

Psychological Factors and Internet Access as Predictors of Internet Addictive Behaviour among Adolescents in Ibadan, Nigeria

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Little research attention has been given to the predictive role of impulsivity, internet access and emotional intelligence on internet addictive behaviour, especially among in-school adolescents. Also, empirical findings in this area are mixed, which is a need for further studies. Therefore, this study examined the pattern of relationship among impulsivity, Internet access, emotional intelligence and internet addictive behaviour, and tested the predictive value of impulsivity, Internet access and emotional intelligence in internet addictive behaviour among in-school adolescents in Ibadan, Nigeria. Data were collected from 200 in-school adolescents in five secondary schools using the Impulsivity, Internet Access, Emotional Intelligence and the Internet Addictive Behaviour Scales. Data collected were analysed using zero-order correlation statistics and multiple regression analysis. Two hypotheses were tested and accepted at a $p < .05$ level of significance. The results of zero-order correlation analysis revealed that impulsivity, Internet access and emotional intelligence were significant positive correlates of Internet addictive behaviour. The multiple regression results established that impulsivity, internet access and emotional intelligence independently and jointly predicted internet addictive behaviour among study participants. It was concluded that impulsivity, Internet access and emotional intelligence are strong predictors of Internet addictive behaviour among in-school adolescents. The practical implications of findings for intervention and future research directions are discussed.

Keywords: Impulsivity, internet access, emotional intelligence, internet addictive behaviour, adolescents

Introduction

Globally, the advent of internet has revolutionized human activities and lifestyles in homes, businesses, schools, universities, libraries, etc. The internet has taken centre stage in our modern life with common online activities such as playing online games, engaging in e-commerce, reading and writing emails and engaging in real time chatting and school work. Despite the positive and beneficial effects of the internet, excessive use can lead to internet addiction and its associated behaviour. Internet addictive behaviour (IAB) is defined as an impulse disorder which shares similar characteristics with those of pathological gambling (Mythily *et al.*, 2018). It is described as the inability of an individual to control the craving for excessive use of the internet, reduce time spent on the

internet, experience intense anxiety and aggression when denied, and continual worsening of social and family life (Young, 2017).

The Nigerian Ministry of Information and Communication (2020) reports that about 94.8% of in-school adolescents are addicted to the Internet, using the Internet space more than the traditional face-to-face communication medium. IAB has been associated with many antagonistic psychosocial and emotional health conditions such as social detachment, social anxiety (fear of missing out-FOMO), hyperactivity issues, social media-induced depression/melancholy, self-destructive fantasies, as well as relational and occupational problems (Maza *et al.*, 2023).

One psychological factor which has been linked to internet addictive behaviour among

different samples and populations, but more commonly among undergraduate students in Nigeria, is Impulsivity (Mustapha & Muhammed, 2017; Odinka, Chinawa, Nguagubam, Ossai, Odinka, Ugwunna, Chinawa, 2023; Okwaraji, Aguwa, Onyebueke & Shiweobi, 2015). Impulsivity is the tendency to act on the spur of the moment without taking into consideration the consequences of one's action (Khurana *et al.*, 2018). Impulsive individuals are characterised by performing behaviour without adequate thoughts and a tendency to act with less thoughtfulness than most individuals of equal ability and knowledge, in addition to being disposed to rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions (The International Society for Research on Impulsivity [InSRI], 2019). The cognitive behavioural model of excessive internet use as modified by Brand *et al.* (2019) suggests that problems with impulse control and dangerous emotional seeking drives are sufficient triggers of internet addiction. Indeed, some studies have shown that individuals who scored high on the impulsivity scale scored high on internet addictive behaviour (Deckman & Dewall, 2011; DeYoung, 2014; Dir *et al.*, 2013; Patel *et al.*, 2023).

A second factor that has been linked to IAB is internet access. Internet access refers to the availability and affordability of internet connectivity and facilities that allow individuals to use applications. Globally, it is estimated that more than 3.5 billion people have accessed the Internet and most of them are youths (Clement, 2020; Karma *et al.*, 2018; Zheng, 2019). The gratification theory (Katz *et al.*, 1974 as cited in Egede & Chuks-Nwosu, 2013) posits that people are active users of media and usually select how they make use of available internet connectivity. The model posits that in a bid to satisfy personalised needs, individuals can become more engrossed in internet use, a tendency that results in addictive behaviour and is more likely among adolescents (Dong, 2020). According to this theory, the level of usage and involvement in online activities is highly motivated by an individual's desire to gratify a distinct need, and the individual is key in deciding how to use internet facilities in ways that will not predispose them to internet addictive tendencies.

Several studies have investigated the impact of this pattern of internet access on addictive

behaviour among internet users. For instance, Asibong *et al.* (2020) in a study of undergraduate students found that 20.1% of students who have internet access were internet addicts. Similarly, Akpunne and Akinnawo (2019) found 48.6% of their study participants with internet access to be internet addicted. Furthermore, Nduanya *et al.* (2018) found that 12.9% of their study participants who had internet access showed internet addictive behaviour tendencies. Empirical investigations among students in Jordan, Iran, Japan and American community university have reported a significant relationship between internet access and IAB (AlGamal *et al.*, 2016; Jelenchick *et al.*, 2012; Bahrainian *et al.*, 2014 and Kitazawa *et al.*, 2018).

The literature suggests that a third factor considered to be linked with internet addictive behaviour is emotional intelligence (EI). EI is a psychological factor described by scholars as an individual's ability to recognise their emotions and those of others, discern between different feelings, use emotional information to guide thinking/behaviour and adjust emotions to adapt to environment and situations (Colman, 2008; Garmah & Rida, 2020). Emotionally intelligent individuals are not only aware of their emotions but also the emotions of others they are dealing with regularly (Garmah & Rida, 2020). Studies that have investigated the link between emotional intelligence and internet addictive behaviour have produced mixed findings. While some have reported that emotional intelligence is a significant predictor of internet addictive behaviour (Parker, 2019; Khoshakhlagh & Faramarzi, 2012; Jafari & Fatehizade, 2011), others found a non-significant relationship between emotional intelligence and internet addictive behaviour (Nikmanesh *et al.*, 2014; Hamissi *et al.*, 2013). In this circumstance, the predictive role of emotional intelligence in internet addictive behaviour is not clear.

A review of the literature shows that internet addictive behaviour has been studied across different demographic groups. However, there is a dearth of studies among in-school adolescents who are mostly prone to internet addictive behaviour and its negative consequences such as cognitive problems, family and interpersonal relationship problems, decline in school performance, lower self-esteem and lack of self-care (Maza *et al.*, 2023; Nagaur, 2020).

Besides, the scanty empirical investigations conducted among adolescents have yielded contrasting results (Edem, 2010; Okwaraji, Aguwa, Onyebueke & Shiweobi, 2015; Odinka, Chinawa, Nguagubam, Ossai, Odinka, Ugwunna, Chinawa, 2023), thereby creating a need for further studies. Therefore, this study investigated the nature of the relationship that exists among impulsivity, internet access and emotional intelligence; and the predictive role of impulsivity, internet access and emotional intelligence in internet addictive behaviour among in-school adolescents in Ibadan, Nigeria.

In line with the reviewed literature and study objectives, the following hypotheses were formulated and tested:

Hypothesis 1: There would be a significant positive relationship among impulsivity, internet access, emotional intelligence and internet addictive behaviour among in-school adolescents in Ibadan, Nigeria.

Hypothesis 2: Impulsivity, internet access and emotional intelligence would jointly and independently predict internet addictive behaviour among in-school adolescents in Ibadan, Nigeria.

The findings of the study would provide more insight into the predictive role of impulsivity, internet access and emotional intelligence on internet addictive behaviour among in-school adolescents in the Nigerian context which Counseling psychologists, parents and teachers can apply in programmes aimed at reducing or eliminating the incidence of internet addictive behaviour among in-school adolescents.

Method

Research design

The study adopted a cross-sectional survey design. The independent variables were impulsivity, internet access and emotional intelligence while Internet addictive behaviour was the dependent variable. All the study variables were measured in a continuous form.

Research setting

The study was carried out in five selected public secondary schools in Ibadan, Nigeria. Ibadan is the

capital and most populous city of Oyo state, in Nigeria. It is the third-largest city by population in Nigeria after Lagos and Kano (Wikipedia, 2022).

Sample and sampling technique

A convenience sampling technique was used to select Ibadan-North LGA in Oyo State while a simple random sampling technique was used to select five public secondary schools in Ibadan. Finally, a convenience sampling method was used to select 200 in-school adolescents, 40 each from each school for the study. The descriptive statistics of participants revealed that 87(44%) of the participants were males while 113(56%) were females. In terms of age, 73(36%) of the participants were between 11-13 years of age, while 127(64%) of the study participants were between 14 - 18 years of age. With respect to their religious faiths, 118(59%) of the participants were Christians while 82(41%) of them were Muslims.

Instruments

Data for the study were gathered by the use of a structured questionnaire comprising four psychometrically sound scales:

1. **Internet Addictive Behaviour:-** It was assessed using the Internet Addictive Test developed by Young (2017) to measure the level of students' addiction to the Internet. It is a 20-item scale measured in a 5-point Likert format. The response format for each of the items was: rarely, occasionally, frequently, often and always. Two sample items are: "How often do you neglect household chores to spend more time online?" and "How often do your grades or school work suffer because of the amount of time you spend online?" The author reported the scale Cronbach's alpha of 0.96 while in this study, 0.89 coefficient reliability was obtained. The scale has been validated in Nigeria by Akpunne *et al.* (2020) using the Smartphone Addiction Scale-Short Version (SAS-SV) developed by Kwon *et al.* (2013) and the Bergen Facebook Addiction Scale (BFAS), with a validity coefficient value of 0.542 was reported.

2. **Impulsivity:-** It was measured using the Impulsivity Scale developed by Buss and Perry (1992) as cited in Zimonyi, Kasos, Halmal, Csirmaz, Stadler, Rozsa, Szekely & Kotyuk

(2021). The scale measures students' inability to inhibit behavioural impulses and thoughts. It is a 21-item scale rated using a 5-point Likert scoring format which includes rarely, occasionally, frequently, often and always. Sample items are: "I plan tasks carefully." and "I am self-controlled." The authors reported a Cronbach alpha coefficient of 0.88 while in the present study, the Cronbach alpha reported was 0.81.

3. **Internet Access:-** It was evaluated using the Internet Access Scale developed by Sam, Othman and Nordin (2005). The scale evaluates the ability of individuals and organisations to connect to the Internet using computer terminals, computers, and other devices. It is a 9-item scale scored using a 5-point Likert format that includes rarely, occasionally, frequently, often and always. Sample items are: "I can use a web browser like Mozilla Firefox to search for information" and "I know how to use a web browser." The authors reported a Cronbach alpha coefficient of 0.91 and in the current study, a Cronbach alpha of 0.84 was reported. The scale has been validated across many studies (e.g., Zimonyi *et al.*, 2021).
4. **Emotional Intelligence:-** It was measured using the Emotional Intelligence Scale developed by Pérez (2005) as cited in Adamakis and Dania (2021). This scale assesses the capability of a person to manage and control his or her emotions and also to possess the ability to control the emotions of others. It is a 29-item measured on a 5-point Likert response format that ranges from strongly agree, agree, undecided, disagreed, and strongly disagree. Sample items are: "When I am faced with obstacles, I remember times when I faced similar obstacles and overcame them" and "I help other people feel better when they are down." The developer reported a Cronbach alpha coefficient of 0.91. In this study, the Cronbach alpha coefficient reported was 0.87. They validated the scale for the pre-service physical education teachers.

Procedure

The researchers collected a letter of introduction from the Department of Psychology, University of Ibadan, which was presented to the respective school Principals. The researchers were directed to liaise with the respective Vice-Principal to vet the contents of the research questionnaires before the final approval to administer the questionnaires was granted. The written instructions on the questionnaires were read to the potential participants. They were informed that participation in the study was voluntary and that they were free to decline to fill out the questionnaires if they wished so. They were assured of confidentiality of their responses and there were no personal identifiers attached to the questionnaires. The questionnaires took less than 20 minutes to be completed. After data collection, 200 copies of the questionnaire (40 copies from each school) were retrieved and used for data analysis.

Data analysis

Statistical Package for the Social Sciences (SPSS) version 23 was used to analyse the data collected. Descriptive and inferential statistics were conducted. Hypothesis 1 was tested using zero-order correlation statistics, while hypothesis 2 was tested using multiple regression analysis. All hypotheses were accepted at $p < 0.05$ level of significance.

Results

Hypothesis 1: Impulsivity, internet access and emotional intelligence would significantly and positively correlate with internet addictive behaviour among in-school adolescents in Ibadan, Nigeria. The hypothesis was tested using zero-order correlation and the result is presented in Table 1.

Table 1: Descriptive statistics and correlations for Study variables

Variables	1	2	3	4	M	SD
1 IAB	-				63.21	15.38
2 Impulsivity	.153*	-			58.97	8.49
3 IA	.136*	.155*	-		52.33	11.11
4 EI	.171*	.419*	.336*	-	61.58	14.31

IAB= Internet Addictive Behaviour, IA= Internet Access, EI= Emotional Intelligence

*Correlation is significant at $p < 0.05$

Table 1 shows the zero-order correlation of the study variables. The results showed that impulsivity ($r = 0.153, p < 0.05$), Internet access ($r = 0.136, p < 0.05$) and emotional intelligence ($r = 0.171, p < 0.05$) significantly correlated with Internet addictive behaviour among in-school adolescents in Ibadan, Nigeria. Therefore, the stated hypothesis was confirmed. The pattern of significant positive correlations implies that high levels of impulsivity, internet access and emotional intelligence are

associated with higher levels of internet addictive behaviour.

Hypothesis 2: Impulsivity, Internet access and emotional intelligence would independently and jointly predict Internet addictive behaviour among in-school adolescents in Ibadan, Nigeria. The hypothesis was tested using multiple regression analysis and the result is presented in Table 2.

Table 2: Multiple regression analysis showing impulsivity, internet access and emotional intelligence as predictors of internet addictive behaviour

Predictors	β	t	P	R	R ²	F	P
Impulsivity	0.190	2.559	<.05	0.481	0.379	3.673	<.05
Internet use	0.204	3.390	<.05				
Emotional Stability	0.134	1.979	>.05				

Table 2 shows the combined or joint contributions of impulsivity, internet access and emotional intelligence on internet addictive behaviour among in-school adolescents in Ibadan, Nigeria. The result revealed that impulsivity, internet access and emotional intelligence jointly predicted internet addictive behaviour among study participants [$R^2 = .37, F(4, 196) = 3.673, p < .05$]. Specifically, the psychosocial variables jointly accounted for a 37.9% variance in the prediction of internet addictive behaviour. Table 2 also presented the independent predictive role of impulsivity, Internet access and emotional intelligence on Internet addictive behaviour among in-school adolescents in Ibadan. The result revealed that impulsivity ($\beta = .190, p < .05$) and Internet access ($\beta = 0.204, p < .05$)

independently predicted Internet addictive behaviour among study participants. However, emotional intelligence ($\beta = .134, p > 0.05$) did not independently predict Internet addictive behaviour among in-school adolescents in Ibadan, Nigeria. Therefore, hypothesis 2 was supported.

Discussion

The study investigated impulsivity, internet access and emotional intelligence as predictors of internet addictive behaviour among in-school adolescents in Ibadan, Nigeria. Two hypotheses were generated and tested at $p < 0.05$ level of significance.

The result of the first hypothesis reveals a positive and significant relationship between impulsivity, internet access, emotional Intelligence

and internet addictive behaviour among in-school adolescents. This implies that impulsivity, internet access and emotional intelligence have positive relationships with internet addictive behaviour among study participants. This finding is supported by De Young's (2014) and Dir *et al.* (2013) results that impulsivity has a significant relationship with internet addictive behaviours among their study participants. Also, the present finding supported previous results that internet access significantly correlated with internet addictive behaviour across different populations and samples (Asibong *et al.*, 2020; Akpunne & Akinnawo, 2019; Nduanya *et al.*, 2018). Finally, the result supported the finding by Jafari and Fatehizade (2011) that emotional intelligence significantly correlated with Internet addiction behaviour among their study participants. The present study also asserts this association among in-school adolescents.

The result of the hypothesis that impulsivity, internet access and emotional intelligence would jointly and independently predict internet addictive behaviour among in-school adolescents was confirmed. The combined influence of the psychological factors accounted for 37.9% of the variance in internet addictive behaviour among in-school adolescents. Collectively, impulsivity, internet access and emotional intelligence are significant joint predictors of internet addictive behaviour among study participants. In terms of the magnitude of contributions, internet access made the largest contributions to internet addictive behaviour, closely followed by impulsivity and then emotional intelligence.

This finding lends credence to previous studies that reported impulsivity (Kim *et al.*, 2008), internet access (AlGamal *et al.*, 2016; Bhandari *et al.*, 2017) and emotional intelligence (Khoshakhlagh & Faramarzi (2012) to be strong predictors of internet addictive behaviour across different populations and samples. However, emotional intelligence did not independently predict internet addictive behaviour among study participants. This finding is supported by previous studies such as by Nikmanesh *et al.* (2014) and Hamissi *et al.* (2013) who did not find emotional intelligence as a predictor of internet addiction among their study participants. In other words, individuals who report high levels of emotional intelligence seemed to show lesser signs of internet addictive behaviour

when compared with those who reported low levels of emotional intelligence.

As theoretically and empirically rendered, the choice that individuals make in the adoption of technologies and dependence on their usage (e.g., Internet access, computer, etc), their level of impulsivity and emotional intelligence all play vital roles in internet addictive behaviour (Brand *et al.*, 2016). The outcome of this study further strengthens the argument that personal and psychological factors (impulsivity, internet usage and emotional intelligence) are very crucial in predicting internet addictive tendencies. Invariably, these psychological factors and their interaction may affect daily life and behaviour but primarily have been established to result in internet addictive behaviours among in-school adolescents. Consequently, the use of the internet can become a problem that has the potential to affect academic, physical, psychological and social wellbeing. This warrants the development of psychological interventions by mental health professionals especially interventions that will address Internet addictive behaviours impulsivity and Internet usage.

Conclusion

This study has empirically established the significant relationship between impulsivity, internet access and emotional intelligence on internet addictive behaviour among in-school adolescents in Ibadan, Nigeria. Also, it has been established that impulsivity, internet access and emotional intelligence are important joint predictors of internet-addictive behaviour among in-school adolescents. Lastly, the result of the study supported the assertion that impulsivity and internet access are independent predictors of internet addictive behaviour. However, emotional intelligence the third psychological factor considered did not independently predict internet addictive behaviour among in-school adolescents.

Recommendations

Based on the findings of this study, the following recommendations were suggested:

First, given that the study established the contribution of internet use to internet addictive behaviour, effort should be put in place by parents, guardians and the school authority to regulate adolescent's internet usage, rules and regulations

on the use of phones and Internet during school hours and at homes should be properly spelt out among in-school adolescents. Second, school counsellors/psychologists should design psychological awareness programmes and interventions targeted at in-school adolescents who have been identified as struggling with internet addictive problems. Finally, there should be a collaborative effort on the part of all relevant stakeholders to crave the design and implementation of policies that will address impulsivity and internet access among in-school adolescents.

Limitations and suggestions for further study

First, a convenient sample size of 200 in-school adolescents was used in the study. This sampling approach and corresponding sample size may hinder the generalisation of the study findings to the larger population of interest. In line with this shortcoming is the need to have stronger external validity, perhaps if the study had considered selecting a more representative sample, extrapolating study findings would have been more plausible. Second, is that the data for the study were collected using self-reported questionnaires. This subjective form of obtaining data has the potential for participants to show social desirability biases; a situation where participants either under-report or over-report their responses. Rather, objective means of gathering data may be considered in future investigations of this nature. Finally, other psychological factors not considered in this study as well as possible mediators and moderators of internet addictive behaviour are still requiring scientific elucidation. Future studies may consider addressing some of the limitations highlighted.

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