meetings, daily live videos, hash-tag challenges, and so on. Our analysis also points out that these impacts are not uniform across all groups but may vary based on sex, age, and work status. Thus, we are able to contribute to an understanding of the role of individual versus group differences in the impact of CAVSD and PI and SNS usage intensity.

## ***5.2. Implications for practice***

The findings of this study are significant for organizations, corporate, educational, public, or private sectors. There is a need to identify that subsection of employees or students who might need social support and relief from isolation and loneliness. The counseling function within an organization needs to take into account that the increased intensity of SNS usage may stem from the psychological impact of isolation due to social distancing or other reasons. Thus, when conditions go back to normal, cyber "loafing" and other dysfunctional behavior resulting from increased SNS usage intensity need to be seen in context by respective managements. Even this may manifest as "phubbing" (ignoring others to play on a device) behavior in meetings or classrooms. These need to be handled at an individual level, taking into account the cognitive appraisal made by the individual. This implies that the HR function has to focus on the individual characteristics of the employee rather than treat them as a group of employees. This might require an added emphasis on psychometric testing and understanding individuals' psychological makeup.

Our results demonstrate that the nature of the impact of CAVSD and PI on SNS usage intensity depends on the category that the employee may fall into. Thus, the results of the study have important implications for employers who have a large proportion of female employees and or younger employees in their ranks. The SNS usage intensity of these groups is impacted more by the CAVSD and PI than men or older employees, implying again that counseling and other employee engagement activities be tailored for these groups. The results of the study have an important implication for the educational sector as well. The future of education involves a substantial portion of online education, irrespective of when normal times return. Our results show that students learning online from home were also impacted in terms of SNS usage intensity by the CAVSD and PI and may exhibit the same behavior on campus. Educators will be required to take this into account in setting campus policies for SNS use.

Mental health experts advise curbing the unhindered consumption of news related to the pandemic (infodemic). The government has a critical role to play to ensure that transparent channels of information from the administration feed citizens with the required information to help reduce fear. When citizens have adequate, authentic information they will act rationally. When individuals are made aware of the measures they need to take during a crisis, it will help them psychologically to tackle fear.

Business organizations should focus on employee engagement programs to help beat COVID-19 stress. Corporations should find ways to stimulate their employees working from remote locations to stay motivated and thereby continue to contribute productively as many of them may be struggling with the emotional aftermath of the COVID-19 pandemic. Organizations must take up initiatives to help employees to cope up with the psychological

turmoil that many may experience. Communication with employees from the organization's leadership team on a continual basis can create a sense of belonging and uplift employees' self-esteem and engagement.

Employees who are required to work remotely tend to miss the group interactions in an office environment and may at times start to feeling excluded (Brooks *et al.*, 2020; Ter Hoeven and van Zoonen, 2020). Forming and maintaining social contact in virtual platforms can help in building team spirit. The problem of exclusion is particularly true for those employees who are working remotely for the first time. This virtual distance can lead to a growing sense of detachment when individuals tend to rely on technology rather than human interaction.

Companies that operate in India may utilize this situation as an opportunity to calibrate their employees to acclimatize to a "new normal" system of working in a void without customers or other employees. This period of unpredictability can generate prospects that organizations can leverage if they are equipped. In a pandemic, business organizations need to take firm decisions from a strategic perspective. The COVID-19 pandemic and the resultant lockdown have taken a toll on the mental health of scores of people working from home. With fear and anxiety about economic uncertainty on one side and family issues on the other, individuals working from home are undergoing mental stress and a range of behavioral issues. Psychologists also warn that a sudden feeling of isolation can lead to a host of behavioral and emotional issues including depression, agitation, anger, and loneliness. Companies could make extensive use their virtual social medium to conduct employee outreach programs to connect with their employees.

## **6. Conclusion, limitations, and scope for future research**

Our study focused on exploring the effects of CAVSD and related PI and SNS usage intensity. The research was restricted to people who had access to the internet and who were conversant with Google forms and English. Future research may accentuate those social media users who may have less distress compared with non-social media users. The study was conducted to investigate the impact of CAVSD on SNS usage intensity and may be further extended to investigate other behavioral changes such as frequency of watching Netflix or TV. The pandemic has seen a major trade-off between the value of life, the psychological impact of isolation, and the economies of countries. India took the decision to save human lives over the economy by following the WHO protocol of a complete lockdown; that said, the ill effects of social distancing are visible in countries in terms of social unrest and psychological distress. The results of this study highlight that CAVSD have PI, but the effect size varies in groups categorized by sex, age and work status. The findings also highlight the effect of CAVSD and PI on SNS usage intensity and that it varies in the groups categorized by sex, age and work status.

Some important limitations of the study should be noted. Since the study was carried out on Indian respondents, the generalizability of the results is limited to countries with similar characteristics as India in terms of internet penetration, SNS usage, and regulatory regimes during the lockdown. This, however, provides an opportunity for researchers to replicate the study in other environments to see if similar results hold. Further, we were compelled to use a limited snowball sampling technique due to the constraints of the research methodology. A more extensive sample could be used to provide better statistical validity for the results. It should also be noted that our subgroups may not represent the population of SNS users as a whole. This may lead to limitations in the applicability of the results.

Future research could focus on other subgroups such as nationality, education, job categories (including the essential services workers), social status, and socio-economic status. While this study provides novel evidence on the impact of CAVSD and PI on SNS usage intensity, it also opens up the field for further research that considers various factors that make up the cognitive appraisal and various behaviors that manifest PI. Thus, we feel that this study makes an important contribution in the field of human behavior and internet usage among different groups of people during a pandemic outbreak.

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Construct (Latent variables)	Constructs and Definition		Source	AVE (SQR of Average Variance Extracte d)
<b>First Order Latent Variable: LONELINESS (LON)</b>	<i>Loneliness is defined as the distressing condition that an individual experience subjected to reduced quantity or quality of social relationships.</i>		Russell <i>et al.</i> , (1978)  Hughes <i>et al.</i> (2004)	0.935
<b>Measuring Items</b>	L1	These social distancing/lockdown days make me feel that I lack companionship.		
	L2	These social distancing/lockdown days often make me feel alone.		
	L3	These social distancing/lockdown days make me feel isolated from others.		
	L4	These social distancing/lockdown days makes me feel I don't have people around, whom I can talk to.		
<b>First Order Latent Variable Cabin_Fever_Syn drome(C_F_S)</b>	<i>Cabin fever syndrome is defined as the stressful bad temper combined with claustrophobic restlessness when an individual is caught at an isolated place or in a confined location for a long time.</i>		Fritscher (2020)  Robinson (2020)	0.756
<b>Measuring Items</b>	CFS1	I feel restless staying at home.		
	CFS2	I have trouble concentrating while staying at home during social distancing/lockdown.		
	CFS3	I have food cravings while staying at home during social distancing/lockdown.		
	CFS4	I have a feeling of social isolation while staying at home during social distancing/lockdown.		
	CFS5	I feel lethargic while staying at home during social distancing/lockdown.		
<b>First Order Latent Variable COVID-19 Fear</b>	<i>Fear of individuals during the COVID-19 outbreak, to get infected by the coronavirus, which is marked by various fear-related symptoms.</i>		De Zwart <i>et al.</i> (2007)  McAlonan <i>et al.</i> (2007)  Wang <i>et al.</i> (2020)  Zhang <i>et al.</i> (2014)	0.964
<b>Measuring Items</b>	COVI D1	Even in social distancing/lockdown, I am often worried about being at the risk of the coronavirus.		
	COVI D2	Even in social distancing/lockdown, I feel extremely anxious when I think of an individual and his family problems after a possible risk of the incidence of coronavirus.		
	COVI D3	Even in social distancing/lockdown, I get anxious and disappointed when I think of being affected by a coronavirus.		
	COVI D4	Even in social distancing/lockdown, I am living with the fear of infection.		
<b>First Order Latent Variable Traumatic Stress (T_S)</b>	<i>Traumatic stress is defined as the stress experienced by individuals during COVID 19 outbreak, characterized by fear and anxiety about COVID 19 infection; this can be overwhelming and trigger strong negative emotions in individuals.</i>		Huang <i>et al.</i> (2020)  Holshue <i>et al.</i> (2020)	0.880
<b>Measuring Items</b>	TS1	The coronavirus outbreak gave me difficulties staying asleep.		
	TS2	I think about the coronavirus, even when I didn't mean to.		
	TS3	I have waves of strong feelings about the coronavirus.		
	TS4	I had dreams about coronavirus affecting me and my family.		
	TS5	I am watchful and on-guard about coronavirus.		
<b>Second-Order Latent Variable</b>	<i>Psychological impact refers to the effect caused by COVID 19</i>		Wang <i>et al.</i> (2020)	0.953

<b>Psychological Impact(P_I)</b>	<i>pandemic on an individual's psychological health.</i>		Ho <i>et al.</i> (2020)	
<b>Measuring Variables</b>	LONELINESS		Cao <i>et al.</i> (2020)	
	Cabin Fever Syndrome (C_F_S)			
	Covid_19_Fear			
	Traumatic Stress			
<b>First Order Latent Variable: Social Distancing Attitude (S_D_A)</b>	<i>Social distancing attitude refers to the attitude individuals hold with respect to accepting social distancing among people, as a means to prevent the spread of coronavirus infection.</i>		Afeand Ogunsemi (2016)	0.968
<b>Measuring Items</b>	AT1	In my opinion, the use of social distancing will have a positive impact to control COVID-19	Azodo and Ogbebor (2019)	
	AT2	The use of social distancing is beneficial for the care of the patients	Williams <i>et al.</i> (2015)	
	AT3	I find it interesting to use social distancing for the control of COVID-19		
<b>First Order Latent Variable Social Distancing Intention (S_D_I)</b>	<i>Social distancing intention refers to the intention to adopt social distancing among people, as a means to prevent the spread of coronavirus infection.</i>		Williams <i>et al.</i> (2015) Fong <i>et al.</i> (2020)	0.971
<b>Measuring Items</b>	IN1	I have the intention to use social distancing when it becomes useful to avoid COVID-19		
	IN2	I have the intention to use social distancing when necessary to provide good results to avoid COVID -19		
	IN3	I have the intention to use social distancing for the care of myself and others		
<b>Second-Order Latent Variable Cognitive Appraisal of Voluntary Social Distancing Compliance (CAVSD)</b>	<i>Cognitive appraisal refers to the personal interpretation of the seriousness of the COVID 19 pandemic that impacts whether the pandemic is perceived as stressful.</i>		Gurnani (2020, March 17)	0.812
<b>Measuring Items</b>	Social Distancing Attitude			
	Social Distancing Intention			
<b>First Order Latent Variable Social Networking Usage Intensity (S_N)</b>	<i>Social networking intensity is defined as the extent to which as an individual is actively occupied in social networking activities</i>		Adapted from, Eidand Al-Jabri; (2016)	0.870
<b>Measuring Items</b>	SNI1	During social distancing/lockdown I am using social networking (SN) more than normal.		
	SNI2	During social distancing/lockdown I am logging into my SN sites more frequently.		
	SNI3	During social distancing/lockdown I am sending/forwarding messages to my friends more than normal.		
	SNI4	During social distancing/lockdown I am using social networking sites for reading news. Attending social gathering.		