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PSYCHOLOGICAL WELL-BEING AND SMARTPHONE USE AMONG COLLEGE STUDENTS

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Abstract

People's overdependence on smartphones has led them to an abundance of psychological well-being issues. Various literature has examined the association between smartphone use, addictive behaviours, and mental well-being. To develop a deeper understanding of the correlation among these factors, the current study aims to find the psychological impact on smartphone use. Smartphone use and psychological well-being, specifically on how adolescents' media use has led them to mental health issues such as addiction, depression, anxiety, sleep problems, and the fear of missing out (FoMO). The results supported hypotheses 1, 2, and 3, smartphone addiction correlates with anxiety, depression, and FoMO; however, the results of the study do not support hypothesis 4, in which there is no correlation between smartphone addiction and sleep issues. In conclusion, smartphone overuse and addiction may subsequently affect an adolescent's mental well-being.

Keywords

Smartphones, FOMO (Fear of Missing Out), Depression, Anxiety

1. Literature Review

Past studies have examined the association between people's use of smartphones and their mental well-being. Referring to the results of the following studies and analyses, the purpose of the present study could thus be explained.

1.1. Smartphone Addiction

People's reliance on technology, mainly smartphones, has led to serious psychological health issues. Experimental literature may help researchers with a deeper understanding of the impacts of smartphone overuse. A study examined the associations between smartphone engagement and mental health using "time-use diaries and retrospective self-report data obtained from three countries: Ireland, the United States, and the United Kingdom" (Orben & Przybylski, 2019). The authors stated that the metrics to measure screen time lack quality as self-reports appear to have inaccurate answers: participants overestimate or underestimate their daily use of phones. Studies of young people who responded in a stimulated manner after engaging in the use of technology show corresponding challenges with relaxing, as well as lower psychological well-being and delayed sleep habits (Orben et al., 2019). The study then found little evidence for "substantial negative associations between digital-screen engagement and adolescent well-being" (Orben et al., 2019).

In fact, an increasing number of reports and articles have talked about how people's overuse of smartphones has interfered with their daily routines. A correlation between the use of smartphones and mental well-being was seen among college students, with control over important variables, which previous studies didn't have. This research came from a comprehensive study in 2018 among Thailand's college students using the Flourishing Scale and the Young Diagnostic Questionnaire for Internet Addiction, consisting of eight items. The researchers defined students whose scores are above the median value as excessive smartphone users. The results showed that "students with excessive use of smartphones had lower scores in psychological well-being than those who did not use smartphones excessively" (Tangmunkongvorakul et al., 2019).

The influence of smartphone overuse could be studied in alternative ways as understanding the influence of social media and technological overuse on people's well-being also provides us with insight into how young adults' behaviours are influenced. According to a report on young adults in the U.K., "about 20% of respondents frequently awoke at night to check social media notifications which caused them to experience more exhaustion than their peers" (Tandon et al., 2020). Researchers believe that the misuse use of smartphones and social media might affect young people,

especially young people's work efficiency and sleep hygiene; therefore, specific habits or behaviour could be changed significantly. The research aimed to study the potential effects of FoMO and CSMU (compulsive social media use) on individuals' sleep behaviour (Tandon et al., 2020).

Another study that showed an analysis between various factors was from Billieux (2012), who proposed to describe problematic mobile phone use through four paths. The study aimed to understand better how problematic mobile phone use is related to health-related quality of life (HRQOL) which includes behavioural problems and mental health in adolescents while smartphone use is controlled. After the surveys Billieux created and a series of data they analyzed, they concluded that problematic phone usage impacts external factors such as bad school and family conditions and internal factors such as impaired HRQOL and behavioural problems (Roser et al., 2016).

1.2. Anxiety, Depression, and Addiction Caused by Cell Phones

To dive into a more specific consequence of phone addiction, mental health issues such as depression are considered significant to investigate. The study by Ithnain et al. (2018) had an objective to identify the connection between smartphone addiction and mental health among college students in Malaysia. The authors distributed a self-administered questionnaire including five sections on the participant's cell phone usage details. This study highlighted the connection between smartphone addiction with anxiety and depression — the tendency of reporting a high score in both smartphone addiction and anxiety and depression (Ithnain et al., 2018).

It is confirmed that cell phone use may have a great impact on mental well-being. Some researchers evaluated the relationship among teenagers between mobile game addiction, loneliness, social anxiety, and depression. They found a positive correlation between mobile game addiction and social anxiety, depression, and loneliness. The study also found a gender-based difference in mobile game addiction. For example, while using smartphones, adolescent males, report greater and more frequent social anxiety (Wang et al., 2019).

Other researchers believe that gaining a thorough understanding of the complex relationship between well-being symptoms and screen time use will lead to more effective intervention strategies for improving teenagers' emotional and physical health. An article by Nuzzo et al. (2019) synthesized the associations between screen-based sedentary behaviours, depressive symptoms, and anxiety symptoms among youth based on previous studies. The researchers systematically integrated the results from previous studies and summarized the moderators that potentially influence people's mental well-being. The results showed that when it comes to a technology-based moderate variable,

computers, and smartphone use affect people's well-being more than other technology such as TV because computers and smartphone use often involve social media and interactions, which are thought as essential variables that impact emotions (Nuzzo et al., 2019).

An abundance of studies all showed their observation of smartphone use and mental well-being's correlation; however, this literature started off from a slightly different perspective. Among Korean adolescents, it aimed to investigate phone addiction's relation with mental well-being, including attention-deficit hyperactivity disorder (ADHD), depression, and anxiety (Kim et al., 2019). The authors handed out surveys that required participants to report their severity in psychological well-being (symptoms, feelings, etc.) The study found that the total Korean Smartphone Addiction Scale score is positively correlated to the total Conners-Wells' Adolescent Self-Report Scale score, Beck Depression Inventory score, Beck Anxiety Inventory score, gender, smoking and alcohol use. Thus, the finding indicates that ADHD, depression, and anxiety may be notable risk factors for getting cell phone addiction. We found it interesting because, once again, well-being and phone use have fallen into the loop of constantly cycling and affecting each other. Similar to this study, psychological health has inversely influenced phone addiction, whereas phone addiction affects psychological health in other studies (Kim et al., 2019).

1.3. Behaviors Affected by Cell Phone Overuse

Smartphone use could subsequently affect people's behaviours. One study focused on the effects of cell phone overuse on children's behaviours. As time passes, more children are starting to use cell phones at earlier ages. The authors examined the parental and post-natal influences on their children. Researchers found that these factors are associated with behavioural difficulties. The authors discovered that children are more easily impacted by various confounding variables during earlier ages, such as parental styles, environmental influences, social norms, etc. The article focuses more on the external effects children had during growth, especially the behaviours of mothers. For instance, children whose mothers have more exposure to stress would be negatively influenced and, therefore, increase cell phone use (Divan et al., 2012).

Addiction behaviours should be considered serious as well. Billieux et al., (2015) stated that the dysfunctional use of cell phones involves "behavioural addiction" that shares similar symptoms as drug addiction. Their study compares and analyzes approaches — mainly a system-based approach and a process-based approach — and concludes that the addiction model can simplify an individual's psychological functioning. In other words, the authors believe that cell phone overuse

is directly associated with behavioural addictions. People are rather normalizing cell phone overuse, and yet, the excessive use of these technologies would cause severe psychological problems. Addictions and FoMO could be great examples to represent the current status of people's phone usage. The approaches that the articles analyzed all stated that cell phone overuse is, without exception, problematic (Billieux et al., 2015).

Smartphone use may involve group interactions that could lead people to severe mental issues; the harms are not limited to only addiction-caused issues. A study discussed addictions to cell phones and the potential risks people may experience while using phones. Cyberbullying is another significant factor of depression, anxiety, and other mental well-being issues. Unwanted exposure to photographs, videos, and personal info of the victim will cause panic, leaving shadows on people. The article started from this point of view, which is slightly different and novel than other articles, as this involves societal and group influences. Psychosocial issues caused by cell phone dependence may momentarily increase personal stress. Overall, the study shows the riskiest causes of cell phone overuse and analyzes them by using previous studies and research (Sansone & Sansone, 2013).

1.4. Effects of Cell Phone Usage on Social Behaviors and Interactions

Understanding the reverberations of smartphone overuse does not only assist us with avoiding its potential harm but also addresses concerns relating to social interactions. Researchers aimed to build a model for observational studies that recorded the social impacts of smartphone use to be practically tested. In one study, the authors discussed several variables considering social interaction and smartphone use, among others. They also experimented with cell phone usage on the concept of social participation, mainly focused on helping behaviours. At the end of the experiment, they concluded that people who are on their phones while the accident happens are less likely to help. The authors believe that cell phone usage could distract people from social responsibilities, which means cell phones disturb people from interacting and getting along with more people (Banjo et al., 2008).

Another similar study that focused on 193 randomly selected college students in Uttarakhand, India aims to measure the impact, if any, on the students related to psychosocial well-being and smartphone use. They compared four variables to define the dependent variables: attention and concentration, academic performance, socialization and communication, and levels of phone addiction. The authors found that age and gender seem to be associated with levels of addiction, concentration, and attention. Female users seem to have a higher addiction to phones as they often use cell phones to communicate and socialize. The results showed that cell phones have a significant

impact on students' concentration levels (Maurya et al., 2014).

Involving theories from thinkers may lead us to another standpoint. A book written by Morrill (2009) involves Erik Erikson's developmental psychology theory. The author believes that cell phone overuse has a significant impact on both children's and adults' development. One thing that was innovative to us is that the author examined the association between having a cell phone, use of the device, and psychosocial and identity development with regard to Erik Erikson's Psychosocial Theory and Marcia's Adolescent Identity Paradigm (Morrill, 2009). The author conducted an experiment in which a sample of 705 university students completed a questionnaire that measured the amount and type of smartphone use, identity development, psychosocial maturity, friendship attitudes, and school achievement. The data showed that cell phones have now infiltrated our lives (Morrill, 2009).

2. Research Objectives

The current study analyzes the research question of whether smartphone overuse has a negative impact on students' psychological well-being. Using a secondary data set, this study aims to test the following four hypotheses:

Hypothesis 1: A positive relationship exists between cell phone addiction and anxiety.

Hypothesis 2: A positive relationship exists between cell phone addiction and depression.

Hypothesis 3: A positive relationship exists between cell phone addiction and FoMO.

Hypothesis 4: A positive relationship exists between cell phone addiction and abnormal sleep.

3. Methods

The procedure and participants of the study is introduced in the following section. A list of materials used in the study is also given.

3.1. Procedure

In the original study by Lee et al. (2017), each participant was recruited via the psychology subject pool and from the general student population at undergraduate psychology courses at a small, liberal arts college in Southeastern Arkansas. Students enrolled in Psychology 101 will receive 2.5 credits towards the research requirement for the course when they participate in the study. Deception

and concealment of the study's main purposes are necessary to eliminate participant bias for the memory task so researchers will state that the study is regarding the relationship between the campus atmosphere and students' psychological well-being. A consent form was signed by each participant and their personal information will be used solely for the purposes of providing them with credit for completion of the study, but the phone number was also used for texting the participants during the study as stated in the consent form.

During the experiment, a series of tasks were completed by the participants and a questionnaire, including a navigation task and a memory task regarding smartphone use and other measures discussed in the materials section.

The current study aims to understand the underlying mechanisms such as smartphone addiction, anxiety, or depression that may explain why chronic and short-term use of smartphones may influence spatial memory. Based on the specific psychological issues the study focused on, we are going to examine further the relation between smartphone usage and mental health.

3.2 Participants

The present study has a sample size of 116 students with 42 males and 74 females. These participants were recruited from students enrolled in a Psychology 101 course at an undergraduate psychology course at a small, liberal arts college in Southeastern Arkansas and received course credit for participating in the study.

3.3 Design

A correlation design was used to examine the association between smartphone use and mental well-being, specifically on how the media use of students has led to mental health challenges such as addiction, depression, sleep problems, anxiety, and FoMO.

3.4. Materials

The measurement of the participants' smartphone addiction, anxiety, depression, sleep quality, and FoMO level referred to the following materials.

3.4.1. Smartphone Addiction Scale, Short Version (SAS-SV)

The SAS-V is a 6-point Likert scale – that is rated from 1 “strongly disagree” to 6 “strongly agree” (Kwon et al. 2013).

3.4.2. Beck's Anxiety Inventory (BAI)

Beck's Anxiety Inventory (BAI) is a 21-item self-report instrument assessing the levels and severity of anxiety (Beck et al., 1988).

3.4.3. Beck's Depression Inventory-II (BDI-II)

The Beck Depression Inventory Second Edition (BDI-II) is a 21-item self-report inventory that measures the symptoms of depression, their existence and severity (Beck et al., 1996).

3.4.4. Pittsburgh Sleep Quality Index (PSQI)

PSQI is a self-rated questionnaire that measures an individual's sleep quality (Buysse et al., 1989).

3.4.5. Fear of Missing Out Questionnaire (FoMO)

The FoMo Questionnaire is a 10-item survey that uses a 5-point Likert scale (1 = not true and 5 = extremely true) (Przybylski et al., 2013).

4. Results

The present study examined the following hypotheses:

Hypothesis 1: A positive relationship between anxiety and cell phone addiction.

Hypothesis 2: A positive relationship between depression and cell phone addiction.

Table 1: Person's Correlations

Person's Correlations												
Variable			Smartphone Addiction		Sleep		Depression		Anxiety		Fear of Missing Out	
1. Smartphone Addiction		Pearson's r	—		—		—		—		—	
		p-value	—		—		—		—		—	
2. Sleep		Pearson's r	0.145		—		—		—		—	
		p-value	0.121		—		—		—		—	
3. Depression		Pearson's r	0.259**		0.393***		—		—		—	
		p-value	0.005		< .001		—		—		—	
4. Anxiety		Pearson's r	0.268**		0.260**		0.670***		—		—	
		p-value	0.004		0.005		< .001		—		—	
5. FearOfMissingOut		Pearson's r	0.344***		0.425***		0.505***		0.474***		—	
		p-value	< .001		< .001		< .001		< .001		—	

* p < .05, ** p < .01, *** p < .001

Source: (Author's own illustration)

Hypothesis 3: A positive relationship between FoMO and cell phone addiction.

Hypothesis 4: A positive relationship exists between cell phone addiction and sleep disorders.

We examined each hypothesis using correlational analysis, reported in the following results:

For hypothesis 1, we analyzed whether there is a correlation between smartphone addiction and anxiety. Based on the results of the study, there was a weak correlation between smartphone addiction and anxiety $r = .268$, $p = .004$.

For hypothesis 2, we analyzed whether there is a correlation between smartphone addiction

and depression. Based on the results of the study, there was a weak correlation between smartphone addiction and depression $r = .259, p = .005$.

For hypothesis 3, we analyzed whether there is a correlation between smartphone addiction and FoMO. Based on the results of the study, there was a significant correlation between smartphone addiction and FoMO $r = .344, p < .001$.

For hypothesis 4, we analyzed whether there is a correlation between smartphone addiction and sleep quality issues. Based on the results of the study, there was no correlation between smartphone addiction and sleep issues $r = .260, p = .121$.

Nevertheless, we conducted exploratory analysis, supporting the idea that smartphone use can affect a whole series of critical mental-health issues.

Table 2: Person's Correlations

Person's Correlations													
Variable		Smart phone Use	MediaUse	Smartphone Addiction	Fear of Missing Out	Anxiety	Depression	Sleep					
1. SmartphoneUse	Pearson's r	—											
	p-value	—											
2. MediaUse	Pearson's r	0.432***	—										
	p-value	< .001	—										
3. SmartphoneAddiction	Pearson's r	0.128	0.175	—									
	p-value	0.172	0.060	—									
4. FearOfMissingOut	Pearson's r	0.086	0.163	0.344***	—								
	p-value	0.358	0.080	< .001	—								
5. Anxiety	Pearson's r	0.109	0.010	0.268**	0.474***	—							
	p-value	0.244	0.916	0.004	< .001	—							

6. Depression	Pearson's r	0.078	0.067	0.259**	0.505***	0.670***	—		
	p-value	0.404	0.473	0.005	< .001	< .001	—		
7. Sleep	Pearson's r	0.126	0.166	0.145	0.425***	0.260**	0.393***		
	p-value	0.179	0.075	0.121	< .001	0.005	< .001		
* p < .05, ** p < .01, *** p < .001									

Source: (Author's Own Illustration)

Through an exploratory analysis, we found that smartphone use and media use are moderately correlated, $r = .432$, $p < .001$. Media use is moderately related to smartphone addiction, $r = .315$, $p < .001$. Smartphone addiction, then, is moderately related to the fear of missing out (FoMO), $r = .344$, $p < .001$. Then as the results showed, surprisingly, that FoMO shows significant correlation with anxiety $r = .474$, $p < .001$, depression $r = .505$, $p < .001$, and sleep $r = .425$, $p < .001$.

5. Discussion

This study intended to analyze whether smartphone use would have affected anxiety, depression, and sleep. Smartphone use is defined as students' usage of smartphones, which different levels could examine. The longer the smartphone usage, the greater risk of smartphone addiction. We examined smartphone addiction using SAS-SV. In this study, we defined psychological well-being as FoMO, anxiety, sleep quality issues, and depression. Students are likely to be in a dangerous situation even though they appear to have mild symptoms of mental well-being issues, as mental disorders increase the risk for disease, of which smartphone addiction may influence (Prince et al., 2007). Based on the correlational analyses, there are significant correlations between smartphone addiction and anxiety, depression, and FoMO. There is also a subsequent correlation between smartphone addiction and sleeping problems. This indicates that smartphone overuse and smartphone addiction could cause severe psychological well-being issues.

6. Conclusion

Overall, we hypothesized that smartphone use negatively affects people's psychological well-being. Based on the study results, hypotheses 1, 2, and 3 were supported and found that smartphone addiction correlates with anxiety, depression, and FoMO; however, the results of the study did not support hypothesis 4, in which there is no correlation between smartphone addiction and sleep issues. However, instead of the direct correlation between smartphone addiction and sleep disorders, there did exist a relation between a series of psychological issues: sleep disorders, FoMO, and smartphone addiction.

The methodology in the present study is limited, nevertheless. Samples are not equally selected, for there is not an equal number in the male and female groups. Confounding variables similar to this might affect the validity of the experiment, thus further studies should be conducted to avoid those variables.

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