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Influence of Personality Traits on Internet Addiction among University Undergraduates

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Abstract
This study investigated personality traits and loneliness as predictors of interest addiction among university undergraduates. A total of 360 university undergraduates selected across departments and faculties at Caritas University Enugu were used as sample for the study. The participants who were between the ages of 18-23 years comprise of 201 females and 159 males. Three instruments were used for data collection i.e. internet addiction test (IAT) young (1998), Big Five Personality Inventories (BFI) John and Srivastava (1990), . Survey research design was adopted while Linear regression was used for data analysis. Findings revealed that Personality trait extroversion, shows a negative predictor of internet addiction among undergraduates (β= -.313, P< .001), Agreeableness also showed a significant negative predictor of internet addiction among undergraduates (β= -.499, P< .001). Conscientiousness did not show a significant prediction on internet addiction among undergraduates (β= .155, P> .05). Neuroticism showed a significant positive predictor of internet addiction among adolescents (β= .506, P< .001). Openness to experience showed a significant positive predictor of internet addiction among undergraduates (β= .522, P< .001). Findings were discussed in relation with literature reviewed and recommendations were also made.

Keywords: Personality dimensions, Loneliness, Internet Addiction, University Undergraduate/Adolescents.

Introduction

Adolescence as a transition period from childhood to adulthood, is characterized with rapid and continuous development phase that includes biological, psychological, mental, and social development, and maturation. During this stage of life, adolescents enter a different period in terms of physical, sexual, social, and emotional changes. They may feel different due to the changes they experience in these developmental areas, and often have difficulties in communicating with their family and the individuals around them (Yavuzer, 2016). It is a period of social exploration especially with reference to intra and inter gender relationship. This may be attributed to why the use of internet is most among adolescents compared to other stages of life (Worthwood, 2024)

In January 2021, 4.66 billion people actively used the Internet, with social media apps like WhatsApp, Facebook messenger, WeChat, QQ, Telegram, and Snapchat being used most (Statista, 2021). Internet Addiction (IA) has been widely discussed as a consequence of Internet pervasiveness, with different definitions aiming to describe its core components. A recent review (Bowden-Green et al., 2021) and a meta-analysis (Marciano et al., 2020) focused on the personality trait of Neuroticism (N) in the context of (problematic) media use, including IA

Addiction is defined as abnormal behaviors that negatively affect the biological, mental, and physical functions and daily life activities of the person, disrupting their balance. Internet addiction, in particular, is a type of digital addiction (Güleç et al., 2015).

The first case of IA, and its detrimental consequences, was described by Young (1998), who coined the term "Internet addiction" and compared it to substance addictions and impulse control disorders (Young, 1998). The concept of IA can be described as a "behavioral addiction", since it resembles other no-substance related disorders like Internet gaming disorder (American Psychiatric Association, 2013), although IA is not a standalone diagnosis yet. People addicted to the Internet show a constant preoccupation with online contents ("cognitive salience"), withdrawal symptoms (e.g., irritability, distress) when one cannot be online, tolerance (i.e., the need to spend an increasing amount of time online to achieve the same gratification previously experienced), difficulty in regulating the use with unsuccessful attempts to control the time spent online, obstinate use despite being aware of the negative consequences, use of the Internet to escape from problems or relieve a negative mood, loss of interest for other activities previously perceived as entertaining ("behavioral salience"), and social conflicts including loss of a significant relationship with others and problems at work/school due to excessive Internet use (Jo et al., 2019; Petry, 2015).

The prevalence of IA (together with other media addictions) has increased over time (Pan et al., 2020), especially among younger populations (Sohn et al., 2019). It is related to general psychopathology and poor physical, mental, and social functioning, especially in younger generations (Petry, 2015). With the aim of explaining the underlying processes of addictive behaviors involving Internet use, Brand et al., 2016, Brand et al., 2019 developed the Person-Affect-Cognition-Execution (I-PACE) model, according to which psychological and neurobiological dynamics are responsible for the development and maintenance of diverse behavioral addictions. The model gives a particular focus on predisposing variables, including psychopathological features and dysfunctional personality traits. In association with certain Internet-use expectancies and problematic coping styles, and by interacting with specific aspects of the medium, these predispositions eventually lead to IA.

The use of specific online applications ultimately resulted in a gratifying experience, fueling a vicious cycle of reward expectancies, thus reinforcing a dysfunctional coping style. Additionally, deficits in executive control processes would further promote compulsive behavior. At the same time, digital media use can also relieve from stress as it may act as a compensatory tool enhancing social communication, especially in depressed people. However, this positive effect is likely to be only temporary (Stanković et al., 2021). In line with the I-PACE model, Montag et al. (2021) suggested that the preferred online activity is assumed to be independent of the means used (e.g., smartphone, PC). However, devices are characterized by specific technological features, which may further promote certain behavioral usage patterns. Hence, the disorder should be further classified as "predominantly mobile" or "predominantly non-mobile". A similar taxonomy has been proposed by Wu et al. (2021), in their two-dimensional taxonomy of IA, which includes the device and the content. This is particularly important considering that higher levels of Internet use are not immediately related to more frequent smartphone use which goes beyond internet browsing (Stanković et al., 2021). Also, the ICD-11 (World Health Organization, 2019) suggests that the environment where a behavioral addiction takes place should be specified as either predominantly offline or online.

These classifications mirror the actual inconsistency in the definition of IA (Billieux et al., 2015). In this study, the term "IA" is used to capture different online addictions, including Facebook, social media, and smartphone addiction measured with self-reported scales in the general population. Importantly, although we use the term "addiction", we acknowledge that it is challenging to delimit *problematic* use from *excessive enthusiasm* (Griffiths, 2005) as people are increasingly online.

Internet addiction has become a critical problem in recent years, with 88 to 98% of adolescents using the Internet at home or at school. Internet addiction has become an important risk factor, especially for adolescents between the ages of 12 and 18 (Kuss et al., 2013). In this sense, as excessive internet use pushes people to loneliness, on the other hand, loneliness pushes people to use the internet more (Meral & Bahar, 2016). However, factor such as personality has been implicated in IA addiction (Amichai -Hamburger, 2002).

Another very important factor of using the Internet is user's personality. Personality has a psychological impact on how individuals interact with information technologies. According to Amichai-Hamburger, personality traits are relevant factors in determining subjects' behaviour when using Internet

technologies (Amichai -Hamburger, 2002). Personality not only defines the subjects' behavioural style but also represents relatively enduring characteristics of subjects, and it refers to all aspects of individuality. Human activities and types of behaviour are consistent with specific traits of personality.

There are three ingredients required for the initiation of scientific research on traits: systematic data collection, statistical techniques for data analysis, and development of testable theories. These prerequisites became available around the beginning of the 20th century. Of key importance were the new techniques of correlation and, somewhat later, factor analysis (Matthews et al., 2009; Gorsuch, 1983). One way to study the relationship between individuals' personality traits and the use of the Internet is to apply specific conceptual frameworks, such as the Big Five factor model (Montag, Jurkiewicz, & Reutera, 2010). Following the advances in research, previous investigations established a strong connection between personality traits and Internet addiction (Chang & Law, 2008; Correa, Hinsley, & de Zúñiga, 2010; Landers & Lounsbury, 2006; Rice & Markey, 2009). Moreover, personality traits, parenting and familial influence, alcohol use, and social anxiety are considered to be predictive factors of Internet addiction disorder (Ko et al., 2012). The exponential use of the Internet has stimulated debate on examining how personality traits impact on the use of technologies, particularly the Internet, social networking, virtual environments, online and offline games, and so on.

Statement of the problems

Nowadays the Internet is used more and more. The use that becomes the most popular is social networking sites. 40.6% of young people complain that their sleep has been significantly affected by social media alone (Woodward, 2024). Lack of sleep has been proven to cause poor mental health among young adults. This can include anything from increased potential for depression to a significant increase in anxiety and low self-esteem. These consequences prompted the need to discovering risk factors associated with internet addiction. However one may argue that this trend is not applicable to every young person, a question that could be linked to many factors among which could be the individual personality. Hence the current study tend to know if the personality of a young person has role to play on the person's usage of internet.

Purpose of the study

The major objectives of this study are;

To examine whether neuroticism will significantly predict internet addiction positively among University undergraduates'

To examine whether extroversion will significantly predict internet addiction positively among University undergraduates'

To examine whether conscientiousness' will significantly predict internet addiction positively among University undergraduates'

To examine whether agreeableness will significantly predict internet addiction positively among University undergraduates'

To examine whether openness will significantly predict internet addiction positively among University undergraduates'

Hypotheses

Neuroticism will significantly predict internet addiction among University undergraduates'

Extroversion will significantly predict internet addiction among University undergraduates'

Conscientiousness' will significantly predict internet addiction among University undergraduates'

Agreeableness will significantly predict internet addiction among University undergraduates'

Openness will significantly predict internet addiction among University undergraduates'

Methods

Participants:

A total of 360 university undergraduates comprising 201 females and 159 males were used as sample for this study. The participants who were within the age range of 17 to 23 years were randomly selected among the population of students of Caritas University Enugu. Out of the 360 students, 50 were selected from the faculty of Environmental Sciences, 88 from Engineering faculty, 91 from Natural Science faculty and 131 from Management and Social Sciences. 120 of the students were from 100 level students, 75 were from 200 level, 300 level were 70 while 400 and 500 levels were 75 and 30 respectively. Religious affiliation shows that only 14 students are Islam while 346 are Christians.

Instruments

The Internet Addiction Test (TAT) Young (1998) is a 20 item scale that measures the presence and severity of internet dependency among adults.it measures the severity of self-reported compulsive use of the internet for adults and adolescents. The scale was created by adopting DSM criteria for pathological gambling and is a modification of the earlier 8 items scale Young Internet Addiction Diagnostic Questionnaire (IADQ).The IAT views internet addiction as an impulse-control disorder and the term internet refers to all types of online activity. The IAT is the most widely use internet addiction scale and the test has been translated in several languages including English, French, Italian, Turkish and Korean.

Scoring

The IAT total score is the sum of the ratings given by the examinee for the 20 item responses. Each item is rated on a 5-point scale ranging from 0 to 5. The maximum score is 100 points. The IAT total score ranges, with the higher the score representing the higher level of severity of Internet compulsivity and addiction. Total scores that range from 0 to 30 points are considered to reflect a normal level of Internet usage; scores of 31 to 49 indicate the presence of a mild level of Internet addiction; 50 to 79 reflect the presence of a moderate level; and scores of 80 to 100 indicate a severe dependence upon the Internet.

Reliability/validity

To further validate the instrument in Nigeria, the researcher carried out a pilot study using a total of 60 participants 35females and 25males.The participants were selected among the population of students of Enugu State University of Science and Technology Enugu State. Data collected yielded a split-half reliability of .52 and a full scale reliability of .86 $P<.01$ level of significance. When correlated with Internet Addiction Assessment scale by Cash, Rae, Steel and Winkler (2012), the instrument yielded a concurrent validity of .82 $P<.01$.

Big Five Personality Inventory (BFI) by John & Srivastava (1990).

Big Five Personality Inventory (BFI). The instrument was developed by John, (1990). The Big Five Inventory is a questionnaire with 44 items. The 44 item inventory is one of the six psychological instruments which assess personality from a five dimensional perspective. The 5 dimensions or sub-scales are extraversion, Agreeableness, Conscientiousness, Neuroticism and openness to experience. It has a response format in which the frequency scale range from 1-5 (1) Disagree strongly (2) Disagree a little (3) neither agree nor disagree (4) Agree a little (5) Agree strongly. The scale is used for the study because it assesses personality trait.

John, (1990) provided the original psychometric properties for American samples, while Umeh, (2004) provided the properties for Nigerian samples.

The norm reported here are the mean score of samples drawn from a population of students of University of Nigeria Enugu Campus.

Scale	American	Nigerian	
	M & F (n=711)	M(n=60)	F(n=60)
Extraversion	25.60	28.45	27.10
Agreeableness	34.20	29.75	28.73
Conscientiousness	32.40	29.10	29.60
Neuroticism	24.00	23.43	24.48
Openness to experience	35.00	38.07	35.18

Validity and Reliability

A Cronbach Alpha Co-efficient of .80 and a test re-test reliability of .85 on 3months interval were obtained by John, et al., (1990) In addition a convergent validity coefficients of .75 and .85 were obtained with a Big Five instrument by costa and McCrea (1992) and Goldberg (1992) respectively. Using Nigerian sample, Umeh (2004) obtained a divergent validity of .05 on Extraversion .13 on Agreeableness, .11 on Conscientiousness .39 on Neuroticism, and .24 on Openness using maladjustment Scale by Kieinmuntz (1961).

To further validate and ascertain reliability of the instrument, the researcher also conducted a pilot study using 60 students selected from Enugu State University of Science and Technology Enugu. A concurrent validity of .76 was obtained by correlating it with Eysenck Personality Inventory. And a split-half reliability of .65 P< .01.

Procedure:

First and foremost, approval was given to the researchers by the management of the University. Participants were approached in their classes during break period with the approval from the University management for the study. The researchers introduces themselves and as well explained the purpose of their study. Participants who agreed sign the informed consent form before filling the questionnaire. However there is no time limit for the filling of the questionnaire neither was a take home questionnaire, Participants filled the questionnaires and submitted to the researchers immediately. After which data collected were subjected to statistical analysis to test the hypotheses.

Design and statistics:

The appropriate design adopted for this study is survey research design while linear regression was used for data analysis.

Results

Table 1: Summary table of descriptive statistics on The influence personality-trait on internet addiction among University Undergraduates.

Descriptive Statistics

	Mean	Std. Deviation	N
INTERNET ADDICTIO	20.7944	8.01440	360
EXTROVERSION	27.9028	9.30205	360
AGREEABLENESS	30.0417	8.37897	360
CONSCIENCIOUSNESS	30.6139	8.14584	360
NEUROTICISM	31.5139	10.59562	360
OPENNESS	31.4000	6.32112	360

Table 1 shows the mean, standard deviation and the number of participants used in the study. As observed from the table above, students with neuroticism personality trait obtained the highest mean of 31.5 on internet addiction followed by openness personality with a mean of 31.4.Conscientiousness personality scored 30.6 followed by agreeableness with a mean of 30. Extroverts had the least mean of 27.9.

Table 2: Inter-correlational (correlation matrix) table

S/N	Variables	1	2	3	4	5	6	7
1	Internet Addiction	1						
2	Extroversion	-.73**	1					
3	Agreeableness	-.66**	.76**	1				
4	Conscientiousness	-.66**	-.74**	.95**	1			
5	Neuroticism	.70**	-.49**	-.28**	-.30**	1		
6	Openness	.64**	-.71**	.91**	.91**	-.24**	1	

N=360, **=p<.01, *=p<.05

The correlation table revealed a significant negative correlation between extrovert and internet addiction (r = -.73, P< .01), between extrovert and agreeableness (r = .74, P< .01), extrovert and conscientiousness (r = .74 P< .01), extrovert and neuroticism (r = -.49 P < .01), extrovert and Openness (r = .71, P< .01) extrovert and loneliness (r = .47, P .01). Agreeableness also showed a significant negative relation with internet addiction (r = -.66, P< .01), agreeableness with conscientiousness (r = .95, P< .01), agreeableness and neuroticism (r = -.28, P < .01), agreeableness and openness (r = .91, P < .01), agreeableness and loneliness (r = .81, P < .01). Conscientiousness also showed a significant negative relationship with internet addiction (r = -.66, P < .01), conscientiousness and neuroticism (r = -.30, P < .01), conscientiousness and openness (r = .91, P < .01), conscientiousness and loneliness (r = .83, P< .01). Contrary to the above findings, neuroticism had a significant positive relationship with internet addiction (r = .70, P , .01), but had a significant negative relationship with openness (-.24, P < .01). Same as neuroticism, Openness to experience also correlated positively with internet addiction (r = .64, P < .01)

Table 3: Model summary table on The influence personality-trait on internet addiction among University Undergraduates.

Model	R	R square	Adjusted R square	Std. error	Change statistics				
					R square change	F change	df1	df2	Sig
1	.877a .	.768	.765	3.88924	.768	195.24	6	353	.000

The results of the regression analysis as presented in table three shows that the predictor variables Personality trait and loneliness account for 76% (R^2 change) variance in internet addiction which is significant (F change (6,353)= .195.24, P < .001).

Table 4: Summary table of Regression analysis on The influence personality-trait on internet addiction among University Undergraduates.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	26.888	1.480		18.170	.000
	EXTROVERSION	-.270	.043	-.313	-6.301	.000
	AGREEABLENESS	-.094	.086	-.499	-1.090	.037
	CONSCIENCIOUSNESS	.152	.087	.155	1.744	.082
	NEUROTICISM	.383	.023	.506	16.74	.000
	OPENNESS	-.155	.092	.522	18.67	.004
	LONELINESS	.359	.076	.267	4.694	.000

Dependent Variable: Internet addiction

Table 4 (coefficient table) reveals that in the regression equation Personality trait extroversion, shows a negative predictor of internet addiction among undergraduates (β= -.313, P< .001), Agreeableness also showed a significant negative predictor of internet addiction among undergraduates (β= -.499, P< .001). Conscientiousness did not show a significant prediction on internet addiction among undergraduates (β= .155, P> .05). Neuroticism showed a significant positive predictor of internet addiction among adolescents (β= .506, P< .001). Openness to experience showed a significant positive predictor of internet addiction among undergraduates (β= .522, P< .001).

Summary of main findings

Finding of this study can be summarized as follows:

Extroversion personality trait showed a significant negative predictor of internet addiction among undergraduates (β= -.313, P< .001),
Agreeableness personality trait also showed a significant negative predictor internet addiction among undergraduates (β= -.499, P< .001).
Conscientiousness personality trait did not show a significant predictor of internet addiction among undergraduates (β= .155, P>.08).
Neuroticism personality trait showed a significant positive predictor of internet addiction among undergraduates
Openness to experience personality trait is also a significant positive predictor of internet addiction among undergraduates

Discussion

Obviously the outcome of this study revealed that personality traits influences internet addiction among University undergraduates. In other words the level of engagement on internet by University undergraduates can be influenced by his/her personality traits..

As observed from the findings of this study, the first hypothesis which stated that neuroticism personality traits will significantly predict internet addiction among University undergraduates is confirmed. This shows that neuroticism as a personality trait plays a role in internet addiction among University undergraduates. The results shows that neuroticism is a positive predictor of internet addiction among University undergraduates. In other words University undergraduates with high neuroticism personality traits engage more on internet that their counterpart with low neuroticism personality trait. However, a good

understanding of neuroticism personality may explain why the positive relationship between neuroticism and internet addiction.

Individuals with neuroticism personality are characterized by sadness, moodiness, and emotional instability often mistaken for antisocial behaviour. Obviously this characters could lead such a person making social media a companion because they may be experiencing more anxiety and copying difficulty, they often restored to internet. Use always, engaging in one or more social media platform as a copying mechanism.

However the outcome of this study is in consonance with the findings of earlier researchers Chang, Lee and Hsieh (2019) reported that individuals with neurotic personality are more likely to become addicted to internet. Chnaszez et. al, (2018) also observed a strong relationship between personality trait and internet addiction.

The second hypothesis which states that extroversion personality will significantly predict internet addiction among University undergraduates is also accepted, the finding shows that extroversion personality has a significant negative relationship with internet addiction. In other words, individuals with high score in extrovert personality trait do not engage more on internet use. The finding shows that the more extrovert, the lesser engagement on internet use. This may be attributed to nature of extroverts. Extroverts are be characterized with talkativeness, assertiveness and high amount of emotional expressiveness but that may not be with reference to internet use.

Furthermore, the third hypothesis which states that conscientiousness will significantly predict internet addiction among University undergraduates is hereby rejected. The outcome of the study shows that conscientiousness is not a predictor of internet addiction among undergraduates. Undergraduates with high levels of thoughtfulness, good impulse, and goal-directed behavior were not found to be addicted or said to be addicted to internet use or not. While neuroticisms and extroverts significantly predicted internet addiction positively and negatively respectively, conscientiousness is neither positive nor negative.

The study also accepted the fourth hypothesis which states that agreeableness personality traits will significantly predict internet addiction among undergraduates. As observed from the findings, agreeableness yielded a significant negative impact on internet addiction among undergraduates. This shows that the higher agreeableness of an undergraduate personality, the lower the addiction to internet use. In other words, undergraduates' university undergraduates with higher agreeableness personality traits tend to be less addictive to internet usage.

However, one may attribute their less addictive use of the internet to their major personality trait, which is prosocial behavior.

The fifth hypothesis which states that openness personality traits will significantly predict internal addiction among undergraduates was also accepted. The study shows that openness to experience personality traits positively predicts internet addiction among university undergraduates. This shows that undergraduates who possess high level of openness to experience personality were found to be more addictive to internet than those who did not. Openness to experience personality is characterized by emotions and insight. These maybe attributed to their higher usage of internet in a bid to know more. They are always eager to learn new things. They tend to have broad knowledge of interest and being more adventurous However, internet platform presents a good platform for persons with their type of personality thrive. Therefore, one may not be surprised to their positive correlation with internet addiction

Implications of the study

The outcome of this study has obvious implications. Firstly, the study shows that factors such as personality traits is a predict/influence internet addiction among University undergraduates.

Using the big five personality inventory (BFI) the study revealed that personality characteristics of an individual has a significant role to play on the individual's engagement on internet.

The study will also serve as an eye opener to mental health practitioners towards understanding the role of personality trait in internet addiction

Suggestion for further studies

Based on the outcome of this study the researcher suggest that future researchers should carry out students to explore variables that can mediate personality trait and internet addiction. For example, It will be interesting to examine the moderating role of something like social supports in the relationship between personality traits and internet addiction.

Researchers can also study the prevalence of Internet addiction among other groups like secondary school students.

Limitations of the study

The above study has obvious limitations. First only 360 undergraduates were used out of myriads of University undergraduates in Nigeria.

Another major constraint of the study was lack of fund. The study could not cover much area due to lack of finance**.**

Summary/Conclusion

Based on the outcome of the findings of this study, the researchers conclude that personality traits (agreeableness, openness, extroversion, neuroticism and Conscientiousness)significantly influence internet addiction among University undergraduates

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