

December 2022

Social Media Addiction- Risk Of Addiction In India Measured Through Bergen Social Media Addiction Scale(BSMAS)

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Recommended Citation

Arora, Shivani; Kumar, Manoj; and Piplani, Kaashvi (2022) "Social Media Addiction- Risk Of Addiction In India Measured Through Bergen Social Media Addiction Scale(BSMAS)," *Management Dynamics*: Vol. 22: No. 2, Article 5: 101-113

DOI: <https://doi.org/10.57198/2583-4932.1308>

Available at: <https://managementdynamics.researchcommons.org/journal/vol22/iss2/5>

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Objective: This study aims to determine what percentage of the population studied is at a high risk of developing Social Media Addiction and analyzes the factors prevalent to Indian users, The shorter version of the Bergen Social Media Addiction Scale is used and the scale is validated.

Material and Methods: The objectives are achieved by using a questionnaire BSMAS scale, applying exploratory factor analysis to BSMAS, and validating the tool for the Indian social media users. The current study focused on India, with a sample of 747 respondents selected through convenience sampling. BSMAS short scale and Likert score, Exploratory Factor Analysis, and Confirmatory Factor Analysis were applied. Results and Conclusion: 18% of the sample was at risk of developing Social Media addiction. EFA reduced the six factors of BSMAS to three relevant factors viz., Salience, Mood Modifications/Tolerance, and Relapse explaining 37.4% of the total variance. Confirmatory Factor Analysis validated the scale for the Indian population. The Kaiser-Meyer-Olkin KMO measure of Sampling Adequacy is .925, the Internal reliability of the data is .89, which is highly favorable. Bartlett's test of Sphericity is the chi-square value 4034.47 /153 and p-value is less than .001, revealing that the sample was suitable for the EFA.

Keywords

Social Media Addiction; Bergen Social Media Addiction Scale; Behavioural Addiction; Factor Analysis, India

RESEARCH ARTICLE

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1. Introduction

Decadal revolution leads to changes as we see how communication has changed from face-to-face to virtual. Digital convergence and rapid technological improvement have increased the time users spend using digital devices (Warren, 2007). Social Media tops the list of the time users spends on digital devices. In India, in 2016, the average time spent on Social Media usage was 212 min per week

(Keelery, 2020). In 2018, an average Indian spent more time online per week than users in China and the United States, approximately 1020 min (a humungous increase) (Kemp, 2018). Once the same is analyzed for the Covid time, it may have increased further. The total number of internet users increased from 239 million in 2014 to 560 million in 2018, and monthly data consumption increase from 86 Mb in 2014 to 8320 Mb in 2018 (Noshir Kaka et al., 2019). The COVID Pandemic has

Received 29 August 2022; revised 21 November 2022; accepted 30 November 2022.
Available online 29 December 2022

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<https://doi.org/10.57198/2583-4932.1308>

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further deepened the wedge. It sent the world into a spiral, and studies to measure the SMA to evaluate addiction and at-risk users have undertaken building on the scales and adding Covid 19 repercussions (Chong Guan, 2021; Islam et al., 2021).

Social media made its presence in people's lives in 2004 when Myspace reached a million monthly active users (Ortiz-Ospina, 2019), and Facebook and Orkut were born the same year. Social Media networks are applications or websites where the users create their profiles (Boyd, 2007) build their network of family & friends (Facebook), acquaintances (WhatsApp), and connections (LinkedIn), and interact with them or follow them (Instagram). The simple platforms that facilitated friends and families to connect and share their lives and aspirations became a part of everyone's everyday lives. Social Media has changed how people live, work, learn, and stay connected. Social network and messaging apps are two distinct types of Social Media usage based on the functions performed (Huang & Chang, 2020).

Since its inception in 2004, many new mediums have come, viz., Twitter, Instagram, WhatsApp, TikTok, Pinterest, etc. Some have faded (like Myspace, which was once even more popular than Google), and most others have evolved, e.g., Facebook added the “likes” feature, and Twitter allowed the uploading of images and videos. Today, Facebook remains the most used social media app, followed by Instagram, YouTube, and WeChat. The increase in social media users from 2010 to 2020 is from 970 million to 3.96 billion (Dean, 2021).

According to the Smart Insights Report, social media usage is expanded to an average of 8 social media apps. The time spent on social media apps and messaging has approximately reached two and a half hours (approx.) daily. There are nearly 5.5 billion mobile users globally, and 99% of Social media users access their social media accounts through their smartphones (Chaffey, 2020). In India, affordable smartphones, data plans' low cost, and broader activity also increase social media usage. The number of Internet users is increasing, and so is the ratio of those who find it challenging to reduce their usage and the approach they use it (Davis, 2001).

The motivation for studying social media addiction stems not only from the statistics on the over-use, as discussed in this section but also observation of the people around. The natural and virtual boundaries are blurring, as is evident in the conduct of the students and families. “Phubbing” is disturbing. The effects of excessive usage and rise of comparisons among users are not healthy. The lack

of a “theory of mind” (Astington & Dack, 2008; Leslie, 2001, pp. 15652–15656) is a concern for all, as the origin of the thought processes cannot be deciphered due to social media propagation. The controversies around various issues like vaccines (not only Covid 19, but others also); conspiracy theories propagation (no one landing on the moon, Covid 19 conspiracy) are all on an exponential rise (Stecula & Pickup, 2021).

The exponential increase in usage has led researchers to look for ways to assess it. Bergen Social Media Addiction Scale (BSMAS) is one such measure that is the most used social media addiction scale (A Biswas, 2015; Aguayo et al., 2021; Duradoni et al., 2020). Andreassen developed the BSMAS, in her study “Development of a Facebook addiction scale”, made a fascinating study of developing a Facebook Addiction scale by analyzing 423 students. The respondents responded to the newly created Bergen Facebook Addiction Scale, Sleep Questionnaire, Facebook Attitude Scale, Addictive Tendencies Scale, and Online Sociability Scale to derive the most important factors. The most loaded item was included in the scales' final scale, called Bergen Facebook Addiction Scale. The scale was built around six core elements of addiction (salience, mood modification, tolerance, withdrawal, conflict, and relapse). It initially had 18 items, three reflecting each. Facebook addiction was found to be negatively associated with conscientiousness and positively associated with Neuroticism and extraversion. The subsequent addition of various social media platforms made it imperative to move beyond Facebook. The same was extended to all Social media platforms, making it Bergen Social Media Addiction Scale (Bányai et al., 2017).

The researchers in this paper used the BSMAS.

The research aims to study the sample from India to detect the presence of social media addiction as assessed by the Bergen Social Media Addiction Scale (BSMAS). To the best of the knowledge of the researcher, the scale has not been applied to the Indian population. The study also purports to find out which aspect of the BSMAS are more relevant to the Indian context.

2. Literature review

The literature is ripe with discussions on whether excessive dependence or usage can be categorized into addiction or it is too soon or too harsh. Internet gaming has been classified as a Disorder vide Section three (3) of the DSM by the American Psychiatric Association, 2013. The phenomenology of

social media addiction is very similar to Internet Gaming (Turel et al., 2018). New evidence is emerging daily that social media addiction is real and affects people adversely. Research is imperative in this area so that addictive patterns can be understood and alleviated. The Covid pandemic may further increase the addictive outcomes. Various studies have tried to relate to the precedents of SMA and its antecedents. The challenge is that appropriate terminology viz., addiction, disorder, problematic use, etc., none has been agreed upon scientifically (Lortie & Guitton, 2013). Still, many studies have established overuse as impairs quality of life (Turel & Serenko, 2012).

Social Media researchers have keenly researched various uses of medium viz., networking, gaming, communication, or collaboration. The studies about social media and internet gaming have discussed both the addictive and productive aspects of its usage. Some of the studies have also implied that all the users are not addicted to technology or the Internet (prima facie) but to related activities like social media, online porn, or online gambling. As discussed earlier, Online gaming disorder has been recognized as a mental disorder by the Diagnostic and Statistical Manual of Mental Disorders. Still, social media addiction has not made it to the list, though the field's interest has been increasing over the years.

This rationale and the study's objectives are that it aims to establish, assess, and combine all relevant aspects of social media addiction from management and psychology literature. The discussion points are constructed on the foundation of literature in the form of books, research papers, and articles from 2010 to 2021. However, some papers that have a bearing on the analysis date back to 2007. The domain focus of the search criteria ensured that the manuscript should represent social media addiction substantially. Though a great contributor, gaming addiction is not considered in this study. Quality keywords were used to get the apt results viz., social media addiction, effects of social media addiction, scale of social media addiction, FOMO, India, Likes, random feedback, etc.

There has been widespread research on social media addiction, its presence, prevalence, reasons, and cures have been discussed across disciplines. Growing demand for listing it as addiction has existed for quite some time. Still, Specific Pathological Internet Usage (PIU) in online gaming is already a part of DSM IV. In contrast, Generalized PIU is considered unhealthy but not addictive and hence not included as a mental ailment requiring intervention.

Overloading of information in the form of technology and social media exerts immense psychological pressure. Since the present generation is the first to experience the extent of technology, the assessment is that the excessive use of Social media and technology in daily life would negatively affect people's psychological health. The process makes the unreasonable or addictive pattern all-pervasive of random feedback (Atler, 2017). The overuse reflects the need to feed the ego (Narcissist) and inhibition of negative self-evaluation (self-esteem) (Bányai et al., 2017).

The strength of data mining to focus on targeting customers is proven and robust. To meet this, the tech giants and the social media moguls worked on all aspects to make them addictive (Kaya et al., 2016). The same is used for Behavior modifications (Lanier, 2018). As a result, in 2017, 210 million people worldwide suffered from social media and internet addiction (Longstreet & Brooks, 2017). The researchers have concluded that users addicted to social media suffer from symptoms similar to those addicted to substance abuse (Atler, 2017; Echeburúa & De Corral, 2010).

Behavioral addiction researchers argue that the psychological processes that explain problematic behavior require greater attention. Duradoni based his research on the six hundred thirty-five studies, most of which elaborated that excessive usage negatively impacted users' well-being (Duradoni et al., 2020). Cengiz, in his study, has tried to develop a scale to measure social media addiction in young people of Turkey. Confirmatory Factor analysis was applied to the data collected from 224 students, resulting in four factors: virtual counterparts of tolerance, communication, problem, and information. (Şahin, 2018).

2.1. Cognitive behavioural model

Davis developed the cognitive behavioral model, which emphasizes the specific pathological internet use (Specific PIU) and generalized pathological internet use (Generalized PIU), both respectively preceded by psychopathology and social context. (Davis, 2001). Cognitive behavior theory focuses on identifying the destructive thought patterns that impact the person's behavior and emotions. Understanding the same helps in identifying ways to change them. The theory helps in establishing the role of cognition in developing and maintaining PIU. The Specific PIU refers to the specific individual pathological uses of the Internet, e.g., online gaming, gambling, porn, whereas the generalized PIU is a global set of behavior.

The upgrade of Davis's model highlights the predictors of excessive internet use-style of internet use with special reference to the dysfunctional resources and application, character traits (self-forgetfulness and self-direction) i.e. resourcefulness, temperament traits (persistence, shyness, sentimentalist), ineffective action control and use of functional Internet. Theories proposed bank on the psychological and personality implications as the precursor and derivative of excessive use of the Internet and social media. The two theories, Davis's and Katarzyna, differ mainly from complex defining traits. In Katarzyna's analysis, excessive internet use is Cognitive dysfunction, Ineffective self-regulation, and deteriorated functioning.

The focus of this research paper is Generalized PIU. Katarzyna in 2011, expanded on the Davis's cognitive behavior model to explain factors in detail. The modification implied that psychopathological disorder factored in both general and specific pathological internet use. More personality traits like temperament and character (Cloninger, 1994), willpower (Kuhl, 1994a), and stress were added and explained. The study of four hundred (400) candidates, across five scales viz., The Excessive Internet Use Risk Scale (Kaliszewska, 2007), The Temperament and Character Inventory (TCI) (Zakrzewska et al., 2001); The Action Control Scale (ACS-90) (Koryczan et al., 2017) (Kuhl, J., & Goschke, 1994) and Berlin Social Support Scales (BSSS) (Aleksandra Luszczynska, M. Kowalska, M. Mazurkiewicz, 2006).

Griffith established that social media addiction might occur in a small number of individuals, but addictive use has a severe and damaging psychological impact. Griffith also highlighted that all addictions imply the six core traits (salience, mood modification, tolerance, withdrawal, conflict, and relapse) (Bányai et al., 2017; M.D,2000). The cognitive behavioral theory, as explained, ambits the individual traits as well combining the social skill model and the socio-cognitive model. Generalized PIU consists of cognitive and behavioral symptoms impacting the user negatively on the professional, academic and social levels (Caplan, 2002, 2005; Davis, 2001).

The psychological manifestations in the form of depression, anxiety, sleep disorder and social anxiety in the form of Fear of missing out (FOMO) are pronounced in social media usage and their presence warrants for a study of social media addiction in India and the next step should be to look for ways to curb it. Depression and anxiety have been highlighted as the antecedents of excessive use of social media (Al Saigh et al., 2022; Bharti et al., 2021; Hou et al., 2020; Lei et al., 2022; Meshi et al., 2020;

Stockdale & Coyne, 2020; Žmavc et al., 2022). Fear of missing out, FOMO, is also positively related to social media addiction i.e. more the FOMO, more the chances of its overuse, which may result in addiction (Bloemen & Coninck, 2020; Duan et al., 2020). The other aspects of sleep deprivation due to overuse of social media have also been validated by researchers (Alimoradi et al., 2019; Chang et al., 2019; Ding et al., 2020; Gezgin, 2018; Masthi et al., 2018; Walsh, 2021).

Internet usage in India is amongst the second largest in the world. This study is an effort to apply the Bergen Social Media addiction scale on the sample of the young Indian population.

The following research questions (RQ) and the research objectives (RO) are addressed in the research paper:

RQ1: Is the Indian population at risk of developing SMA?

RO1: To determine the percentage of the sample studied at risk of developing social media addiction.

RQ2: Does the BSMAS fit to study the SMA in the Indian population?

RO2: To analyze the dominant factors of addictive behavior in Indian parlance and validate the scale.

3. Methodology

3.1. Choosing of scale

The conceptual framework surrounding SMA has been studied in detail and it found the data collection can be done through the Likert-based questionnaire. The questionnaire used for the study was based on the Bergen Social Media Addiction Scale (BSMAS); since it has been widely accepted (Duradoni et al., 2020) and verified in countries like Turkey, Portugal, Thailand, Brazil and Egypt. The reason for opting for BSMAS has been validated by various studies that imply any behavior that considers all the six dimensions viz., Salience, withdrawal, mood modifications, tolerance, relapse and conflict is defined as an addiction (Kuss et al., 2014). All the six dimensions have been acknowledged as describers of many other behavioral addictions like internet addiction, mobile phone addiction, online gaming, etc. That makes a strong case for the use of BSMAS for application to Social Media usage in India. The scale was developed in 2014 and has not been established and verified in India. Therefore, in consultations with the field experts one in psychology, one in psychiatry, one from management and two from computer science, all the 18 items in the BSMAS scale were accepted for Exploratory Factor Analysis

(EFA) and Confirmatory Factor Analysis (CFA). The shorter version was acceptable to study the risk of addiction in the sample.

This is a five-point Likert scale consisting of 18 items, constructed around six dominant traits: Saliency, mood, tolerance, withdrawal, conflict, and relapse. All the items representing the traits are positive. The five-point grading used in the scale is very rarely (score 1), rarely (score 2), sometimes (score 3), often (score 4) and very often (score 5). Scores ranged between 18 and 90, with a higher score indicating a higher risk of addiction.

And for our research, the higher the score on the BSMAS, we categorize the respondents as at high risk of being addicted to social media. For the shorter version of BSMAS with 6 statements, a cut-off of 19 (Lin et al., 2017).

The dimensions of the Bergen Social Media Addiction Scale are

- a. Saliency: Saliency refers to the situation when any physical activity becomes the dominant thought or craving (e.g. I spend a lot of time thinking about social media or planning how to use it.);
- b. Mood modifications: Mood modifications refers to different moods like numbing, exciting, tranquilizing, buzz, high, etc (e.g. Used Social media in order to forget about the personal problems);
- c)Tolerance: In addiction, tolerance is the process whereby more quantity of the same substance/usage is required to attain the former effects. E.g. I feel that I have to use SM more and more to get the same pleasure out of it; I Feel the urge to use SM more and more;
- d) Withdrawal: The unpleasant feelings experience when the user lacks access to the object or activity. E.g. I become restless or troubled if you have been prohibited from using SM.
- e. Relapse: The tendency for repeated reversions to earlier patterns of the usage or activity e.g. I decide to use SM less often, but not manage to do so.
- f. Conflict: The conflict here is between the user and people around him/her, who find their usage of the medium annoying e.g. I experience that others have told me to reduce your use of SM but not listened to them (Griffiths, 2009)

All these dimensions are an integral part of both substance and non-substance abuse. The initial version of BSMAS was Bergen Facebook Addiction Scale (BFAS), as quoted in around 310 reports. Facebook Intrusion Scale (FIS) (Elphinston & Noller, 2011) is also used in some studies (Elphinston & Noller, 2011). But since then, the expanse of Social Media broadened, and BFAS and FIS were considered too specific and narrow; therefore BSMAS i.e.

Bergen Social Media Addiction Scale was developed and adopted (Bányai et al., 2017). It includes all the other social media apps viz., Facebook, Instagram, WhatsApp, twitter and all that are being added subsequently.

3.2. Data collection

A convenience sampling technique has been used to collect the responses, and the data collection aimed to have a representative sample of the population using Social Media apps/websites from India. It was ensured to keep a substantial sample size. India's total number of social media users is estimated to be 3.6 billion by 2020 (Chaffey, 2020). The sample size has been calculated with the following formula

$$S = (z^2(d(1 - d)) / e^2) / 1 + (z^2(d(1 - d)) / e^2)$$

where Z is z-score, e is margin of error and d is the standard deviation. The z-score is 2.58; (<https://blog.flexmr.net/sample-size-calculator>); population size 3.6 billion; margin of error 5% and standard deviation of 0.5 is assumed. We calculated the sample size from the above-mentioned formula and estimated that 664 participants were required to understand social media addiction phenomena. The set of 18 statements from the established BSMAS have been included in the study. Sample size as per the rule of thumb is that the number of respondents per variable should be 10 or ten times the items in the scale. In the case of this research paper, the variables are 18, and so the sample size of 180 or more is acceptable.

The online questionnaire created in google forms was sent to a sample of 2500 users' from India. 747 responses were documented in the June–July 2020 month. The response rate was close to 30% considered good, especially in online surveys, where a close association between the researcher and the respondents could not be availed due to the Covid pandemic. The aim was to collect a combination of online and offline data collection, but offline data collection could not be done due to the Covid pandemic.

In the data cleaning of 747 responses, some incomplete responses were removed, and finally, 632 responses were considered for analysis. The data collected for BSMAS with 18 statements have been analyzed with the help of Exploratory Factor Analysis and Confirmatory Factor Analysis.

The analysis was done to understand the factors affecting social media addiction in India. The collected data of 632 respondents was uploaded to SPSS version 24 and SPSS AMOS-24 to conduct the reliability test, Confirmatory and Exploratory Factor Analysis.

4. Analysis

4.1. BSMAS (Likert score)

In the first visualization through the Bergen Social Media Addiction (Andreassen et al., 2017), the score of 19 is considered a cut-off for the shorter version of BSMAS (with 6 statements). In the analysis, 117 out of 632 respondents, i.e.18% are considered at high risk of developing social media addiction. Of the 117 respondents, 53% were males, and 47% were females; across age-group, 50% were in the age group of 21–25 years of age, followed closely by 23% belonging to 26–30 years of age; across the educational qualification, the high probability of developing addiction in 117 is represented by 50% of Under Graduate and 36% of Post-graduates.

4.2. Demographics and exploratory factory analysis

4.2.1. Demographics

A convenience sample 632 was employed for descriptive Statistics and to understand the addiction among the respondents. As shown in the table the various representations are Male = 50.8%, female = 49.2%, which conveys equal participation in the social media; we found that 40% contributed by the age group of 20–24 years and then followed by the 26–30 years = 20.9%; the less than 20 years of age19.1%, 31–35 years = 9.2%, >35 years = 6.2%. respondent education was diverse and found the 54% are Graduated and Post graduate = 33.1%;

Table 1. Demographics.

Category		Total = 632 n (%)	F3 Mean (SD)	F2	F1
Gender	Male	321(50.8%)	1.36(.42)	1.78(.51)	1.95(.64)
	Female	311(49.2%)	1.32(.41)	1.74(.46)	1.87(.60)
Education	Graduate	345(54.6%)	1.32(.42)	1.73(.50)	1.89(.63)
	Post Graduate	209(33.1%)	1.34(.41)	1.77(.46)	1.90(.59)
	Research Scholar	34(5.4%)	1.37(.45)	1.80(.57)	1.93(.69)
	School	44 (7%)	1.46(.39)	1.85(.51)	2.10(.63)
Age	Age <20 Years	121(19.1%)	1.31(.40)	1.69(.52)	1.85(.61)
	Age 20–25 Years	282(44.6%)	1.35(.44)	1.79(.50)	1.91(.64)
	Age 26–30 Years	132(20.9%)	1.35(.40)	1.77(.46)	1.93(.58)
	Age 31–35 Years	58(9.2%)	1.39(.36)	1.77(.45)	2.03(.58)
	Age >35 Years	39(6.2%)	1.26(.41)	1.65(.46)	1.83(.61)

Sources: Primary data collection.

Table 2. Users of Social Networking sites.

Use of SNS		
A	WhatsApp	591(93.5%)
B	Facebook	384(60.8%)
C	Instagram	369(58.4%)
D	Tiktok	89(14.1%)
E	LinkedIn	97(15.3%)
F	Snapchat	122(19.3%)
G	Twitter	95(15.0%)
Frequency of use of the SNS		
A	Only one	110(17.4%)
B	Two SNS	190(30.1%)
C	Three	155(24.5%)
D	Four	113(17.9%)
E	Five	49(7.8%)
F	Six	10(1.6%)
G	Seven	5(0.8%)

Source: Primary Information

Research Scholar = 5.4% and school = 7%. The participation was voluntary and the study's objective was shared with the respondents. Only those respondents using social media accounts were considered for the study.

The sample is represented by 52% of the respondents who use more than three social networking websites/apps, and only 17.4% used at least one. The popularity of the use of social networking was taken as Whatsapp (93.5%), Facebook(60.8%), and Instagram (58.4%) are the most used Social media apps by the respondents. LinkedIn, Twitter and TikTok remain the least used apps. In the survey most of the persons using the WhatsApp, and around 60% people using the Facebook and Instagram to connect with the friends and family for the daily activity. Table 1 above tries to establish the mean difference between the factors according to gender, age, and qualifications. The mean average in the case of gender shows no variation between the two. In case of age more than 35 years, respondents are slightly less addicted across all

factors. And the school students are slightly more addicted across all factors as compared to their counterparts (see Table 2).

Many studies have explored using the internet and social media apps as a deterrent to well-being (Bányai et al., 2017). This quantitative research is undertaken to determine the conspicuous factors affecting social media addiction. The aim is to determine if the current population sample depends on Social Media apps and the prominent factors.

There were 18 indications for social addiction, and their reliability and validity were satisfactory. However, the internal reliability of the scale was examined using the Cronbach's alpha, which is good consistency value ($\alpha = 0.89$). To establish the suitability of data for Factor Analysis, Kaiser-Meyer-Olkin (KMO) coefficient and Bartlett's Test was done. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.925, which is highly favorable, and Bartlett's test of Sphericity is the chi-square value 4034.47 and df is 153, and p value is less than 0.001, revealing that the sample was suitable for the EFA (Russell, 2002). The statements have been

subjected to Exploratory Factor Analysis to determine the SMA factors concerning the Indian users. Varimax rotation technique was applied. The purpose of the process was also to reduce the number of variables in the whole process and make the scale crisp (Secer, 2013).

Principal component analysis was applied to obtain the loadings, and the factor loadings of below 0.5 have been removed, so only highly correlated items are retained. As a result, one statement has been removed. The table on Factor analysis shows that all the items were significantly correlated. The factors were extracted with the rule of eigenvalue >1 .

Table 3 represents the three-factor model, which explains the variance of around 51%. Factor 1 (with 8 statements) explains 37.4% of the total variance and emphasizes the Salience of Social media usage in the user's life. The factor explains that the users seek to use the social media accounts constantly and get annoyed if it is unavailable to them for some reason. They constantly plan to free more time to use social media. Factor 2 (5 statements) explains 7.65% of variance emphasizes tolerance

Table 3. Factor analysis.

Items	Statements	Factor I Salience	Factor II Tolerance and Mood Modification	Factor III Relapse
SM8	I think about how I could free more time to spend on SM.	.768		
SM16	I feel bad if I, for different reasons, cannot log on to my SM account for sometime	.697		
SM15	I become irritable if I have been prohibited from using SM	.688		
SM18	I have ignored my partner, family member or friends because of SM?	.647		
SM7	I think about what happened on social media.	.637		
SM17	I give less priority to hobbies, leisure activities, and exercise because of SM	.618		
SM5	I become restless or troubled if you have been prohibited from using SM	.586		
SM11	I feel that I have to use SM more and more in order to get the same pleasure out of it	.574		
SM1	I spend a lot of time thinking about SM or planned use of SM.		.711	
SM2	I Feel an urge to use SM more and more		.694	
SM3	I use SM to forget about the personal problems		.649	
SM10	I spend more time on SM than initially intended		.515	
SM9	I use in order to reduce restlessness		.510	
SM14	I decide to use SM less often, but not manage to do so.			.717
SM4	I have tried to cutdown the use of SM without success			.637
SM3	I experience that other have told me to reduce your use of SM but not listened to them			.619
SM6	I use SM so much that it has a negative impact on your job/studies			.552
Eigen values		6.73	1.37	1.14
Explained Variance %		37.39	7.65	6.37

Table 4. Pearson Correlation between the total Score and F1 F2 F3 (#Correlation is significant at the 0.01 level (2-tailed)).

	Factor 1	Fator 2	Fator 3
	r (p-value) n = 632		
Factor 1	1		
Factor 2	0.70 (<0.00#)	1	
Factor 3	0.67 (<0.00)	0.66 (<0.00)	1
Factor total	0.92 (<0.00)	0.88 (<0.00)	0.85 (<0.00)

and mood modification associated with social media usage. Factor 2 explains that the users' mind space is occupied with planning social media usage. There is an urge to use social media all the time, sometimes to forget about personal problems or reduce restlessness. The CAGE of addiction also mentions “eye-opener” wherein the user starts thinking and abusing the substance (in this case social media) the moment they wake up and plan its usage thorough out the day. Factor 3 (4 statements) acknowledges relapse in spite of the awareness of the problems associated with excessive SM usage. Factor 3 highlights the aspect of the users trying to reduce the use of social media but have not been able to do that. They have failed every time; they have tried to cut down the usage. The “CAGE” categorization of addiction, where “C” stands for the need to cut down, “A” is for annoying i.e. if people around find the Social media usage annoying and have asked them to reduce usage but it has fallen on deaf ears, “G” implying the feeling of guilt of overusing Social Media and “E” if it is being used as an “eye opener”, it is

addiction. The cut down is an integral part of the mix since the negative impact on the job or studies would make people think of cutting down or quitting but have not been able to do that. (see Table 4)

To know the significant relationship between the F1, F2, F3 and total score done through the Pearson correlation and found the positive correlation with highly significant value. The high correlation among the total score and three factor is 0.92, 0.88, 0.85.

The next crucial step in validating the scale is to apply the Confirmatory Factor analysis on the collected data. CFA is done to test if the data fit the hypothesized measurement model.

4.3. Confirmatory factor analysis -scale validation

To validate and understand the scale, we find the three factors mentioned: F1(Saliency), F2(Tolerance and Mood modifications) and F3 (Relapse) for the model. The statistical output of the confirmatory factor analysis CFA for the model and it mentioning the chi-square value, Comparative fit index (CFI), the index for adjusted goodness of fit (AGFI), and Root mean square error of approximation (RMSEA). Our CFA analysis exposes the following results indicator are χ^2 , CFI, AGFI, and RMSEA. The value is $\chi^2 = 446.56$, d.f. = 116, $\chi^2/d.f. = 3.84$, p-value = 0.0001, CFI = 0.901, AGFI = 0.89, RSMEA = 0.067 which fitting for the model. In Fig. 1 below shows the factor load value range from 0.62 to 0.75 for factor one, 0.53 to 0.64 for factor two and 0.41 to 0.74 for factor three (see Figs. 2 and 3).

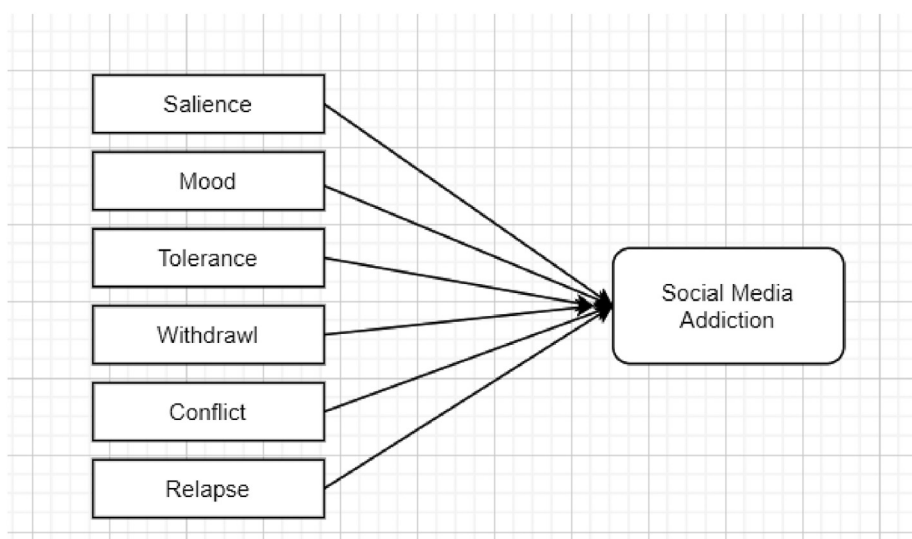


Fig. 1. Bergen Social Media Addiction Scale (Andreassen et al., 2017).

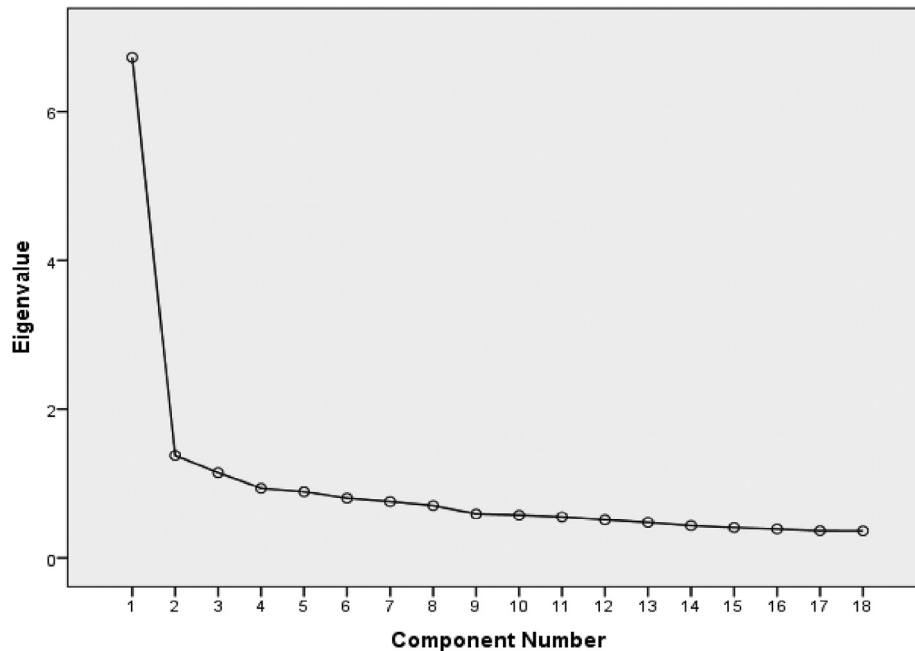


Fig. 2. Scree plot for Indian sample.

5. Discussion

BSMAS is validated in many countries with its shorter version. The first part of the analysis is done on the six statements of the eighteen statements i.e., the shorter version of the scale. 18% of the respondents are at risk of developing social media addiction (SMA), with the males slightly higher inclined than the females. The metanalysis of studies around the internet addiction of males and females showed similar graph where males in South Asia have higher internet addiction tendencies than females (Su et al., 2019). The inclination needs to be explored further as to what aspects are more addictive to males than females. The age group of 21–30 years is more likely to develop SMA than the other age groups. The UG and PG students are more at risk than the school students and PhD/research scholars. Bergen Social Media Addiction Scale has been validated to identify the at-risk population (Bányai et al., 2017), and the school and colleges can plan preventive and remedial actions accordingly.

The second part of the analysis is to work on the more extended version of BSMAS to derive meaningful inferences in the Indian context. BSMAS is built on the six factors: Saliency, Mood modifications, tolerance, withdrawal symptoms, conflict, and relapse. Exploratory Factor Analysis clubbed all statements into three elements: Saliency, Mood Modification/Tolerance, and Relapse, which are predominant in the Indian population sample. The

statements loaded on these factors are best explained by these factors. And the third segment of the research has validated the scale as applicable to India.

6. Results

The data collected from the sample population reveal that 18% of respondents are at a high risk of social media addiction per the BSMAS. The Social Media user penetration in India has increased from 46.44% in 2019 to 58.31% in 2021; this increase would further lead to a grave situation (Keelery, 2020).

The finding makes a case for creating awareness since it has been long established that the people addicted to Social media suffer from similar symptoms as those addicted to substance abuse (Echeburúa & De Corral, 2010). The behavioral psychologists opine that the “CAGE” theory applies to SMA the same way as it does to the other forms of addictions, CAGE being an acronym for Cutdown, Annoyed, Guilty and Eyeopener (Arora, 2020).

Research has established the role of demographics, especially gender, age, and education, on social media addiction in various countries (Kirezli & Aydin, 2021). This paper also focuses on studying social media addiction in India with respect to gender, age, and qualifications. The collected data evenly represents the gender viz., males (50.8%) and females (49.2%). The literature review is ripe with three views on the impact of

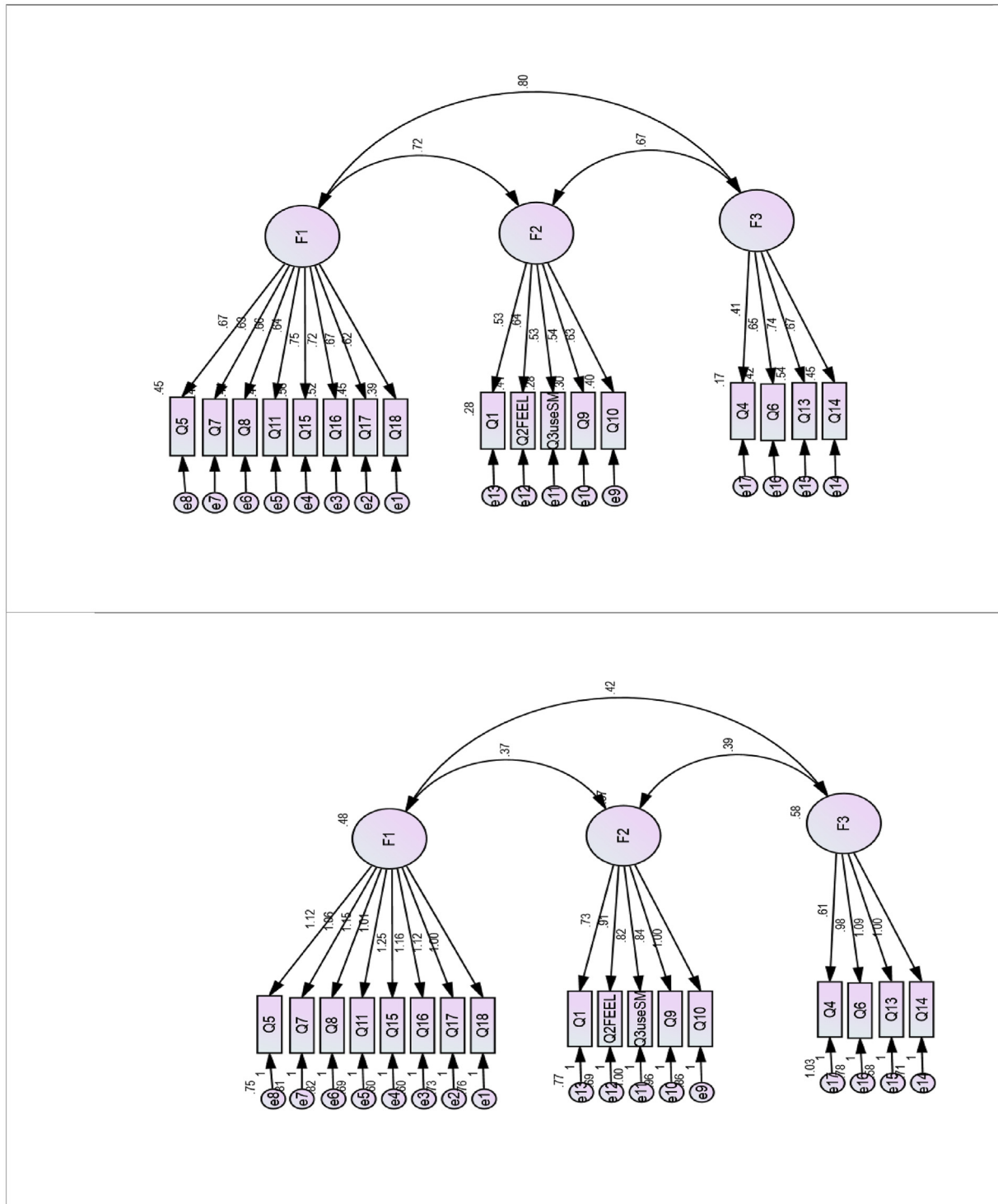


Fig. 3. Confirmatory factor Analysis-I and II.

Gender on SMA. Andreassen emphasizes that females are more vulnerable to SMA as they are more inclined toward social activity (Bányai et al., 2017). The second perspective highlighted by Kuss is

that both men and women are vulnerable. Still, males are more inclined to be addicted to gaming, pornography, and gambling, whereas females use social media, texting, and shopping online. (Kuss

et al., 2014). The third view elaborated in the study by Dailey claims that men are more likely to be addicted to social media (Stephanie et al., 2020). This research paper tries to resolve the conflict through empirical data specific to the Indian population and finds that the impact is similar. The paper highlights that across all factors (F1, F2 and F3), the two genders do not vary in their dependence on social media; more than 35 year age group are slightly less addicted than the other age groups and school students and diploma holders are more addicted than the others.

The analysis of the sample population from India concerning the Bergen Scale of Social Media Addiction reveals that the critical correlated factors are Salience, Tolerance and Mood Modification, and Relapse of Social Media Addiction. This is confirmed by applying CFA and significantly fitting to this model.

Results indicated that Social media addiction was significantly correlated with Factor 1, Factor 2 and Factor 3. The result about social media addiction shows support through the factor analysis, confirmatory analysis, and literature. The present study results support the use of BSMAS in research in India and confirm the uni-dimensional nature of the single factor proposed by the original authors.

6.1. Practical and theoretical implications of the study

The study points clearly in the direction of the fact that the Indian population is at the risk of developing SMA and as pointed out by research in the field, the impact can prove to be damaging to the mental health of the users. Social media users start young and the implications in terms of resultant bullying, depression, anxiety, anorexia, etc are well-established by the research in the field. The most important inference from the study is that it exists and hence needs to be curbed.

Educational institutions (schools, colleges, universities) and workplaces all need to work towards increasing awareness of the existence of addiction and how to curb it.

The strong case for including mandatory intervention weekly or fortnightly by psychologists to hold lectures and workshops is made in the research paper. Since the nature of the “cue” (Covey, 1991) i.e. the mobile phone is such that it cannot be removed from the users' lives, the research establishes that it is prevalent and hence should be

considered something that needs to be managed before it becomes a full-blown pandemic.

This paper focuses on the General Pathological Internet Use; the future research can specifically focus on the Specific Pathological Internet Use. The study can be further expanded to observe what aspects of social media, viz., socialization, gaming, pornography, etc., are more addictive across gender, age group, and people with a different set of qualifications.

7. Conclusion

Social media's impact on people's daily lives is on the rise. The research points towards the need to study the affected population and decipher the risk of addiction. The present research presents the addiction parameters relevant to India (salience, tolerance, and relapse).

The next step can be to establish what the experts feel about the rising usage level, whether it can be termed addiction, and how to curb it. Future research should also be done in the establishment of the relationship between Happiness (Longobardi et al., 2020) and Social Media Addiction; Depression; Sleep (Bányai et al., 2017; Gezin, 2018), Social Media Addiction; Self-esteem (Bányai et al., 2017), Narcissism (Choi, 2018; Malik & Khan, 2015), Productivity (Ch et al., 2022; Ma & Liu, 2021; Majid et al., 2020; Munene & Nyaribo, 2013; Yu & Shek, 2021). This would further strengthen the case for how Social Media overuse may impact the users' happiness, productivity, sleep, self-esteem, and any other that may come up in research.

The research on social media addiction has not gained prominence in the Indian context. The originality of the research lies in the fact that it is a part of the project, where once the pattern of addiction is deciphered in the sample population, it is re-enforced or reconfirmed by interviews the experts in the field viz., the psychiatrists and psychologists and the inferences would be used to suggest policy interventions that can be enforced by the government authorities.

Conflict of interest

There is no conflict of interest.

Acknowledgement

The paper is a part of the project “Social Media Addiction-Developing Ethics and Protocol”

IMPRESS/p3406/593/2018-19/ICSSR funded by IMPRESS/ICSSR.

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