Relationship between Smartphone Addiction, Personality Traits and Cyberloafing Behaviour among Malaysian Youths

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Abstract: As the number of internet users continues to grow, smartphone addiction has become a significant problem among today's youths. This addiction is exacerbated by cyberloafing and personality traits, which can negatively impact productivity and efficiency in educational settings. The purpose of this study is to examine the relationship between smartphone addiction, personality traits, and cyberloafing behaviour among Malaysian youth. The study involved a sample of 150 urban youths aged 18 and above living in the Klang Valley area. Participants completed three questionnaires, the Short Form Smartphone Addiction Inventory Scale, Mini-International Personality Item Pool, and Cyberloafing Scale via an online survey. SPSS was used to analyse the data. The results showed that males had a higher level of smartphone addiction. Additionally, extraversion and conscientiousness were found to be strongly correlated with smartphone addiction. While cyberloafing behaviour was positively correlated with extraversion traits, there was no significant correlation with smartphone addiction. In conclusion, young adults with an extraversion personality trait are at a higher risk of smartphone addiction and cyberloafing activities. For future investigations, the effects of the endemic COVID-19 on smartphone addiction should be explored to discover other problematic Internet use behaviour.

Keywords: Addiction, Cyberloafing, Behaviour, Smartphone

1. Introduction

Throughout history, human beings have developed various communication tools like signal fires, telegraph, radios to facilitate communication and to enhance social interaction. With the advent of the fourth industrial revolution, communication technology has progressed rapidly, and we are now closer to machine learning, virtual communication, artificial intelligence, and living in a world that is seamlessly connected via the internet (Fook et al., 2021). The development of smartphones which allow people to access the Internet, has revolutionized the way we communicate with each other. In 2017, it was estimated that about 2.4 billion

people worldwide used smartphones (Gökçearslan et al., 2018). Smartphones have become an essential part of our daily lives, as they provide entertainment and access to information. People prefer to use smartphones over cell phones because they have access to the internet, which allows them to stay connected to the world at all times. Undoubtedly, technology has become an integral part of our lives, and communication technology has become part of the world culture that influences a society's accessibility, safety, and social activities (Fook et al., 2021). A study conducted by Pew Research Center found that people who use social media tend to have larger and more diverse social networks (Hampton et al., 2011). Additionally, communication technology has made it easier for people to access health information and resources, which can improve health outcomes (Broom et al., 2019).

However, there are also concerns about the negative impact of communication technology on our lives. For example, excessive use of smartphones and social media has been linked to mental health problems such as anxiety and depression (Twenge et al., 2018). Additionally, dependence on communication technology has led to a decline in face-to-face communication which is essential for building and maintaining strong relationships (Bélanger et al., 2020). We are currently experiencing a technological revolution which has resulted in a generation of youths who are heavily reliant on smartphones for communication. Studies have shown that students spend a significant amount of time on their smartphones each day, with some spending up to 40 hours per week (Fook et al., 2021). This high level of smartphone usage may have implications on their social lives and overall well-being. It is important for individuals to be aware of their smartphone usage and to take steps to maintain a healthy balance between their digital and offline lives.

Excessive use of a smartphone beyond 300 minutes, habitual checking more than 60 times a day or difficulty controlling addictive behaviour is called smartphone addiction (Tran, 2016). Excessive use of technology will have a number of negative consequences on users' mental health, social interactions, and time management (Fook et al., 2021). For example, poor academic performance, increased financial cost, impaired interpersonal relationships, lightheadedness, pain in the wrists or neck, and accidents. This addiction can also reduce the quality of one's sleep if the smartphone is kept by the side as one falls asleep as screen light can adversely affect sleep (Gökçearslan et al., 2016). Many young adults use their smartphones as an alarm clock which could disturb the quality of their sleep.

Smartphone users often use their devices to escape from challenges and relieve stress, but this also opens potential risks associated with excessive smartphone use including cybercrime, bullying, and sexual violence. Fook et al. (2021) supports the idea that smartphone addiction can be a way of coping with negative emotions. Additionally, Mei and Dianne (2007) found that female undergraduates in local public universities were more likely to use the Internet and engage in potentially dangerous behaviour online than those in private universities. The study also revealed that many of these students were willing to meet online acquaintances in person, despite the potential risks.

On the contrary, the ability to access online learning materials and courses via smartphones has allowed students to continue their education remotely, and has also made learning more interesting and interactive. Additionally, some students have become more productive and autonomous in their learning as a result of using smartphones to access information and resources. Woodcock et al. (2012) found that students reported an increase in academic performance as a result of using smartphones to access various sources of knowledge. However, it is important to note that the impact of smartphones on education is related to their usage, and misuse of smartphones can have negative impacts.

Yen et al. (2009) found that adolescent smartphone users exhibited tolerance, withdrawal, extensive use , relapse, and functional impairments. Kuss et al. (2012) discovered that the sound notification of smartphones can trigger the release of dopamine in the brain, leading to addiction. Similarly, Griffiths (2005) found that social media addiction can result in tolerance, relapse, withdrawal, and functional impairment. Fook et al. (2021) raised concerns about the susceptibility of Asian and youth populations towards addictive smartphone behaviour due to their social environment. They underline the importance of individual control to minimize negative effects.

The paragraph also notes that individuals with more neurotic and less open, conscientious, extroverted, and agreeable personalities are more prone to addiction due to their inability to self-regulate and insecurity (Arthur et al., 1996; Cocoradă et al., 2018; Kita & Luria, 2018). Low conscientious individuals

are inefficient and careless (Kuss et al., 2013). On the contrary, highly conscientious individuals are hardworking and target-oriented. Lane et al. (2011) and Salgado (2004) found that high extraversion, low neuroticism, high openness, and high agreeableness were associated with certain personality traits.
However, Cyberloafing is positively correlated with smartphone addiction, openness trait, extraversion, and neuroticism, while negatively related to agreeableness and conscientiousness (Dmour et al., 2020; Gokçearslan et al., 2016; Gökçearslan et al., 2018). The studies highlight the importance of considering personality traits in understanding smartphone addiction and related behaviors. A significant percentage of students use the Internet for personal purposes during class (Varol & Yildirim, 2017; Kim & Byrne, 2011). While smartphones can give them a mental break before continuing their work, cyberloafing can negatively impact their academic achievement and disrupt their learning sessions. The relationship between personality traits and cyberloafing behavior with smartphone addiction is still uncertain. Therefore, this study aims to determine the relationship between smartphone addiction, personality traits and cyberloafing behaviour among university students.

2. Research Methodology

2.1 Respondents

This was a cross-sectional study design with purposive sampling. Ethical approval was granted by the Universiti Teknologi Mara (UiTM) Research Ethics Committee and was conducted at Puncak Alam Campus, UiTM. A total of 150 respondents participated in this study. Criteria for selecting respondents were: they must (i) be aged between 18-30; 1st year for Diploma is 18 years old. Youth Societies and Youth Development Act (Amendment) 2019 (Act 668) categorises youths in Malaysia from 15-30 years of age; (ii) be currently living in Malaysia, and (iii) agree to participate in this study by signing the consent form. Those with chronic neurologic or musculoskeletal diagnosis and postgraduate students have been excluded. Each participant was asked to complete the demographic characteristics and three series of questionnaires.

2.2 Outcome measures and data collection

Characteristics which included demographic data such as age, gender, semester of study, and health statuses such as medical diagnosis and other comorbidities were recorded. The 10 items of the Short Form Smartphone Addiction Inventory (SPAI-SF) Scale consisting a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree) with the cut-off point 24/25 based on four subscales (compulsive behaviour, functional impairment, withdrawal, and tolerance) were used to determine the risks of smartphone addiction (Lin et al., 2017). These questionnaires showed a significant association with 26-item SPAI ($r = 0.94$, $p < 0.01$) which were valid and reliable screening tools for assessing smartphone addiction among university students (Boumosleh & Jaalouk, 2017). While the 20 items of the Mini International Personality Item Pool (Mini-IPIP) with 5 Point Likert Scale ranging from 1 (very inaccurate) to 5 (very accurate) were used to determine the personality based on the five-factor model traits that were classified into the high, medium, and low level (Donnellan et al., 2006). Mini-IPIP shows good convergent validity with Big Five Inventory (BFI) test for each trait (Donnellan et al., 2006). Next, the 30-item Cyberloafing Scale that consists of 5 Point Likert Scale ranging from 1 (never) to 5 (a great extent) was used to measure cyber activities in education settings composed of five different dimensions which are sharing, shopping, real-time updating, accessing online content and gaming or gambling (Yeik, 2018). The interpretation is based on mean scores in which "1.00-1.80" very low, "1.81- 2.60" low, "2.61-3.40" medium, "3.41-4.20" high and "4.21-5.00" very high (Akgün, 2019).

2.3 Statistical analysis

Overall, 150 sets of questionnaires were received and analyzed. All statistical analyses were performed using Statistical Package for Social Sciences (SPSS) version 26, in which p-value was less than

0.05. Descriptive analysis was conducted to examine the characteristics of each variable which were frequency, percentage, mean, and standard deviation. The association among the different variables and age were evaluated using Pearson's correlation coefficients. The relationship between the different variables and gender was evaluated using Independent t-test.

3. Results

3.1 Demographic of Participants

The mean age of the respondents was 21.75 years (SD=1.366). Out of 150 respondents, 84.7% (n=127) were females while 15.3% (n=23) were males. Majority of the respondents 34.7% (n=52) were in semester 7 with 6.6% (n=10) and 36.0% (n=54) were from the first and last year of their undergraduate education, respectively. The descriptive statistics of the data were tabulated in Table 1.

Table 1. Socio-demographic Data of Participants

Characteristics		**Frequency (%)**	**Mean ± SD**
	Age (in years)		21.75 ± 1.366
Gender	Male	23 (15.3)	
	Female	127 (84.7)	
Smartphone addiction	Smartphone addict	84 (56.0)	
	Non-smartphone addict	66 (44.0)	
Personality traits	Extraversion		
	Low	71 (47.3)	
	Medium	76 (50.7)	
	High	3 (2.0)	
	Agreeableness		
	Low	93 (62.0)	
	Medium	50 (33.3)	
	High	7 (4.7)	
	Conscientiousness		
	Low	18 (12.0)	
	Medium	122 (81.3)	
	High	10 (6.7)	
	Neuroticism		
	Low	2 (1.3)	
	Medium	98 (65.3)	
	High	50 (33.3)	
	Openness		
	Low	61 (40.7)	
	Medium	83 (55.3)	
	High	6 (4.0)	
Cyberloafing behaviour	Very low	6 (4.0)	
	Low	48 (32.0)	
	Medium	77 (51.3)	
	High	15 (10.0)	
	Very high	4 (2.7)	

Characteristics		Frequency (%)	Mean ± SD
Cyberloafing category	Sharing		27.02 ± 5.675
	Shopping		20.56 ± 5.782
	Real-time updating		12.83 ± 6.035
	Accessing online content		17.85 ± 4.300
	Gaming/Gambling		7.52 ± 3.162

Note : m mean, *1 SD* standard deviation

3.2 Descriptive Statistics

The study shows that 56% (n=84) were addicted to smartphones while 44% (n=66) of the respondents were not. Age and smartphone addiction were found to be significantly and negatively poor correlation, [r(148) = -.21, p = .010]. Moreover, there was no correlation between gender and smartphone addiction, [r(148) = -.08, p = .336]. The mean values of smartphone addiction among females were 1.54 (SD=0.5), while for males were 1.65 (SD=4.87).

A large number of the respondents showed a medium level of extraversion (n=76; 50.7%), conscientiousness (n=122; 81.3%), neuroticism (n=98; 65.3%), and openness (n=83; 55.3%) but for agreeableness more than half of them showed a high level of agreeableness 62% (n=93). Although there were no correlations between age and gender towards each of the personality traits, agreeableness showed significantly and negatively poor correlation with gender, [r(148) = -.20, p = .016].

Most of the respondents showed a medium level of cyberloafing behaviour in educational setting (n=77; 51.3%) while others showed either low (n=6; 4%), very low (n=48; 32%), high (n=15; 10%), or very high (n=4; 2.7%) level of cyberloafing behaviour. Age [r(148) = -.17, p = .034], and gender [r(148) = -.18, p = .026] which only showed significant and negative poor correlation with gaming category. The mean values of cyberloafing category based on gender (male vs. female) were (25.65 vs. 27.27) for sharing, (19.52 vs. 20.75) shopping, (12.48 vs. 12.89) real time updating, (17.61 vs. 17.90) accessing online content, and gaming (8.87 vs. 7.28). This shows that males had higher mean values for gaming category compared to females.

The survey revealed that undergraduate students often cyberloaf to share posts (X=27.02; SD=5.675) and carry out shopping online (X=20.56; SD=5.782) but rarely used smartphone for accessing online (X=17.85; SD=4.300), updating (X=12.83; SD=6.035), and gaming (X=7.52; SD=3.162). To be more specific, the three activities frequently engaged in by undergraduate students were watching videos online (X=4.06; SD=0.964), listening music online (X=3.96; SD=1.111), and using online banking (X=3.87; SD=1.028) while the three least activities were checking online sport sites (X=1.217; SD=1.85), visiting betting site (X=1.47; SD=0.872), and betting online (X=1.43; SD=0.893).

Smartphone addiction showed a significant and negatively poor correlation towards extraversion [r(148) = -.17, p = .034] but negatively fair correlation towards conscientiousness [r(148) = -.27, p = .001]. On the other hand, there was no significant correlation between smartphone addiction with cyberloafing behaviour, [r(148) = -.15, p = .071]. Result shows that only extraversion had significant and positive correlation with cyberloafing behaviour [r(148) = -.12, p = .031] while traits like agreeableness [r(148) = -.08, p = .307], conscientiousness [r(148) = -.08, p = .342], neuroticism [r(148) = -.07, p = .388], and openness [r(148) = -.05, p = .513] had no correlation with cyberloafing behaviour.

Table 2. Correlation between variables (n=150)

Variable	Smartphone addiction	Personality traits					Cyberloafing behaviour
		E	A	C	N	O	
Age	-0.210 [a]	0.020 [a]	-0.196 [a]	0.057 [a]	-0.041 [a]	0.127 [a]	-0.063 [a]
	(0.010) [b]	0.805 [b]	0.016 [b]	0.485 [b]	0.616 [b]	0.123 [b]	(0.446) [b]
Gender	-0.079 [a]	0.020 [a]	0.026 [a]	0.120 [a]	0.088 [a]	-0.047 [a]	0.008 [a]
	(0.336) [b]	0.810 [b]	0.753 [b]	0.145 [b]	0.282 [b]	0.564 [b]	(0.926) [b]
Smartphone addiction	-	-0.173 [a] (0.034) [b]	0.004 [a] (0.964) [b]	-0.267 [a] (0.001) [b]	0.030 [a] (0.712) [b]	-0.053 [a] (0.520) [b]	0.148 [a] (0.071) [b]
Cyberlo-afing behavi-our	-	0.176 [a] 0.031 [b]	0.084 [a] 0.307 [b]	-0.078 [a] 0.342 [b]	-0.071 [a] 0.388 [b]	-0.054 [a] 0.513 [b]	-

Note : E=Extraversion; A=Agreeableness; C=Conscientiousness; N=Neuroticism; O=Openness, a Pearson correlation coefficient, b P value

4. Discussions

At the point when this report was being written, we were facing the coronavirus disease (COVID-19). There was a strict law to restrict the movement of people. Generally, there were four orders applied in Malaysia which are movement control order (MCO), conditional movement control order (CMCO), enhanced movement control order (EMCO), and recovery movement control order (RMCO) that changed our lifestyle as restaurants, shopping mall, education institutions, and other services stores were closed for a certain period. People stayed indoors most of their time, so smartphones or gadgets that have access to the Internet were the best choice to relieve stress and loneliness. Not surprisingly, globally there was an unprecedented rise in data consumption due to the behavioural shift. Data from Malaysian Communications and Multimedia Commission showed a 23.51% higher internet traffic nationwide during the first week of MCO and further increase of 8.6% for the second week. Inevitably we hypothesised a higher risk of smartphone addiction and cyberloafing behaviour associated with personality traits. Thus this study aimed to determine the relationship between smartphone addiction with personality traits and cyberloafing behaviour as we noticed that university students had higher usage of smartphones for entertainment along with learning sessions.

Indeed, this study revealed that more than half of the respondents were addicted to smartphones , similar to findings by Aljomaa et al. (2016) whose study showed 56%, and Gökçearslan et al. (2016) at 48%. Online communication was able to maintain their social relationship, help cope with their psychology problems, and facilitate them during open and distance learning. The current study revealed that males (65.22%) showed a higher level of smartphone addiction compared to females (54.33%). However, many studies stated that females had higher levels of smartphone addiction compared to males (Gokçearslan et al., 2016; Kim et al., 2016). The female respondents in this study were currently living with their parents during COVID-19 which could have affected the results.

The three activities frequently performed by the respondents were watching videos online (X=4.06), listening to music online (X=3.96) and using online banking (X=3.87) while the three least activities were checking online sport sites (X=1.217), visiting gambling site (X=1.47), and gambling online (X=1.43). However, studies among undergraduate students in Malaysia revealed that engaging in conversation with friends, checking, and giving 'like' the posts were the top three cyberloafing activities. Shopping online, gambling and visiting the gambling sites were the three least performed activities in the classroom (Yeik, 2018). We noticed that watching videos online was the most frequent activity during MCO as no one was allowed to the cinema and apps like Netflix were an alternative. The same could be said of online banking e-commerce. Gambling categories were rarely checked by the students due to the possibility that most of the respondents were Muslims, and gambling was forbidden in Islam. Chaffey (2017) further added that 90% of studnet time was allocated for using various apps on the Internet such as Facebook and Instagram while another 10% of the remaining time was spent skimming through multiple websites (Fook et al., 2021).

Sharing (X=27.02; SD=5.68) had the highest mean, followed by shopping (X=20.56; SD=5.48), accessing online content (X=17.85; SD=4.30), real-time updating (X=12.83; SD=6.04) and gaming/gambling (X=7.52; SD=3.16) but previous study showed that accessing online content had the highest mean, followed by sharing, shopping, real-time updating, and gaming/gambling (Akbulut et al., 2016). We could relate the result with COVID-19 situation as the majority of the students lived with their families, causing them to keep share, chat, and check posts of their friends to maintain relationships. Gender and cyberloafing behaviour reported no significant difference (Gökçearslan et al., 2016) but study shows males were engage in cyberloafing instances compared to women (Dursun et al. [2018] as cited in Saritepeci, 2019). The current study stated the mean values for sharing, shopping, real time updating, and accessing online content were higher among females compared to males except for gaming. However, males had higher means for online shopping, gaming, gaming/gambling (Akbulut et al., 2016). To conclude, gender was a significant predictor for cyberloafing but it depended on the type of cyberloafing and the nature of the target population (Akbulut et al., 2016).

Based on the result, smartphone addiction had significant and negative correlation towards extraversion and conscientiousness. Cocoradă et al., (2018) concurrs that higher neuroticism, lower openness, and lower conscientiousness negatively predicts the smartphone addiction risk. Generally, people with a low level of extraversion tend to spend most of their time using smartphones as they lack social communication skills while higher levels of extraversion are also related to smartphone addiction (Kita & Luria, 2018). Government movement restrictions caused them to seek social friends to avoid loneliness and get entertained when interacting with others. Youths with a low degree of conscientiousness are addicted to smartphones as the device has access to the Internet. It is convenient and they could avoid challenges or less enjoyable tasks (Kita & Luria, 2018).

On the other hand, this study shows no significant and correlation between smartphone addiction and cyberloafing behaviour. This could be due to the family environment that did not allow them to cyberloaf. Neuroticism and extraversion positively correlated with cyberloafing, while conscientiousness and agreeableness negatively predicted cyberloafing but current study only shows significant and positive correlation of extraversion with cyberloafing behaviour (Varghese & Barber, 2017). Extraverted people tend to cyberloaf because of the environment and social factors like entertainment (Varghese & Barber, 2017).

5. Conclusion

The current study shows that smartphone addiction significantly and negatively correlates with age. Although more than half (56%) of the undergraduate respondents were addicted to smartphones, there was no significant relationship with cyberloafing behaviour. For personality traits, only extraversion and conscientiousness showed a significant and correlation effect towards smartphone addiction. Furthermore, extraversion also shows significant and positive poor correlation with cyberloafing behaviour. To conclude, only certain personality traits are inter-related towards smartphone addiction and cyberloafing behaviour.

There is no doubt that the multipurpose function of smartphones makes their lives easier but excessive use would lead to addiction. Thus, these problems need to be addressed properly from now on to prevent other problems that can occur such as accidents when they use smartphones while driving, walking, or in forbidden places like gas stations. They also need to be taught on cyber friends' general assessment of risk especially towards female young adults. Data from this study could be the evidence that personality in the environment might cause smartphone addiction and cyberloafing among undergraduates. Future research should be conducted in a larger sample with different backgrounds. In addition, future research also can be done by a mixed method that consists of quantitative and qualitative to get a more comprehensive understanding about the factors that lead to smartphone addiction among students. Next, future studies should investigate the prevention of smartphone addiction based on the intrinsic factors like personality traits and cyberloafing behaviour to create awareness towards academic performance for producing high quality of graduates.

6. Co-Author Contribution

The authors declared that there is no conflict of interest in this article. Author 1 carried out the fieldwork, organized the literature review and sorting the sub-topics for the whole article. Author2 wrote the research methodology , conducted the statistical analysis and did the data entry. Author 3 and 4 carried out interpretation of the results and finalised the manuscript.

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