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Mediating Effect of WhatsApp Addiction Between Social Loneliness and Preference for Online Social Interaction: A Cross-cultural Study

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Abstract

The present study aims to explore the relationship between social loneliness and online interaction through WhatsApp addiction among a sample of Indian and Fijian respondents. Based on the responses of 202 Indian and 73 Fijian respondents, the present research study validated the mediating role of WhatsApp addiction, revealing that social loneliness increased the possibility of preferring to interact online through increased WhatsApp addiction. The empirical results showed that the underlying mechanism of social loneliness might indirectly influence consumers' preference for online social interaction (POSI). The study further assessed the moderating role of culture in the association between social loneliness and POSI. Findings of the moderated mediation analysis demonstrated that, the association between loneliness and preference to socialize online differed, based on the identified cultural differences between Indian and Fijian groups.

Keywords

Social loneliness, preference for online social interaction, WhatsApp addiction, cultural difference, structural equation modelling

Introduction

Widespread expansion of new digital and social media has transformed the way people communicate and interact with each other. Under the umbrella of social media, social networking sites (SNSs) are most commonly used platforms of communication, wherein, according to Wang and Wang (2018), there has been an unprecedented increase in the usage of these platforms for networking and communication, especially among the younger generation. These SNSs are broadly defined as the websites and applications that enable users to create and share content within networks (Abu-Salih et al., 2019; Kaplan & Haenlein, 2010). Furthermore, as the number of worldwide mobile phone subscriptions escalates

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(Agarwal et al., 2019) and with an increase in the number of adults owning smartphones, more and more people are using their phones as a form of connectivity, social relations and communications. Students, the young, in particular, are hitched to their mobile devices through different formats of social networking applications. Various social media platforms have become an integral part of youngsters' daily lives (Manca, 2020; Rospigliosi, 2019). Among these, vastly popular social networking sites like Twitter and Facebook have been the subject of several scholarly investigations (Bodily et al., 2019; Chugh & Ruhi, 2018). However, there are many other platforms, which have been gaining in popularity among the youth, have been largely overlooked by researchers. These include Internet-based mobile messaging applications, characterized by the use of multimedia (audio and video), that have drastically replaced the initial text-based messaging to instant messaging (Cetinkaya, 2017; Sultan, 2014). WhatsApp is one such application that has become popular for social networking (Aizenkot, 2017; Aizenkot & Kashy-Rosenbaum, 2018; Rossini et al., 2021).

WhatsApp is a free communication app installed primarily on smartphones and is used for instant text and voice messaging, sharing photos, videos and video calls (WhatsApp, 2018). There are a number of arguments for considering WhatsApp as a social media. First, WhatsApp prompts users to provide personal information and create their profiles, including their photo, name and status (Thorne et al., 2015). Second, this provides its users a platform to create and manage group communications such that the creator of the group can add new or remove existing members from the group (Bouhnik & Deshen, 2014). These characteristics make WhatsApp application a mobile-based social network (Fischer, 2013).

Growth and popularity of social media have generated concerns among socio-psychological researchers about the potential risks facing the population that is engaged in online social networking to cater to their social needs rather than face-to-face communication (Adhikari & Panda, 2019; Benson et al., 2018; Rasmussen et al., 2020). Despite the fact that most of us spend a large amount of time connected to others in some way, studies show we are lonelier than ever (O'Day & Heinberg, 2021). Verduyn et al. (2017) found that even passive use of social media was associated with increased social loneliness.

The frequent use of social media has also led to a number of behavioural and psychological problems, including preference of socializing online rather than face to face (Al-Kadi, 2018; Bakeer, 2018; Kuss & Griffiths, 2012). Such obsessive and uncontrolled social media usage has been known to be linked to negative effects on psychological well-being, like loneliness, among others (Chen & Lee, 2013; Thomas et al., 2020). However, some researchers have found positive relationship between the usage of Internet and psychological well-being (Houghton et al., 2020; Mesch & Talmud, 2006). For instance, greater involvement with online communities was related to lower levels of stress (Shaw & Gant, 2002) and increased satisfaction with life (e.g., Ang et al., 2015; Keresteš, G., & Štulhofer, A. (2020)). In the midst of such conflicting results surrounding the Internet in general, and social media, in particular, it becomes imperative to take a closer look at the Internet, and more specifically the social media, and the consequences due to its increased usage.

Although a dominant form of mobile-specific social media, WhatsApp has not been the focus of much scholarly attention. A number of studies have found the relationship between use of mobile phone and psychological well-being (Alhassan et al., 2018; Chan, 2013; Jin & Park, 2013; Sha et al., 2018; Whitty & McLaughlin, 2007); however, these studies have largely focused on mobile communication but do not account for the outcomes that addiction to social media generates. Despite the popularity and variety of social media, the extent to which different social media might affect offline well-being remains understudied. This is in contrast with earlier studies that have researched on the implications for well-being as technologies such as radio, television and, now, the Internet and social networking sites (Lazarsfeld, 1940; McKenna & Bargh, 2000; Perse & Rubin, 1990; Waheed et al., 2019).

Experiences of loneliness vary across cultures. This is mainly due to culturally distinctive expectations regarding relationships. The present research study, therefore, not only assesses the association between loneliness and online social interaction and how they are linked with WhatsApp addiction but also does so in the context of two different cultures—India and Fiji.

Therefore, we identify two major gaps in literature. First, while there is some previous research studies measuring the relationship between the two constructs of social media addiction and preference for online interaction (e.g., Caplan, 2003; Caplan & High, 2012), the links have not been adequately researched, and therefore, it is timely to examine this relationship with respect to a specific social media—WhatsApp. Second, it is worthwhile to study this by using a cross-cultural sample. To the best of our knowledge, the relationship has not been examined on a cross-cultural sample. Failure to find a clear association between WhatsApp use and psychosocial variables necessitates systemic and comprehensive research in this direction.

Including the earlier introduction section, the article has been divided into eight sections. Literature review of related studies is followed by the objectives section detailing the objectives of the present study. The fourth section presents the methodology adopted, including data source, sampling techniques and measures adopted for this study. Analysis of data and findings form part of the fifth section, followed by discussion on the findings. The final two sections discuss the practical and managerial implications of the study, as well as the limitations and agenda for future research. The following section presents a review of related literature.

Review of Literature

Role of Culture in Social Network Use

Individuals belonging to various cultures learn different theories of communication to guide their behaviour through the socialization processes (Hofstede, 1980). At the same time, peoples' usage of social networks has been found to be influenced by their cultural background. Research has indicated that, people differ in the way they socialize, based on their culture (Morio & Buchholz, 2009). A small number of cross-cultural studies have analysed differences in the impact that culture has on online social networking. Table 1 shows some important studies that have analysed the influence of culture on online social behaviour. It is observed that majority of the studies use Hofstede's dimensions—some consider all the dimensions together (Al Omoush et al., 2012)—while some others consider specific dimensions of the model (e.g., Marshall et al., 2008). These works confirm that cultural dimensions are related to social media behaviour (Veltri & Elgarah, 2009). Specifically, there is a complete lack of investigation comparing Indian and Fijian cultures, which adds greater value to our research. Therefore, the aim of the present study is to complement previous literature by understanding predictors of online social media interaction in the context of India and Fiji—two countries with slight cultural differences.

The Hofstede's Model of Cultural Values: Comparing India and Fiji

Most of the researchers have studied the cultural dimensions of Hofstede to discuss the impact of national culture on different issues of SNSs. The model (Hofstede, 2001) is probably one of the most widely adopted framework to explain cultural differences. According to the original Hofstede model, cultures have been differentiated according to power distance, individualism/collectivism, masculinity/femininity

Table 1. Previous Research on the Links Between Cultural Dimensions and Online Social Behaviour.

Study	Cultural Dimensions	Countries	Relevant Findings
Al Omoush et al. (2012)	Hofstede's cultural dimensions	Arab	Arab youth seek to liberate from all the kinds of restrictions to satisfy their human needs through joining SNSs, but their attitudes are still influenced by the cultural values of the Arab nation
Marshall et al. (2008)	Individualism/collectivism	India and the USA	Individualists are assumed to be more trusting, active and mobile in developing online friendships
Cardon et al. (2009)	Individualism/collectivism	China, Macao, Israeli, Indian, Turkey, the USA, French, Egyptian, Korea and Sweden, Thailand	Found no differences in the number of offline friends and number of online social ties between individualist and collectivist nations
Veltri and Elgarah (2009)	Power distance, individualism, uncertainty avoidance and masculinity	Morocco and the USA	Moroccan users are high on uncertainty avoidance than their US counterparts, and thus, they exhibit lower perception of relative advantage of using social networks
Yoo and Huang (2011)	Power distance, individualism and uncertainty avoidance	The USA and Korea	Korean students were more apprehensive about accepting SNSs as compared to their counterparts in the USA
Choi et al. (2011)	Individualism/collectivism	The USA and Korea	Use of SNSs for relational purposes are still culturally driven; Americans held larger but looser networks with a far greater portion of weak ties, whereas their Korean counterparts maintained smaller and denser networks with the roughly even ratio of strong and weak ties
Guo et al. (2011)	Individualism/collectivism	The USA and China	Distinctions exist between the USA and Chinese SNS subscribers in terms of SNS use and perceptions

Source: The authors.

and uncertainty avoidance, with the subsequent addition of two more dimensions (i.e., long-term orientation and indulgence). A comparison of over 70 countries for each dimension, on a scale from 0 to 100, is provided (hofstede-insights.com, 2021). Following this comparison, each country has a position on each dimension of the framework.

A comparison of India and Fiji, on the original four dimensions of the Hofstede's model (scores for Fiji on the long-term orientation and indulgence dimension are not provided), offers similar values on most of the dimensions, with a large difference in individualism (48 vs. 14, respectively), as can be observed in Table 2.

Table 2. Cultural Differences Between India and Fiji.

Cultural Dimension	Brief Description	Score for India	Score for Fiji	Cultural Difference
Power distance	Refers to the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally	77	78	1
Uncertainty avoidance	The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid uncertainty	40	48	8
Individualism (vs. collectivism)	In individualist societies, people look after themselves and their direct family only. In collectivist societies, people belong to 'in-groups' that take care of them in exchange for loyalty	48	14	34
Masculinity (vs. femininity)	A high masculinity score on this dimension indicates that the society will be driven by competition, achievement and success. A feminine society is one where quality of life is the sign of success, and standing out from the crowd is not admirable	56	46	10

Source: Elaborated by the authors with values taken from http://hofstede-insights.com/product/compare-countries

A comparison of the Indian and Fijian scores on the four dimensions reveal that India and Fiji are very similar, although India turns out to be more individualistic and more masculine when compared to Fiji. Comparison of the two countries, based on the description of power distance dimension, revealed that both cultures show similarity such that people in both the cultures accept hierarchal order in society and a top-down structure in organizations. Additionally, Fiji society is slightly higher on uncertainty avoidance as compared to the Indian society. The relatively low score on this dimension explains the pragmatic culture of Fiji in terms of ambiguity avoidance. Accordingly, people within this cultural are more relaxed and have a higher degree of acceptance for new ideas. In turn, India scores a little less on the preference for avoiding uncertainty.

Objectives of the Study

Based on the extensive review of literature on social media use and psychological well-being, the present study undertakes to understand factors like addiction and social loneliness related to Internet users. This

research study seeks to examine the relationship between social loneliness and preference for online interaction in the context of a popular social networking site—Whatsapp—among Indian and Fijian respondents.

Theoretical Framework of the Study

Researchers in the past have linked poor mental health with being lonely (Mushtaq et al., 2014). According to the uses and gratification theory—UGT (Katz et al., 1974; Thomas et al., 2020), poor mental health is a significant predictor of heightened social media use (Bulut & Dogan, 2017). UGT, which has its roots in the communications literature, assumes that individuals choose to engage in certain types of media (e.g., social media) to satisfy some needs. A major motivation to engage in media usage, in general, involves escapism from everyday mundane activities (Coyne et al., 2013) that cause a feeling of loneliness among people (Song et al., 2014). In such situations of loneliness, social media is perceived as a support (Gowen et al., 2012). In other words, when feeling lonely, social media is a way to suppress or avoid the negative emotion of loneliness (van Deursen et al., 2015). The UGT, which was initially used in the context of mass media, explains the excessive use of social media due to the gratification or benefits that the user finds, attracting them to social media to fulfil their psychological and social needs (Dunne et al., 2010; Gan et al., 2017). The basic premise of UGT is that individuals seek out media that fulfil their needs and lead to ultimate gratification (Lariscy et al., 2011). Some studies have found the relationship between emotional problems and the use of social media (Hormes et al., 2014). For example, many people with mental health issues switch to social media as a coping strategy (Gowen et al., 2012; van Deursen et al., 2015). Therefore, according to UGT, the need to overcome social loneliness will result in people gravitating towards social media to fulfil and satiate this specific need (Rubin, 2002).

By applying the UGT in the context of social media, this research study seeks to provide a comprehensive understanding of consumers' preference to the use of social media platforms, specifically WhatsApp, for social interactions.

Social Loneliness and Preference for Online Social Interaction

The association between Internet use and users' psychological dysfunction, like loneliness, has been popular with the researchers for the past many years. In particular, the concern is increasing, owing to the psychological apprehensions surrounding the rising Internet use. Scholars have investigated the psychological well-being and behaviour associated with Internet use and specific individual differences, including age, gender and personality (Tosun & Lajunen, 2010). Among the range of personality characteristics and emotions experienced by individuals, loneliness and the psychosocial outcomes of online social network engagement have increasingly attracted research attention (Kraut et al., 2002; Song et al., 2014).

POSI is defined as a 'cognitive individual-difference construct characterized by beliefs that one is safer, more efficacious, more confident, and more comfortable with online interpersonal interactions and relationships than with traditional face-to-face social activities' (Caplan, 2003, p. 629). Numerous studies have investigated both the causes and consequences of online engagement. A few studies have examined and found support for the relationship between social loneliness and preference for online social interaction—POSI (Kraut et al., 2002; McKeena et al., 2002; Ye & Lin, 2015), but the results

have been mixed. While McKeena et al. (2002) found support for the positive relationship between loneliness and individuals' tendency to express on the Internet; Kraut et al. (2002) found that extensive Internet use is associated with loneliness. Therefore, causal direction of this relation seems unclear. However, a meta-synthesis of qualitative studies carried out by Douglas et al. (2008) from 1996 to 2006 has found that feeling of loneliness is an antecedent resulting in excessive Internet use. Other researchers have found similar results of association of loneliness with excessive Internet use (Morahan-Martin & Schumacher, 2003).

In the context of mobile phone usage, past researchers have mainly focused on the communicative aspects (Ling, 2008). However, with the advancement in technology, the mobile phone is no longer just a device for communication only. Nowadays, mobile phones use a hybrid technology that integrates audio, video and text with a display screen, which is increasingly being used to connect with family and friends. A research study carried out by Wei and Lo (2006) to study the mobile phone usage among adults in Taiwan found that social-orientated uses were related to lower levels of loneliness and shyness. Similarly, Jin and Park (2013) conducted a research study in the USA and found that face-to-face communication was related to decreased feelings of loneliness, but mobile phone use was related to increased loneliness. A research carried out by Reid and Reid (2007) found similar relationship for adults in the UK.

Based on the vast body of well-documented research studies examining the effect of loneliness on increased Internet usage, we expect that *Social Loneliness positively predicts POSI (H1)*.

The Mediating Role of WhatsApp Addiction

Although research predicts that social loneliness is one of the key drivers of individuals' POSI, it raises the question of whether this relationship is true for all those who experience social loneliness or if this relationship depends on individuals' behavioural characteristics.

A pool of research in the past has focused on examining the negative influence of various personality factors, specifically the five-factor model (McCrae & Costa, 1997), representing extraversion, neuroticism, openness to experiences, agreeableness and conscientiousness on the use of Internet (Ehrenberg et al., 2008). In the present scenario, however, measuring the consequences of uncontrolled and excessive use of the Internet is fast emerging as a central focus of several recent studies as the problems associated with its excessive use and addiction have become more and more frequent. More specifically, with the popularity and widespread promotion of the Internet, behavioural addictions have become the focus of several studies (Widyanto & Griffiths, 2006).

A persons' Internet addiction is conceptualized as a type of impulse control disorder that is similar to addiction associated with conventional mass media (Kubey & Csikszentmihalyi, 2002). These symptoms commonly associated with the Internet may conceptually be considered similar to other forms of social media, like WhatsApp addiction.

Although several researchers have indicated that the Internet user may become addictive (Griffiths, 1999; Suresh & Biswas, 2019; Young, 1998), many researchers still question whether this addiction is to the platform or to the content of the Internet (Griffiths, 1999). Among the several online activities and Internet-based applications used by people to connect with others, social networking has been one of the predominant activities. Specifically, among the social networks, Facebook has been one of the most popular online brands worldwide (Nielsen Company, 2010). The excessive use of the Internet for social networking, rather than the non-social functions, such as emailing or gaming, have largely contributed

to the creation of Internet addicts (Kesici et al., 2009; Kuss & Griffiths, 2011). This addiction has been proposed as an explanation for the damaging and uncontrollable usage of the Internet (Beard, 2005).

Furthermore, studies reveal that people engaging in uncontrollable Internet use experience a higher degree of loneliness as compared to those who are not addicted to usage (Morahan-Martin & Schumacher, 2000). More interestingly, a variety of early studies (Ghassemzadeh et al., 2008; Liu et al., 2009; Tokunaga & Rains, 2010) have found a moderate and consistent link between loneliness and problematic Internet use.

According to Davis (2001), depressed and lonely people are more vulnerable to Internet addiction and prefer online interactions rather than face-to-face communication. As a result, these individuals will be inclined to prefer online social interaction. POSI is a cognitive symptom of problematic Internet use (Caplan, 2005).

Similar to Facebook addiction, conceptualized as a behavioural control problem with respect to Facebook users, WhatsApp addiction may be considered as a condition marked by the users' inability to control their activities related to the medium. Since both are forms of social media, obsession to either is likely to exhibit similar addictive tendencies. However, as WhatsApp is a very recent social phenomenon, there is a distinct lack of psychological theory relating to its use. Therefore, in the absence of literature related to WhatsApp addiction and based on the above-mentioned line of reasoning, we expect that *WhatsApp addiction is likely to mediate the relationship between Social Loneliness and POSI (H2)*.

The Moderating Role of Culture

Several scholars have studied the nature of loneliness and its harmful effects (Rokach & Brock, 1997). If the argument that loneliness is the expressive relationship of individuals with the community is accepted, then it is plausible that the cultural differences among people and the way they interact socially will result in cross-cultural variations in the ways they perceive loneliness. Cultural psychology maintains the importance and urgency of cross-cultural research of human experiences. These human experiences, varying across cultures, have been affected profoundly by increased Internet use (Douglas et al., 2008; Huang et al., 2010), which has been vastly reflected in the emergent coverage of this issue in empirical studies (e.g., Brenner, 1997; Davis, 2001).

Regardless of culture, loneliness has become an issue and is experienced by all at some point in life. At the same time, the similarities and differences between cultures in the experiences of loneliness are also evident (Yum, 2003). For instance, researchers have found that culture of loneliness is found in both individualist and communal cultures (Anderson, 1999; Rokach, 2007). In individualist cultures, like American and other Western cultures, loneliness is more about personal separateness. In contrast, in communal cultures like Japan, loneliness is more about others not understanding the ordinary views and feelings.

Contemporary psychology is based on research conducted in the Western countries, including North America and Europe, although majority population resides in non-Western regions (Triandis, 1996). Consequently, to understand differences among people from different cultural backgrounds in the other half of the globe, the present study focuses on adult populations from India and Fiji, where people have cultural differences based on their geography, religions, economics and social tapestry. We, therefore, expect that *cultural difference moderates the relation between social loneliness and POSI (H3)*.

The conceptual model is an integrated moderated mediation model as presented in Figure 1.

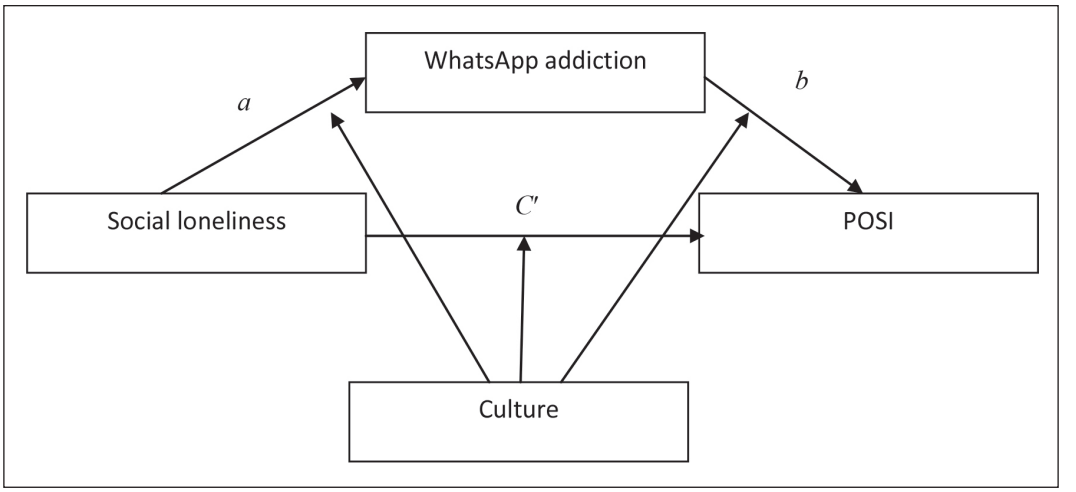

Figure 1. The Proposed Moderated Mediation Model.

Source: The authors.

Research Methodology

Data Source and Sample Frame

The survey was administered on 323 WhatsApp users in the age group of 18–50 years. There were 202 participants from India and 73 from Fiji who formed the final sample for this study. Data from 275 respondents were found fit for analysis after excluding 60 incomplete responses. The average age of the participants was 20.31 years (SD = 0.43). A total of 51% of the participants were females. Table 3 presents the breakdown of gender, age, marital status and educational qualifications within each culture.

We selected India because, second only to China, India has the largest Internet user base of over 300 million, which has been growing exponentially since 2005 (Chandra et al., 2005). Specifically, the mobile Internet usage is growing at the rate of nearly 85% per annum. Although some studies examining the relationship between Internet addiction and its effects have been conducted in India (Das & Mishra, 2013; Kodvanji et al., 2014; Nalwa & Anand, 2004; Yadav et al., 2013), the understanding of Internet addiction as a disorder is still in its initial stages in India. Furthermore, while the majority of the previous research studies focuses on countries with high cultural differences (e.g., the USA and Japan), these studies disregard the relevance of studying online interactions in countries with little cultural differences. Fiji was selected for the present study as both India and Fiji share a common cultural perspective despite the geographical distance (Glauser & Richmond, 1994).

The importance of cross-cultural research of various human experiences is well established as it 'would provide an excellent approach for establishing general laws about human experience and behavior' (Barrett, 2020; Spielberger & Diaz-Guerrero, 1976). Socioculturally, Fiji and India comprise two different groups, and a cross-cultural study would help clarify aspects of culture and loneliness and its relatedness to specific social media usage.

Table 3. Characteristics of the Respondents.

Characteristics	India (*N* = 202)	Fiji (*N* = 73)
Gender		
Male	123	36
Female	79	37
Age		
Below 20	26	5
21–35	75	42
36–50	81	21
Above 50	20	5
Marital Status		
Married	156	53
Unmarried	46	20
Educational Qualifications		
Undergraduate	39	18
Postgraduate	139	36
Higher qualification	24	19

Source: The authors

Data Collection Form and Generation of Scale Items

A questionnaire was designed to gather data, and this was done with a purpose to test the theoretical framework. The measures of social loneliness, WhatsApp addiction and preference for online interaction were developed and validated after a thorough review of literature from previous studies to ensure content validity. A brief discussion of each study construct and its measurement is as follows:

WhatsApp Addiction Scale

Facebook addiction scale by Andreassen et al. (2012) was modified. The original scale had 18 statements, 3 statements each for salience, tolerance, mood modification, relapse, withdrawal and conflict. Statements were modified to relate to the objectives of the present study, concerning WhatsApp addiction.

Preference for Online Social interaction Scale

Based on concept and instrument developed by Caplan (2010), we four items to measure this. Respondents were asked to rate their agreement with items on a 5-point Likert scale with anchors 1 = Strongly disagree and 5 = Strongly agree.

Social Loneliness Scale

Participants' social loneliness was assessed by Russell (1996) using a 20-item 5-point scale developed in University of California, Los Angeles (UCLA). For the purpose of measurement, average scores were used. This was carried out in all subsequent analyses. Items from the scale included: 'I am unhappy doing so many things alone', 'I have nobody to talk to' and 'I lack companionship'. Two statements (i.e., 'My social relationships are superficial' and 'No one really knows me well') were removed from analysis.

Data Analysis

A total of 275 valid responses were analysed to study the impact of social loneliness and WhatsApp addiction on POSI. Most of the respondents (about 42%) were in the age group of 21–35 years, followed by respondents in the age group of 36–50 years (about 37%). In addition, the majority of the respondents were males (about 58%) and 63.6% of the respondents were postgraduates.

Harman's Single-factor Test

To assess common method variance (CMV), we used Harman's single-factor test (Podsakoff & Organ, 1986). Results from exploratory factor analysis revealed that unrotated principal component solution resulted in three factors. The first factor accounted for 39.80% of the variance. For CMV to exist, a single factor accounting for a majority (>50%) of the covariance between the variables would emerge. In our study, no single factor accounted for the majority of variance in the data. This indicated that CMV was not an issue (Podsakoff & Organ, 1986).

Descriptive Statistics and Correlation Analysis

Means, standard deviations and intercorrelations of all variables are presented in Table 4. As expected, results indicate that social loneliness is positively correlated with WhatsApp addiction ($r = 0.14$, $p < 0.01$) and POSI ($r = 0.25$, $p < 0.01$). Similarly, WhatsApp addiction is also positively correlated with POSI ($r = 0.33$, $p < 0.1$).

We used structural equation modelling in AMOS 17.0 to test the hypothesized model. Our analysis followed the two-step procedure: the measurement model and the structural model (Anderson & Gerbing,

Table 4. Means, Standard Deviation and Correlations of the Constructs.

Constructs	Mean	Standard Deviation	A	B	C
A. Social loneliness	4.12	1.20	1		
B. WhatsApp addiction	4.61	1.32	0.635*	1	
C. POSI	4.01	1.56	0.689*	0.652*	1

Source: The authors.

Note: *$p < 0.01$.

1988; Klien, 2010). The measurement model performed a confirmatory factor analysis (CFA) to examine whether individual items in a scale were good indicators of a latent construct. Three latent constructs, as discussed in the previous section, were included in the measurement model: the dependent construct *POSI* and two independent constructs *Social Loneliness* and *WhatsApp Addiction.* The structural model consisted of two sets of regressions: (a) POSI was regressed on social loneliness and WhatsApp addiction and (b) WhatsApp addiction was regressed on social loneliness.

The Measurement Model

A structural equation modelling (SEM) technique was used to test the model. Results of SEM analysis indicate that the model used for this research offers a good fit to the data.

For testing the model fit, seven fit indexes commonly used in the literature (chi-square/degrees of freedom, Goodness of fit (GFI), Adjusted Goodness of fit (AGFI), Non-normed Fit Index (NNFI), Comparative Fit Index (CFI), Root mean square residual (RMSR), Root mean square Error of Approximation (RMSEA)) were employed. For a good fit, chi-square/degrees of freedom must be less than 3, GFI, NNFI, and CFI should be greater than 0.9, AGFI greater than 0.8, RMSR less than 0.1 and RMSEA less than 0.06 or 0.08.

The confirmatory analysis with maximum likelihood method shows a good fit of the measurement model: chi-square/df = 2.19, CFI = 0.949, GFI = 0.91 and RMSEA = 0.05. For assessing the convergent and discriminant validity, we calculated average variance extracted (AVE) (Fornell & Larcker, 1981). As presented in Table 5, the AVE for each construct was higher than the 0.50 threshold recommended by Fornell and Larcker (1981). For testing discriminant validity, the square root of AVE and correlation of respective pairs of constructs were evaluated through comparison. The square root of the AVE of each construct exceeded all correlations between this construct and other constructs, suggesting that each construct was distinct from other constructs.

Structural Model and Hypotheses Testing

The total effect of social loneliness on POSI is presented in Figure 2. The total effect model showed a good fit with all the goodness-of-fit statistics in the acceptable ranges. Chi-square/*df* = 2.05, CFI = 0.91, GFI = 0.94 and RMSEA = 0.05.'

The direct path from social loneliness to preference for online interaction is significant since the regression coefficient is 0.39 with a *t*-value of 2.54 and $p < 0.05$. Results show that social loneliness positively predicts POSI. Thus, our first hypothesis is accepted.

Next, we examined the proposed mediating and moderating effects using SEM. The results showed a good fit of the structural model: chi-square/*df* = 2.07, CFI = 0.94, GFI = 0.93 and RMSEA = 0.06.

Table 5. Cronbach's Alpha Coefficient, CR and AVE.

Construct	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Social loneliness	0.972	0.84	0.56
WhatsApp addiction	0.982	0.94	0.69
POSI	0.957	0.87	0.64

Source: The authors.

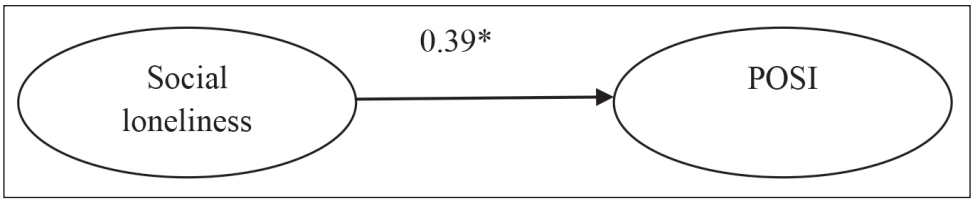

Figure 2. The Total Effect Model.

Source: The authors.

Note: *$p < 0.05$.

Results of the model testing are presented in Figure 3. Results indicated that social loneliness was positively associated with POSI ($\beta = 0.44$, $p < 0.05$). Furthermore, social loneliness significantly increased WhatsApp addiction ($\beta = 0.21$, $p < 0.05$), and WhatsApp addiction positively predicted POSI ($\beta = 0.17$, $p < 0.05$). Bootstrapping method was used to conduct mediation analysis with 10,000 samples. The mediation effect of Whatsapp addiction between social loneliness and POSI was examined. The mediating effect of WhatsApp addiction was 0.05 and was significant (95% confidence Interval = [0.013, 0.018], $p < 0.05$), supporting hypothesis 2.

The final analysis examined whether culture may function as a moderator between social loneliness and POSI separately, or both in the direct effect (loneliness–POSI) and indirect effect (social loneliness–WhatsApp addiction and WhatsApp addiction–POSI). It was found that culture did not play a moderating role in the direct effect (social loneliness–POSI) of the mediation model ($\beta = 0.03$, $p = 0.09$). The results further reveal that culture only moderated the indirect effect of social loneliness on POSI through WhatsApp addiction (social loneliness–WhatsApp addiction: $\beta = 0.14$, $p < 0.05$; WhatsApp addiction–POSI: $\beta = 0.11$, $p < 0.05$), signifying that the indirect effect of WhatsApp addiction on social loneliness and POSI was moderated by culture (Figure 3).

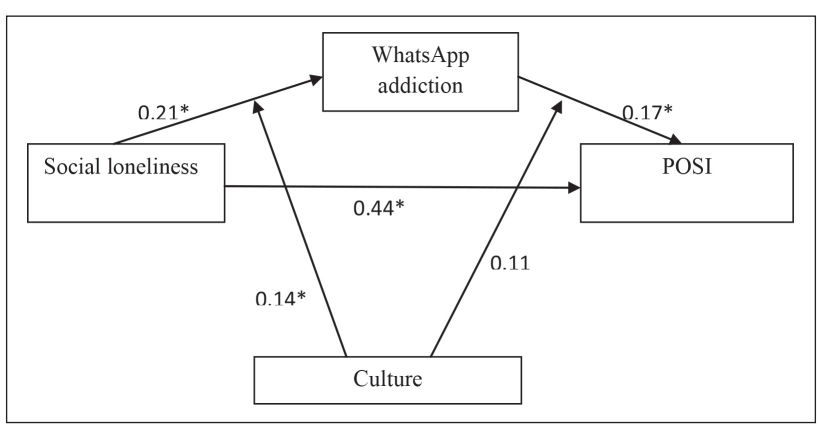

Figure 3. The Moderated Mediation Model.

Source: The authors.

Note: *$p < 0.05$.

The significant moderated mediation was further tested by analysing the indirect effect of social loneliness on POSI for the two cultures—India and Fiji. Specifically, WhatsApp addiction significantly mediated the association between social loneliness and POSI for the Indian group ($\beta = 0.23$, $p < 0.05$) and the Fiji group ($\beta = 0.18$, $p < 0.05$). Thus, culture could moderate the association between social loneliness and WhatsApp addiction for both the cultures. Furthermore, culture could moderate the relationship of WhatsApp addiction on POSI for both Indian and Fiji culture.

Discussion

The current study explored the prevalence of POSI and investigated the mechanisms underlying the relation between social loneliness and preference for online interaction. The study also examined the mediating role of WhatsApp addiction, and it explored the relationship among social loneliness, POSI and WhatsApp addiction among young consumers in India and Fiji via a moderated mediation model. The findings of the study validate the mediating role of WhatsApp addiction and the moderating role of culture in the association between social loneliness and POSI.

Social Loneliness and Preference for Online Social Interaction

Results of this study confirm that social loneliness is positively associated with young consumers' POSI. Extant empirical research indicates a relationship between Internet use and psychosocial health (Caplan, 2003). Grounded in Davis' (2001) early work and Caplan (2003) tested the cognitive–behavioural model, suggesting that individuals develop a POSI as an alternative to face-to-face communication when they perceive it to be less threatening and perceive themselves to be more efficacious when interacting with others online. In light of this theoretical assumption, it is possible that individuals who suffer from psychosocial distress, like loneliness, seek out what they perceive to be safer and less threatening. Young consumers are connected to social media to a very high degree (Khan, 2017), resulting in them spending more time interacting online and less interested in face-to-face interactions. Resultantly, they are more vulnerable to the fallout of excessive social media usage and its behavioural outcomes like depression and loneliness. Consistent with the findings of both Shotton (1991) and Davis (2001), the present study supports that the Internet itself does not make people isolated; rather, it is loneliness or isolation that attracts people to online social interaction.

The Mediating Role of WhatsApp Addiction

Consistent with hypothesis 2, WhatsApp addiction served as a mediator in the association between social loneliness and POSI. Specifically, social loneliness increased the possibility of preferring to interact online through increased WhatsApp addiction. This revealed the underlying mechanism concerning how social loneliness might indirectly influence consumers' POSI. Young consumers who suffer from feelings of loneliness may be more likely to make use of online platforms and the mobile-based applications, since these communication applications allow individuals to express their real selves with the friends and acquaintances more confidently and comfortably (McKenna et al., 2002). However, the excessive dependence on social media for alleviating loneliness may further reinforce their preference for social

interaction online (Davis, 2001). The strength between social loneliness and POSI is likely to further increase due to enhanced WhatsApp addiction. Further studies are necessary to explore interventions to control addiction to social networking platforms.

Our results further revealed that social loneliness positively predicted WhatsApp addiction. The results were consistent with previous studies that found that social loneliness was positively associated with problematic social media use (Shensa et al., 2017). Social networking sites are popular among young people, and mobile-based social media, like WhatsApp**,** allow young individuals to lead a parallel virtual life, where they socialize with friends and acquaintances (Khan, 2017). According to Steafnone et al. (2011), for individuals who feel socially lonely, social media may help them to feel connected with the others in some way (such as through posting, commenting, liking, etc., on WhatsApp). Sheldon et al. (2011) found that feelings of loneliness prompt more Facebook usage. This provides support for our findings in the context of WhatsApp addiction.

Our study also found that WhatsApp addiction increased the possibility of POSI. This finding is consistent with the combined media dependency theory (Ball-Rokeach & DeFleur, 1976) and UGT, which suggests that the more dependent a person is on social media, the more its usage is perpetuated, allowing addiction behaviour to grow. Such dependence on the social media and the anonymity associated with it have been shown to predict a POSI (Caplan, 2003). Thus, the outcome of WhatsApp addiction can lead to an increased preference for interaction through the online mode.

The Moderating Role of Culture

Consistent with our third hypothesis, the moderated mediation analysis demonstrated that culture moderates the strength of the relationship between social loneliness and POSI mediated by WhatsApp. As predicted, our results are in line with the research conducted by Lykes and Kemmelmeier (2014) on cultural differences between individualistic and collectivistic societies. According to this study, levels of loneliness are found to be higher in collectivistic as compared to individualistic societies. For example, Turks who are considered low at individualism show more feelings of loneliness than Swedes who are high on individualism. Turks have broader social networks and more interpersonal interactions than Swedes Similarly, Western European countries are high on individualism but show lower levels of loneliness than Southern and Central/Eastern countries, which are more collectivistic (Fokkema et al., 2012; Yang & Victor, 2011). Fiji, which is low on individualism as depicted by the Hofstede's country comparison (Table 2), is thought to contribute to the growing loneliness. Culture moderated the indirect link (social loneliness–WhatsApp addiction as well as WhatsApp addiction–POSI) of social loneliness and POSI, which is a reasonable result, considering the increased dependence on interaction through computer-mediated communication (CMC) across cultures. Jackson and Wang (2013) compared the use of social networking sites in a collectivistic culture—China—and an individualistic culture—the USA—and found that the US participants spent more time communicating through SNSs than did Chinese participants. Thus, results revealed cultural differences in SNS use such that in collectivistic cultures, like Fiji, importance is given to friends and family, and dependence on SNS use is less as compared to individualistic cultures, where friendships are less enduring, resulting in greater use of SNS. From the current findings, it appears that, the relationship between loneliness and preference to socialize online will differ, based on the identified cultural differences between Indian and Fijian cultural groups.

Implications

Theoretical Implications

The current research explored the relation between a specific type of social disorder (i.e., social loneliness) and POSI. The study further examined the mediating role of a specific smartphone use disorder (i.e., WhatsApp addiction) and the moderating role of the cultural context. Our findings suggest that the UGT could be applied to the field of social media communication. Therefore, users' preference to socialize and interact online, rather than through face-to-face communication, can be understood from the perspective of psychological and social needs. From a theoretical standpoint, this implies that users are constantly trying to meet their social needs through active social media consumption.

In addition and as previously mentioned, WhatsApp addiction is often overlooked in social media research (Alkhalaf et al., 2018). The results of the present study add to the scarce literature on the addiction to a specific type of social media platform—WhatsApp. Existing research about addiction mainly focused on smartphone addiction (Leung et al., 2020). However, addiction is not to the smartphone, but to the application and features of the smartphone. There have also been debates about specific Internet-based applications, particularly, Facebook, and the problematic behaviour associated with it. However, investigations of the potential behavioural outcomes of other mobile-based social media, like WhatsApp addiction, have largely been ignored. Interestingly, the present study found it relevant to study the role of WhatsApp addiction in social interactions and assumed that people who experience social loneliness might be more likely to be attracted to social media and, consequently, prefer social interactions online. These findings provide support to the idea that POSI is the result of social loneliness (Caplan, 2003).

Perhaps the most noteworthy result of the present research is the role of culture in explaining the relation between social loneliness and WhatsApp addiction. None of the previous studies have focused on identifying whether cultural differences can moderate the relationship between loneliness and POSI.

Practical Implications

These findings also have a number of practical implications for governments, regulatory bodies, marketers and practitioners in Fiji and India. Results of this study provide an important input for the law enforcement uses of social media and review of the legal framework that governs its use. The findings will also assist in strengthening the legal and social media landscape in both the countries. As corroborated by the qualitative and quantitative results, this study recommends to protect the values of citizens as enshrined in the constitution and also amend the sections in the constitution that enable the business models shielding companies from responsibility for their social media users' behaviour at its most extreme. Findings of this study also provide information to marketers and practitioners about the relevant predictors of social media use among young consumers across two different cultures. Specifically, a wide gap between Indian and Fijian culture has been noted in terms of their individualism–collectivism dimension of the Hofstede model such that Fiji is more collectivist than India. Results from previous studies have revealed that people who are part of cultures that are high on collectivism prefer indirect communication style with less open self-disclosure, and members who belong to cultures that are high on individualism prefer a direct communication style with more self-disclosure (Trepte et al., 2017). Findings of our study suggest that members of individualistic cultures seek social gratification online by, for example, using SNSs, while members of collectivistic cultures seek gratification in the real world.

The present study can assist marketers and other practitioners in devising new strategies for today's social media landscape and use their WhatsApp communities to seek timely customer feedback for the launch of their new products in the market. Several successful brands recognize social media networks as viable platforms for delivering better customer service to their clients. Findings of this research study can also assist the counsellors and psychologists in designing and implementing counselling programmes to promote mental health for those who are more at risk of social networking addiction due to loneliness. These findings may also assist clinicians to determine whether assessments for depression and loneliness should include the prospect of social media usage as a contributing factor to the client's symptoms. This study should also help the health authorities in implementing early intervention and prevention for the symptoms of addiction associated with social media use.

Limitations and Future Research

As with most other empirical studies, the range of respondents in our study limits generalizability. The differences between Indian and Fijian cultures may limit the external validity of the research findings. One should be cautious in generalizing the model to other types of SNSs and users in other countries. Besides, the identity feature of the respondents in this study showed significant difference from the sample of India and Fiji. Although our sample is representative of the entire active students' population of WhatsApp users to some extent, the large proportion of responses probably generated some bias. Researchers can employ data from a broader sample in the future to study users' actual behaviours.

Another limitation refers to the evolving nature of SNSs. The active and passive features WhatsApp users can employ today will most likely change in the future as technology develops. Yet we believe the nature of such features will not change. Furthermore, we restricted our research to one particular SNS (i.e., WhatsApp), and hence, we focused on features available to WhatsApp only. Another study might want to explore variations in features across different SNSs and what impact the variations have on SNS use and loneliness. Besides overcoming these limitations, researchers may address several other vital issues in the future, such as anxiety, distinct perceptions, attitudes and behavioural intentions, which could be studied according to the type of SNS.

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