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The Online Trap: Personality Traits and The Risk of Internet Addiction among Undergraduates in Southwest Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: Addiction can involve physical and psychological components because of the increasing evidence that some behaviours activate the brain reward system with effects similar to those of drugs of abuse. Personality traits are relevant factors in determining subjects' behaviour while using the Internet. This study aimed to assess the degree of Internet use and its association with personality traits among a population of medical students and other students of allied health sciences in a Nigerian tertiary institution.
Study Design: This cross-sectional study was carried out among the students of the Ekiti State University College of Medicine, Nigeria. The study population was the entire preclinical medical students and students of allied health sciences between August 2023 and September. 2023.
Methods: Probability random sampling was adopted among the groups of students. A total of 214 study participants were enrolled. Data was collected using a questionnaire that comprised socio-demographic variables, the Young Internet Addiction Test (YIAT), and the Big Five personality traits 10-item inventory version (BF-10). Each YIAT and BF-10 used a set of responses on a Likert scale.
Results: A total of 214 (95%) adequately completed the questionnaires. About two-thirds (69.6%) of the participants were females. The mean age of the participants was 21.4(±2.54), with ages ranging from 16 years and 40 years. About nine out of ten (86.7%) of the participants who engaged

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on the Internet dwelled on social media. Seventy-one (42%) of the participants admitted to using the Internet for study or academic purposes. One hundred and fifty-four (72%) of the participants reported mild to moderate addiction levels (score of 31-79 on YIAT). This study revealed a statistically significant negative correlation between Internet addiction and conscientiousness (r= -0.151, p=0.029). There were negative correlations between internet addiction and extraversion (r=-0.440, p=0.525); and agreeableness (r=-0.110, p=0.871); neuroticism (r=-0.029, p=0.674); and openness (r=-0.091, p=0.187.

Conclusion: The association between Big Five personality traits and Internet addiction reveals the complexity of the relationship.

Keywords: Internet; addiction; personality; traits; undergraduates; Nigeria.

1. INTRODUCTION

Addiction is a chronic disease that involves compulsive, uncontrollable drug seeking and use, despite harmful consequences. Addiction can involve physical and psychological components. In addition to mental and physical dependence on a specific kind of substance, such as a drug, consumers may become addicted to problematic behaviour [1]. This is so because of the increasing evidence that some behaviours activate the brain reward system with effects similar to those of drugs of abuse [2]. Behavioural addiction refers to an intense desire to carry out an action perceived to increase well-being or, more often, one that alleviates internal distress, despite the individual's awareness that such an action carries negative consequences [3]. And it can affect many different aspects of a person's life, including their physical health, mental health, and social relationships.

Addiction can have a wide range of implications on mental health. Besides the possibility of addiction leading to the development of mental health disorders like depression, anxiety, and even psychosis, addiction can exacerbate existing mental health conditions, and make them more difficult to treat [4]. Additionally, addiction can cause major disruptions in social relationships [5].

Internet addiction, also known as problematic internet use, is characterised by excessive or compulsive use of the internet, to the point where it interferes with other aspects of a person's life [6,7]. Many researchers have reported on internet addiction as a behaviour-oriented addiction [1]. Like other forms of addiction, it can have a negative impact on relationships, work, and overall well-being. Similar to other addictions, it can involve withdrawal symptoms and cravings. The most common activities associated with internet addiction include social media, online gaming, online shopping, and cybersex. Although the specific criteria for diagnosing internet addiction are still being debated, it generally involves things like spending a lot of time online, neglecting other activities, using the internet to escape from problems or distress, feeling a sense of euphoria while online, and experiencing symptoms of withdrawal or craving when not online [8,9].

The rapid development of the Internet has greatly transformed various aspects of human life, offering numerous benefits and opportunities. However, alongside its advantages, the excessive use of the Internet has given rise to a growing concern known as Internet addiction. Expanded openness to the Internet is turning into a major issue around the world, particularly among teenagers [10] and young adults.

According to the latest report from the International Telecommunication (ITU), there were over 4.9 billion active Internet users worldwide in 2022 [11]. Internet-related factors such as longer internet usage time, easier internet access, and superior internet skills can lead to addiction [12]. While various factors may contribute to the development and perpetuation of Internet addiction, researchers have increasingly turned their attention towards understanding the role of personality traits in this phenomenon. Personality represents the fundamental characteristics that affect human behaviour [13]. Personality predispositions are known to play an essential role in Internet addiction [14]. Personality traits are relevant factors in determining subjects' behaviour while using the Internet [15]. Various studies on the association between behavioural addictions and personality traits have noted in individuals with addictive behaviour higher levels of impulsivity [16,17], sensation seeking, more emotional lability [18], and lower levels of harm avoidance [1,19] self-esteem, and loneliness [17].

Among the prominent models of personality, The Big Five personality traits, have gained significant attention. The Big Five model of personality encompasses five broad dimensions: extraversion, neuroticism, openness to experience, agreeableness, and conscientiousness. These traits capture the fundamental aspects of an individual's personality and are widely recognised in psychological research.

Internet addiction is a bigger problem among university students because problems faced by university students, such as adaptation difficulties and underlying psychological problems, cause problematic Internet use [20–24].

Students are more prone to excessive use of the Internet for sundry reasons such as their natural tendency, unlimited access and freedom from parental influence, among others [25–27].

Personality traits have been shown to play a role in internet addiction. the main goal would be to understand the specific personality traits that are most strongly associated with internet addiction and to determine whether there are any specific patterns or combinations of traits that are particularly predictive of internet addiction among students of basic medical sciences at Ekiti State University, Nigeria. Findings from this study could be used to develop more targeted interventions and prevention strategies.

Internet use has witnessed explosive growth worldwide in the last decade [10]. However, Internet use is less researched in developing countries such as Nigeria. This study aimed to assess the degree of Internet use and its association with personality traits among a population of medical students and other students of allied health sciences in a Nigerian tertiary institution.

2. METHODS

2.1 Study Population and Sampling

This cross-sectional study was carried out among the students of the Ekiti State University College of Medicine. The study population was the entire preclinical medical students and students of allied health sciences. A probability random sampling was done among the groups. A total of 214 study participants were enrolled. Participants were randomly selected after they had given informed consent.

2.2 Measures

The data was collected from the students using a questionnaire that comprised two sections. In the first section, the author's questionnaire collected data on the socio-demographic variables of the students such as age, gender, course of study and academic year. The second section included two components: (i) the Young Internet Addiction Test (YIAT), and (ii) the Big Five personality traits 10-item inventory version (BF-10). Each of the components (i) and (ii) has a set of responses on the Likert scale to choose from.

The Young Internet Addiction Test (YIAT) is a valid, consistent and reliable tool for screening Internet addiction. The YIAT questionnaire has the best-documented psychometric properties and the greatest number of adaptations worldwide [14]. It has been shown to have good internal consistency, with a Cronbach's alpha of 0.94. The YIAT has also been shown to have good test-retest reliability.

The Big 5 personality traits test, also known as the NEO-PI-R, is a well-validated and reliable tool for assessing personality traits. It has good internal consistency, with Cronbach's alphas ranging from 0.75 to 0.90 for the different traits. The test-retest reliability is also good, with correlations ranging from 0.75 to 0.90 for the different traits. The Big Five model of personality encompasses five broad dimensions: extraversion, neuroticism, openness to experience, agreeableness, and conscientiousness. These traits capture the fundamental aspects of an individual's personality and are widely recognised in psychological research. Extraversion refers to the degree of sociability, assertiveness, and outgoingness exhibited by an individual. Neuroticism relates to emotional stability, with high levels indicating a tendency towards anxiety, depression, and emotional instability. Openness to experience reflects an individual's inclination towards novelty, creativity, and intellectual curiosity. Agreeableness refers to the level of compassion, trust, and cooperativeness, while conscientiousness represents one's level of organisation, self-discipline, and reliability. In this study, the 10-item version was used in this study.

2.3 Data Analysis

After data gathering using the questionnaire, scores for each of the participants on YIAT, and the dimensions of the Big 5 component were computed. Statistical analysis was performed using SPSS. Version 25 (IBM Incorp).

Descriptive statistics were done. Independent t-test was used to compare the mean scores of participants on various scales based on some demographic characteristics. Spearman's correlation was also used to explore the associations between continuous variables.

3. RESULTS

3.1 General Measures

Table 1 shows the sociodemographic features of the participants.

A total of 225 students gave consent to participate in the study but only 214 (95%) adequately completed the questionnaires. About two-thirds (69.6%) of the participants were females. The mean age of the participants was 21.4(±2.54), with ages ranging between 16 years and 40 years. About three out of four (77.6%) of the participants lived in private hostels outside of the school.

3.2 Internet Use

The average daily online time spent by the students was about four hours with average monthly data usage of about 4 gigabytes. About nine out of ten (86.7%) of the participants who engaged on the Internet dwelled on social media. The least rated purpose for using the Internet indicated by the students was for online games. Seventy-one (42%) of the participants admitted to using the Internet for study or academic purposes. One hundred and fifty-four (72%) of the participants reported mild to moderate addiction levels (score of 31-79 on YIAT). Twenty-two (17.1%) of the participants scored below the mean score for addiction on YIAT. The mean score on YIAT was 37.33 (±15.04) with a range of 1 to 80.

There was no statistically significant difference in the mean scores on the YIAT scale regarding the sociodemographic variables of the participants as shown in Table 2a.

3.3 Personality Traits and Socio-Demographic Variables

The intensity of personality traits demonstrated by the mean scores of 6.81(±1.71), 6.19(±1.79), 6.25(±1.74), 6.54(±1.82) and 7.06(±2.06) for the personality dimensions: extraversion, agreeableness, conscientiousness and openness, respectively. This study revealed statistically significant differences in the mean scores for some of the sociodemographic variables on some of the personality trait dimensions as shown in Table 2b.

The females scored significantly higher on agreeableness and neuroticism. The younger age group also scored significantly higher on neuroticism. The study participants in the higher level of study scored significantly higher on conscientiousness. Participants who admitted to engaging in online "Yahoo business" had significantly higher scores on the openness dimension of the (BF-10) personality trait test.

3.4 Correlations

Table 3 shows the correlations between the variables of internet addiction and the subscales of the Big-five personality traits.

This study revealed a statistically significant negative correlation between Internet addiction and conscientiousness (r= -0.151, p=0.029). There were negative correlations between internet addiction and extraversion (r=-0.440, p=0.525); and agreeableness (r=-0.110, p=0.871); neuroticism (r=-0.029, p=0.674); and openness (r=-0.091, p=0.187).

4. DISCUSSION

About three-quarters of the participants had mild to moderate levels of Internet addiction. Similarly, several other studies have reported a high prevalence of Internet addiction among students of tertiary institutions in both developing and developed countries of the world [28–32]. The pattern and level of Internet addiction among the participants of this study as observed showed IA is pervasive; this was regardless of the course of the study. In fact, the medical students who, presumably, are considered to have higher academic workload had higher mean scores than others on the YIAT scale, though no statistically significant difference from the other group of students.

Some of the results of our study results do support the findings of previous research work in the field. This could be attributed to cultural differences that exist in varying settings for the previous studies.

Participants who engaged in online business had higher mean YIAT scores, although not

statistically significant when compared to the participants who claimed non-engagement in online business. Individuals who engaged in online business were more likely to spend a long time on the Internet. This, however, was expected, as students who engaged in online business in addition to their academics were more likely to spend longer time online.

Earlier research exploring the relationship between the Big Five personality traits and IA provided valuable insights into the psychological factors underlying this phenomenon [13]. Our study found a statistically significant negative correlation between IA and conscientiousness. Conscientiousness refers to a person's level of responsibility, orderliness and self-discipline. finding appeared consistent with some other patterns and associations that have emerged [33–36]. Lower conscientiousness has been associated with higher Internet addiction tendencies [37]; this could imply lower conscientiousness reduces motivation to either act or be focused on goals. The majority (72%) of the participants in this study had relatively high scores on the Internet addiction scale, similarly; they have relatively low mean scores on the conscientiousness subscale. Individuals low in conscientiousness may struggle with self-control and time management, leading to excessive Internet use. Indeed, the reality of this personality trait is often found among students who, more often than not, are engrossed in engaging their electronic devices even while lectures are ongoing with their teachers in their classes [38].

High levels of neuroticism have consistently been linked to a greater risk of Internet addiction [39–43]. This was however not so with respect to this study in which there was a negative correlation between neuroticism and Internet addiction. The reality of the liveliness of undergraduates living together in hostels might not allow the majority of the participants to experience heightened levels of negative affect, loneliness, and maladaptive coping strategies which are associated with individuals' high levels of neuroticism.

Table 1. The sociodemographic variables of the participants

Variables	Frequency	Percentage
Age (years)		
(16-22)	174	81.3
(23-40)	40	18.7
Gender		
Female	149	69.6
Male	65	30.4
Marital status		
Single	213	99.5
Married	1	0.5
Year of study		
Second year	82	40.6
Third year	120	59.4
Course of study		
Medicine	78	36.4
Others	136	63.6
Residence		
Private hostel	187	87.4
School hostel	27	12.6
Favourite site		
Browser	25	13.3
Social media	163	86.7
Reason for use		
Social	68	40.5
Study	33	19,6
Academic	38	22.6
Online games	4	2.4
Online business	25	14.9

Table 2a. Internet Addiction scores based on sociodemographic characteristics

Characteristics	n (%)	YIAT Mean±SD	p-values
Age group			
16-22	174 (81.3)	37.10±15.24	(0.628)
>22	40 (18.7)	38.38±14.26	
Gender			
male	65 (30.4)	37.19±14.2	(0.126)
female	149 (69.6)	37.40±15.41	
Residence			
School hostel	27 (12.6)	39.15±14.93	(0.511)
Private hostel	187 (87.4)	37.08±15.08	
Year of study			
2nd	87 (40.7)	35.48±14,15	(0.136)
3rd	127 (59.3)	38.61±15.55	
Course of study			
Medicine	78 (36.4)	39.59±14.11	(0.100)
others	136 (63.6)	36.06±15.44	
Online business			
No	189 (94.0)	37.14±15.17	(0.478)
Yes	12 (6.0)	40.33±13.63	

Table 2b. Demographic characteristics of participants by big-five personality traits

	n (%)	Extraversion	p	Agreeableness	p	Conscientiousness	p	Neuroticism	p	Openness	p
Characteristics		**Mean±SD**		**Mean±SD**		**Mean±SD**		**Mean±SD**		**Mean±SD**	
Age group (yrs.)									**(**		
16-22	174 (81.3)	6.85±1.80	**(0.382)**	6.28±1.760	**(0.149**)	6.27±1.78	**(0.639)**	6.71±1.80	**0.004)***	7.12±2.07	**(0.381)**
>22	40 (18.7)	6.59±1.25		5.82±1.88		6.13±1.56		5.79±1.78		6.79±2.07	
Gender			**(0.118)**		**(0.033)***		**(0.180)**		**(0.001)***		**(0.116)**
male	65 (30.4)	6.52±1.77		5.80±2.07		6.00±1.72		5.92±1.91		6.71±2.01	
female	149 (69.6)	6.93±1.67		6.36±1.63		6.35±1.74		6.80±1.72		7.20±2.08	
Residence			**(0.416)**		**(0.666**)		**(0.567)**		**(0.289)**		**(0.121)**
School hostel	27 (12.6)	6.56±4.79)		6.33±1.80		6.74±1.75		6.89±1.91		6.48±1.95	
Private hostel	187 (87.4)	6.84±5.14		6.17±1.80		6.17±1,73		6.49±1.81		7.14±2.07	
Year of study											
2nd	87 (40.7)	6.76±2.02	**(9.763**)	6.14±2.05	**(9.763**)	5.80±1.78	**(0.002)***	6.42±2.13	**(0.425)**	6.90±2.34	**(0.347)**
3rd	127 (59.3)	6.83±1.47		6.23±1.59		6.54±1.65		6.62±1.59		7.17±1.76	
Course of study											
Medicine	78 (36.4)	6.73±1.20	**(0.626)**	6.05±1.54	**(0.375)**	6.42±1.75	**(0.280)**	6.40±1.53	**(0.227)**	7.00±1,93	**(0.90)**
others	136 (63.6)	6.85±1.94		6.28±1.92		6.14±1.72		6.62±1.98		7.09±2.15	
Online business											
No	189 (94.0)	6.80±1.71	**(0.585**)	6.18±1.84	**(0.560**)	6.27±1.75	**(0.654)**	6.62±1.82	**(0.495)**	6.99±2.01	**(0.019)***
Yes	12 (6.0)	7.08±1.38		6.50±1.57		6.50±1.57		6.25±1.14		8.42±2.11	

*Legend: * = p < .05*

Table 3. Addiction personality traits correlations

Variables	IA	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Internet addiction	1	-0.440	-0.110	0.150	-0.029	-0.091
Extraversion	0.044	1	0.240	0.153	0.274	0.257
Agreeableness	-0.011	0.240	1	0.185	0.258	0.127
Conscientiousness	0.151*	0.153	0.185	1	0.344	0.292
Neuroticism	-0.029	0.274	0.258	0.344	1	0.396
Openness	-0.091	0.257	0.127	0.292	0.396**	1

*Legend: * = p < .05*

Some studies [34,44] suggest that extraversion is positively associated with Internet addiction, as individuals high in extraversion may use the Internet as a means to meet their social needs. However, this study found no significant association. This is similar to some researchers who found no meaningful relation between extraversion and unhealthy internet use [33,45].

The relationship between openness to experience and Internet addiction is relatively underexplored. Previous studies [34,46,47] have shown that individuals high in openness to experience may be more prone to excessive Internet use due to their tendency towards seeking novel and diverse experiences. This study did not find a strong relationship between openness and Internet addiction. This is not to say, however, that the generation of the study participants is not explorative. It is interesting to note, however, that participants who admitted to being involved in online business had statistically significantly higher mean scores on openness personality trait subscale than those who did not.

A low score in agreeableness may indicate less self-regulation and be more prone to impulsive behaviours.

The cross-sectional nature of this study may make it difficult to assume a direct effect as several other factors affect participant's responses. Another limitation of this study is that the small sample size and the fact that the study was limited to one university make it difficult to generalize the findings from this study. The authors were also mindful of the possibility of the social desirability response by the students. Nonetheless, this is one of the few studies in this environment exploring the relationship between personality traits and internet addiction.

5. CONCLUSION

The association between Big Five personality traits and Internet addiction reveals the complexity of the relationship. Beyond sociodemographic variables and personality traits studied other variables may be associated with internet addiction. Further research is needed to explore the role of personality and other variables in Internet addiction. Understanding the association between personality traits and Internet addiction may help in developing programmes and intervention strategies for preventing Internet addiction among students' populace.

CONSENT AND ETHICAL APPROVAL

Written informed consent was sought and obtained from all participants. Confidentiality of all information was maintained throughout the course of the study. Ethical clearance was obtained from the institutional Ethical Research Committee.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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