

## INFLUENCE OF DARK TRIAD AND FAMILY FUNCTIONING ON INTERNET ADDICTION AMONG IN-SCHOOL ADOLESCENTS IN NSUKKA URBAN OF ENUGU STATE, NIGERIA.

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### ABSTRACT:

*The study examined the association between dark triad and family functioning on internet addiction among adolescents. Participants were 300 students, age ranging from 11- 19 years (male n = 137, 45.7%, female n = 163, 54.3%, mean age = 16.68, SD = 2.03) conveniently drawn from 3 co- educational secondary schools in Nsukka urban. Instruments such as: The 27-item Short Dark Triad Questionnaire (SD3), The McMaster Family Assessment Device (FAD) and - Internet Addiction Test (IAT) were used to elicit the information needed. Hierarchical multiple regression showed that narcissism dimension of dark triad was not associated with Internet Addiction  $\beta = -.11$ , while Psychopathy and Machiavellianism were significantly associated with Internet Addiction ( $\beta = .15, p < .05$ ) ( $\beta = .23, p < .01$ ), and poor family functioning were found to be significantly associated with greater Internet addiction ( $\beta = .13$ ). These findings offer important implications for understanding the prevalence of Internet Addiction and its associated risk factors among in-school adolescents in sub-Saharan Africa. In addition, this will enable the creation of a specific model for early intervention, diagnosis and rational treatment, and thus a better improvement in the quality of adolescents' life.*

**Keywords:** In-school adolescents, dark triad, family functioning, internet addiction.

### INTRODUCTION

Internet addiction among adolescents is a growing concern, and a global problem in the contemporary world (Duong et al., 2020). Adolescents are particularly vulnerable to internet addiction because of their high level of impulsivity at this stage, and their heavy use of technology and the internet for communication, entertainment, and access to information, and if not carefully resolved, this can lead to an addiction (Karacic & Oreskovic, 2017). Events during adolescence period greatly influence a person's development and can determine their attitudes and behavior in later life (Karacic et al., 2017). During this developmental phase, they are especially attracted to new technological methods of communication, which offer interaction with others and at the same time provide anonymity, impression of belonging to a community, and a sense of social acceptability. Thus, the Internet as a global network connects millions of people throughout the world and enables users to exchange information, which remains available at any time and any place (Sindermann et al., 2018). However, as the most popular and sophisticated mass communication medium today, the Internet also has its negative consequences for the children using it without adult control and supervision, especially for the adolescents with free access to the content that is not suitable for their age. Unlimited access to information on the Internet can be a source of amusement and generator of new interests, but it can also be a source of new and unknown threats (Mathur, 2019). So, this uncontrolled behavior towards the use of the internet is seen as "Internet addiction" or "problematic Internet use", and this problem has been suggested to constitute a behavioural addiction (Sindermann et al., 2018).

Internet addiction refers to a situation where an individual has lost control of the internet use and keeps using internet excessively to the point where he/she experiences problematic outcomes that negatively affects his/her life. It is seen as the inability of someone to control his or

her use of the internet which may eventually lead to some psychological and social problems in the person's life (Okwaraji et al., 2015).

Internet addiction has many negative effects on adolescents. For example, it can lead to poorer health, more negative emotions such as anxiety, depression loneliness, less well-being and life satisfaction, decreased cognitive ability (Rozgonjuk et al.,2023), more delinquencies and even an emergence of psychiatric disorder (Wang et al, 2023). These negative effects are more salient on those adolescents who were exposed to some predisposing personal and contextual factors such as temperament, self-control, family relations, and parental emotional support (Pace et al., 2014).

However, the prevalence and concerns about excessive internet use have been raised not only in affluent developed countries (e.g., Putra et al., 2023; Zokirov, &Gayipov, 2023; Xue et al., 2023), but in developing nations like Nigeria (e.g., Nwufu et al., 2023; Onukwuli et al., 2023; Okwaraji et al., 2015). Furthermore, 90 percent of its secondary school children in urban areas are online, with many using it for more than 20 hours a week (Seok& DaCosta, 2014). Reasons for a wide range of prevalence rates may be related to different study designs, diverse assessment measures, or various diagnostic criteria, cultural backgrounds, and study samples (Wu et al.,2015).

Various factors have been found to be statistically associated with internet addiction (Kawabe et al., 2016). Such factors include lack of parents' emotional support of children, individuals' low self-esteem (Anderson et al., 2017); and age (Stodt, et al., 2016). However, the other factors such as the dark triad traits are yet to be investigated. So, in this study, Dark triad is of keen interest. The dark triad refers to three personality traits: narcissism, machiavellianism, and psychopathy. Jonason et al (2015) sees it as constituted of three undesirable personality traits. The most common features of these types of personality is a person's disregard for others and an obsession with self. Individuals with Dark Triad traits use various tactics to reach their interpersonal and social goals, despite their antisocial personality (Jonason et al., 2015). Narcissism is characterized by an inflated sense of self-importance, a need for admiration, and a lack of empathy for others. Machiavellianism involves a manipulative and deceitful attitude towards others, a tendency to exploit and deceive others for personal gain, and a lack of moral principles. Psychopathy is marked by a lack of remorse or guilt, a lack of empathy or concern for others, and impulsivity and a disregard for social norms and rules. People with dark triad traits tend to be self-centered, manipulative, and callous, and may engage in risky or reckless behavior. In summary, persons with dark triad traits score high in their willingness to exploit anyone to get ahead and experience little remorse when they cause harm to others. Research has shown that individuals with dark triad traits are more likely to be involved in criminal activities (e.g., internet fraud (Yahoo-yahoo tendency), to have problems with substance abuse, and to experience relationship difficulties. However, not everyone who exhibits dark triad traits will engage in such behavior. It is also important to note that the dark triad is not a formal psychiatric diagnosis in the DSM-5, and therefore may be difficult to know how exactly how people fit this description (Jonason et al. 2015). Information from the literature has shown that individuals with dark triad traits may be more likely to develop an addiction to the internet. This may be because individuals with these traits tend to engage in impulsive and risky behavior, and may be more likely to spend excessive amounts of time on the internet. Many studies have reported that personality traits are associated with social media use, cyberbullying, cyber aggression (Pabian et al. 2015), self-esteem, selfie behaviors, and trolling behaviors (Buckels et al. 2014). Additionally, individuals with narcissistic traits may use the internet as a way to boost their self-esteem and seek admiration from others, which can lead to internet addiction. There are few studies that have explained the relationships between narcissism (Andreassen et al. 2017), other personality characteristics, and internet addiction (Miskulin et al., 2022), and the vast majority of these studies have focused on uses and



gratifications of social media use. However, it is important to note that the relationship between the dark triad and internet addiction is not well understood, and more research is needed to fully understand this relationship. In addition, various studies have reported conflicting findings regarding the effects of the same personality traits on internet addiction (Sun et al., 2020), and therefore deserve further investigation. Additionally, not everyone with dark triad traits will develop an internet addiction, and not everyone with an internet addiction will have dark triad traits. Having considered the dark triad as a personal factor that may be implicated in Internet Addiction, it is also necessary to study contextual factor as one of the risk factors of Internet addiction. In view of this, family functioning is considered in the present study.

Family functioning refers to the way in which a family works together and solves problems. A family with good functioning is able to communicate effectively, support and care for each other, and manage conflicts in a healthy way (Marzilli et al., 2020). On the other hand, a family with poor functioning may have difficulty communicating, may lack support and warmth, and may have high levels of conflict. Family functioning can have a significant impact on the physical and mental health of family members, particularly children and adolescents. Adolescents who come from families with good functioning are more likely to have better mental health, academic achievement, and overall well-being. On the other hand, adolescents who come from families with poor functioning may be at an increased risk for mental health problems, substance abuse, and other negative outcomes. It is important for families to work on improving their functioning in order to support the well-being of their members. This may involve seeking professional help, such as therapy or counseling, to address communication and conflict resolution skills. Research has shown that family functioning can play a role in the development of internet addiction among adolescents. Yayman (2020) found that unhealthy family functioning and family conflict were related to Internet addiction in a large young sample. Cerniglia et al (2020) warned that domestic violence and unhealthy communication may enhance Internet addiction in young individuals and suggested that programs to prevent addiction should include patients' families. Adolescents who come from families with poor functioning may be more likely to develop an internet addiction as a way to cope with their home environment. For example, they may use the internet as a way to escape from conflicts or negative emotions within their family, or as a way to connect with others and feel a sense of belonging. Recently, the same associations have also been shown with internet addiction suggesting that young adults who perceive a poor quality relationship with their parents may use the internet in a problematic way to cope with the resulting distress (Marzilli et al., 2020).

The prevalence of internet addiction among adolescents has been increasing, with negative impacts on their physical and mental health, as well as their academic and social functioning. However, the specific factors that contribute to the development of internet addiction among adolescents are not fully understood, and there is a dearth of research in this area especially in developing nations like Nigeria. The dark triad traits of narcissism, Machiavellianism, and psychopathy have been linked to impulsive and risky behavior, and may increase the risk of developing an internet addiction (Maneiro et al., 2020). In the same vein, family functioning has been shown to be a significant predictor of mental health problems among adolescents, and may also play a role in the development of internet addiction (Sanchez et al., 2021). Having noted this from the previous works; our intention was to expand the existing literature by integrating both the contextual (family functioning) and personal (Dark triad) factors in understanding it.

In the light of the above considerations, the present study aims to investigate the roles of dark triad traits and family functioning on internet addiction among in-school adolescents in a sub-Saharan Africa. By understanding the factors that contribute to internet addiction among adolescents, interventions can be developed to prevent and treat this problem. This research is necessary to address the growing concern of internet addiction among adolescents and support

their well-being. Therefore, the present study addressed specifically, the following research problems.

- (a) Will narcissism dimension of dark triad significantly be associated with internet addiction among adolescents?
- (b) Will Machiavellianism dimension of dark triad significantly be associated with internet addiction among adolescents?
- (c) Will psychopathy dimension of dark triad significantly internet addiction among adolescents?
- (d) Will family functioning significantly predict internet addiction among adolescents?

## LITERATURE REVIEW

### Dark triad and Internet Addiction

The theoretical framework of the present study is the Family Systems Theory developed by Bowen (1966). The idea of the family systems theory is that, the environment we live in constantly influences our lives; and for one to understand human behaviour better we must examine the individual in relation to the context they are in (Bronfenbrenner, 1994). That means human beings cannot be understood when studied in isolation, but rather must be appreciated within their network of relationships to the other creatures around them if their lives are to make sense.

Relating the theory to the present study, the theory is of the view that the members of the family with dark triad traits can affect the functioning of the family, and that the functioning of the family can also affect the development of the dark triad traits. For example, if an individual with the dark triad traits is a member of a family, their manipulative, deceitful, or self-centered behavior may create conflicts and strain within the family, leading to a breakdown in communication and emotional connection. This breakdown in family functioning may then reinforce the individual's dark triad traits, as they continue to use these behaviors to gain power, control, or attention within the family. On the other hand, if the family is able to maintain healthy communication and emotional connection, they may be better able to support the individual with the dark triad traits and help them develop more balanced and adaptive behaviors. This can improve the functioning of the family as a whole and potentially reduce the individual's reliance and possible addiction to the Internet.

Lee et al. (2022) investigated the relationship of the dark triad and social network sites (SNS) addiction with adolescents in order to examine the possible antecedents of SNS addiction. 169 adolescents aged ( $M = 15.40$ ,  $SD = .97$ ) were recruited for the research. These adolescents completed the dirty dozen scale, the modified Bergen Facebook addiction scale and the Barratt impulsive scale. The descriptive statistics and Pearson correlation result showed that the dark triad composite score was positively associated with SNS addiction. Similarly, Jin et al. (2019) investigated the relationship between the dark triad and internet adaptation among adolescents. 1927 middle school students aged 11–18 ( $M=15.07$ ,  $SD=1.95$ ) from Beijing and Kunming in China. They completed a self-report questionnaire including the Dark Triad scale and Internet adaptation scale. Results from the correlation and regression showed that Dark Triad was positively correlated with negative Internet adaptation and negatively correlated with positive Internet adaptation. The three Dark Triad dimensions had more predictive power for negative Internet adaptation. The close correlation between the Dark Triad and negative Internet adaptation showed that adolescents who scored higher on the Dark Triad are more likely to develop negative adaptation behaviors, such as escaping from school using the Internet, avoiding relationships in reality, and Internet problem behaviors (Pabian et al., 2015). The result also showed that psychopathy had a stronger negative association with Internet adaptation than Machiavellianism or narcissism. One possible reason is that individuals with high psychopathy



are impulsive, lack of empathy and responsibility and have negative social adaptation characteristics (Karras et al., 2023).

In another study, Sindermann et al (2018) noted that the dark triad of personality is associated with Internet-use disorder (IUD). The researchers carried out two studies to grasp the links between these variables. In the first study, a sample consisting of N = 468 participants (n = 130 males) filled in the Short Dark Triad Questionnaire to assess scores in the dark triad of personality and the short Internet Addiction Test to assess tendencies toward unspecified IUD. In the second study, another independent sample of N = 472 participants (n = 143 males) filled in the same questionnaires plus it. Traits Machiavellianism and psychopathy were positively linked to tendencies toward unspecified IUD in both samples and males and females. Regarding the associations between tendencies toward specific IUDs and the dark triad of personality, no significant associations were found in males. In females, Machiavellianism, and psychopathy were tendencies towards Internet-use disorder. No robust pattern of associations between trait narcissism and unspecified/specific forms of IUD could be observed across samples. These results indicate positive associations of the traits Machiavellianism and psychopathy with tendencies toward IUD, especially unspecified IUD. The associations with tendencies toward specific forms of IUD seem more complex with differential personality correlates for each specific IUD.

Kircaburun, et al. (2019) in their own study, examined the association of problematic social media use (PSMU) with Dark Triad (DT) traits (i.e., Machiavellianism, psychopathy, and narcissism) and self-esteem. A total of 827 participants [495 (60%) women and 332 (40%) men, Mage = 20.36, SD = 1.47] filled out a questionnaire that included the Social Media Disorder Scale, Dark Triad Dirty Dozen Scale, and Single Item Self-esteem Scale. The direct effects of DT traits and self-esteem on PSMU and the indirect effect of narcissism on PSMU through self-esteem were investigated by applying structural equation modeling. Results indicated that, when controlling for gender and age, Machiavellianism and narcissism had small significant direct effect on PSMU, while the partial indirect link of narcissism via self-esteem was negligible. The model was able to explain 18% of the variance.

Jauk and Dieterich (2019) systematic review of the associations between the dark triad of personality (narcissism, Machiavellianism, and psychopathy) and addictive behaviors, both substance-related and non-substance-related. They summarized evidence from personality and clinical research and integrate it with prevailing models of addiction. The review suggests that the relationship between dark triad and addictive behavior are in the light of affect regulation, which is likely more relevant in narcissism, as well as inhibitory deficits, a putative mechanism in psychopathy. These mechanisms, they found, can be related to central motives of the respective personality constructs, such as stabilization of self-esteem in narcissism and impulsive stimulation-seeking in psychopathy. They concluded that different mechanisms might lead to similar observable behavior in narcissism and psychopathy at earlier stages of the addiction. This underpins the importance of considering personality factors for the understanding and treatment of addiction.

Furthermore, Moor et al. (2019) systematic review showed that a strong association exists between dark triad and internet addiction. The review was guided by Cochran method. Initial search yielded a total of 327 unique articles. 26 studies met the inclusion criteria process, which revealed that the dark triad personality trait (narcissism, Psychopathy, Machiavellianism) are associated to internet addiction (social media addiction) and other anti-social online behaviors such as problematic social media usage, problematic online gaming, internet-use disorder, and intimate partner cyber stalking. The review revealed evidence that psychopathy is the trait most strongly associated with these behaviors. Machiavellianism and everyday sadism were also

consistently associated with these online addictive behaviors, albeit to a lesser degree. Narcissism is the trait least consistently associated with antisocial online behaviors.

### **Family functioning and Internet Addiction**

Bonnaire and Phan (2017) in their own study examined the relationships between adolescent perception of family functioning and Internet gaming disorder (IGD). From a sample of 434 adolescents attending school ( $n = 434$ ; age 13.2 years), 383 non-problematic gamers (NPG, 196 males; 187 females) were compared with 37 problematic gamers (PG, 29 males; 8 females). Family functioning was assessed with the Family Relationship Index and parental attitudes with a questionnaire measuring rules, access to video games, monitoring and banning of video games. NPG have a better family cohesion while PG has more family conflict and a poorer family relationship. While rules about gaming use are important in males, for females, banning is associated with IGD. For both gender, parental monitoring, conflicts and family relationship are associated with IGD. These findings highlight the strong influence of parental attitudes and family functioning on the occurrence of IGD in adolescents and their gender specificities. Thus, prevention programs need to take into account the importance of parents, parenting and gender specificities.

Shi et al. (2017) investigated the possible association between family functioning and adolescent Internet addiction. A sample of 3289 middle school students (41% boys; Mage = 15.771 years old,  $SD = 1.545$ ) completed the questionnaires regarding demographics, family functioning and Internet addiction. With the demographic factors under control, the results revealed that family functioning was negatively associated with Internet addiction

In another study, Marzilli, et al. (2020) explored the interplay between young adults' family functioning and internet addiction. With a community sample of 244 young adults, his study aimed to assess the association between young adults' perception of family functioning and internet addiction. The presence and the severity of internet addiction were assessed using and Family APGAR Index and Internet Addiction Test (IAT). Results showed no significant association between the youths' gender and internet addiction. However, moderately addicted young adults were more likely to report poorer quality of family affective involvement. This study provides new evidence on the interaction between individuals and interpersonal risk factors involved in IA among young adults, with important implications for the planning of intervention treatments.

Li et al. (2018) in a studied the association between family functioning and adolescent Internet addiction. A total of 863 Chinese adolescents (Mage = 14.34 years;  $SD = 1.66$ ; 45% males) completed anonymous questionnaires regarding family functioning and Internet addiction. After covariates were controlled, the results indicated that negative association exists between family functioning and Internet addiction among both males and females. In a similar study, Kiliç et al. (2019) systematic review investigated the relationship between internet addiction in adolescents and family relationships. This systematic review was conducted according to the guide "Centre for Reviews and Dissemination" with scanning databases Pubmed, Cochrane, Medline, EBSCO, Science Direct, Google Akademik and Ulakbim (Turkish National Databases). In the research, problematic, internet usage," "internet addiction," "adolescence," "family relationship," "family functioning," "adolescent," and "parents" were used as key words. Scanning was completed between the dates November 2017-January 2018 with various combinations of the key words. With scanning the key words, 1,017 studies were analyzed based on titles. Summaries of 309 studies saved as a title were investigated. As a result of investigations made according to titles and summaries, 7 studies got involved in the research. Studies involved in the research show that internet addiction problem exists almost in every continent of the world. Adolescents having not a healthy family relationship with their parents predisposes them in developing internet addiction.

Fumero et al. (2018) conducted a meta-analysis of the association between Internet addiction (IA) and a number of personal and social psychological factors in adolescents. The search included cross-sectional, case-control and cohort studies which analyzed the relationship between IA and positive family functioning among other variables. A total of 28 studies with adequate methodological quality were identified in the primary medical, health and psychological literature databases up to November 2017. Of the 48,090 students included in the analysis, 6548 (13.62%) were identified as excessive Internet users. The results highlight a strong association between family functioning and internet addiction.

### Hypotheses

1. Narcissism dimension of dark triad will significantly be associated with internet addiction among adolescents in a sub-Saharan Africa.
2. Machiavellianism dimension of dark triad will significantly be associated with internet addiction among adolescents in sub-Saharan Africa.
3. Psychopathy dimension of dark triad will significantly be associated with internet addiction among adolescents in a sub-Saharan Africa.
4. Family functioning will significantly be associated with internet addiction among adolescents in a sub-Saharan Africa.

### METHOD

#### Design

The present study adopted a cross-sectional survey design. Cross sectional survey design was adopted because data obtained from it can be used to make inferences about a population of interest (in-school adolescents) at one point in time.

#### Setting

The settings for this study were three different co-educational secondary schools drawn from Nsukka Urban, all in Enugu state, Nigeria. The settings are all located in South-East region of Nigeria.

#### Participants

Participants were 300 students, age ranging from 11- 19 years (male n = 137, 45.7%, female n = 163, 54.3%, mean age = 16.68, SD = 2.03) conveniently drawn from 3 co- educational secondary school in Nsukka urban. Religious affiliations showed that 294 (98.0%) of the participants were Christians, 5 (1.7%) were Muslim, while 1 (0.3%) belong to African Traditional Religion. Ethnic affiliation showed that majority of the respondents 275 (91.7%) were of Igbo ethnicity, 8 (2.7%) were of Hausa ethnic group, 11 (3.7%) were of Yoruba ethnicity, while 6 (2.0%) belong to other ethnic groups. All the participants could read and understand the content of the questionnaires.

#### Instruments

*The 27-item Short Dark Triad Questionnaire (SD3; Jones & Paulhus, 2014)*

The 27-item Short Dark Triad questionnaire was developed by Jones and Paulhus (2014). It is a shorter version of the earlier 41-items Inventory scored using a 5-point Likert options from 1 (strongly disagree) to 5 (strongly agree). The scale has 3 dimensions Machiavellianism (items 1-9), example of items are: 'Whatever it takes, you must get the important people on your side', 'Make sure your plans benefit yourself, not others', etc; Narcissism (items 10-18), example of items are: 'People see me as a natural leader', "I know that I am special because everyone keeps telling me so" etc; and Psychopathy (items 19-27), example of items are: "I enjoy having sex with



people I hardly know”, “I will say anything to get what I want”, etc. There were 4 reversed items in the questionnaire. Alpha reliabilities for the 3 subscales were .71, .77, and .80 for narcissism, Machiavellianism, and psychopathy respectively (Jones, & Paulhus, 2014).

Onyedire et al. (2021) conducted a Confirmatory Factor Analysis (CFA) for the 27-item Short Dark Triad in the Nigerian setting, using IBM SPSS® Amos™ version 24. Goodness of fit indicators of the three-factor model evidenced its adequacy. Cronbach’s  $\alpha$  coefficients of internal consistency were good – .79 (narcissism), .83 (Machiavellianism), and .85 (psychopathy).

In the present study, we found an acceptable internal consistency reliability, Cronbach’ alpha of .74 (Machiavellianism), .76 (Narcissism) and .77 (Psychopathy). This shows that the scale is reliable and valid for use in the present study.

#### *The McMaster Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983)*

This self-reported McMaster Family Assessment Device (FAD) was developed by Epstein, et al (1983), to assess family functioning. It uses a 4-point Likert response format from 1 = Strongly Agree to 4 = Strongly Disagree. It has a total of 7 subscales which are: Problem solving, communication, roles, affective responsiveness, affective involvement, behaviour control, and general functioning. However, in this study, it is the general functioning that was used to assess family functioning. Sample items include: “We can express feelings to each other”, “In times of crisis we can turn to each other for support”, “we don’t get along well together, etc. items 2, 4, 6, 8, 10, and 12 were reversed scored. The developers obtained a reliability coefficient of .92 for the general functioning. The further established concurrent validity by correlating the scores of FAD to that of Locke Wallace Marital Satisfaction Scale. Fad predicted 28% of the variance on Locke Wallace Marital Satisfaction Scale. The scale is scored by summing all each of the items together, higher score represents lower family functioning. We found a good internal consistency reliability index of .80 in this study.

#### *Internet Addiction Test (IAT; Young, 1996)*

This is a 20-item that measure addictive internet use developed by Young (1996). It has six dimensions: salience, excessive use, neglect work, anticipation, lack of control, and neglect social life. It is a 6-Likert-type scale ranging from 0 = Does not apply to 5 = Always. Some of the items include: How often do you fear that life without the Internet would be boring, empty, and joyless? How often do you lose sleep due to late-night logins? How often do you find yourself saying just a few more minutes when online? The Cronbachs alpha ranged from .54 to .82. Higher score shows internet addiction. To determine the validity of the scale, Widyanto and McMurrans (2004) conducted a confirmatory factor analysis and a Bartlett’s test of sphericity indicated a chi square value of 746.34,  $p < 0.0001$ ; while Kaiser Meyer-Olkin measure of sampling adequacy indicates a value of .83. In the present study, we obtained internal consistency reliability index of .76

### **Procedure**

The researcher approached the school authorities with an approval letter obtained from her department and obtained permission to allow students participate in the study. The heads of the schools after studying the instruments for the study and asking relevant questions regarding the purpose of the study and its requirements referred the researcher to teachers in the school who introduced the researcher to the students and also assisted in administering the questionnaires. Using convenience sampling method, 300 copies of the questionnaire were distributed to 300 respondents across the three schools after the students gave their consent to participate in the study. Demographic variables such as age, gender, religion, and ethnicity were obtained as well. They were encouraged to honestly respond to the test items. Each of the participants responded to the questionnaires between 15 and 30 minutes and returned them to the researcher. The



researcher therefore keyed in the respondents' scores into the Statistical Package for Social Sciences (SPSS) version 23.

**RESULTS**

Table 1: Hierarchical multiple regression predicting internet addiction among adolescents by Machiavellianism , Narcissism, Psychopathy, and Family functioning

Predictors	Step 1			Step 2		
	B	$\beta$	T	B	$\beta$	T
Machiavellianism	.52	.23	3.38**	.56	.25	3.64***
Narcissism	-.32	-.11	-1.74	-.40	-.14	-2.13*
Psychopathy	.36	.15	2.43 <sup>†</sup>	.35	.14	2.38 <sup>†</sup>
Family functioning				.52	.13	2.26 <sup>†</sup>
R <sup>2</sup>	.09			.10		
R <sup>2</sup> $\Delta$	.09			.02		
F	9.15 (3, 296)***			8.24 (4, 295)***		
F $\Delta$	9.15 (3, 296)***			5.12 (1, 295)*		

Note. \*\*\*p<.001; \*\*p<.01; <sup>†</sup>p<.05

Results of the hierarchical multiple regression for the test of the hypotheses is shown in Table above. In Step 1, Machiavellianism was a significant positive predictor of internet addiction among adolescents,  $\beta = .23$ .  $p < .01$ . The B showed that for each one unit rise in Machiavellianism, internet addiction among adolescents' increases by .52 units. Narcissism was not a significant predictor of internet addiction among adolescents,  $\beta = -.11$ . Psychopathy was a significant positive predictor of internet addiction among adolescents,  $\beta = .15$ ,  $p < .05$ . The B showed that for each one unit rise in psychopathy, internet addiction among adolescents increases by .36 units. The model was significant,  $F(3, 296) = 9.15$ ,  $R^2 = .09$ . The  $R^2$  of .09 indicated that 9% of the variance internet addiction among adolescents was explained by the dark triad personalities.

In step 2, family functioning was a significant positive predictor of internet addiction among adolescents,  $\beta = .13$ . The B showed that for each one unit rise in family functioning, internet addiction among adolescents increases by .52 units. The model was significant,  $F\Delta(1, 295) = 5.12$ ,  $R^2\Delta = .02$ . The  $R^2\Delta$  of .02 indicated that 2% of variance in internet addiction among adolescents was explained by family functioning. All the variable in the study explained 10% of the variance in internet addiction among adolescents.

**DISCUSSION**

The present study examined the association between dark triad and family functioning on internet addiction. Informed by theories and previous studies on the study variables, four hypotheses were formulated and tested. Results from the statistical analysis showed that narcissism was not a significant predictor of internet addiction among adolescents, whereas Machiavellianism, psychopathy, and family functioning increased the odds of internet addiction. The first hypotheses which states that narcissism will significantly be associated with internet addiction among adolescents was rejected. The result contradicts earlier study of (Jauk and Derich, 2019; Moor et al, 2019) who found a significant association between narcissism and Internet addiction. However, the present finding is in concordance with that of Kircaburun, et al. (2019) who found no robust pattern of associations between trait narcissism and unspecified/specific forms of internet use disorder across samples. These conflicting findings show that more studies are needed to understand the relationship between narcissism and internet addiction. One possible explanation for the inconsistent findings is that internet addiction is a complex phenomenon that is influenced by a variety of factors, including individual characteristics, social and environmental factors, and

the content and context of internet use. It is likely that the relationship between narcissism and internet addiction is mediated by these other factors, and that the impact of narcissism on internet addiction may vary depending on the specific context and individual characteristics of the person in question. It is also possible that the relationship between narcissism and internet addiction may vary depending on the specific aspects of narcissism that are being measured. For example, some research has suggested that grandiose narcissism (a type of narcissism characterized by a sense of entitlement and self-importance) may be more strongly related to internet addiction than vulnerable narcissism (a type of narcissism characterized by feelings of inadequacy and insecurity).

The second hypotheses which states that machiavellianism will significantly be associated with internet addiction among adolescents was confirmed because there was a positive association showing that machiavellianism increased the odds for internet addiction. Since machiavellianism involves a manipulative and deceitful attitude towards others, a tendency to exploit and deceive others for personal gain, and a lack of moral principles, there is every tendency that people with this trait will always cling online to extent of being addicted to it looking for whom to devour for personal gain. Thus, individuals who score high in machiavellianism may use the internet as a tool for manipulating and exploiting others, which could lead to an increased risk of internet addiction. This collaborates with the study of Sindermann et al (2018) who found a positive association between Machiavellianism and internet addiction.

The third hypotheses which state that psychopathy will be associated with internet addiction among adolescents was also confirmed. The association was positive showing that psychopathy also increased the odds for internet addiction. These findings are in line with previous studies (e.g., Jin et al., 2019; Moore et al., 2022;) which reported that psychopathy is associated with internet addiction. One possible explanation for this association with internet addiction is that individuals who score high in psychopathy are more likely to engage in risky or irresponsible behavior online, such as engaging in cyberbullying or accessing inappropriate content, which could lead to an increased risk of internet addiction.

The fourth hypotheses which states that family functioning will significantly be associated with internet addiction among adolescents was confirmed. Family functioning has a positive association with internet addiction among adolescents, indicating that lower family functioning was associated with high internet addiction among adolescents. This finding is consistent with the studies conducted by other researchers (e.g., Bonnaire et al, 2017; Marzilli et al., 2020) who reported positive association on family functioning and internet addiction.

These findings highlight the strong influence of family functioning on the occurrence of internet addiction among adolescents. However, a number of factors within the family may contribute to the development of internet addiction in adolescents, including: poor communication and lack of conflict resolution within the family, lack of parental supervision and support, low levels of family cohesion, negative family dynamics etc. These aforementioned factors may lead adolescents to turn to the internet as a way to escape these negative experiences, engage in unchecked unhealthy internet use, use the internet excessively as a way to cope with feelings of loneliness or social isolation or turn to the internet as a way to cope with these negative experiences and believing to find solace on the internet.

### **Implications of Study**

Results of this study provide several implications for psychologists and other professionals who are involved or interested in screening and intervention programs to reduce mental health problems especially internet addiction among adolescent population. The findings are particularly important because of its various implications for prediction and targeted prevention. The results



obtained will contribute to the overall scientific knowledge in the prediction and identification of high-risk, vulnerable subclinical group for internet addiction, which will enable the creation of a specific model for early prediction, diagnosis and rational treatment, and thus a better long term prognosis and improvement in the quality of adolescents' lives. These findings indicate that more focus should be given to the dark triad personality traits when considering internet addiction and other forms of problematic online behaviors for a better understanding of these associations. The findings also highlight the importance of taking cognizance of family dynamics in dealing with internet addiction among adolescents.

### **Conclusion**

The study investigated the roles of dark triad and family functioning on internet addiction among adolescents in a sub-Saharan Africa. Narcissism was not significantly associated with internet addiction, while Machiavellianism, psychopathy, and family functioning were found to be significantly associated with internet addictions among adolescents. These findings are very critical in clinical practice which will help to unravel the underlying factors predisposing adolescents to internet addiction. Furthermore, it will help in developing good interventions in managing internet addiction. This also calls for more research to explore this association, and underlying mechanisms.

### **Recommendations**

In line with the limitations outlined in the study, future researchers are encouraged to use larger sample size while conducting similar studies to establish well-grounded generalizations. Also, researchers should use longitudinal studies and devote more resources in conducting a study using similar construct by so doing they could extend research to other geographical locations for pattern analysis and interpretation. The present researchers also recommended that the different mechanisms that may lead to internet addiction should be explored, and this can help in the development of good interventions for the treatment of internet addiction.

### **Limitation of the study**

The study has a number of limitations that should be mentioned. Firstly, it was based on self-report measures of individual beliefs and experiences but which may be subject to bias. A second limitation refers to mono-method bias. Although the use of questionnaires to evaluate dark triad, family functioning and internet addiction is a customary practice, the relationships between variables measured with the same method might be inflated due to the action of common method variance (CMV). Thirdly, the study adopted a cross-sectional survey design and the results of this study were limited to the time frame in which the data was collected. A cross-sectional design yields correlational rather than casual evidence. Therefore, in future research it is important to adopt other methods like longitudinal, mixed method, etc that will reveal cause and effect.

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