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Research Article

Social Media and Mental Health: The role of Emotional Investment and Self-esteem

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Abstract

Aims: The consumption of social media has grown ingrained in the lives of today's youth. However, previous studies ignored the independent role of emotional perspective, self-esteem, and social media gratification with respect to social media usage and mental health. The purpose of the study is to explore the combination of crucial factors responsible for mental health.

Methods: The current study has integrated the uses and gratification theory (U&G), stimuli-organism-response (S-O-R), and sociometric theory in its earnest attempt to create a theoretical framework for the impact of social media usage on mental health through motives of social media usage (MSMU), emotional investment and self-esteem. A model was proposed to examine the relationship using a structured equation modeling method on data from 660 Indian participants.

Results: The results revealed that the most critical factors influencing mental health were the total time spent on social media (TTSSM), and passive and active non-social usage (ANSU). Furthermore, it was also found that some combination of MSMU, emotional investment, and self-esteem mediated the relationship between TTSSM, ANSU, and mental health.

Conclusion: The findings of the current study present empirical reasoning and information related to social media by representing that gratification, emotional investment, and self-esteem impact mental health. The present study's findings are strong enough to encourage parents, educators, and health professionals to counsel young people about their emotional involvement, building self-esteem, and use of social media.

Keywords: *Social Media; Depression; Anxiety; Mental Health; Uses and Gratification Theory; S-O-R Theory, Emotional Investment*

Introduction

In the twenty-first century, the use of social platforms is a constantly increasing activity. Particularly, in the pandemic, there was a surge noticed in online and digital activities. Around 43% of users increase their time spent on social media (Global Webindex, 2020). Worldwide, 4.20 billion (53.6%) users were active by January 2021 (Chaffey, 2021). In India 448 million users were active on social media and 78 million (21%) users were increased during 2020-2021 (Kemp, 2021). Millennials and Generation Z are the major contributors to approximately 67% of social media usage in India (Keelery, 2020a). In the United States, almost 7 out of 10 people use social media to communicate with others, get news, exchange information, and enjoy themselves (Pew Research Center, 2018). Young individuals engage in social media activity for various purposes for example entertainment, identity creation, networking, and maintaining relationships (Ifinedo, 2016).

Studies on social media have shown mixed results as far as its impact is concerned, making it a “doubtful advantage” tool. Previous studies revealed that there is blooming interest in investigating and assessing the features and prevalence of problematic/excessive social media use (Kuss a, 2011). Some studies showed that individuals who spend more time on social media platforms more tend to experience anxiety and depression symptoms (Banjanin et al., 2015). Likewise, the frequency of social media use is also associated with poor psychological well-being among young adults (Shakya & Christakis, 2017; Kross et al., 2013). Excessive usage of social media has negative consequences for users' personal, professional, and/or social, lives (Griffiths et al., 2014). Pantic and Damjanovic (2012) found a strong link between depressive symptoms and social media use. Facebook is really the most common and most frequently used social media platform and demonstrated that adolescents also use other social media platforms on a regular basis (Lenhart et al., 2015). However, to conclude that poor psychological is an outcome of total time spent on social media (TTSSM) and the frequency of social media use is excessively simplistic. It’s important to narrow down the factors for poor mental health due to the usage of social media. Another important factor in the extant literature related to social media is the uses and gratification of social media. Although little is known about the uses and gratification of social media’s effect on mental health. The present study contributes to the literature in terms of specific uses and gratification of social media corroborate in the diminishing of mental health.

The Purpose of social media use is different according to various users, for example, for teens who used social media, makes them feel closer to friends (78 percent), makes them more aware (49 percent), and more linked to their family (42 percent), but they also say it makes them feel under pressure to always show their best oneself (15 percent),

overloaded with data they get (10 percent), overwhelmed (9 percent), and/or as if they were really missing out (9 percent) (Tompson, 2017). Psychological well-being is defined as a combination of frequent happy feelings and relatively uncommon negative emotions (Diener and Larsen, 1993).

Previous studies on social media usage and mental health-focused frequency and duration of social media use. Considering the usage of social media by young adults, the frequency and duration of social media usage may not be enough to identify the underlying reason for diminishing mental health. Young adults' usage of social media has increased enormously (Kemp, 2021). Young adults deeply care the social media resulting in the induction of emotions while using social media, for instance, users feel disappointed and disconnected when they were not able to use social media (Woods & Scott, 2016) termed emotional investment. This emotional investment of an individual in social media can be a crucial factor to investigate in diminished mental health. Due little known about the emotional investment and social media, the current study corroborates in literature by investigating which uses and gratification involve/increase the emotional investment leads to an impact on mental health i.e., depression and anxiety (Woods & Scott, 2016)

Many researchers focus on this topic because Well-being is commonly described as a general outcome of social media studies, with effects on psychological indicators such as happiness and life satisfaction. (Chou and Edge, 2012), stress, and quality of life (Bevan et al., 2014), and depression (Tandoc et al., 2015). Despite an increasing number of studies, the link between social media use and well-being remains a matter of debate (Pantic, 2014).

Theoretical Background

U & G Theory

The uses and gratification approach investigates why and how individuals use the media, while also what gratifications they acquire from it, in contrast to mass media ideas and theories that focus on media effect. U & G theory has its roots in the study of mass communication (Gan and Li, 2018). U & G's theory states that there are social and psychological incentives to use all types of media that justify the use of certain media over others to meet a particular individual need (Katz and Blumler, 1974). According to U & G theory, different rewards influence user behavior patterns. U & G's theory reflects the motivation to use specific media and the motivation to use common social media (Gan, 2017).

U&G theory has recently been applied to online photo sharing (Malik et al., 2016), Internet use (Dhir et al., 2017, 2016, 2015), online social media (Dhir et al., 2017), photo tagging (Dhir et al., 2017; Dhir and Torsheim, 2016), and various forms of new popular media, such as Instagram and Flickr (Liu et al., 2013; Bui, 2014; Zhang et al., 2016). U&G has also been utilized to find out the reasons for teen's consistent usage of social media (Mäntymäki and Riemer, 2014), as well as the serious consequences of specific behaviors (Mäntymäki and Islam, 2016).

S-O-R Theory

The S-O-R theory developed by Woodworth (1918) states that stimuli (S) affect an individual's behavioral response (R) to an organism (O). Furthermore, Mehrabian and Russell (1974) used this idea to develop the S-O-R framework, which that asserts, a stimulus (S) received from the environment causes humans to evaluate their internal states (organism, O), ending in positive or negative reactions (R) (Mehrabian and Russell, 1974). Environmental signals (stimuli) can activate a person's internal evaluation state (organisms), resulting in psychological and cognitive responses to the stimulus, according to the paradigm. Yang et al. (2021) investigated the impact of metacognitive beliefs and catastrophic misunderstandings on social media users' health concerns. Using the S-O-R model, another study investigated the impact of social media use on weariness and dependency on internalized disorders (depression and anxiety) (Cao et al., 2019). As a result, the S-O-R framework may be able to detect changes in mental health brought on by external stresses with greater accuracy. The S-O-R framework has also been applied to social media research (Wu & Feng, 2021). Furthermore, this theory has been evident in the domain of Marketing (Wang et al., 2007), Web Design (Parboteeah et al., 2009), Information Systems (Animesh et al., 2011), etc., studied the effects of various stimuli on the user's behavioral response. The current study integrates the S-O-R theory in the context of social media usage for example TTSSM and active-passive usage as a stimulus, self-esteem, and motive of social media usage (MSMU) as organism and mental health of an individual as the response.

Sociometer Theory

Mark Leary and colleagues (1995) developed a sociometer theory to describe the facets of the self-esteem system. Self-esteem, or a person's sense of self-worth or value, maintains track of one's social approval and alerts the self to any potential threats to one's sense of belonging. The sociometer theory is one of the most used theories for self-esteem related studies. According to studies using a number of methods, acceptance leads to increases in state self-esteem, and rejection leads to decreases in self-esteem. These effects emerge when individuals are given false input about approval or rejection in the experiment when individuals envision being rejected or accepted, and when they recollect a past experience of acceptance or rejection (Leary et al., 1995). In the social media context, one’s self-esteem changes according to the approval of others on social media, for example, accepting the invitation, liking, commenting and sharing the post, etc.

Previous studies applied the U&G theory to different uses and gratification of social media in the context of addictive scenarios (Kircaburun et al., 2020). Various previous studies have examined user behavior with reference to a particular social media platform for example Facebook (Hsu et al., 2015), Twitter (Coursaris et al., 2013), and online social networking sites (Chaouali, 2016). However, to evaluate the social media (SM) behavioral response, emotions involved in the process of various activities on social media and users’ self-esteem cannot be ignored. For example, emotional investment and self-esteem negatively affect anxiety (Roberts, 2006) and depression (Watson et al., 2002). Therefore, the current study integrated sociometer, S-O-R, and U&G theory to examine whether the stimuli (social media usage) affect the response (mental health) through organism process (gratification of social media and self-esteem)? In the current proposed model, self-esteem and emotional investment are treated as organisms due to it was evident that self-esteem and emotional investment affect mental health (Nguyen et at., 2019) whereas emotional investment in social media also increases depression and anxiety (Alsunni & Latif 2021).

Social media and Mental health

The concern of social media on mental health is often represented in unpleasant terms. A previous study on a large sample of adolescents and young adults reported the link between social media usage (SMU) and mental health complications (Royal Society for Public Health, 2022). The use of social media has impacted negatively on mental health, which includes the elements of emotional, physical, and social well-being (Galderisi et al., 2015). National Mental Health Survey (2016) revealed that 1 out of 20 people in India suffers from depression, the most impacted group is below 25 years and above 65 years, and the treatment, the gap varies between 70% to 92% (Duffy et al., 2020). Young individuals with mental health issues are at greater risk of poor mental health for their whole life (Kessler et al., 2007). The impact of social media is an outcome of various confounding factors in diminishing mental health. Previous studies examined various factors for example duration, frequency, active and passive usage, and motives of social media usage which affect mental health. Therefore, it is important to investigate the combination of factors that affect the mental health of individuals. Previous studies reported that extensive use of SM was linked with depression and anxiety (Yan et al., 2017). However, multiple studies have found a link between greater social media use and increased anxiety and depression symptoms (Banjanin et al., 2015; Woods & Scott, 2016; Shukla & Chouhan, 2020), particularly among females (Viner et al., 2019). The studies found that there was an inverse relationship between TTSSM and psychological distress among Australian samples (O'Dea and Campbell, 2011). In contrast, other studies revealed that the use of social media for at least 2 hours daily is connected with psychological distress (Sampasa-Kanyinga and Lewis, 2015). It was also found that most of the studies conducted on social media were self-reported studies in which error cannot be eliminated. Therefore, it is required to use some other techniques/technology to track the TTSSM and various social media platforms. Hence, the current study applied the android application technology to track the respondent's TTSSM and various social media platforms on which the user spent their leisure time. Therefore, in light of these findings, we hypothesize that,

H1 (a): TTSSM will affect depression.

H1 (b): TTSSM will affect anxiety.

Concentrating only on the duration spent on social media may not help us to identify the major cause of poor mental health. Therefore, it will be important to include active-passive usage of social media. Gerson et.al. (2017) found that the uses of Facebook can be classified into three subscales: active social use, active non-social use (ANSU), and passive use. According to Burke et al., (2010), users who interact on Facebook contact are less inclined to feel lonely and have better feelings about establishing social capital. Users who are actively involved with the social site, creating material, and chatting with friends are said to be active users. Using Facebook to build social capital (Ellison et al., 2007), call on friends for help (Liu & Yu, 2013), and create social connectedness (Grieve et al., 2013), all that has been related to a number of subjective well-being measures (Ellison et al., 2007). The second component comprises elements that reflect ANSU, in which only liking a post is considered as ANSU (Gerson et.al. 2017). The presence of ANSU was surprising, as it denotes a type of SM interaction that is halfway between active and passive. The ANSU components indicate a degree of SM involvement in which a user approves the content posted by others

through liking the post but does not contact directly with friends. Because of its non-social nature, ANSU was likely lumped in with passive use or active use and thus may be disregarded as a distinct degree of engagement (Gerson et al. 2017), whereas scrolling, browsing, and consuming other people's content constitutes the passive mode of using social media.

Individuals using social media actively express their feelings and emotions with others which helps in positive mental health, whereas passive usage results in feelings of envy and inferiority leading to negative mental health. Both active and passive social media use seems to be a factor causing emotional distress and connected to poor mental health. A previous study analyzed that active and passive usage of social media is differentially connected to depression and anxiety (Thorisdottir et. al., 2019). Furthermore, some studies reported that being both actively and passively using social media – specifically related to Facebook - resulted in an increased number of depressive and anxiety symptoms (Escobar-Viera et.al., 2018; Thorisdottir et. al., 2019). In contrast, Banjanin et al. (2015), posited that social media activities and depressive symptoms were not related. One of the studies highlighted that passive usage increases depressive symptoms whereas active usage decreases depressive symptoms (Escobar-Viera et.al., 2018). Most of the studies were conducted on active and passive usage of social media whereas, there is one grey usage also available between active and passive usage i.e., ANSU of social media which may impact mental health. Expanding the strand of research, it is worthwhile exploring the influence of active, ANSU and passive usage of social media on mental health in light of the inconclusive and limited evidence of extant studies. On basis of the aforementioned findings, we hypothesize that,

H2 (a): Active usage of social media will affect depression.

H2 (b): ANSU usage of social media will not affect depression.

H2 (c): Passive usage of social media will affect depression.

H3 (a): Active usage of social media will affect anxiety.

H3 (b): ANSU usage of social media will not affect anxiety.

H3 (c): Passive usage of social media will affect anxiety.

Social Media, Emotional Investment, and Self-Esteem

Social media creates unique social pressure on individuals to be available all the time to respond to the messages and like the content instantaneously (Thomée et al., 2010). A previous study found that "friends typically build emotional closeness links which are unsurpassed in individuals' social lives," and while people may find it difficult to express emotion within their family relationships, they “can often reduce their guard, when one or more cohorts are present (Gaines et al, 1998). Furthermore, emotional experiences in personal relationships have been connected to relational aspects such as the quality of alternative partners, investment, and satisfaction, (Bevan, 2008). A previous study found that higher emotional investment is linked with depression and anxiety among university students (Alsunni & Latif,

2021). Very limited literature is available on the emotional investment of social media users (Woods & Scott, 2016). Therefore, more studies are needed to examine the effect of the emotional investment of social media users on mental health.

It was found that emotional investment plays a crucial role in influencing the self-esteem of social media users (Woods & Scott, 2016). Self-esteem can be defined as a positive or negative perception of the self which develops across time and various situations (Rosenberg, 1965; Brown & Marshall, 2006). As young age is important as individuals are developing their self-identity (Brewer & Kerslake, 2015) during this process feedback on the self possibly affects self-esteem (Valkenburg et al 2017; Erol & Orth, 2011). A previous study revealed a positive correlation between social media use and self-esteem (Valkenburg et al., 2017), whereas Malik and Khan (2015) discovered a negative link between self-esteem and excessive social media use. Previous studies investigated the positive and negative effects of social media on adolescents, and they got that feedback obtained from social media networks, whether negative or positive, has a significant influence on an individual's self-esteem (Valkenburg et al., 2006). Adolescents and young adults were more vulnerable to low self-esteem (Orth et al., 2015) leads to depression and anxiety (McLaughlin & King, 2015).

Social media forums are considered to be crucial tools for maintaining relationships, entertainment, gathering information, passing time, and creating a social network (Quan-Haase and Young, 2010). As per the U&G theory, how and why of any particular media been used by various individuals? Entertainment as a factor for Facebook usage; and coolness, creativity, documentation, and surveillance as factors for Instagram usage, have been put forward by studies in the past (Alhabash and Ma, 2017). However, little is known about which gratification of usage of social media affects mental health. Social media usage has been reported both intrusive and emotional consequences for individuals.

A previous study reported that social media use is related to physical, mental, and interpersonal consequences which include sleep loss, lack of exercise, effect on performance, depression, anxiety, and diminished interpersonal relationship with family and friends (Andreassen, 2015). Studies reported the effect of social media usage on mental health, still, more knowledge is needed to shed insights on which specific social media uses lead to, impair, or are of no relevance to mental health (Meier and Reinecke, 2020). The previous studies demonstrated motives of social media usage (MSMU) affect mental health, however, the effect of MSMU as a mediator is still missing. Hence, it is worth investigating how active, passive usage and most importantly non-active use can impact mental health through various motives of social media usage.

Filling the gap arising out of the inconclusiveness of the extant studies regarding the identification of factors responsible for diminishing mental health, the current study contributes its bit to the coffers of the academic literature by proposing a model in which MSMU, emotional investment, and self-esteem used as a mediator to investigate the link between social media usage (TTSSM and active-passive usage) and mental health (anxiety & depression).

Previous studies reported the direct effect of social media usage (TTSSM, active-passive, MSMU) on mental health, still, there were a series of activities conducted by the participant while using the social media for example time spent

on specific use may majorly affect the mental health. Even, with the studies so far conducted on children and adolescents, some studies have been conducted on young adults (Stronge et.al., 2019) who are more vulnerable to poor mental health. To our best knowledge and belief, this is the first study for examining various factors (total time spend on social media, active and passive usage, the motive of social media usage, emotional investment, and self-esteem) which may contribute to mental illness with the same sample and use of the android application to track the total time spent on social media and various social media platforms. The current study proposed serial mediation models (SMM) with various mental health symptoms for example SMM 1 (Figure 2) for depression as mental health symptoms likewise, SMM2 (Figure 3) for anxiety, which includes MSMU (M1), emotional investment (M2) and self-esteem (M3) as mediators between social media usage and various mental health symptoms. Therefore, along with other hypotheses and on the basis of the above findings we hypothesized that:

Figure 2: Serial Mediation Model 1 (SMM 1)

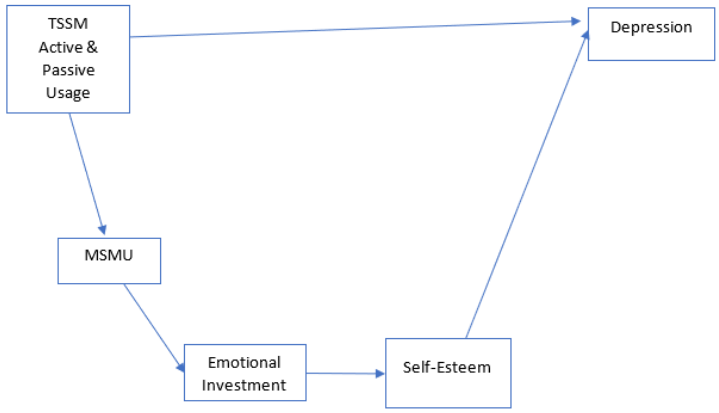
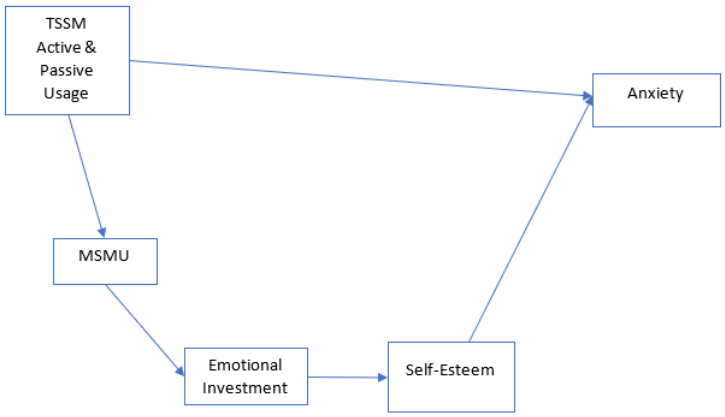


Figure 3: Serial Mediation Model 2 (SMM 2)



H4 (a): MSMU, emotional investment, and self-esteem mediate the relationship between TTSSM and depression.

H4 (b): MSMU, emotional investment, and self-esteem mediate the relationship between TTSSM and anxiety.

H5 (a): MSMU, emotional investment, and self-esteem mediate the relationship between active- ANSU- passive usage and depression.

H5 (b): MSMU, emotional investment, and self-esteem mediate the relationship between active-ANSU-passive usage and anxiety.

Methods

Participants, design, and procedure

The participants were selected through the snowball sampling method during the period to March 2021. The responses for the current study were collected from students aged 18 to 19 years. During this time restaurants, clubs, gyms, etc., opened with COVID-19 protocol except for schools and universities. Due to schools and universities being closed, the online method was adopted to conduct the study. The questionnaire comprised several questions that helped the researcher to determine the participant's eligibility to participate in the present study. Students' selection was based on a few criteria, which were included in the screening questionnaire. Firstly, participants desired to be 18 years of age. Secondly, participants are capable of accessing the Internet. Thirdly, participants should have an account on different social media platforms, fourth, they had spent significant time on social media on a daily basis, and lastly, the students are using android smartphones. The current study was approved by the university's ethical committee. Making use of the existing participants for getting newer ones in, the snowball sampling method was used as it is a non-probability referral chain-forming sampling method (Ghaljaie et al., 2017). The primary data was taken at the onset of the study and through the primary data, the respondents were encouraged to refer their friends, family, and acquaintances to take part in the study. The Snowball sampling technique is specifically used when the population is unknown. This sampling method has been used in this study as participants were not available physically in the university as universities were shut down due to COVID-19. Recently few studies have used this method successfully to investigate different mental health issues in the population (Arafa et.al., 2021).

Initially, the students were contacted for participation in the survey. After receiving consent from the students, they have been encouraged to contact their interested friends as much as possible to participate in the study, henceforth the chain was created for the participants to take part in the study. To encourage the students to take part in the study and spread the word among their acquaintances, they have been given non-monetary incentives for example extra time to submit their assignments, etc. Keeping the participation voluntary, the respondents were anonymous and could withdraw at any point in time. Setting the context, the study objectives, and data confidentiality were explicitly taken care of by the ethical committee of the university on the first page of the form. The survey was hosted on Google forms and an anonymous link was generated to be further shared with the target population. Participants signed the consent form for the study and responded to the questions related to socio-demographic characteristics, COVID-19, social media usage, emotional investment, self-esteem, motives of social media usage, and mental health. Subsequently, after receiving the consent form with a few eligibility questions and being selected for the study, participants were asked to install an android application named "Stay Free" on their respective android

devices. The Stay Free app is a self-control and productive app that tracks the phone usage and time spent on various activities like social media (Facebook, Instagram, Twitter, WhatsApp, etc.), entertainment (YouTube, etc.,), education (Google classroom, online class app, etc.,), gaming (Ludo, etc.,), utility activity, etc., (Waddilove, 2020). The participants were instructed that they must keep the android app for at least seven days for tracking their social media usage. After seven days of usual social media usage, participants must submit the screenshots through the google form (Figure 1). Two-phased methodologies were adopted in the study. Firstly, the participants (N=50) were contacted over the phone and were requested to fill out the consent form along with a few eligibility questions, and afterward, participants were asked to send the same consent form and other staged instructions (for example eligibility questions, android application installation and reporting of the data) to their friends, family, and acquaintances.

Figure1: Screenshot of android application.

Participants

The survey assessed on 908 participants of which 9 participants were found COVID-19 positive and 31 participants who were unhealthy from the chronic disease were excluded from further analysis. Out of these 868, 660 (76%) responded by completing the questionnaire and were considered for advanced statistical analyses. The sample consists of 52.1% male (n = 344) and 47.9% female (n = 316). Participants resided in 13 Indian states, with residing 44.8% (n = 296) in Uttar Pradesh and 29.1% (n = 192) in Madhya Pradesh state. Additionally, 87.3% (n = 576) have not experienced COVID-19 symptoms in the past by the participants (Table 1).

Table 1: Descriptive characteristics (N=660)

Factors	N (%)	M (SD)	Min-Max	Reliability (α)
Gender		1.47 (0.50)	1-2	

Male	344 (52.1)			
Female	316 (47.9)			
Location		8.79 (2.63)	1-13	
Bihar	24 (3.6)			
Chhattisgarh	6 (0.9)			
Gujarat	6 (0.9)			
Haryana	8 (1.2)			
Jharkhand	6 (0.9)			
Maharashtra	8 (1.2)			
Madhya Pradesh	192 (29.1)			
New Delhi	36 (5.5)			
Rajasthan	64 (9.7)			
Telangana	2 (0.3)			
Uttar Pradesh	296 (44.8)			
Uttarakhand	2 (0.3)			
West Bengal	10 (1.5)			
Total Time spent on social media (TTTSSM), hours		2.44 (0.82)	1-4	
Q1 (0-13)	90 (13.6)			
Q2 (13-26)	238 (36.1)			
Q3 (26-39)	282 (42.7)			
Q4 (39-52)	50 (7.6)			
Active-passive usage	660	23.07 (9.44)	00-52	0.913
Active usage	660	8.56 (4.57)	00-20	
ANSU	660	5.36 (3.29)	00-16	
Passive usage	660	9.13 (3.57)	00-16	
Uses of social media	660	89.14 (16.07)	38-127	0.908
MER	660	13.71 (4.20)	4-20	
MNPS	660	8.95 (2.57)	3-15	
MEPO	660	10.94 (3.67)	4-20	
PT	660	6.85 (1.71)	2-10	

TMT	660	14.88 (4.12)	5-25	
EMT	660	12.75 (3.53)	4-20	
IAE	660	21.03 (4.66)	6-30	
Emotional Investment	660	30.2 (6.53)	13-48	0.866
Self-Esteem	660	24.2 (4.74)	9-35	0.883
Depression	660	25.69 (10.65)	2-55	0.905
Anxiety	660	9.60 (4.53)	1-21	0.865

ANSU: Active non-social usage; MER: Maintain existing relationships; MNPS: Meet new people and socializing; MEPO: Make express, present or more popular oneself; PT: Pass time; TMT: As a task management tool; EMT: Entertainment; IAE: informational and educational.

Measure

The survey included ad-hoc sections and standardized questions. There were three sections, detailed below.

Section A contains the questions related to social-demographic characteristics and health status. Participants were asked about their gender (male and female), location (State), COVID-19 symptoms or tested positive (Yes or No), and chronic disease (Yes or No). The purpose of asking the COVID-19 and chronic disease-related questions is to ensure the participants should not be diseased with COVID-19 or any chronic disease at the time of the survey.

Total time spent on social media.

The TTSSM was calculated through an android application. The total time was calculated as the summation of time spent on every social networking platform. In this study, the total amount of time spent on Facebook and Instagram was considered for further analysis.

Active-Passive usage of social media.

Section B contains the questions related to active and passive social media use (Gerson et.al., 2017) and social media usage (Mehmet et.al.,2016). Passive active use measure (PAUM) is a Facebook use questionnaire with 13 items designed to identify the Facebook user's engagement activity. Respondents were asked to report their engagement activities using a 5-point Likert scale (1-never, 5-very frequently). Gerson et.al. (2017) found that the uses of Facebook can be classified into three subscales: active social use, ANSU, and passive use. When users and their friends got into direct communication in form of writing posts or comments, that constitute active social use. Merely liking a post in conversations between friends and users constituted active non-social use. And, finally, instances where the content was consumed but no interaction happened between the users and their friends on social media sites, constituted the passive social use. Showing fine reliability (internal as well as test-retest) and validity, these multi-item scales fit in well with requirements (Gerson et al., 2017). Originally, the PAUM was designed to measure the active and passive

usage pattern of Facebook, but the current study used to identify the usage pattern of Instagram as well due to mostly the same characteristics found in Facebook and Instagram.

Uses and Gratification of social media.

Facebook Usage Aim (FAU) (Horzum, 2016) was originally designed to identify the aim of using Facebook. This scale was used to identify the user's objective to use Facebook and Instagram due to almost the same characteristics found in both social media platforms named as motives for social media use (MSMU). The scale included 30 items which were classified into seven various subscales for example a. Maintain existing relationships [MER], b. Meet new people and socialize [MNPS], c. Make express, present, or more popular oneself [MEPO], d. Pass time [PT], e. As a task management tool [ATMT], f. Entertainment [ENT] g. informational and educational [IAE] in the form of a 5-point Likert scale. The scale has good internal consistency (0.91), test-retest reliability, and construct, discriminant, convergent, and divergent validity.

Emotional Investment in social media.

Next in the line, section B comprises questions related to the social media use integration Scale for emotional investment (Jenkins-Guarnieri et al., 2013). This scale includes a 10-item measure of self-reporting used to measure two-dimension termed Social Integration and Emotional Connection (SIEC) and Integration into Social Routines (ISR). Making use of a 5-point Likert scale, the respondents are asked to report their levels of emotional investment (1 = Strongly disagree, 5 = Strongly agree). The Social Media Use Integration Scale reported decent reliability with Cronbach's alpha of .89. The reliability of the current sample was reported with Cronbach's alpha of .866.

Self-Esteem

Self-esteem was measured through Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). Participants rated their trait self-esteem levels on- a 4-point Likert scale from "Strongly disagree (1)" to "Strongly agree (4). There is no cut-off and used as a continuous measure, a higher score depicted higher self-esteem. The measure indicates high reliability with Cronbach's alpha of .88 in the current study.

Section C includes the mental health-related questions. Mental health measured through various subscales includes depression &anxiety.

Depression

Depression symptoms were evaluated via the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a self-report instrument that includes 20 items with excellent reliability and validity (Radloff, 1977).

Anxiety

Anxiety symptoms were measured via a generalized anxiety disorder questionnaire (GAD-7). GAD-7 is a 7-item self-reported questionnaire designed to identify possible causes for anxiety and its severity (Spitzer et al., 2006). Participants are asked to report the questions for example how often they have been upset for the last two weeks experiencing any of the seven main anxiety disorder symptoms. Participants report the anxiety (GAD) symptoms on a 4-point Likert scale ranging from 0-to 3 (1 = Not at all, 3 = Almost every day). Thus GAD-7 scores range from 0-to 21 representing scores of 5 for mild, score 10 for moderate, and 15 for severe symptoms. The scale has demonstrated excellent internal consistency ($\alpha = .92$) and reliability (Spitzer et al., 2006).

Statistical Analyses and Results

The statistical analysis was conducted using SPSS version 26 and Jamovi 2.2.5 based on R statistical tool (IBM, Armonk, NY, USA; Jamovi Project, 2021) to perform descriptive statistics analyses, reliability analyses, and bivariate correlation. Additionally, IBM SPSS-AMOS version 26 (Byrne, 2016; Sharma et al., 2017) was used to analyze the relationships proposed in the model. The indirect effect was calculated using SPSS-AMOS version 26 indirect effect plugins (Gaskin et al., 2020).

The screenshot of the data reported by the participants was entered into the SPSS and Jamovi, raw scores of active, and passive social media usage, use of social media, depression, and GAD were calculated. The data of the proposed model were analyzed using structured equation modeling (SEM). SEM has been employed in the regression method of mediation analysis due to SEM provides a more suitable interpretation mediation framework for mediation analysis and various types of analysis (Kraemer et al., 2001). The maximum likelihood technique is adopted to analyze the hypothesized models, shown in Figure 2. The current study proposed social media referred to as the stimulus, various gratification, emotional investment, and self-esteem is referred to as an organism, and mental health is referred to as a response, inspired from S-O-R theory. The statistical analyses were conducted in two stages, firstly estimated the measurement model and second structured equation modeling were performed on the proposed hypothesized model.

Measurement Model and Construct Reliability

To validate the proposed model, the overall model fit was assessed, construct validity, and reliability. The overall model fit was evaluated using the following fit indices i.e., chi-square (X2), degree of freedom (df), normed-fit index (NFI), normed chi-square to degree-of-freedom (CMIN/DF), goodness-of-fit index (GFI) (Bonett, 1980), comparative fit index (CFI) (Bentler. 1990), adjusted goodness-of-fit index (AGFI), standardized root mean squared residual (SRMR) (Hu and Bentler,1999), and root means a square error of approximation (RMSEA) (Browne and Cudeck, 1992). The purpose of selecting these fit indices is to confirm about the data fit the various serial mediation proposed model (McDonald and Ho, 2002). Table 3 presented the various proposed model fit indices and their threshold values which showed a good fit.

The current study used composite reliability (CR), discriminant validity, and convergent validity to assess measure construct reliability and validity. The average variance extraction (AVE) technique was utilized for convergent validity and most maximum shared variance (MSV) and √AVE were applied to estimate the divergent validity of measures. Also, Cronbach alpha (α) was determined to confirm the reliability of the instruments.

Table 2: Person correlation between various constructs.

	TTSSM	Gender	LOC	Active	ANSU	Passive	MER	MNPS	MEPO	PT	TMT	ENT	IAE	EI	SE	DEP	GAD
TTSSM	**1**																
Gender	.030	**1**															
LOC	-.013	-.069	**1**														
Active	.119**	-.069	-.005	**.804**													
ANSU	.258**	-.030	-.060	.518**	**.805**												
Passive	.278**	.020	-.025	.558**	.449**	**.784**											
MER	.377**	.046	.029	.181**	.174**	.341**	**.813**										

MNPS	.463**	-.003	.079*	.108**	.127**	.182**	.545**	**.754**									
MEPO	.395**	.043	-.094*	.225**	.326**	.396**	.413**	.254**	**.715**								
PT	.200**	.101**	-.053	.157**	.196**	.279**	.351**	.260**	.479**	**.747**							
TMT	.252**	.016	-.078*	.256**	.335**	.338**	.285**	.129**	.510**	.375**	**.764**						
ENT	.625**	.064	-.036	.158**	.285**	.329**	.410**	.417**	.422**	.278**	.315**	**.729**					
IAE	.261**	.119*	.042	.131**	.179**	.192**	.165**	.155**	.242**	.170**	.156**	.314**	**.741**				
EI	.425**	-004	-.001	.188**	.315**	.348**	.146**	.308**	.454**	.305**	.360**	.376**	.148**	**0.86**			
SE	-324**	.026	.050	.117**	-.090*	-.084*	-.160**	-.146**	-.157**	-.171**	-.107**	-.163**	.021	-.248**	**0.88**		

DEP	.633**	.014	-.074	.178**	.283**	.357**	.331**	.319**	.397**	.217**	.252**	.404**	.102**	.430**	-.419**	**.707**	
GAD	.539**	-.002	-.023	.107**	.237**	.231**	.192**	.272**	.231**	.201**	.177**	.387**	-.068	279**	-.325**	.555**	**.719**

Note. ∗ p ≤ .05, ∗∗p ≤ .01, ∗∗∗p ≤ .001.

ANSU: Active non-social usage; TTSSM: time spent on social media, LOC: location, MER: Maintain existing relationships; MNPS: Meet new people and socializing; MEPO: Make express, present or more popular oneself; PT: Pass time; TMT: As a task management tool; ENT: Entertainment; IAE: informational and educational, EI: emotional investment, SE: self-esteem, DEP: depression, GAD: anxiety.

Table 3: Fit indices for proposed model and their respective threshold.

Fit Indices	**Threshold**		
		DEP	**GAD**
X^2		20.47	26.31
df		18	18
CMIN/DF	≤3.0	1.13	1.46
GFI	≥0.90	.996	.994
AGFI	≥0.80	.974	.967
NFI	≥0.90	.993	991
CFI	≥0.90	.999	.997
SRMR	≤0.08	.0169	.0168
RMSEA	≤0.08	.014	.026

DEP: depression, GAD: anxiety.

Construct reliability, discriminant validity, and convergent validity were investigated in the current study. As shown in Table 4, the AVE values of all latent constructs were higher than the threshold level (0.5), implying convergent validity. The square root of each construct's average variance extraction values was higher than the inter-construct correlation (Table 2). In addition, the values for the maximum shared variance (MSV) were lower than the comparable AVE values. (Table 4). According to the findings, the current study data satisfy the condition of discriminant validity (Matemba & Li, 2018).

Table 4: Reliability and validity of the constructs.

Latent Construct	**CR (CR>0.70)**	**AVE (AVE>0.50)**	**√AVE (√ AVE > Inter-construct correlations)**
Active	.901	.647	.804
ANSU	.880	.648	.805

Passive	.864	.615	.784
MER	.886	.662	.813
MNPS	.798	.569	.754
MEPO	.804	.512	.715
PT	.817	.559	.747
TMT	.875	.585	.764
EMT	.927	.532	.729
IAE	.879	.550	.741
EI Self-esteem			
Depression	.951	.500	.707
Anxiety	.771	.517	.719

ANSU: Active non-social usage; MER: Maintain existing relationships; MNPS: Meet new people and socializing; MEPO: Make express, present or more popular oneself; PT: Pass time; TMT: As a task management tool; ENT: Entertainment; IAE: informational and educational; EI: Emotional Investment.

Correlational Analysis

Correlation analysis and descriptive statistics are shown in Table 2. TTSSM was found to be associated with the majority of the constructs in the correlational analysis. For example, TTSSM is most frequently linked to depression and anxiety (r =.633, p <0.01, r =.539, p< 0.01). TTSSM was also linked to active (r =.119, p< 0.01), active non-social (r =.258, p< 0.01), and passive (r =.278, p< 0.01) usages. Eventually, it was observed that TTSSM was related to a variety of MSMU besides informational and educational use (IAE). Surprisingly, TTSSM was positively related with emotional investment (r = .425, p< 0.01). When compared to ANSU and active social media usage, passive social media usage was found to be more strongly associated with depression and anxiety. Despite the fact that various uses and gratifications of social media have been linked to depression and anxiety, when compared to other social media motives, the most significant motive was entertainment with depression (r =.404, p< 0.01), anxiety (r =.387, p< 0.01).

However, the least depression found when an individual uses the social media for information and education (IAE) (r = .102, p< 0.01), anxiety in maintaining an existing relationship (MER) (r =.192, p< 0.01). Emotional investment is significant factor found to be positively associated with depression (r = .430, p< 0.01), anxiety (r = .279, p< 0.01), whereas self-esteem found to be correlated negatively with depression (r = -.419, p< 0.01), anxiety (r = -.325, p< 0.01). Squared multiple correlations of various latent constructs are also represented in Table 5.

Table 5: Squared multiple correlation of various latent constructs.

Latent Constructs	**DEP**	**GAD**
ENT	.422	.422
TMT	.174	.174
PT	.096	.096
MEPO	.260	.259

MNPS	.217	.217
MER	.203	.203
IAE	.090	.090
EI	.039	.049
SE	.045	.046
DEP	.484	-
GAD	-	.322

MER: Maintain existing relationships; MNPS: Meet new people and socializing; MEPO: Make express, present or more popular oneself; PT: Pass time; TMT: As a task management tool; EMT: Entertainment; IAE: informational and educational, EI: emotional investment, SE: self-esteem, DEP: depression, GAD: anxiety.

Structure Equation Modelling Analysis

The current study data showed convergent and discriminant validity, we examined the hypothesized relationship of proposed model through structural equation modelling method (Figure 1). For SMM 1, X2 = 20.47, df = 18, CMID/DF = 1.13, GFI = 0.996, AGFI = 0.974, NFI = 0.993, CFI = 0.999, SRMR = 0.0169, RMSEA = 0.014. These values are considerably within the permissible range of indices (Table 3), thus showed a good model fit. Subsequently, found that statistical outcome accounted for of 41%, 47%,31%, 29%, 34%, 25%, 28%, 31%, 18%, 20%, 22% the variance in depression, anxiety, MER, MNPS, MEPO, PT, TMT, ENT, IAE, self-esteem and emotional investment respectively.

As shown in Table 6, the direct positive effect was found between TTSSM and depression ($\beta = .497$, $p<0.01$), TTSSM and anxiety ($\beta = .448$, $p<0.01$). Therefore, H1(a) and H1(b) were accepted. Whereas ANSU effect anxiety ($\beta = .081$, $p<0.05$) and passive usage positively affect depression ($\beta = .161$, $p<0.01$). Hence, H3 (b) was rejected and H2 (c) was accepted.

Table 6: Standardized direct effects for the paths of various model.

Depression					**Anxiety**				
Conceptualized Path			Std. Estimate	S.E.	Conceptualized Path			Std. Estimate	S.E.
IAE	<---	TTSSM	.214**	.200	IAE	<---	TTSSM	.214**	.200
MER	<---	TTSSM	.311**	.188	MER	<---	TTSSM	.311**	.188
MNPS	<---	TTSSM	.452**	.115	MNPS	<---	TTSSM	.452**	.115

MEPO	<---	TTSSM	.286**	.159	MEPO	<---	TTSSM	.286**	.159
PT	<---	TTSSM	.121*	.082	PT	<---	TTSSM	.121*	.082
TMT	<---	TTSSM	.144**	.189	TMT	<---	TTSSM	.144**	.189
ENT	<---	TTSSM	.564**	.156	ENT	<---	TTSSM	.559**	.156
MNPS	<---	active	.047	.025	MNPS	<---	active	.047	.025
MEPO	<---	active	-.038	.035	MEPO	<---	active	-.038	.035
PT	<---	active	-.022	.018	PT	<---	active	-.022	.018
TMT	<---	active	.030	.041	TMT	<---	active	.030	.041
ENT	<---	active	-.036	.030	EMT	<---	active	-.037	.030
IAE	<---	active	.017	.044	IAE	<---	active	.017	.044
MER	<---	passive	.262**	.052	MER	<---	passive	.262**	.051
MER	<---	active	.015	.041	MER	<---	active	.015	.041
MNPS	<---	passive	.045	.031	MNPS	<---	passive	.045	.031
MEPO	<---	passive	.271**	.043	MEPO	<---	passive	.270**	.044
PT	<---	passive	.222**	.022	PT	<---	passive	.222**	.022
TMT	<---	passive	.194**	.052	TMT	<---	passive	.194**	.052
ENT	<---	passive	.164**	.041	ENT	<---	passive	.164**	.041
IAE	<---	passive	.092	.055	IAE	<---	passive	.092	.055

MER	<---	ANSU	-.031	.054	MER	<---	ANSU	-.031	.054
MNPS	<---	ANSU	-.034	.033	MNPS	<---	ANSU	-.034	.033
MEPO	<---	ANSU	.152**	.045	MEPO	<---	ANSU	.152**	.046
PT	<---	ANSU	.073	.023	PT	<---	ANSU	.073	.023
TMT	<---	ANSU	.195**	.054	TMT	<---	ANSU	.195**	.054
ENT	<---	ANSU	.092*	.045	ENT	<---	ANSU	.092*	.045
IAE	<---	ANSU	.079	.057	IAE	<---	ANSU	.079	.057
EI	<---	MER	.108**	.083	EI	<---	MER	.114*	.084
EI	<---	MNPS	-.046	.135	EI	<---	MNPS	-.045	.135
EI	<---	MEPO	.112	.099	EI	<---	MEPO	.115*	.099
EI	<---	PT	.016	.172	EI	<---	PT	.017	.173
EI	<---	TMT	.056	.076	EI	<---	TMT	.059	.077
EI	<---	ENT	.754**	.312	EI	<---	ENT	.741**	.311
EI	<---	IAE	-.113	.074	EI	<---	IAE	-.118*	.075
SE	<---	EI	-.119	.035	SE	<---	EI	-.120*	.035
DEP	<---	SE	-.241**	.067	GAD	<---	SE	-.168**	.033
DEP	<---	TTSSM	.497**	.401	GAD	<---	TTSSM	.448**	.196
DEP	<---	Active	.035	.086	GAD	<---	Active	.000	.042

DEP	<---	Passive	.161**	.105	GAD	<---	Passive	.056	.051
DEP	<---	ANSU	-.043	.110	GAD	<---	ANSU	.081*	.054

ANSU: Active non-social usage; TTSSM: Total time spent on social media; MER: Maintain existing relationships; MNPS: Meet new people and socializing; MEPO: Make express, present or more popular oneself; PT: Pass time; TMT: As a task management tool; EMT: Entertainment; IAE: informational and educational, COG: cognitive distortion, DEP: depression

N = 660, * $p < 0.05$,** $p < 0.01$.

In the present study, the full path of significant mediation which includes MSMU, emotional Investment (EI) and self-esteem (SE) has been depicted in Table 7. The significant mediation was found between TTSSM and depression through IAE-EI-SE (β = -.024, p<0.05), MER-EI-SE (β = .034, p<0.05), MEPO-EI-SE (β = .032, p<0.05) and ENT-EI-SE (β = .421, p<0.05). Hence, H4 (a) was accepted. Eventually, mediation test found that anxiety was influenced by TTSSM through IAE-EI-SE (β = -.025, p<0.05), MER-EI-SE (β = .035, p<0.05), MEPO-EI-SE (β = .033, p<0.05) and ENT-EI-SE (β = .414, p<0.01); MER-EI-SE (β = .036, p<0.05), MEPO-EI-SE (β = .036, p<0.05) and ENT-EI-SE (β = .406, p<0.01), MER-EI-SE (β = .035, p<0.05), MEPO-EI-SE (β = .035, p<0.05), and ENT-EI-SE (β = .410, p<0.01) (Table 8). Table 7 and 8 represents the significant path of structural model. Therefore, H4 (b) was accepted.

MSMU, emotional and self-esteem does not mediate the relationship between active usage and depression, whereas active non-social usage influence depression via MEPO-EI-SE (β = .017, p<0.05), ENT-EI-SE (β = .069, p<0.01) and IAE-EI-SE (β = -.009, p<0.05) and passive and depression via MER-EI-SE (β = .028, p<0.05), MEPO-EI-SE (β = .030, p<0.05), ENT-EI-SE (β = .124, p<0.05) and IAE-EI-SE (β = -.010, p<0.05). Hence, H5 (a) was partially accepted due to few MSMU factors, EI and SE mediates the relationship between social media usage and mental health. Furthermore, mediation test was examined for anxiety and found that passive usage effect anxiety through MER (β = .030, p<0.05), MEPO (β = -.031, p<0.05), ENT (β = .122, p<0.01) and IAE (β = -.011, p<0.05); active non-social through MEPO (β = .017, p<0.05), ENT (β = .068, p<0.01) and IAE (β = -.009, p<0.05) ; subsequently, active non-social usage via MEPO-EI-SE (β = .019, p<0.05), ENT-EI-SE (β = .067, p<0.01) and IAE-EI-SE (β = -.009, p<0.05) and passive and depression via MER-EI-SE (β = .031, p<0.05), MEPO-EI-SE (β = -.034, p<0.05), ENT-EI-SE (β = .119, p<0.01) and IAE-EI-SE (β = -.011, p<0.05) and passive through MER-EI-SE (β = .030, p<0.05), MEPO-EI-SE (β = .034, p<0.05), ENT-EI-SE (β = .120, p<0.01) and IAE-EI-SE (β = -.011, p<0.05),. Therefore, H5(a) and H5 (b) partially accepted.

Table 7: Standardized Indirect effects for the paths of various model.

Depression	**Anxiety**

		95% Confidence Intervals					95% Confidence Intervals		
Indirect Path	**Standardized Estimate**	**Lower**	**Upper**	**P-Value**	**Indirect Path**	**Standardized Estimate**	**Lower**	**Upper**	**P-Value**
TTSSM --> IAE --> EI --> SE --> DEP	-0.024*	-0.024	-0.002	0.018	TTSSM --> IAE --> EI --> SE --> GAD	-0.025*	-0.008	-0	0.014
TTSSM --> MER --> EI --> SE --> DEP	0.034*	0.001	0.035	0.049	TTSSM --> MER --> EI --> SE --> GAD	0.035*	0.001	0.011	0.038
TTSSM --> MNPS --> EI --> SE --> DEP	-0.021	-0.035	0.004	0.248	TTSSM --> MNPS --> EI --> SE --> GAD	-0.02	-0.01	0.001	0.25
TTSSM --> MEPO --> EI --> SE --> DEP	0.032*	0.001	0.034	0.049	TTSSM --> MEPO --> EI --> SE --> GAD	0.033*	0	0.011	0.044
TTSSM --> PT --> EI --> SE --> DEP	0.002	-0.001	0.006	0.501	TTSSM --> PT --> EI --> SE --> GAD	0.002	0	0.002	0.456
TTSSM --> TMT --> EI --> SE --> DEP	0.008	0	0.012	0.129	TTSSM --> TMT --> EI --> SE --> GAD	0.009	0	0.004	0.101
TTSSM --> ENT --> EI --> SE --> DEP	0.421*	0.061	0.324	0.011	TTSSM --> ENT --> EI --> SE --> GAD	0.414**	0.019	0.1	0.009
Active --> MNPS --> EI --> SE --> DEP	-0.002	-0.001	0	0.212	Active --> MNPS --> EI --> SE --> GAD	-0.002	0	0	0.199
Active --> MEPO --> EI --> SE --> DEP	-0.004	-0.002	0	0.209	Active --> MEPO --> EI --> SE --> GAD	-0.004	-0.001	0	0.205

Active --> PT --> EI --> SE --> DEP	0	-0.001	0	0.495	Active --> PT --> EI --> SE --> GAD	0	0	0	0.482
Active --> TMT --> EI --> SE --> DEP	0.002	0	0.001	0.279	Active --> TMT --> EI --> SE --> GAD	0.002	0	0	0.273
Active --> ENT --> EI --> SE --> DEP	-0.027	-0.006	0	0.136	Active --> ENT --> EI --> SE --> GAD	-0.027	-0.002	0	0.122
Active --> IAE --> EI --> SE --> DEP	-0.002	-0.001	0	0.481	Active --> IAE --> EI --> SE --> GAD	-0.002	0	0	0.452
Active --> MER --> EI --> SE --> DEP	0.002	0	0.001	0.431	Active --> MER --> EI --> SE --> GAD	0.002	0	0	0.424
Passive --> MER --> EI --> SE --> DEP	0.028*	0	0.007	0.043	Passive --> MER --> EI --> SE --> GAD	0.030*	0	0.002	0.031
Passive --> MNPS --> EI --> SE --> DEP	-0.002	-0.002	0	0.189	Passive --> MNPS --> EI --> SE --> GAD	-0.002	0	0	0.19
Passive --> MEPO --> EI --> SE --> DEP	0.030*	0	0.008	0.05	Passive --> MEPO --> EI --> SE --> GAD	0.031*	0	0.002	0.042
Passive --> PT --> EI --> SE --> DEP	0.004	-0.001	0.003	0.588	Passive --> PT --> EI --> SE --> GAD	0.004	0	0.001	0.515
Passive --> TMT --> EI --> SE --> DEP	0.011	0	0.004	0.132	Passive --> TMT --> EI --> SE --> GAD	0.012	0	0.001	0.107
Passive --> ENT --> EI	0.124*	0.004	0.022	0.011	Passive --> ENT --> EI -->	0.122**	0.001	0.007	0.008

--> SE --> DEP					SE --> GAD				
Passive --> IAE --> EI --> SE --> DEP	-0.010*	-0.003	0	0.031	Passive --> IAE --> EI --> SE --> GAD	-0.011*	-0.001	0	0.026
ANSU --> MER --> EI --> SE --> DEP	-0.003	-0.002	0	0.252	ANSU--> MER --> EI --> SE --> GAD	-0.004	-0.001	0	0.25
ANSU --> MNPS --> EI --> SE --> DEP	0.002	0	0.002	0.237	ANSU t --> MNPS --> EI --> SE --> GAD	0.002	0	0	0.22
ANSU --> MEPO --> EI --> SE --> DEP	0.017*	0	0.005	0.036	ANSU --> MEPO --> EI --> SE --> GAD	0.017*	0	0.002	0.033
ANSU --> PT --> EI --> SE --> DEP	0.001	0	0.001	0.405	ANSU --> PT --> EI --> SE --> GAD	0.001	0	0	0.37
ANSU --> TMT --> EI --> SE --> DEP	0.011	0	0.004	0.147	ANSU --> TMT --> EI --> SE --> GAD	0.012	0	0.001	0.117
ANSU --> ENT --> EI --> SE --> DEP	0.069**	0.002	0.017	0.009	ANSU --> ENT --> EI --> SE --> GAD	0.068**	0.001	0.005	0.008
ANSU --> IAE --> EI --> SE --> DEP	-0.009*	-0.003	0	0.048	ANSU --> IAE --> EI --> SE --> GAD	-0.009*	-0.001	0	0.038

ANSU: Active non-social usage; Time (TTSSM): Total time spent on social media; MER: Total Maintain existing relationships; MNPS: Total Meet new people and socializing; MEPO: Total Make express, present or more popular oneself; PT: Total Pass time; TMT: Total As a task management tool; EMT: Total Entertainment; IAE: Total informational and educational, EI: emotional investment, SE: self-esteem, DEP: depression, ANSU: Non-active usage

N = 660, * $p < 0.05$, ** $p < 0.01$,***$p < 0.001$

Table 8: Standardized Indirect effects for the paths of various model.

Loneliness					**Life Satisfaction**				
		95% Confidence Intervals					**95% Confidence Intervals**		
Indirect Path	**Standardized Estimate**	**Lower**	**Upper**	**P-Value**	**Indirect Path**	**Standardized Estimate**	**Lower**	**Upper**	**P-Value**
TTSSM --> IAE --> EI --> SE --> LON	-0.025*	-0.006	-0.001	0.011	TTSSM --> IAE --> EI --> SE --> SWL	-0.025*	0	0.005	0.023
TTSSM --> MER --> EI --> SE --> LON	0.036*	0	0.009	0.031	TTSSM --> MER --> EI --> SE --> SWL	0.035*	-0.009	0	0.044
TTSSM --> MNPS --> EI --> SE --> LON	-0.02	-0.008	0.001	0.222	TTSSM --> MNPS --> EI --> SE --> SWL	-0.02	0	0.008	0.172
TTSSM --> MEPO --> EI --> SE --> LON	0.036*	0.001	0.009	0.025	TTSSM --> MEPO --> EI --> SE --> SWL	0.035*	-0.008	0	0.041
TTSSM --> PT --> EI --> SE --> LON	0.003	0	0.002	0.361	TTSSM --> PT --> EI --> SE --> SWL	0.002	-0.001	0	0.406
TTSSM --> TMT --> EI --> SE --> LON	0.007	0	0.003	0.138	TTSSM --> TMT --> EI --> SE --> SWL	0.008†	-0.003	0	0.085
TTSSM --> ENT --> EI -->	0.406**	0.014	0.083	0.006	TTSSM --> ENT --> EI --	0.410*	-0.066	-0.007	0.023

SE --> LON					> SE --> SWL				
Active --> MNPS --> EI --> SE --> LON	-0.002	0	0	0.203	Active --> MNPS --> EI --> SE --> SWL	-0.002	0	0	0.165
Active --> MEPO --> EI --> SE --> LON	-0.005	0	0	0.208	Active --> MEPO --> EI --> SE --> SWL	-0.005	0	0	0.151
Active --> PT --> EI --> SE --> LON	0	0	0	0.397	Active --> PT --> EI --> SE --> SWL	0	0	0	0.462
Active --> TMT --> EI --> SE --> LON	0.001	0	0	0.256	Active --> TMT --> EI --> SE --> SWL	0.002	0	0	0.184
Active --> ENT --> EI --> SE --> LON	-0.026	-0.002	0	0.115	Active --> ENT --> EI --> SE --> SWL	-0.027†	0	0.001	0.093
Active --> IAE --> EI --> SE --> LON	-0.002	0	0	0.452	Active --> IAE --> EI --> SE --> SWL	-0.002	0	0	0.404
Active --> MER --> EI --> SE --> LON	0.002	0	0	0.42	Active --> MER --> EI --> SE --> SWL	0.002	0	0	0.346
Passive --> MER --> EI --> SE --> LON	0.031*	0	0.002	0.027	Passive --> MER --> EI --> SE --> SWL	0.030*	-0.002	0	0.038
Passive --> MNPS	-0.002	0	0	0.191	Passive --> MNPS	-0.002	0	0	0.156

--> EI --> SE --> LON					--> EI --> SE --> SWL				
Passive --> MEPO --> EI --> SE --> LON	0.034*	0	0.002	0.026	Passive --> MEPO --> EI --> SE --> SWL	0.034*	-0.002	0	0.043
Passive --> PT --> EI --> SE --> LON	0.005	0	0.001	0.423	Passive --> PT --> EI --> SE --> SWL	0.003	-0.001	0	0.452
Passive --> TMT --> EI --> SE --> LON	0.01	0	0.001	0.144	Passive --> TMT --> EI --> SE --> SWL	0.011†	-0.001	0	0.088
Passive --> ENT --> EI --> SE --> LON	0.119**	0.001	0.006	0.006	Passive --> ENT --> EI --> SE --> SWL	0.120*	-0.005	0	0.021
Passive --> IAE --> EI --> SE --> LON	-0.011*	-0.001	0	0.023	Passive --> IAE --> EI --> SE --> SWL	-0.011*	0	0.001	0.033
ANSU --> MER --> EI --> SE --> LON	-0.004	-0.001	0	0.249	ANSU --> MER --> EI --> SE --> SWL	-0.003	0	0	0.208
ANSU --> MNPS --> EI --> SE --> LON	0.001	0	0	0.227	ANSU --> MNPS --> EI --> SE --> SWL	0.001	0	0	0.193
ANSU --> MEPO --> EI --> SE --> LON	0.019*	0	0.001	0.018	ANSU --> MEPO --> EI --> SE --> SWL	0.019*	-0.001	0	0.035

ANSU --> PT --> EI --> SE --> LON	0.002	0	0	0.268	ANSU --> PT --> EI --> SE --> SWL	0.001	0	0	0.328
ANSU --> TMT --> EI --> SE --> LON	0.01	0	0.001	0.151	ANSU --> TMT --> EI --> SE --> SWL	0.011†	-0.001	0	0.094
ANSU --> ENT --> EI --> SE --> LON	0.067**	0	0.004	0.006	ANSU --> ENT --> EI --> SE --> SWL	0.067*	-0.003	0	0.017
ANSU --> IAE --> EI --> SE --> LON	-0.009*	-0.001	0	0.041	ANSU --> IAE --> EI --> SE --> SWL	-0.009*	0	0.001	0.041

Time (TTSSM): Total time spent on social media; MER: Total Maintain existing relationships; MNPS: Total Meet new people and socializing; MEPO: Total Make express, present or more popular oneself; PT: Total Pass time; TMT: Total As a task management tool; EMT: Total Entertainment; IAE: Total informational and educational, EI: emotional investment, SE: self-esteem, DEP: depression, ANSU: Non-active usage, SWL: Life satisfaction

N = 660, * $p < 0.05$, ** $p < 0.01$,***$p < 0.001$, † $p < 0.100$

Discussion

We tried to assess, how TTSSM and active and passive usage of social media for gratification, emotional investment, and self-esteem were resulting in the poor mental health of university students, with the objective of examining the effect of TTSSM and active and passive use of social media on mental health in mind. This study not only concentrated on the direct effects of TTSSM and active-passive usage on mental health; but also investigated depression and anxiety in a cross-sectional study, which have all been mentioned in earlier individual studies. This study concentrated on two different aspects: a) the direct effect of TTSSM and active-passive social media usage on mental health, b) the serial mediation effect of TTSSM and active-passive usage on mental health through uses and gratification, emotional investment, and self-esteem. As a result, the current study examined which particular characteristic or combination of characteristics is associated with poor mental health.

TTSSM was found to be one of the most important factors influencing all aspects of mental health, according to the findings. As the user spends more time on social media, their depression, and anxiety increase. Our findings were more in line with prior research that had established a link between TTSSM and mental health. This may be due to various factors, such as when users spend more time on social media, they may compare the status of friends and

acquaintances with their own, feel envious, and believe that others are living happier lives while they are not, resulting in poor mental health. Users who spent more time on social media might be disturbing their sleep, due to the majority of users accessing social media during the afternoon, evening, and night-time. Subsequently, TTSSM also affects anxiety with the combination of IAE, MER, MEPO, and ENT, emotional investment, and self-esteem. From the current study, it was revealed that users mostly access social media for informational and educational purposes due to COVID-19, institutions were used social media to communicate information and decisions related to academics and examinations.

This study is unique for its approach, exhaustive analysis, and examined the combination of uses and gratification, emotional investment, and self-esteem responsible for poor mental health. In a nonconformity from the existing studies where the thrust was on the time of social media usage or active-passive involvement in it, the current study makes an important contribution that the TTSSM with respect to a specific social media usage was more responsible for depressive symptoms and anxiety rather than the time spent and the active-passage usage.

It was also found that active, ANSU, and passive usage was positively associated with depression and anxiety (Verduyn et al., 2015; Escobar-Viera et al., 2018). Although the active users were not satisfied with their lives, the level of dissatisfaction was less as compared to passive and active non-social users.

As previous studies revealed that use and gratification were important factors that affect mental health (Muhammad, 2018). Mediation analysis revealed that MER MEPO, IAE, and ENT were crucial combinational factors with EI and SE affecting the mental health of an Individual for example the user spent more time on informational and educational use (IAE) and make express, present, or more popular oneself (MEPO), maintaining a relationship (MER) and entertainment (ENT) use which leads to emotional attachment and affects the self-esteem, will ultimately influence the depression symptoms. In other words, users may spend time for various purposes, but it's important to be more vigilant from an emotional perspective. Surprisingly, the combination of active users, uses and gratification, EI, and SE were not significantly affecting depression and anxiety. However, majorly depression symptoms were affected by passive and ANSU through IAE and MEPO use, MER, ENT, EI, and SE. The probable reason may be users who use social media activity can express their thoughts, make friends easily, share their photos, have positive comments, and be recognized by various users, which makes them confident and decreases their emotional vulnerabilities (Settanni & Marengo, 2015). This finding is evident from the result as well (Table 8). For the current study, it was well evident that the specific motives of social media or the combination of MSMU with TTSSM, active-passive usage, and EI and SE make nastiest for mental health. As the uses and gratification of social media were a self-reported scale, it was difficult for participants to identify which content of social media was information, education, or entertainment. Therefore, the content analysis of social media according to MSMU will be worth investigating in future studies.

Theoretically and practically, this study has implications for social media and mental health practice. Previous research has primarily focused on the impact of social media time and active-passive usage on mental health. This study went one step further to investigate the relationship between the total time spent on social media/active-passive usage with motives of using social media, emotional perspectives, and an individual's self-esteem. The result then extends the

use of the S-O-R theory and the U&G theory in the social media literature by examining the impacts of various social media uses and gratification on mental health (depression, anxiety), using TTSSM, active-passive usage as stimuli, uses, and gratification as organisms, and mental health as response according to the S-O-R theory. Furthermore, our results indicated that the motives that have the most impact on depression and anxiety are informational and educational use, entertainment, maintaining relationships, and the desire to express and publicize ourselves. Finally, the individuals spent more time on social media to fulfill their specific motives, which had the greatest impact on mental health.

The impact of social media was experienced all across the world. Parents, educators, and health professionals will benefit from the current study. According to the findings of the current study, users should limit their social media usage; it should not be excessive, since this might have a negative impact on mental health. It is also recommended that users use social media without much emotionally involved in it or use emotions in the right direction, which will aid in the individual's mental health. Counselors and health practitioners can be consulted in this case. The combination of social media usage uses, and gratification, as well as emotional investment and self-esteem, is another critical component.

Limitation and Future Research

There are a few limitations to this study that must be acknowledged at the time of result interpretation. Firstly, the total amount of time included in the study was from Facebook and Instagram, other social media network was not considered for analysis. Other networks like Youtube, Whatsapp, etc., can be considered to investigate in future studies. The selection of the participants was not probabilistic incidental. The participants were from India only; therefore, the findings may be limited to this country. Future studies can be conducted from various cultural perspectives as moderating or mediating variables. The sample used in the current study was the young, aged group, other age groups and gender studies can be conducted to generalize the result. The combination of emotional investment and self-esteem was examined, but which kind of personality will be more emotionally vulnerable with the self-esteem is worth investigating.

Conclusion

The current study integrates the S-O-R, U&G, and sociometric theories to examine the impact of social media usage, the gratification of social media, emotional investment, and self-esteem on mental health. The findings of the current study present empirical reasoning and information related to social media by representing that gratification, emotional investment, and self-esteem impact mental health. Previous studies investigated the impact of social media usage on mental health; however, this study is crucial and represents how social media usage impacts mental health. This is the first study that demonstrates the role of emotional investment and self-esteem between social media usage and mental health. As a result, the current study's findings are significant and relevant in terms of implications for social media research and health professionals.

Data Availability Statement: The data supporting this study's findings are not openly available due to [Human sensitive data] and are available from the corresponding author upon reasonable request.

Conflict of Interest Statement: There is no conflict of Interest.

Funding: The present study was not funded by any agencies.

Informed Consent Form

TITLE OF STUDY

"Social Media and Mental Health: The role of emotional investment and self-esteem"

Principal Investigator and Co-Investigator

Pooja Patidar

Dr. Sandeep Arya

Dr. Abhishek Shukla-Corresponding Author

Purpose Of Study

You are being asked to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information.The purpose of this study is to examine your social media usage and its effect on mental health.

Study Procedures

You are required to install an android app on your mobile phone for seven days and send the details as demonstrated in front of you to the researcher. Subsequently, you need to participate in a survey which is based on your feeling and experiences. The survey will take around 10 minutes.

Risks

There is no risk involved in the experiment. You may decline to answer any or all questions and you may terminate your involvement at any time if you choose.

Benefits

There will be no direct benefit to you for your participation in this study. However, we hope that the information obtained from this study may be helpful for you in terms of the effects of using social media.

Confidentiality

For the purposes of this research study, your comments will not be anonymous. Every effort will be made by the researcher to preserve your confidentiality including the following:

- Assigning code names/numbers for participants that will be used on all research notes and documents
- Keeping notes, and any other identifying participant information in a locked file cabinet in the personal possession of the researcher.

Participant data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents.

Contact Information

If you have questions at any time about this study, or you experience adverse effects as a result of participating in this study, you may contact the researcher whose contact information is provided on the first page.

Voluntary Participation

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

Consent

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

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• Consent to participate (include appropriate statements): - Yes, consent was received for the study by the participants.

• Consent for publication (including appropriate statements): - Yes, consent of publication also received.

• Availability of data and material (data transparency): - Yes, data can be available according to the requirement.

• Code availability (software application or custom code): - SPSS version 21 was used in the study.

• Authors' contributions (optional: please review the submission guidelines from the journal whether statements are mandatory): -

Dr. Abhishek Shukla has worked on problem conceptualization, literature review and drafted manuscript.

Pooja Patidar worked on data collection and data analysis.

Dr. Sandeep Arya has worked on writing discussion content.

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