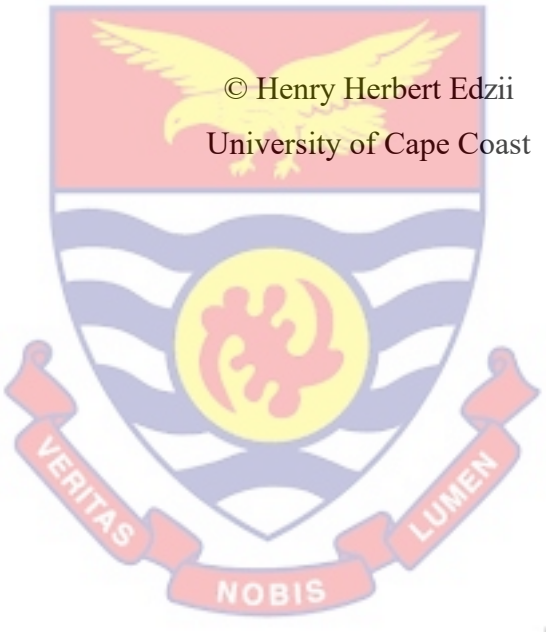
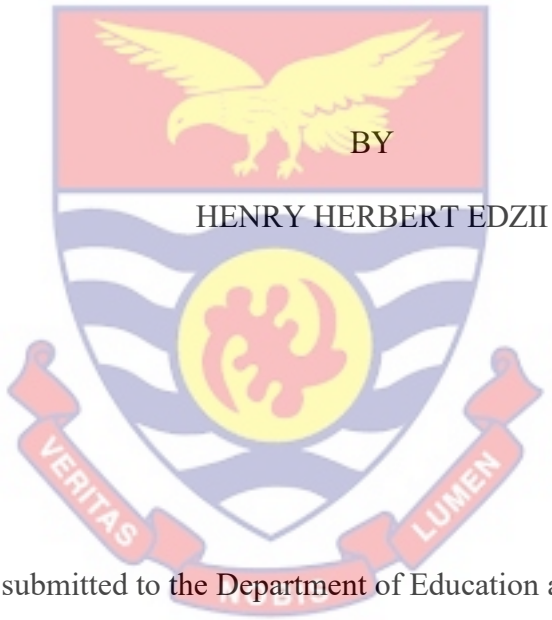


UNIVERSITY OF CAPE COAST

PERSONALITY TRAITS AND INTERNET ADDICTION: A STUDY AMONG UNIVERSITY STUDENTS IN GHANA



BY

HENRY HERBERT EDZII

Thesis submitted to the Department of Education and Psychology of the Faculty of Education Foundations, College of Education Studies, University of Cape Coast, in partial fulfillment of the requirements for the award of Master of Philosophy degree in Clinical Health Psychology.

APRIL 2024

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature…… Date……..

Name…….....

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of the thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature…… Date……..

Name…….

Co-supervisor's Signature…… Date……

Name……

ABSTRACT

This study examined the relationship between personality traits and internet addiction among university students in Ghana, specifically targeting participants from the University of Cape Coast (UCC) and the University of Ghana, Legon (UG). A total of 205 students were surveyed, chosen via a convenience sampling method to guarantee diversity. Data were gathered by a structured online questionnaire that included demographic information, the Big Five Inventory (BFI-10), and Young's (1998) Internet Addiction Test (IAT). Data analysis was performed using the Statistical Package for Social Sciences (SPSS, v.26), using descriptive statistics, multiple linear regression, independent samples t-test, and the Hayes Process Macro (Model 1) to evaluate moderation effects. The findings indicated that the majority of Ghanaian university students displayed mild internet addiction, with social networking identified as the predominant online activity. Among the Big Five personality qualities, openness and conscientiousness negatively predicted internet addiction, although extraversion exhibited a positive relationship. Agreeableness and neuroticism were not significant predictors. Moreover, the analysis revealed no substantial sex disparities in internet addiction. The hours spent online significantly regulated the association between conscientiousness, agreeableness, neuroticism, and internet addiction, but did not moderate the effects of openness and extraversion. The study suggests that internet addiction among Ghanaian university students is a common yet relatively minor issue, shaped by personality factors and behavioural involvement. The implications for policy are discussed, and recommendations are made to enhance personality-sensitive digital wellness initiatives.

ACKNOWLEDGEMENTS

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CHAPTER ONE

INTRODUCTION

The Internet facilitates various activities such as communication, information sharing, entertainment, social interaction, education, and economic progress. This significance is attributed to technological improvements and the extensive adoption of broadband and mobile devices (Zeng et al. 2021; Pereira et al. 2021). The increasing prevalence of internet usage has been associated with a rise in clinical presentations characterised by several indicators of abuse, such as insomnia, depression, suicidal ideation, anxiety, smoking-related disorders, alcohol-related disorders, and sleep disturbances (An et al., 2014; Bhandari et al., 2017; Chen & Gau, 2016; Lee & Ham, 2018). Internet addiction has been the focal point of numerous scholarly investigations for the last decade. The existing body of research on internet addiction has predominantly concentrated on its associations with various psychological factors such as anxiety, loneliness, sorrow, shyness, and self-consciousness (Chak et al., 2004; Shapira et al., 2000; Whang et al., 2003).

There exists a limited, though expanding corpus of scholarly literature pertaining to the relationship between personality traits and internet usage (Hamburger & Ben-Artzi, 2000; Leung, 2002; Scealy et al., 2002). The necessity of studying personality traits arises from the association with various human activities and behaviours. These include school attendance (McShane et al., 2001), gambling (Temitope et al., 2019), aggression (Wu & Clark, 2003), television viewing (Persegani et al., 2002), drug use (Sussman et al., 2003), sexual behaviour (Kalichman et al., 2003), job performance

(Suliman et al., 2010), and sports participation (Pristyna et al., 2022; Daniels et al., 2023). Considering the widespread usage of the internet among individuals from diverse backgrounds, it is a pertinent domain to investigate from a personality perspective (National Telecommunications and Information Administration [NTIA] Release, 2000). This assertion is particularly valid due to the voluntary nature of internet usage, which tends to reflect individual goals, wants, values, preferences, and other aspects of one's personality.

The study of personality traits and internet addiction holds great importance due to its potential to substantially influence the individual's psychological health and general state of being. Several prior research investigations have established a correlation between specific personality traits, namely neuroticism and impulsivity, and increased susceptibility to internet addiction (Li & Kirkup, 2007; Kuss & Griffiths, 2011; Wang & Wang, 2014).

Additionally, extant research has indicated that some personality traits may be a protective factor against the onset of internet addiction (Kuss & Griffiths, 2012). For instance, research conducted by Kayiş et al. (2016), Servidio (2014), and Landers and Lounsbur (2006) suggests that persons who exhibit higher levels of conscientiousness and agreeableness may have a reduced propensity for becoming internet addicts compared to those who possess lower levels of these personality traits. This implies that gaining insight into an individual's personality features can facilitate the identification of those susceptible to acquiring an internet addiction, hence enabling the implementation of suitable therapies to mitigate its occurrence.

Therefore, examining how personality traits interact with internet addiction is significant in grasping the intricate interplay between these two variables. Knowledge of these associations would help to develop more efficacious interventions for individuals susceptible to developing internet addiction or other mental health conditions associated with excessive internet use.

Background to the Study

The computer, software, and internet businesses have experienced significant growth in the 21st century (Feldman, 2003). The Internet is a global platform where individuals can easily retrieve information from various geographical locations. According to Pereira et al. (2021), digital technology has become essential in various domains such as communication, information exchange, entertainment, sharing, socialising, learning, teaching, and economic expansion. The number of individuals with internet connectivity has experienced a significant surge in the last ten years. As of October 25th, 2023, it was anticipated that there were approximately 5.3 billion users globally, accounting for 65.7% of the global population (Petrosyan, 2023). Researchers' concerns regarding the potential ramifications of the widespread adoption of Internet usage have grown proportionally with its rapid rise. One concern is the phenomenon of obsessive online behaviour, sometimes referred to as "internet addiction," and the hypothesis that an individual's personality traits may contribute to their susceptibility to this condition. Research investigating the association between individuals' online activity duration and distinct personality traits has been ongoing for a considerable time (Mark et al., 2016; Marbach et al., 2019; Jie, & Haider, 2022).

Over the previous decade, there has been a notable rise in the Internet penetration rate inside Ghana, as documented by Essel et al. (2022). The utilisation of the internet by students in public institutions and colleges of education has been significantly impacted by the COVID-19 epidemic (Essel et al., 2021; Essel et al., 2022; Essel et al., 2021). The phenomenon can be attributed to the Ghanaian government's dedication to fostering technological advancement inside the nation by implementing the ICT4AD (Information and Communication Technologies for Accelerated Development) initiative (Buabeng-Andoh & Issifu, 2015). According to the data provided by Statista (2024), Ghana experienced an increase in its internet user population from over 23 million in the previous year to nearly 24.06 million as of April 25th 2024. Multiple research studies have indicated the presence of varying degrees of Internet addiction among African secondary school and university students (Muche & Asrese, 2022; Zenebe et al., 2021; Shehata & Abdeldaim, 2021). Moreover, a study conducted by Endomba et al. (2022) found that 40% of the African population exhibited signs of Internet addiction. The connection between internet absorption and its use by secondary and tertiary students can be attributed to the increased accessibility and integration of technology in educational settings, leading to higher internet usage among young individuals (Wojdan et al., 2020).

The terms "Internet addiction" or "pathological use of the Internet" refer to the concept that individuals may struggle to effectively regulate their Internet usage, resulting in evident emotional distress and impaired functioning (Young, 1999). Young (1999) identified addiction symptoms akin to those observed in substance misuse, such as tolerance, withdrawal, craving, and

negative impacts on personal well-being among individuals engaging in problematic Internet use. Dickerson and O'Connor (2006) argue that internet addiction should be classified as an obsessive-compulsive disorder due to its absence of pharmacological reliance. Davis (2001) introduced the term "Pathological Internet use" (PIU) to describe a distinct behavioural pattern associated with Internet usage among specific demographic groups, emphasizing the absence of pharmacological dependence. Shapira et al. (2003) propose that internet addiction manifests through an individual's inability to regulate their Internet usage, persistent engagement despite negative social and academic consequences, and anxiety when access is restricted. Nonetheless, various perspectives exist on interpreting this phenomenon (Shek & Yu, 2012). Brain research has contributed substantial evidence highlighting the shared characteristics between Internet addiction and other forms of addiction (Kuss & Griffiths, 2012). In response to accumulating empirical data and the need for professional intervention, the American Psychiatric Association (APA) included "Internet use disorder" in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V, 2013). Drawing upon these insights, I define internet addiction as a spectrum of behaviours characterised by an individual's inability to regulate their Internet usage, leading to negative consequences in various domains of life, including social, academic, and psychological well-being.

The prevalence of internet addiction is increasingly recognised as a significant concern in contemporary society, as many people rely on the internet and its related activities. Several prevalent features associated with internet addiction include obsessive internet use, excessive focus on online activities,

experiencing withdrawal symptoms while unplugged from the internet, and neglecting other obligations (Kurniasanti et al., 2019; Starcevic & Aboujaoude, 2017; Young, 2009). Individuals who exhibit excessive reliance on the Internet may experience a range of psychological and physiological consequences, including but not limited to chronic pain, exhaustion, and disrupted sleep patterns, as evidenced by studies conducted by Surís et al. (2014) and Cao et al. (2011). According to Kuss and Griffiths (2012), individuals who spend significant time online may face the potential consequence of social isolation.

The excessive use of the internet can have severe negative consequences on an individual's physical, mental, and social well-being. Internet addiction has been found to have physical consequences such as the development of poor posture, migraines, eye strain, and carpal tunnel syndrome (Collier, 2009). Internet addiction has been associated with several psychological symptoms, including depression, anxiety, and impaired concentration (Ko et al., 2012; Kuss & Griffiths, 2012; Bernardi & Pallanti, 2009). Furthermore, individuals may also encounter a decline in cognitive functioning, characterised by reduced attention span, memory capacity, and problem-solving abilities (Kuss & Griffiths, 2012). From a social perspective, excessive use of technology has been associated with potential consequences such as detachment from close relatives and friends and challenges in establishing significant interpersonal connections (Yao & Zhong, 2014; Shaw & Black, 2008). Several research has indicated a potential correlation between internet addiction and an elevated likelihood of engaging in dangerous behaviours, including but not limited to gambling and cyberbullying (Kuss & Griffiths, 2012). Excessive engagement in online activities or disregarding crucial obligations might also result in

financial difficulties (Shaw & Black, 2008).

According to previous research conducted by Weibel et al. (2010), Quaglieri et al. (2021), and Lee and Lim (2021), personality trait is the most influential factor among the various traits associated with internet addiction. According to Kayiş et al. (2016), it may be inferred that personality traits can potentially impact individuals' online behaviour. Personality traits refer to individuals' unique and consistent cognitive, affective, and behavioural tendencies. It exemplifies persistent traits of persons who exhibit consistencies over their lifetimes and across diverse circumstances (Pervin & John, 1997; Shaffer, 2000). Individuals can exhibit variations in their personality traits, which endure across different temporal and contextual circumstances. Traits are believed to be fundamental elements of emotional, motivational, and social behaviour. McCrae and Costa (1995) assert that they provide descriptions, explanations, and predictions regarding the individual differences observed in human behaviour and subjective experiences. The Big Five personality qualities encompass openness to novel experiences, conscientiousness, extraversion, agreeableness, and neuroticism (McCrae & Costa, 1995; Rachubinska et al., 2021). Individuals willing to embrace novel experiences, ideas, and views exhibit curiosity, unconventionality, originality, boldness, imagination, intellectuality, creativity, and open-mindedness (Costa & McCrae, 1992; Johnson & Ostendorf, 1993).

According to Costa and McCrae (1992), conscientiousness can be characterised by methodicalness, resolution, self-control, vigilance, adherence to principles, rule-following, and industriousness. According to McCrae and Costa (1987), individuals who exhibit higher levels of extroversion tend to own

larger social networks, actively participate in a greater number of discussions, and demonstrate a greater propensity for engaging in risk-taking behaviours. Individuals with an agreeable disposition tend to harbour a distaste for competition and actively want to avoid engaging in debates. According to McCrae and Costa (1987), individuals who possess agreeable traits, such as tolerance and forgiveness, resist employing force and actively refrain from placing pressure on others.

Several studies have indicated that certain individual psychological features, such as personality qualities, can make certain persons more prone to excessive Internet use (Chak et al., 2004; Shapira et al., 2000; Whang et al., 2003). According to a study conducted by van der Aa et al. (2009), there is evidence to support the notion that agreeableness and emotional stability play significant roles as risk factors in developing Internet addiction. The phenomenon of excessive engagement in online gaming has been associated with various undesirable personality characteristics, such as neuroticism (Mehroof & Griffiths, 2010; Peters & Malesky, 2008), hostility and aggression (Caplan et al., 2009; Kim et al., 2008; Porter et al., 2010), introversion (Caplan et al., 2009), and social inhibition (Peters & Malesky, 2008). There is evidence suggesting a negative relationship between internet addiction and extroversion, agreeableness, and conscientiousness (Barnett et al., 2015; Cole & Holey, 2013; Landers & Lounsbury, 2006; Mehroof et al., 2010; Samarin et al., 2013; Wolfradt & Doll, 2016).

Statement of the Problem

Internet addiction (IA) has become a worldwide issue, especially among university students, whose academic, social, and emotional growth matches

rising digital involvement. A global meta-analysis determined the aggregated prevalence of internet addiction to be 14.22%, highlighting its pervasive nature (Meng et al., 2022). Prevalence rates demonstrate considerable variability across different contexts, from 0.7% in Mumbai (Thabet et al., 2019; Goel et al., 2013) to 11.6% in Tunisia (Missaoui et al., 2015). Durkee et al. (2016) identified a higher prevalence of pathological internet use among males (5.2%) compared to women (3.9%) in Europe, while Kuss et al. (2014) documented rates varying from 0.8% in Italy to 27% in Hong Kong. The estimated prevalence in the United States ranges from 0% to 26.3% (Moreno et al., 2013). These statistics underscore the global variability of IA, frequently influenced by socio-cultural, economic, and technological differences.

Although considerable literature has concentrated on the psychological correlates of internet addiction, including depression, anxiety, insomnia, and self-esteem (Kim & Davis, 2009; Gao et al., 2018; Younes et al., 2016; Priego-Parra et al., 2020), increasing evidence suggests that personality traits are significant predictors of internet addiction. Kuss et al. (2013) identified that high neuroticism and low agreeableness, together with excessive online purchasing and social interaction, were significant predictors of Internet Addiction (IA) among English students. Servidio (2014), in a study of Italian university students, found a negative correlation between agreeableness and extraversion with Internet Addiction (IA), but openness showed a positive association. In a meta-analytic review, Kayiş et al. (2016) similarly concluded that neuroticism increases susceptibility to Internet Addiction (IA), while conscientiousness, extraversion, and agreeableness mitigate it. Research in Lebanon and Turkey corroborated the influence of personality traits, specifically agreeableness,

conscientiousness, and openness, in predicting Internet Addiction (IA), alongside self-esteem and usage frequency (Hawi & Samaha, 2019; Günaydin, 2021). These findings together identify personality qualities as significant factors influencing internet usage behaviours.

Despite this, most studies on personality and internet addiction are derived from Europe, Asia, and North America, with scant focus on African contexts. Umeta et al. (2022) observed a 79% prevalence of Internet Addiction (IA) among university students in Ethiopia, attributing it to excessive online usage. Mboya et al. (2020) discovered that 31% of undergraduates in Tanzania exhibited addiction, with social networking and extended usage identified as predictors. Smita and Azhar (2018) observed a prevalence of 5.1% in Mauritius, with no discernible gender difference. In Nigeria, IA was significantly correlated with depression in university students (Ineme et al., 2017). These findings underscore the gravity of IA in African universities; yet, research is scattered, often confined to prevalence and psychological determinants, rather than exploring personality characteristics.

In Ghana, current research has focused on the effects of IA on student life rather than its personality factors. For instance, Essel et al. (2022) identified a correlation between IA and depression, life satisfaction, and loneliness in pre-service teachers. Miezah et al. (2020) found a positive association between video game addiction and depression, as well as time spent gaming, while noting a negative correlation with self-esteem. Amofah–Serwaa and Dadzie (2015) as well as Tuurosong and Amadu (2014) emphasised the adverse consequences of social media addiction, such as academic disruption, the utilisation of Pidgin English, and involvement in fraudulent activities. These

investigations emphasise the detrimental academic and psychosocial consequences of internet addiction in Ghana; however, they fail to investigate the extent to which students' vulnerability is related to their personality traits.

Despite an expanding worldwide corpus of research on the relationship between personality and internet addiction, the evidence is predominantly Western-centric. African research is mainly confined to the examination of prevalence and correlations, including depression, stress, and academic performance, with minimal investigation into personality traits. In Ghana, although researchers have examined the effects of Internet Addiction (IA) on academic and psychosocial outcomes, the influence of personality traits as predictors of IA has not been thoroughly explored. This gap is essential, since understanding the personality elements of IA could guide targeted treatments, counselling strategies, and policy frameworks to address the issue within Ghana's university system.

Purpose of the Study

The primary goal of this study was to examine how students' personality traits can predict addiction to the Internet. Specifically, this study sought to:

1. determine the prevalence rate of Internet addiction among university students in Ghana
2. discover the online activities university students engage in frequently.
3. determine the impact of the Big Five Personality Traits on internet addiction.
4. ascertain the differences between men and women university students regarding Internet addiction.
5. investigate the moderating effect of the number of hours spent online on

personality traits and internet addiction among university students.

Research Questions/ Hypothesis

For the study, the following research questions were addressed:

1. What is the prevalence rate of Internet Addiction among University students in Ghana?
2. What online activities do university students engage in frequently?

The following research hypotheses were tested:

1. Ho: Openness (H1a) and conscientiousness (H1b) will not have a statistically negative impact on internet addiction.

   H_1: Openness (H1a) and conscientiousness (H1b) will have a statistically negative significant impact on internet addiction.

   Ho: Extraversion (H1c) will not have a statistically positive impact on internet addiction.

   H_1: Extraversion (H1c) will have a statistically positive impact on internet addiction.

   Ho: Agreeableness (H1d) and Neuroticism (H1e) will not statistically impact internet addiction.

   H_1: Agreeableness (H1d) and Neuroticism (H1e) will statistically impact internet addiction.

2. Ho: There is no statistically significant difference between male and female university students regarding internet addiction.

   H_1: There is a statistically significant difference between male and female university students regarding Internet addiction.

3. Ho: The number of hours spent online will not moderate the relationship between Big Five personality traits and Internet addiction.

   H_1: The number of hours spent online will moderate the relationship between the Big Five Personality Traits and Internet Addiction.

Significance of the Study

The main objective of this research is to enhance knowledge regarding the link between personality factors and internet addiction within the context of Ghanaian universities. This study offers a comprehensive analysis of the probable factors contributing to internet addiction and its potential association

with specific personality traits among university students. Furthermore, this study has the potential to yield significant insights that might contribute to the enhancement of preventative and intervention approaches targeting students who are susceptible to the development of internet addiction within the context of Ghanaian higher education institutions. Moreover, this study could discover plausible risk variables associated with internet addiction and enhance understanding of the most effective strategies to tackle this concern within the university setting in Ghana.

The results on personality traits and internet addiction will provide valuable insights for policymakers, including the Ministry of Communications, the National Communications Authority, the Ghana Tertiary Education Commission (GTEC), and the Ghana Psychology Association. These findings will help in understanding the underlying factors that contribute to internet addiction and facilitate the formulation of policies aimed at effectively addressing these concerns. For instance, policymakers may utilise the outcomes of this study to develop educational initiatives that specifically cater to persons exhibiting personality traits that are more prone to developing Internet addiction. Furthermore, authorities may utilise the data to design regulations or legislation that restricts the accessibility of specific internet platforms or activities, such as online gambling or social media usage. Ultimately, policymakers have the potential to utilise the outcomes of this study to develop public awareness initiatives pertaining to the perils associated with internet addiction and the various preventive measures that may be implemented.

Ultimately, this study will offer significant contributions by shedding light on effective strategies for institutions to effectively tackle the challenges associated with internet addiction among their student cohorts. Universities have the potential to adopt regulations or establish programmes aimed at mitigating access to technology or offering support services to individuals grappling with internet addiction. To enhance the orientation programmes for first-year students, universities may consider incorporating educational sessions conducted by the counselling unit that address the potential problems connected with excessive technology use. Additionally, these sessions could provide valuable resources and support for those who may be grappling with internet addiction. Through a comprehensive examination of the strategies employed by universities to effectively tackle the challenges associated with internet addiction among their student cohorts, scholars aim to devise targeted treatments that specifically address these concerns, ultimately leading to a reduction in the prevalence of internet addiction among university students.

Delimitations

The scope of this study was confined to university students in Ghana. The research concentrated on personality traits and internet addiction among Ghanaian university students, specifically at the University of Cape Coast (UCC) and the University of Ghana, Legon (UG). No other population, such as high school pupils or country, was included in this study. In addition, the study did not consider any other characteristics that may influence internet addiction, such as socioeconomic position. Additionally, only self-reported assessments of personality traits and internet addiction were considered in the study. The study did not incorporate any additional personality traits or

internet addiction measures. Lastly, this study used a descriptive cross-sectional design to describe the prevalence of personality traits and internet addiction among participants. This design did not permit any causal inferences or the investigation of behavioural changes over time.

Limitations

The limitation of this study was encountered during data collection. The study relied on self-reported data from participants, which may have introduced response bias and social desirability effects. Participants' responses to the standardised scales, such as the Big Five Personality Traits and the Internet Addiction Test, may be influenced by their perceptions of socially desirable traits or behaviours, potentially impacting the accuracy of the reported data. To resolve this, respondents were guaranteed the confidentiality and anonymity of their responses. This was emphasised at the beginning of the survey to alleviate privacy concerns and encourage honest and accurate reporting. Participants were informed that their responses would remain confidential and would not be linked to their identities.

Definitions of Terms

Personality traits: They describe how a person typically thinks, feels, and behaves. They are often used to describe an individual's behaviour in different situations and can be used to predict how they may respond in the future. Personality traits include extraversion, agreeableness, neuroticism, conscientiousness, and openness to experience.

Internet addiction: A spectrum of behaviours characterised by an individual's inability to regulate their Internet usage, leading to negative

consequences in various domains of life, including social, academic, and psychological well-being.

University students: Individuals who are currently enrolled in undergraduate programs at public universities in Ghana

Organisation of the Study

Chapter two, which reviews related literature will comprise the remainder of the study. In chapter three, research methods will be covered, covering data collecting and analysis, population, sampling and sampling procedure, research instruments, and study design. The results and discussion will be covered in chapter four Finally, chapter five will examine the summary, conclusions, and recommendations.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, the emphasis will be on reviewing the literature on previous research on the related topic. The literature review comprises three areas: the theoretical framework, empirical review and conceptual framework. This chapter will review journals, textbooks, articles and websites. Most of the reviews will be on personality traits and internet addiction.

Theoretical Framework

This section of the write-up examines the theoretical underpinning of the variables in this study. It delves into the theories posited by scholars to explain how personality traits can predict internet addiction among students. These theories also offer the reader a better grasp of the variables and explain the cause-and-effect relations among them.

Some of the theories reviewed for the study included the following:

1. Big Five Personality Traits theory (Goldberg, 1990)
2. Uses and gratification theory (LaRose, 2007)
3. Social skills theory (Caplan, 2003)

Big Five Personality Traits (Goldberg, 1990)

One of the recent and broad-based personality traits used in this study is Goldberg's Big Five personality traits, which he propounded in 1981 and substantiated for validity by Goldberg (1990), Costa, McCrae (1992), and other researchers. The Big Five personality traits have been largely used in personality studies and are considered to be stable and can predict internet addiction (Andreassen et al., 2013; Yu et al., 2021; Kircaburn et al., 2021; Miškulin et al., 2022). The Big Five personality traits encompass openness to

new experiences, conscientiousness, extraversion, agreeableness, and neuroticism. Open individuals are curious, independent, non-traditional, original, courageous, highly imaginative, open-minded, intellectual, and creative. They are inclined towards novelty, possess broad perspectives, and enjoy diversity (Costa & McCrae, 1992; Johnson & Ostendorf, 1993). Research diverges on the relationship between openness to new experiences and unhealthy internet use. Some studies show no connection (Durak-Batıgün & Kılıç, 2011; Randler et al., 2014; Servidio, 2014), while others suggest a positive association (Kuss, van Rooij, Shorter, Griffiths, & van de Mheen, 2013; Rahmani & Lavasani, 2011; Tuten & Bosnjak, 2001). Conversely, certain research findings indicate a negative correlation between openness to new experiences and unhealthy internet use (Durak & Senol-Durak, 2014; McElroy et al., 2007).

Conscientiousness refers to being organised, disciplined, planned, decisive, cautious, rule-abiding, and hardworking (Costa & McCrae, 1992). Research generally indicates a negative correlation between unhealthy internet use and conscientiousness (Durak-Batıgün & Kılıç, 2011; Rahmani & Lavasani, 2011; Randler et al., 2014; Servidio, 2014). Essentially, this suggests that individuals with lower levels of conscientiousness tend to exhibit higher levels of internet addiction compared to those with higher conscientiousness levels.

Extraversion, characterised by an individual's level and depth of social engagement, reflects their confidence and inclination towards competitiveness (McCrae & Costa, 1987). Many studies explore how extraverted individuals manifest themselves online and whether their internet use leans towards

healthy or unhealthy patterns. While numerous studies indicate a negative correlation between extraversion and unhealthy internet use (Anderson, 2008; McElroy et al., 2007; Servidio, 2014; Van der Aa et al., 2009; Puerta-Cortes & Carbonell, 2013), some research suggests a positive relationship (Rahmani & Lavasani, 2011; Hwang et al., 2014). Conversely, certain researchers have found no significant association between extraversion and unhealthy internet use (Wanget al., 2013; Batıgün & Kılıc, 2011; Buckner et al., 2012).

Individuals with agreeable traits tend to avoid competition and conflicts, being characterised as tolerant and highly forgiving, disliking the use of force and resisting pressure (McCrae & Costa, 1987). Studies examining the association between agreeableness and unhealthy internet use consistently reveal a negative correlation (Anderson, 2008; Randler et al., 2014; Servidio, 2014; Van der Aa et al., 2009; Puerta-Cortes & Carbonell, 2013). In essence, it can be concluded that individuals with lower levels of agreeableness are more inclined towards unhealthy internet use.

Neuroticism, viewed as a personality trait, denotes individuals' susceptibility to emotional instability (McCrae & Costa, 1997). These individuals frequently grapple with negative emotions and tend to employ maladaptive coping strategies, such as delay and denial, when faced with stressful situations (Carver & Connor-Smith, 2010). Consequently, it's observed that individuals high in neuroticism, experiencing frequent negative emotions and employing maladaptive coping methods, exhibit unhealthy and dependency-level internet usage (Cao & Su, 2006; Hamburger & Ben-Artzi, 2000; Hardie & Tee, 2007). Furthermore, neuroticism shows a positive

correlation with problematic internet use, indicating tendencies toward internet addiction (Bulut-Serin, 2011; Tsai et al., 2009).

The Uses and Gratification Theory (UGT)

The uses and gratifications theory (UGT), pioneered by Katz et al. in 1973, posits that individuals actively choose and employ media to fulfil specific needs and desires, seeking various gratifications such as entertainment, information, social interaction, and escapism. This theory, extensively applied to traditional media like TV and newspapers and new media such as social media and the internet (Stafford et al., 2004; Ruggiero, 2017), highlights that different people derive distinct reasons and gratifications from consuming the same media. Individual factors like needs, motives, and social environment, as emphasised by Kasirye in 2021, significantly influence the gratifications obtained from media use. Extending this framework to the context of internet addiction, the theory suggests that individuals utilise the internet for diverse reasons, driven by their needs and desires, including entertainment, socialisation, information seeking, and self- expression. In cases of problematic internet use, motivations may deepen, serving as a means to escape reality and cope with underlying issues such as relationship difficulties, work problems, or emotional challenges (Li, 2022).

Internet addiction is associated with various socio-demographic, internet use, and psychosocial factors, as well as comorbid symptoms and disorders in adolescents and adults (Kuss et al., 2014). The UGT suggests that individuals may develop addictive behaviours to fulfil specific needs and desires through their internet use (Stafford et al., 2004). This addiction tendency can be seen as a negative psychological outcome of seeking

gratifications through internet use (Li et al., 2018). Furthermore, the theory helps in understanding the dimensions of consumer internet use and usage gratifications, which may contribute to the development of addictive behaviours (Stafford et al., 2004). It has been found that the gratification of internet use is related to social isolation and internet addiction (Joorabchi & Samadi, 2023). Additionally, the theory has been used to understand the relationship between internet addiction and the family environment, highlighting the physical, psychological, and social damage that internet addiction can cause to individuals (Jiang et al., 2022).

The UGT also sheds light on the psychological needs underlying internet addiction and suggests socially more appropriate means to satisfy these needs (Arpaci et al., 2018). It has been suggested that the degree of gratification with prior internet use can lead to the habitual use of internet activities, potentially contributing to addictive behaviours (Chen et al., 2008). Moreover, the theory has been extended to explore the relationship between internet addiction and family communication patterns, indicating the mediating role of psychological needs in influencing internet addiction among adolescents (Nikdel & Nasab, 2022). This suggests that the gratifications derived from internet use, such as the fulfilment of social relationship needs online, may contribute to addictive behaviours (Putri et al., 2018).

The UGT has several advantages in explaining internet addiction. First, the theory provides insights into the diverse motivations and needs that drive individuals' internet use. Studies have identified various gratifications sought from internet use, including entertainment, social interaction, information seeking, and escapism. These gratifications can predict

problematic internet use and addiction (Stafford et al., 2004; Song et al., 2004; Yin & Shen, 2023; Li et al., 2018; Joorabchi & Samadi, 2023). In addition, it highlights the role of individual differences in shaping the gratifications obtained from internet use. Personality traits and psychological factors influence the motives for internet use and the risk of addiction (Armstrong et al., 2000; Kim & Haridakis, 2009; Omar & Subramanian, 2013; Soh et al., 2014).

Furthermore, the UGT offers a framework for understanding the psychological mechanisms underlying internet addiction. Studies have found that reinforcement, learning processes, and craving are relevant in the development and maintenance of internet addiction (Laier et al., 2013). It has also been found to provide a basis for developing interventions and policies to reduce internet addiction. By identifying the key gratifications that drive excessive internet use, targeted interventions can be designed (Dhir et al., 2015; Chen et al., 2008; Guedes et al., 2016).

Lastly, the theory considers the social and environmental context of internet use. In other words, the uses and gratification theory recognizes that people's use of the internet is not isolated but influenced by social contexts such as parental and peer attachment, family relationships as well as environmental factors like internet infrastructure and device accessibility and the risk of addiction (Soh et al., 2014; Aslanbay et al., 2009). This approach highlights the interconnectedness of individual motivations with the broader world, providing a comprehensive understanding of why people seek specific gratifications in their online activities.

The UGT, while valuable, has certain limitations in explaining internet addiction. These disadvantages are evident in the following aspects. To begin with, the UGT primarily focuses on individual motivations and needs, potentially overlooking broader societal and environmental factors that contribute to internet addiction. It may not fully account for the influence of social norms, cultural factors, and environmental stresses on addictive behaviours (Young, 1998; Ali, 2022). In other words, the theory's individual-centric approach may limit its ability to comprehensively address the impact of social relationships, peer influences, and environmental stressors on internet addiction. It may not fully capture the social dynamics and contextual factors contributing to addictive internet behaviours (Salubi & Muchaonyerwa, 2018; Shaffer, 1996).

While the theory acknowledges individual differences, it may not provide a comprehensive psychological framework for understanding the complex interplay of cognitive, emotional, and behavioural factors that underlie internet addiction. This limitation may hinder a holistic understanding of addictive behaviours (Young & Rogers, 1998; Jackson, 2000). In addition, the theory may not fully address the role of mental health issues such as depression, anxiety, and stress in contributing to internet addiction. These psychological factors are often intertwined with addictive behaviours and may not be fully captured by the uses and gratifications framework (Young & Rogers, 1998; Ali, 2022).

The UGT may not adequately consider the role of technological features, design elements, and platform affordances in shaping internet addiction. Simply put, it may not fully account for the addictive potential

inherent in certain online environments and digital interfaces (Shaffer, 1996; Chou & Hsiao, 2000). Again, the theory's focus on gratifications sought from media use may not fully predict the development of internet addiction. It may not account for the complex interplay of factors that contribute to the progression from gratification-seeking to addictive behaviours (Leung, 2014; Brenner, 1997).

These notwithstanding, the uses and gratifications theory has been instrumental in predicting internet addiction and understanding its psychological mechanisms. Studies have examined how gratifications sought from social media use can predict internet addictions and subsequent internet risks (Bisen & Deshpande, 2018). Additionally, the theory has been applied to understanding the relationship between gratifications sought and problematic internet use, providing valuable insights into the factors contributing to internet addiction (Bisen & Deshpande, 2018).

Social Skills Theory (Caplan, 2003)

Caplan (2003) posited a theory concerning problematic Internet use, suggesting that individuals experiencing depression and loneliness tend to develop more pessimistic views regarding their social abilities and interactions, potentially contributing to their excessive reliance on the Internet. These people are attracted to the Internet for many personal characteristics but specifically because they perceive themselves as better able to open to others their 'true selves' online than in the 'offline' world (McKenna et al. 2002). Those alluded to by poor social skills believe that online interaction is safer (that is, there is more privacy and anonymity), easier (that is, interaction is easier), and more exciting. People are entitled to

represent themselves less rigidly compared to face-to-face situations. A person is allowed to put the right information about them by concealing or deleting the bad or the negative and at the same time creating or aggrandizing the good. People can even go to the extent of creating an altered persona to represent them. The more control that is given to people on the internet, the more confident they will be and the easier it will be for them to fulfil while using the service. Compared to human interactions and human relationships, computers offer a reliable guarantee of complying with all commands without complication or rejection (Kandell, 1998). According to Morahan-Martin and Schumacher (2000), "the Internet can be socially liberating, the Prozac of social communication". According to Wallace (2015), synchronous online communication presents a formidable alternative, particularly for individuals grappling with issues such as boredom, unsatisfactory relationships, bullying, low self-esteem, and limited social support and interaction in their real lives.

Consequently, individuals experiencing social anxiety find online communication more comfortable and adaptable to their preferences.

While this theory sheds light on the motivations behind problematic internet use, it also has its advantages and limitations. One advantage is that it provides a framework for understanding how individuals with social difficulties or psychological issues may gravitate towards the Internet for social interaction and support. It highlights the role of perceived control, comfort, and freedom in online interactions, offering insights into why some individuals may prefer online communication.

However, a limitation of this theory is that it may oversimplify the complex nature of problematic internet use. While it emphasizes the role of social factors in driving excessive internet use, it may not fully account for other contributing factors such as individual differences, underlying psychological conditions, or environmental influences. Additionally, the theory's focus on social deficits as the primary driver of internet use may overlook other motivations or consequences of excessive online behaviour, such as addiction or negative psychosocial outcomes (Sinha et al., 2020).

Empirical Review

This section of the write-up presents studies done by other researchers that relate to the variables and the aim of this study. The section presents the outcomes of these studies and how they are related to this study and those of others.

Prevalence Rate of Internet Addiction among University Students

The prevalence of internet addiction among university students has been a topic of interest in various studies conducted globally. The global pooled prevalence of internet addiction was estimated to be 14.22% (Meng et al., 2022). For instance, Lin et al. (2011) found a prevalence rate of 15.3% among college students in Taiwan. Similarly, Ghamari et al. (2011) reported an overall prevalence of internet addiction of 10.8% among medical students in Iran. Furthermore, a study was conducted among undergraduate university students in Ethiopia and found a prevalence of internet addiction ranging from .8% to 47.7% (Zenebe et al., 2021). These studies indicate a significant prevalence of internet addiction among university students across different countries.

In 2015, a study conducted in China involving 6468 students with a

mean age of 13.78 years reported a .96% prevalence of serious internet addiction (Xin et al., 2018). In Jordan, a 2017 study of 716 students aged 12-18 years found that 6.3% exhibited serious internet addiction (Malak et al., 2017). In Tunisia, a study spanning 2010 and 2011 with 982 students (mean age 17.10 years) revealed an 11.6% prevalence of internet addiction (Missaoui et al., 2015). Conversely, a 2009 study in Mumbai, India, involving 987 college students, reported a lower prevalence of .7% (Missaoui et al., 2009; Goel et al., 2013). In England, a 2013 survey of 2257 university students (mean age 22.67 years) found a 3.2% prevalence of internet addiction (Kuss et al., 2013).

Meta-analysis studies have provided a global overview, indicating prevalence rates ranging from .8% in Italian teenage students to approximately 27% in Hong Kong adolescents (Kuss et al., 2014). In the United States, reported rates of problematic internet use vary from 0% to 26.3% (Moreno et al., 2013). A 2005 South African study involving 1795 participants aged 19-35 years reported a prevalence of problematic internet use ranging from 1.67% to 5.29% (Thatcher & Goolam, 2005).

Furthermore, a study in Saudi Arabia indicated a prevalence of internet addiction among female students at Jouf University (Abdel-Salam et al., 2019). Similarly, Kolaib et al. (2020) found varying prevalence rates of internet addiction among adolescent and university students in the Middle East and Asia, ranging from .9% to as high as 33% (Kolaib et al., 2020). These studies provide insights into the prevalence of internet addiction among students in different regions. In addition, a study in Turkey, which conducted a meta-analysis involving 122,454 students, reported a general prevalence of internet addiction among university students at 11.3% (Özarıcı & Sögüt, 2021).

This further supports the notion that internet addiction is a significant issue among university students. Overall, the literature analysis on the prevalence of internet dependency among college students found a significant frequency of internet addiction different nations, which could have repercussions for the psychological health of learners and academic performance.

Online Activities University Students Engage in Frequently

University students engage in a variety of online activities frequently for varied purposes. The shift to online learning has led to increased engagement in digital technology, including the use of digital devices and resources for academic purposes (Henderson et al., 2015). Additionally, the COVID-19 pandemic has impacted students' physical activity routines, leading to a decrease in regular participation in exercise or sports (Chu & Li, 2022). Furthermore, the roles of academic engagement and digital readiness have become crucial in students' achievements in e-learning environments (Kim et al., 2019). The pandemic has also influenced online political discussion activities among university students (Feng, 2022).

Furthermore, there is a correlation between proficiency in digital abilities and the occurrence of pleasant digital experiences, affecting students' degree of engagement while using technology (Bergdahl et al., 2019). Students' competence in accessing resources, choosing appropriate technologies, and collaborating effectively in academic communities has become essential for sustainable engagement in higher education (Kim et al., 2018). Engaging in online activities, such as using social networking platforms and participating in virtual academic courses, has become a prevalent part of students' lives and the overall higher education journey (Hutchens, 2012). Additionally, internet

usage and online shopping are prevalent among university students despite financial constraints (Ahmad, 2018).

Furthermore, university students share a large percentage of the total number of users who engage in online social networking activities (Lau, 2012). Social networking refers to a broad spectrum of online platforms and applications designed to facilitate social connections, content sharing, and communication among users (Sutherland et al., 2018; Ahenkorah-Marfo & Akussah, 2016; Dzogbenuku et al., 2019). Well-known examples of these platforms include Facebook, Twitter, Instagram, Snapchat, and WhatsApp. These platforms hold a central position in the daily lives of students, serving as primary channels for social interaction, networking, and information access (Sutherland et al., 2018; Ahenkorah-Marfo & Akussah, 2016; Dzogbenuku et al., 2019).

The use of the internet for online gaming and shopping among university students has garnered significant attention in academic research. Kuss et al. (2013) investigated internet addiction in students, highlighting the prevalence and risk factors associated with neuroticism, psychology, and addiction. The study found a link between spending more time on online activities such as shopping and gaming and depressive symptoms, shedding light on the potential negative impact of excessive internet use on mental health. In their 2020 study, Karunakaran and Jacob examined the trends and preferences of college students when it came to online buying, emphasizing the impact of the internet, an increasing level of living, and alluring deals on these behaviours. This study provided valuable insights into the factors driving online shopping behaviour among university students. In addition, Yolanda

et al. (2021) investigated the factors influencing addiction to online games among private high school students, identifying facility, individual, family, social, and game-related factors as influential in online gaming addiction. This study shed light on the multifaceted nature of online gaming addiction among students.

By and large, university students engage in a wide range of online activities, including academic engagement, social networking, online shopping, and digital informal learning. The COVID-19 pandemic has significantly influenced the online activities of university students, emphasizing the importance of digital competence and academic engagement.

The Impact of University Students' Big Five Personality Traits and Internet Addiction

To investigate the relationship between university students' Big Five Personality traits and Internet addiction, several studies have been conducted. For instance, Boumosleh and Jaalouk (2017) found a significant positive association between neurotic personality traits and smartphone addiction severity among Lebanese university students. In a study conducted by Andreassen et al., (2013), the researchers investigated the connection between behavioural addictions, such as internet addiction, and the Big Five Personality traits. The study revealed a notable correlation between these components. The study also revealed that personality traits explained between 6 and 17% of the variance in the seven behavioural addictions, suggesting that personality, to a varying degree, explains scores on measures of addictive behaviours. Moreover, Kuss et al. (2013) aimed to discern the interplay between personality traits and specific Internet uses in increasing the risk for Internet addiction,

highlighting the relevance of personality traits in this context. The study sought to assess the prevalence of clinically significant levels of Internet addiction and understand the interplay between personality traits and specific Internet uses in increasing the risk for Internet addiction. The findings of the study indicated that certain personality traits, such as neuroticism, were associated with an increased risk of Internet addiction. Additionally, the study highlighted the importance of considering specific Internet uses in relation to personality traits when assessing the risk for Internet addiction. This underscores the complex interplay between individual characteristics and specific online activities in contributing to the development of Internet addiction. Additionally, Yu et al. (2021) demonstrated that the Big Five personality traits, maladaptive cognitions, and Internet addiction predicted each other over time, with maladaptive cognitions mediating the associations between the Big Five personality traits and Internet addiction.

The study by Miškulin et al. (2022) investigated the association between personality traits of university students and Internet addiction, shedding light on the relevance of personality in understanding Internet addiction. The outcomes of the study revealed a significant association between specific personality traits and the risk of Internet addiction among university students. The results emphasised the significance of taking into account certain traits of students, such as neuroticism, conscientiousness and extraversion, while studying the development of internet addiction. Additionally, the study highlighted the need to explore the mediating factors contributing to the correlation between personality traits and the Internet. addiction, emphasising the complex interplay between individual traits and problematic Internet use.

Furthermore, Cazan (2019) associated internet addiction with the Big Five personality traits and Pavlinovic and Orešković (2018) concluded that neuroticism, extraversion, and openness to new experiences were more common among adolescents with moderate and serious internet addiction. These findings collectively suggest that there is a statistically significant relationship between personality traits and internet addiction among students. Moreover, Kircaburun et al. (2021) reported significant positive relationships between neuroticism and Internet addiction and significant negative relationships between extraversion, agreeableness, openness, and conscientiousness and Internet addiction, highlighting the multifaceted nature of this relationship.

In contrast, Haramain (2022) found that consciousness and openness to experience were not associated with Internet addiction, indicating the need for a nuanced understanding of the relationship between specific personality traits and Internet addiction. Additionally, Lee and Lim (2021) revealed that the dark traits significantly predicted Internet addiction after controlling for the Big Five personality traits, suggesting the importance of considering both dark and Big Five personality traits in understanding Internet addiction.

Khosravi et al. (2022) explored the mediating roles of general health and self-esteem in the relationship between personality traits and Internet addiction among college students. The outcomes of this study revealed several significant findings. Firstly, the research highlighted the mediating roles of general health and self-esteem in the association between personality traits and Internet addiction among college students. It emphasized the intricate interplay between these factors and their combined influence on the development of Internet

addiction. Additionally, the study shed light on the significance of considering general health and self-esteem as potential mediators in understanding the relationship between personality traits and Internet addiction, providing valuable insights into the complex mechanisms underlying problematic Internet use among college students.

However, some studies suggest that there is no statistically significant relationship between personality traits and internet addiction among students. For example, Cao et al. (2007) found that adolescents with Internet addiction exhibit more impulsivity than controls and have various comorbid psychiatric disorders, which could be associated with the psychopathology of Internet addiction. Additionally, Lee and Lim (2021) indicated that personality traits were not associated directly with Internet addiction but exerted their influences through corresponding behavioural patterns. Furthermore, Kırcaburun and Griffiths (2018) mentioned that the relationship between dark personality traits and problematic internet use has yet to be investigated.

The relationship between university students' Big Five Personality traits and Internet addiction is complex and multifaceted. While several studies have demonstrated significant associations between specific personality traits and Internet addiction, some findings collectively suggest no statistically significant relationship.

Difference Between Men and Women University Students Regarding Internet Addiction

There are conflicting findings regarding whether men are more addicted to the internet than women. Some studies indicate that men are more addicted to the internet, while others suggest that women are more prone to internet

addiction. Other scholars also found no significant difference among the sexes.

Several studies have indicated sex differences in the prevalence of Internet addiction among university students. For instance, a study in Saudi Arabia by reported varying prevalence rates of internet addiction among male and female medical students (Kolaib et al., 2020). Additionally, a study in Pakistan reported a statistically significant difference in Internet addiction between the sex with a higher prevalence among men students (Memon et al., 2021).

Furthermore, a study in Albania found that male students are more prone to Internet addiction than female students (Hasmujaj, 2021). Moreover, a study in Taiwan reported that male college students are more prone to Internet addiction than female students (Chiu et al., 2013). These findings collectively suggest that there is a gender disparity in the prevalence of Internet addiction among university students. According to Patil et al. (2017), there is a substantial difference in the occurrence of online addiction between men and women. This suggests that the prevalence of internet addiction among medical students in Nagpur, Maharashtra varies depending on gender.

These notwithstanding, there are some studies to suggest that women are more addicted to the internet than men. For example, the study by Leung and Lee (2012) found that students who are women tend to be more addicted to the internet, indicating a sex difference in internet addiction among university students. Taha et al. (2019), in their study of internet use and addiction among medical students in Saudi Arabia, also found that women were more frequent internet users than men. According to Ahmed (2021), men university students are more internet-addicted than women, whereas women show higher

psychosocial functioning. Similarly, Chiu et al. (2013) reported that female college students scored higher than male students in terms of mobile phone addiction, which may also reflect a higher tendency towards internet addiction. Additionally, a study in the Slovak Republic (Rigelsky et al., 2021) confirmed that female students tend to be more addicted to the Internet than male students. Furthermore, Shehata and Abdeldaim (2021) found that female students were more addicted to the internet than male students, particularly during the COVID-19 pandemic. Khan et al. (2017) also observed that female students were more addicted to the internet than male students, emphasising the gender differences in internet addiction among university students.

However, some studies have also revealed no difference among men and women about their addiction to the internet. For instance, a study in Hong Kong found that there are no significant gender differences in adolescent Internet addiction, indicating that gender variations in Internet addiction prevalence may vary across different age groups (Shek & Yu, 2016). Additionally, some studies, such as those by Černja et al. (2019) and Li (2022), conducted in Croatia and China respectively suggest that there is no difference in the level of internet addiction between men and women. Özdemir & Arslan (2018) in the studies on the moderating roles on the relation between internet addiction and burnout among Turkish university students also added that their statistical analyses revealed no significant difference between the degrees of internet addiction of female and male students.

Personality Traits and Internet Addiction among University Students: The Moderating Effect of Number of Hours Spent Online

The relationship between the hours spent online, personality traits, and

internet addiction has been a subject of interest in various studies. For instance, Tonioni et al. (2012) explored the associations between hours spent online, behaviours, and psychological symptoms related to internet addiction. The findings of this study revealed significant associations between the number of hours spent online and psychological symptoms related to internet addiction. Specifically, the research highlighted the relationship between excessive hours spent online and behaviours indicative of internet addiction, as well as the psychological symptoms associated with this addictive behaviour. Thus, Tonioni et al., (2012) provided valuable insights into the impact of prolonged internet use on psychological well-being and the development of addictive behaviours related to internet use.

Servidio (2019) found that limiting the number of hours spent online per day reduces the risk of internet addiction. Servidio (2019) also conducted a discriminant analysis to predict the impact of personality traits, self-esteem, and time spent online on different levels of internet addiction risk among university students. The results of this study indicated that certain personality traits, except for openness, were consistent with the outcomes of recent literature reviews (Peris et al. 2020: Sechi et al., 2020). For instance, Peris et al. (2020) conducted a study on psychological risk factors predicting social networking and internet addiction in adolescents, emphasizing the role of neuroticism as a psychological risk factor for internet addiction. These suggest that specific personality traits may interact with the number of hours spent online to influence the risk of internet addiction.

Alheneidi et al. (2021) reported a high correlation between loneliness and the number of hours spent online, suggesting that internet use may be high

due to feelings of loneliness and low social support. These data suggest that the amount of time spent online is a crucial component in comprehending internet addiction. In addition to the hours spent online, personality traits have been studied with internet addiction. Kuss et al. (2013) examined particular online activities that have the potential to be addictive and connected them to personality factors that make persons more likely to develop internet addiction. In addition, Kuss et al. (2014) established the construct validity of the Internet Addiction Components Model and personality, indicating a theoretical link between internet addiction and personality traits. The study suggested that specific personality traits, such as neuroticism, conscientiousness, and agreeableness, may be associated with internet addiction. Additionally, the study indicated that the hours spent online could moderate the relationship between these personality traits and internet addiction, potentially influencing the likelihood of individuals developing addictive behaviours related to internet usage. In short, this provides a foundation for understanding how specific personality traits may be associated with internet addiction and how the hours spent online could potentially moderate this relationship.

Durak and Senol-Durak (2014) investigated the roles of individual factors, including personality traits and time spent online, on cognitions related to problematic internet use. Their study suggests that certain personality traits may contribute to the development of internet addiction, and the number of hours spent online may interact with these traits to influence addiction risk.

Moreover, research has looked at the moderating effect of internet addiction on hours spent online. Hoare et al. (2016) conducted a systematic review of the associations between sedentary behaviour, including time spent

on sedentary activities, and mental health among adolescents. This review provides insights into the potential moderating role of sedentary behaviour, which includes online activities and internet addiction on mental health. Additionally, Dossari et al. (2022) reported that during the COVID-19 pandemic, schoolteachers spent two to five hours daily on online teaching, indicating a potential increase in online activity that may have implications for internet addiction.

In summary, this review of the literature reveals a complex interplay between these factors. The number of hours spent online is associated with internet addiction, and certain personality traits may influence this relationship. Furthermore, the potential moderating role of online hours on mental health and addiction during specific circumstances, such as the COVID-19 pandemic, has also been highlighted.

Conceptual Framework

The conceptual framework for this study was developed using the theoretical and empirical review as a foundation. Some studies suggest that the personality traits of students can predict their addiction to the internet. Sex of students has also been found to have a direct relation to addiction to the internet. Researchers have also discovered that students' personality traits and internet addiction are moderated by the amount of time they spend online. In Figure 1, the conceptual framework is displayed. The framework aids in illustrating the relationship between the variables under investigation and the particular hypotheses formulated for this study.

The impact of University Student's Big Five Personality traits on internet addiction forms my first hypothesis. The relationship between the sex of university students and internet addiction forms my second hypothesis. Lastly, my third hypothesis examined the moderation effect of the number of hours spent online on personality traits and internet addiction of university students.

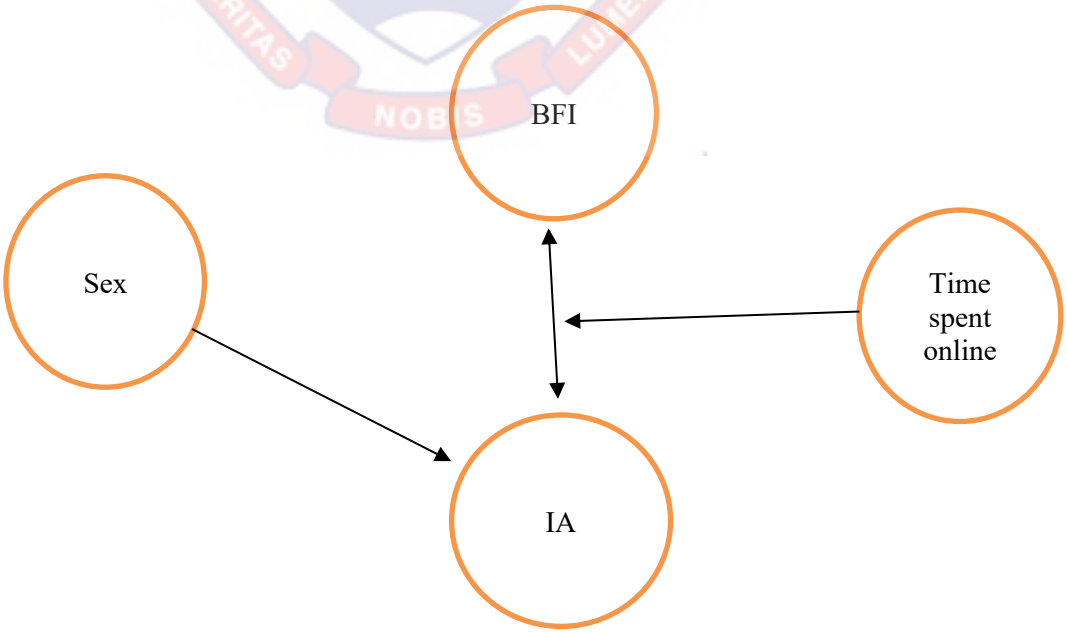

Figure 1: The Conceptual Framework of the Study Source: The Researcher's Construct (2023)

Chapter Summary

This chapter presents some of the relevant related literature for this study. The topical areas that are reviewed in this chapter included theories such as personality traits, uses and gratifications theory and social skills theory. The researcher also reviewed empirical studies on online activities university students engage in frequently, the relationship between university students' Big Five Personality Traits and internet addiction, differences between men and women University Students regarding internet addiction, online time engagement and internet addiction among university students and the moderating role of sex in the relationship between Personality Traits and internet addiction. The final section of this chapter presents the conceptual framework of this study.

CHAPTER THREE

RESEARCH METHODS

Research methodologies are the main topic of this chapter. It will address the population, study region, sample and sampling process, data collection tool, data collection process and data analysis method. It also provided detailed information on how the study will be conducted.

Research Paradigm

The researcher used the positivist research paradigm for the study. The positivist research paradigm is a philosophical framework that emphasises objectivity, empirical observation, and the scientific method in the pursuit of knowledge (Romani et al., 2011). Positivism holds that the social world can be studied similarly to the natural sciences, aiming to uncover general laws that govern human behaviour (Primecz et al., 2011). This paradigm values quantifiable data, reproducibility, and the verification of hypotheses through systematic observation and experimentation (Sanchez et al., 2023).

In this study context, the positivist research paradigm was appropriate. By adopting a positivist approach, a researcher could systematically investigate the relationships between research variables among the target population using standardised instruments and rigorous methodologies (Andreassen et al., 2013; Kuss et al., 2013; Kırcaburun & Griffiths, 2018; Yu et al., 2021; Peris et al., 2020; Lee & Lim, 2021; Kuss et al., 2014; Sulaiman et al., 2019). The positivist paradigm allowed for the collection of quantitative data that could be analysed statistically to identify patterns, correlations, and predictive models (Kırcaburun & Griffiths, 2018; Yu et al., 2021; Peris et al.,

2020; Lee & Lim, 2021; Kuss et al., 2014; Sulaiman et al., 2019; D'Souza et al., 2018). This approach aligned well with the study's objective of examining the prevalence of internet addiction and its impact on specific personality traits among Ghanaian university students.

Furthermore, the positivist paradigm's emphasis on objectivity and the systematic testing of hypotheses is crucial in ensuring the study's credibility and reliability (Romani et al., 2011). By following a positivist approach, the researcher could minimise bias, control extraneous variables, and draw valid conclusions based on empirical evidence (Romani et al., 2011). This rigorous methodology is essential in the study of complex phenomena like internet addiction, where clear associations with personality traits need to be established (Lee & Lim, 2021; Kuss et al., 2014; Sulaiman et al., 2019; D'Souza et al., 2018). In short, the positivist research paradigm provided a solid foundation for this study. By embracing the principles of objectivity, empirical observation, and systematic inquiry, the researcher can effectively explore the relationships between personality traits and internet addiction within the target population, contributing valuable insights to the field of psychology and addiction studies.

Research Approach

The present study ultilised a quantitative research approach. The process entails precisely characterising a specific phenomenon within a population, enabling the researcher to draw broader conclusions (Salehi et al., 2014). Typically, quantitative research relies on the use of deductive reasoning. In the research process, a researcher typically initiates by formulating a hypothesis, followed by the collection and subsequent data

analysis to determine the extent to which the hypotheses may be substantiated (Ponterotto, 2005).

Quantitative analysis necessitates the utilisation of numerical representations for variables. Variables are a means of approximating a characteristic that possesses multiple values (Ponterotto, 2005). Numerous characteristics, such as age or height, inherently exhibit variability. The numerical values correspond to the aggregate characteristics that they symbolise. In addition to numerical indicators, scholars also recognise the significance of non-numerical attributes, including gender, spirituality, and educational attainment.Numerical values are used in quantitative analysis to represent the aspect for analytical purposes. However, it is important to note that these numerical representations do not necessarily encapsulate the complete summation of the attributes being examined, unlike what is typically understood as "true numerical data" (Cohen, 2009).

Various sorts of quantitative data can be acquired (Ponterotto, 2005). Objective data can be acquired in a controlled laboratory environment, whereas subjective data can be gained from individuals using methods such as self-reporting. Quantitative data collection involves using questionnaires to obtain information from people, encompassing several factors such as socio-demographic variables and perceptions, among others.

Research Design

Saunders et al. (2007) propose that the research design encompasses the overarching strategy employed to address research questions or examine hypotheses. The authors additionally asserted that the document has explicit objectives drawn from the research questions or hypotheses drawn from the

research questions or hypotheses, and it specifies the source from which the data is obtained. The authors additionally asserted that the data might be gathered at a singular moment, albeit the duration required to acquire all the data can vary from a single day to several weeks or even longer. That is, according to Saunders et al., (2007), the variation in data collection duration is influenced by several factors, that could include the nature of the research, the complexity of the phenomena under investigation, and the methodological approach employed

The cross-sectional survey design involves collecting data simultaneously to draw judgements about a specific population of interest. According to Groves et al. (2011), cross-sectional research can be described as capturing visuals of populations at one- or several-time intervals, focusing on the current state of the phenomenon under investigation. The chosen research design is deemed suitable for gathering data on how personality traits can predict or influence internet addiction among university students in Ghana.

Cross-sectional studies offer a glimpse of the current situation as opposed to longitudinal studies, which look at a cohort of people over a longer period. The survey can be carried out utilising several methods of data collecting, such as telephone interviews, in-person interviews, mailed questionnaires, self-administered questionnaires, electronic mail, web-based data collection, or a combination of data collection modes (Dillman, 2007).

Babbie (2007) asserts that the cross-sectional survey design offers the benefits of cost-effectiveness and efficient data collecting, as well as the

capacity to infer demographic features from a limited sample size. In other words, conducting and administering it is rather efficient and cost-effective. One of the notable benefits of employing a cross-sectional study design is the ability to determine the prevalence of the result of interest. Additionally, this design allows for the simultaneous assessment of several risk factors and outcomes. Nevertheless, the utilisation of cross-sectional studies also entails intrinsic drawbacks. Establishing causal inference is challenging in this study, as it can only provide a static representation of the issue at hand. The prevalence of a phenomenon is subject to the influence of the temporal scope of the research, as noted by Levin (2006).

The study examined the potential impact or predictive nature of students' personality traits on internet addiction. The utilisation of a cross-sectional survey design was deemed suitable for this study due to its ability to gather data from a representative sample derived from a pre-established population, to identify the prevailing characteristics within a said population at a specific moment in time.

Study Area

The research was carried out at the academic institutions of the University of Ghana and the University of Cape Coast. The University of Ghana (UG), considered the leading institution of higher education in Ghana, was established through an Ordinance on August 11, 1948. The Legon campus is the primary site for academic instruction and research activities at the University of Ghana. The Legon campus is around 13 km northeast of Accra, the capital city of Ghana, at an elevation ranging from 300 to 400 feet (About UG, 2023. Retrieved from https://www.ug.edu.gh/about/overview)

The following represents the student body distribution for the 2022/2023 academic year:

Table 1: Enrolment statistics for the University of Ghana

Graduate and Undergraduate Enrolment		
	No.	**%**
Undergraduate	44474	82.9
Masters	6339	11.8
PhD	1014	1.9
Sub-Degree	1551	2.9
Visiting Students	265	.5
Total	**53643**	**100**

Source: University of Ghana Enrolment and Graduation Statistics, 2023.

The University of Cape Coast, a publicly funded higher education institution, is located in the historically significant town of Cape Coast. The university is spread across two main campuses: The Southern Campus, also known as the Old Site and the Northern Campus, referred to as the New Site. Notably, the university is situated just a few kilometres away from two of Ghana's prominent historical landmarks, Elmina Castle and Cape Coast Castle (History of University of Cape Coast. Retrieved 12 August 2023).

The University of Cape Coast's student body distribution for the 2022-2023 academic year is as follows:

Table 2: ***Enrolment Statistics for University of Cape Coast***

Enrolment Statistics by Gender						
	Gender	**Regular**	**Distance**	**Sandwich**	**IOE Sandwich**	**Total**
Certificate	Male			2		2
	Female			7		7
Total				9		9
Diploma	Male		5271	132		5403
	Female		5963	173		6136
Total			11234	305		11539
Undergraduate	Male	13072	8324	561	9937	31894
	Female	10465	7936	686	9425	28512
Total		23537	16260	1247	19362	60406
Masters	Male	709	1287	1321		3317
	Female	439	952	940		2331
Total		1148	2239	2261		5648
PhD	Male	372				372
	Female	206				206
Total		578				578
PGDE	Male		29	148		177
	Female		42	86		128
Total			71	234		305
Total	Male	14153	14911	2164	9937	41165
	Female	11110	14893	1892	9425	37320
Total		25263	29804	4056	19362	78485

Source: (Enrolment Facts. University of Cape Coast. 22 March 2022. Retrieved 22 July 2023).

The researcher selected the University of Cape Coast (UCC) and the University of Ghana, Legon (UG) as study locations due to their convenient accessibility and the expectation of a diverse student population with varied backgrounds, ethnicities, and personalities. These environments provide a full

depiction of personality traits and internet addiction among students belonging to diverse demographic groups.

Population

The study was carried out in Ghana at two leading universities: the University of Cape Coast (UCC) and the University of Ghana, Legon (UG, Accra). The research focused on undergraduate students who consented to participate voluntarily. The two universities collectively account for a significant student body, with UG enrolling 44,474 undergraduates and UCC enrolling 23,537 undergraduates, resulting in a total of 68,011 students (University of Ghana Enrolment and Graduation Statistics, 2022; University of Cape Coast Enrolment Facts, 2022). The selection of these institutions is based on established methodological practices and the necessity to ensure representativeness and generalisability within the context of university education in Ghana.

Recent research on internet addiction and related personality traits among university students in Ghana has been conducted in prominent institutions, including the Kwame Nkrumah University of Science and Technology (KNUST) and other tertiary environments (Mahama et al., 2024; Tachie-Menson et al., 2025; Amoah et al., 2020). These studies highlight the importance of choosing universities with large and diverse student populations, as these environments offer a range of experiences and behaviours that are crucial for enhancing the validity and reliability of research findings.

In research methodology, the term population denotes the entire collection of individuals or elements within a defined geographic area or context that a researcher aims to investigate (Adeniyi et al., 2011). Undergraduate students were deemed a suitable population because of their

significant internet usage and elevated digital literacy, both of which are closely linked to the risk of internet addiction (Veen & Vrakking, 2006; Leung & Lee, 2012). Additionally, university students frequently experience free internet access, flexible schedules, and limited parental oversight, factors that have been demonstrated to increase the likelihood of problematic internet use (Kuss et al., 2013). The size, diversity, and accessibility of the university population make UCC and UG appropriate for examining the relationship between personality traits and internet addiction in Ghana.

Inclusion Criteria

The inclusion criteria for this study included:

1. Men and women aged 18 years and above.
2. Currently enrolled in the University of Cape Coast or University of Ghana, Legon, as an undergraduate student.
3. Access to the internet and smart mobile devices.
4. No current diagnosis of a mental health disorder or substance abuse disorder.

Sampling Procedure

Frey et al., (2000) define a sample as a population subdivision. The sample must be representative as each unit selected for sampling will accurately reflect the characteristics of a specific number of units within the larger population (Lohr, 2021). A sample size of 205 out of a targeted 250 students from the University of Cape Coast (UCC) and the University of Ghana, Legon (UG) was utilised. The sample size was calculated using the G*Power. G*Power is utilised to determine the required samples, effect size and other relevant parameters, including statistical power, across a range of tests (Serdar et al., 2021). According to Faul et al. (2009), G power is a tool that assists researchers in determining the minimum sample size required for investigating a certain population. After obtaining the minimum required sample size, a researcher may opt to increase the sample size.

The study required a minimum sample size of 89 participants, as determined using G power. The accessible population for the study were

undergraduate students whom the researcher could reach out to and who were willing to participate in the study (Faul et al., 2009).

Sampling is the systematic process of selecting a representative subset from a larger population to accurately reflect a specific target group, thereby enabling effective data collection (Sarantakos, 2005). The sampling strategy employed in this study was convenience sampling, more precisely the maximum variation sampling approach (heterogeneous sampling), to identify and choose participants. This methodology involves purposefully selecting conveniently and readily available participants while also assuring the inclusion of a diverse range of individuals from the target population.

Multiple online platforms were utilised for the dissemination of the questionnaires. The process entailed disseminating emails to students, distributing the questionnaire through student class WhatsApp group sites, and coordinating with student class representatives and some Teaching Assistants to facilitate widespread awareness.

Demographic information including sex, age, educational level, university affiliation, field of study, and other pertinent background data were collected. Due to the comparative advantages of overpopulation versus underpopulation, 205 participants were ultimately selected for the study.

Data Collection Instruments

Utilising a questionnaire as a method of data collection can be beneficial for acquiring self-reported information from those participating in a study (Johnson & Onwuegbuzie, 2004). The selection of a research instrument is contingent upon the specific qualities a questionnaire exhibits. According to Kothari (2004), surveys afford respondents sufficient time to

offer thoughtful and reasoned comments. Due to their low response rate, questionnaires may introduce bias into the collected replies (Creswell & Creswell, 2017). The adoption of this method has been justified due to its efficiency in saving time, its capability to generate a comprehensive geographical sample, and its capacity to encompass a high sample size (Amedahe & Asamoah Gyimah 2002).

In this study, the researcher collected the data to elicit relevant responses to achieve the study's objectives. The questionnaire contained close-ended questions with instructions on how to fill them without errors. Close-ended questionnaires allowed for specific structured answers or a selection of choices.

A 3-part questionnaire was used to obtain data for this study. Part A of the questionnaire solicited demographic characteristics, and the subsequent sections measured personality traits (Big Five Inventory-BFI-10) and internet addiction (Internet Addiction Test-IAT). The Internet Addiction Test (IAT) has a Cronbach's α of .917 (Hawi & Samaha, 2019), and the 10-item short version of the Big Five Inventory (BFI-10) has a Cronbach's α of 0.77 (Kotov et al., 2010). The CAGE (derived from the four questions of the tool: Cut down, Annoyed, Guilty, and Eye-opener), which has a Cronbach's α of (0.84 to 0.89) (Basu et al., 2016), was used to screen participants for substance abuse.

The Internet Addiction Test (Young, 1998)

The Internet Addiction Test (IAT) developed by Young in 1998 is a self-report scale comprising 20 items. It is designed to evaluate internet addiction by utilising criteria derived from substance dependency and compulsive gambling as outlined by the American Psychiatric Association (APA, 1994). The criteria encompass various dimensions, namely Salience (as indicated by

questions 10, 12, 13, 15, and 19), Excessive Use (as reflected in questions 1, 2, 14, 18, and 20), Neglect of Work (as evidenced by questions 6, 8, and 9), Anticipation (as assessed by questions 7 and 11), Lack of Control (as measured by questions 5, 16, and 17), and Neglect of Social Life (as indicated by questions 3 and 4). The Internet Addiction Test (IAT) employs a Likert scale that spans from 1 ("not at all") to 5 ("always"), enabling a dimensional evaluation rather than a categorical one. The survey includes questions such as "To what extent do you exceed your intended online duration?", "To what extent does your academic performance or school- related tasks deteriorate due to excessive online activity?", and "To what extent does your sleep get compromised as a result of being engaged online?". According to Young (2015), a scoring system ranging from 0 to 30 is used to indicate normal usage, while scores between 31 and 49 suggest mild addiction. Moderate addiction is indicated by scores ranging from 50 to 79, while severe dependency is represented by scores falling within the range of 80 to 100. Hawi and Samaha (2019) have stated that the internal consistency of the Internet Addiction Test (IAT) is deemed satisfactory, as indicated by Cronbach's alpha coefficient of .917.

Big Five Inventory-BFI-10 (Rammstedt & John, 2007)

The study involved a comparison between students' internet use and their self-reported replies on a questionnaire that aims to assess personality traits. Specifically, the questionnaire used was a short version of the Big Five Inventory, consisting of 10 items, as developed by Rammstedt and John in 2007. The Big Five Inventory (BFI) is a highly prevalent personality model in academic and research settings. The Big Five Model posits that personality

traits encompass neuroticism, openness to experience, extraversion, agreeableness, and conscientiousness. As part of the Big Five Inventory (BFI), a scale consisting of five items was developed, with response options ranging from "strongly disagree" (1) to "strongly agree" (5). The personality of an individual can be discerned across multiple levels of analysis. Several sample items are provided, such as "I see myself as an individual who exhibits reserved tendencies," "I see myself as an individual who possesses outgoing and sociable qualities," "I see myself as an individual who demonstrates meticulousness in tasks," and "I see myself as an individual who experiences heightened nervousness." The Big Five Model is commonly utilised in diverse cultural settings (Günaydin, 2021; Hosťovecký & Prokop, 2018) and multiple domains of psychological research (Rammstedt & John, 2007). The Cronbach's α coefficient for the Big Five Inventory (BFI-10) was reported to be 0.77 in the study conducted by Kotov et al. (2010).

The CAGE-AID (Ewing, 1970)

The CAGE-AID (CAGE-Adapted to Include Drugs) questionnaire is a concise and widely utilised screening tool that consists of four questions. These questions are as follows: ―Have you ever tried to Cut down your drinking or drug use; have people Annoyed you about your drinking or drug use; have you ever felt Guilty about your drinking or drug use; have you ever had a drink first or used drugs thing in the morning to steady your nerves or to get rid of a hangover (Eye opener)?‖ (Smith et al., 2011). By using this screening tool, the researcher aimed to rule out any underlying issues related to alcohol or drug abuse that could potentially influence internet addiction behaviours. The CAGE-AID questionnaire has exhibited robust test-retest reliability and

satisfactory associations with other screening measures, thus establishing its validity as an effective tool for identifying alcohol misuse and dependence (Aertgeerts et al., 2004; Aertgeerts et al., 2000; Gordon et al., 2004; Alpers et al., 2021; Dhalla & Kopec, 2007; Maisto & Saitz, 2003). Furthermore, several research studies have employed the CAGE-AID questionnaire to assess substance use disorders beyond alcohol. This involves modifying the questions to encompass additional drugs (Jamison et al., 2011). In addition to assessing the extent of issues arising from substance use disorders, identifying abuse through opportunistic screening plays a crucial role in mitigating associated morbidity and mortality risks (Dhalla & Kopec, 2007). The CAGE-AID questionnaire demonstrates robust internal consistency as evidenced by Cronbach's alpha coefficients ranging from 0.84 to 0.89 (Adger & Saha, 2013).

Pre-test

Pre-testing was conducted at the University of Education, Winneba. The aim was to help identify any technical issues and improve the efficiency of data collection for the study. The appropriate sample size for studies is a matter of debate, with recommendations ranging from 10 to 12 participants per group to 60 to 75 participants per group, depending on the primary purpose of the study (Lewis et al., 2021). Based on the above recommendations, the researcher used 42 students for the pre-testing. Studies have found that scales possessing a Cronbach‘s alpha coefficient equal to or exceeding .70 demonstrate reliability (Hair et al., 2013; Pallant, 2011). Table 3 shows that the pre-test results displayed Cronbach‘s Alpha values of .70 or higher for the constructs employed in the research. Therefore, the reliability coefficients of the various instruments were suitable for the study.

Table 3: ***Reliability Estimates***

Construct	Cronbach's Alpha
Agreeableness	.772
Conscientiousness	.724
Extraversion	.807
Neuroticism	.721
Openness	.740
CAGE-AID	.754
Internet Addiction Test	.880

Source: Field Survey (2023)

Ethical Consideration

The researcher gained ethical approval from the Institutional Review Board of the University of Cape Coast (see Appendix C). Informed consent ensured participants understood the study's goals, procedures, risks, and benefits. Participants' data and responses were protected by privacy and confidentiality procedures. To avoid compulsion, voluntary involvement was maintained. The researcher also ensured that there were measures to reduce emotional and psychological suffering.

The researcher clearly explained the study on the consent form so that participants can willingly enter the study with adequate information about the essence of taking part, and consent to enter the study. Participants were allowed to ask questions and make informed decisions about their involvement. The researcher used unique participant identifiers instead of personal information to ensure privacy. Restricted access to the data was limited to only the researcher and supervisor. Thirdly, research involvement was clearly stated as voluntary and individuals could withdraw at any time without consequence.

Participants would also receive counselling contact information if they were uncomfortable. This would reduce risk and protect respondents. This strategy respected autonomy and avoided compulsion. Finally, the researcher emphasised the importance of diverse personality traits and said the study tried to understand rather than judge behaviours. This was crucial to eliminate stigma and promote non-judgmental research.

Data Collection Procedures

All ethical considerations in conducting research studies were adhered to. The University of Cape Coast Institutional Review Board stipulated that all other requirements were followed before data collection began. Data collection was done systematically and personally by the researcher. An online questionnaire (Google Forms) was emailed or WhatsApped to the students who consented to participate in the study. The online survey also contained the instructions and consent form for the participants to read and sign. Data were collected from the respondents in two (2) weeks starting from the first week in November 2023 to the third week in November 2023, with the help of some course representatives and Teaching Assistants. Out of 250 expected responses from participants, 205 were deemed valid for analyses. The response rate was 82%.

Data Processing and Analysis

In this study, the collected data underwent statistical analysis using Statistical Package for Social Sciences (SPSS) for Windows, version 22.2, as the primary software tool (Babbie et al., 2022). The provided tool encompassed a comprehensive array of descriptive and inferential statistical techniques, proficient editing capabilities, efficient labelling features, and the capacity to

generate output in tabular formats and concise summaries. Additionally, it possesses the ability to manage missing data effectively (Ullah & Ameen, 2021).

The study questions one (1) and two (2) were analysed using frequencies and percentages. The researcher adopted the frequencies and percentages for research questions one and two because it helps to describe certain features and patterns of the groups in the data that the researcher collected (Lavrakas, 2008). In other words, the use of frequencies and percentages to analyse the prevalence rate of internet addiction and the online activities that university students engage in is appropriate due to its ability to provide a comprehensive understanding of the prevalence and distribution of various online activities among the student population (Heidari et al., 2021; Yasin et al., 2023; Bala, 2021).

Multiple Linear Regression was used to analyse the research hypothesis one (1). The use of this model was deemed appropriate as it helps to analyse the relationship between multiple independent variables and a single dependent variable, handles interactions and covariates, and provides robust estimates in various research contexts (Uyanık & Güler, 2013).

Independent samples t-test was used to analyse hypothesis two (2). The use of an independent samples t-test to analyse the hypothesis of a statistically significant difference between men and women university students regarding internet addiction was appropriate due to its ability to compare the means of two independent groups and determine whether there is a significant difference between them (Randler et al.,2014; Lee; Kuss et al., 2014; Pavlinovic & Orešković, 2018; Cazan, 2019; Lee & Lim, 2021; Zewde et al., 2022).

Hayes Process Macro - Model 1 was used for the analysis of hypothesis three (3). The index of moderated is utilised to make inferences about whether the indirect effect of X on Y through M is influenced by Wo (Hayes et al., 2017). In other words, this model was selected because it facilitated the exploration of hypotheses involving various intervening factors (hours spent online) that may moderate causal effects (Chiu & Ho, 2023) while also enabling the examination of the predictor variable's impact (BFI) on the outcome variable (IA).

Chapter Summary

This section outlines the methods and approaches used in the research. It details the process of collecting data, covering aspects such as the research paradigm and design, study location, the group being studied, how participants were selected, the size of the sample, the tools used for research, testing these tools beforehand, how data was collected, processed, analysed, and the ethical considerations used during the research.

CHAPTER FOUR

RESULTS AND DISCUSSION

The results of the analysis of the data gathered to answer the research questions and hypotheses of the study are presented in this chapter. It begins by presenting the socio-demographic characteristics of university students. This section goes on to describe the prevalence rate of internet addiction among university students in Ghana. Following this, it delves into two sections exploring the online activities frequently undertaken by these students and the impact of University Students' Big Five Personality Traits on internet addiction. Additionally, it scrutinises the differences in internet addiction between male and female university students. Furthermore, it outlines the findings concerning how the number of hours spent online moderates the relationship between personality traits and internet addiction among university students. Finally, the chapter concludes by summarising and discussing the results obtained in this study.

Socio-Demographic Characteristics of University Students

This section presents the socio-demographic details of the respondents. The details covered here include the sex of the respondents, age range, educational level, average money spent online, and the number of hours spent online each day. The subsequent table displays the outcomes of the analysis for the mentioned variables.

Table 4: ***Socio-Demographic Distribution of University Students***

		Frequency	Percentage (%)
Sex	Men	96	46.8
	Women	109	53.2
Age Range in Years	18-24	151	73.7
	25-30	53	25.9
	31-40	1	.5
	40+	0	0
Years	First-year undergraduate	38	18.5
	Second-year undergraduate	45	22
	Third-year undergraduate	53	25.9
	Fourth-year undergraduate	69	33.7
University	UCC	103	50.2
	UG	102	49.8
Amount (GH₵)	Less than 100	31	15.1
	100-200	56	27.3
	200-300	73	35.6
	300-400	38	18.5
	400 cedis+	7	3.4
Hours	Less than 1	1	.5
	1-2	4	2
	2-4	24	11.7
	4-6	95	46.3
	More than 6	81	39.5
Cut down on drink or drug use	Yes	3	1.5
	No	202	98.5
Criticised for drinking or drug use?	Yes	1	.5
	No	204	99.5
Guilty of drinking or drug use	Yes	0	0
	No	205	100
Morning drink or drug (eye-opener)?	Yes	0	0
	No	205	100
Diagnosis of any mental disorder within the last 6 months?	Yes	0	0
	No	205	100

Source: Field Survey (2023)

Table 4 provides a detailed demographic overview of the participants involved in the study. It reveals that out of the total 205 participants from both universities, 53.2% were women, amounting to 109 participants, while 46.8% were men, totaling 96 participants. In terms of age distribution, the majority of the participants, 73.7%, were within the 18-24 age range, which accounted for 151 participants. Those aged between 25-30 years constituted 25.9% of the participants, with 53 students falling into this category. Only one student, representing .5% was in the 31-40 age range. Regarding educational levels, final-year students were the most prominent, comprising 33.7% of the participants (69 students), followed by third-year students at 25.9% (53 students), second-year students at 22% (45 students), and first-year students at 18.9% (38 students). The universities from which the participants were drawn were predominantly the University of Cape Coast (UCC) with 50.2% (103 participants) and the University of Ghana, Legon (UG) with 49.8% (102 participants).

In terms of expenditure on data bundles per month, the majority of participants, 35.6% (73 students), spent between GhȻ 200-300, followed by 27.3% (56 participants) spending between GhȻ 100-200, and 18.5% (38 participants), spending between GhȻ 300-400. Additionally, 15.1% (31 participants) spent less than GhȻ 100, while only 3.4% (7 participants) spent over GhȻ 400 monthly. Concerning daily internet usage, 46.3% of students spent 4-6 hours online, 39.5% spent more than 6 hours, 11.7% spent 2-4 hours, 2% spent1-2 hours, and .5% spent less than an hour daily. About substance use and other related behaviours, only 1.5% (3 participants) felt the need to cut down on their drinking or drug use, .5% (1 participant) reported

being criticised for drinking or drug use, none felt guilty about their drinking or drug use, and no participant admitted to consuming a drink or drug in the morning as an eye-opener or having been diagnosed with a mental disorder in the last six months.

Main Results Research Question 1

What is the Prevalence of Internet Addiction among University Students in Ghana?

The purpose of this research question was to determine the prevalence rate of Internet Addiction among University students in Ghana. The Internet Addiction Test (IAT) was used to determine the prevalence rate among students. The 20 items on IAT are rated on a 5-point scale from 0 to 5. The highest an individual can score on the scale is 100 points. The higher the score one gets, the higher the severity of the person's addiction to the internet. The scores for the scale have the following ranges:0 to 30 is considered a normal level of internet usage; a range of 31 to 49 reflects the presence of a mild level of internet addiction; scores of 50 to 70 indicate a moderate level of internet addiction and range from 80 to 100 represents severe dependence on the internet. The analysis of the results of the responses on the prevalence rate of Internet Addiction among University students is shown in Table 3 below.

Table 5: ***Prevalence Rate of Internet Addiction Among University Students***

Levels	Frequency	Percentage (%)
Normal (0-39)	69	32.7
Mild (31-49)	97	47.3
Moderate (50-79)	41	20
Severe (80-100)	0	0
Total	205	100

Source: Field Survey (2023)

The prevalence of internet addiction among Ghanaian university students is shown in Table 5. According to the above statistics, University students have mild levels of internet addiction (47.3%). Furthermore, 69 participants, representing 32.7%, had normal internet usage, while 41 participants (20%) had moderate internet addiction. From the above report, it can be concluded that most participants have mild levels of internet addiction.

Research Question 2

What Online Activities Do University Students Engage in Frequently?

The purpose of this study was to identify the regular internet activities that Ghanaian university students partake in. Table 4 below displays the findings of the study of the responses to the online activities that students participated in regularly.

Table 6: ***Online Activities Engaged in Frequently***

Online Activities	Frequency	Percentage (%)
Social networking	173	84.4
Online gaming	22	10.7
Streaming videos/movies	77	37.6
Online Shopping	29	9.8
Studying/Research	168	82

Source: Field Survey (2023)

Table 6 represents the online activities that the University students engage in frequently. Participants had the opportunity to select more than one online activity that they engaged in most of the time. From the above table, social networking was the highest activity that most university students engaged in (84.4%), followed by studying/research activities (82%), streaming videos/movies (37.6%), online gaming (10.7%) and online shopping (9.8%). It can also be drawn from this study that participants used multiple online activities in a given period. For example, some students might be studying while accessing social media, engaging in online gaming, or viewing films on the internet. From the above table, it can, therefore, be concluded that social networking is one of the most frequently used internet activities by the participants.

Hypothesis Testing

The study's hypotheses are showcased in this segment, with three hypotheses subjected to testing.

Hypothesis 1

H_o: Openness (H1a) and conscientiousness (H1b) will not have a statistically significant negative impact on internet addiction.

H_1: Openness (H1a) and conscientiousness (H1b) will have a statistically significant negative impact on internet addiction.

H_o: Extraversion (H1c) will not have a statistically positive impact on internet addiction.

H_1: Extraversion (H1c) will have a statistically significant positive impact on internet addiction.

H_o: Agreeableness (H1d) and Neuroticism (H1e) will not statistically

significant impact internet addiction.

H_1: Agreeableness (H1d) and Neuroticism (H1e) will statistically significant impact internet addiction.

The purpose of Hypothesis 1 was to investigate the relationship between the Big Five Personality Traits and Internet Addiction by examining Multiple Linear Regression. This model was selected because it facilitates the analysis of the predictor variable's impact (BFI) on the outcome variable (IA) as well as improving prediction accuracy (Hosmer et al., 2008).

Table 7: ***The Big Five Personality Traits' Effect on University Students' Internet Addiction***

Variable	B	SE B	β	*t*	*p*
Extra	.058	.022	.171	2.602	.010
Agre	.039	.031	.078	1.243	.216
Cons	-.138	.032	-.316	-4.322	.000
Neur	-.024	.024	-.068	-1.007	.315
Open	-.107	.031	-.244	-3.475	.001
R^2	.232				
F	12.012				

Dependent Variable: Internet Addiction

Predictors (Constant), Open, Agre, Neur, Extra, Cons

The regression model explained 23.2% of the variance in internet addiction. Personality traits (BFI) collectively are a significant predictor of internet addiction F (5,199) =12.012, p<.001. The hypothesis predicted that Openness, Conscientiousness and Extraversion are substantial predictors of Internet addiction. Results displayed in Table 7 showed that Openness (β = -.107, p < .001), and Conscientiousness (β = -.138, p < .001), representing hypotheses 1a and 1b respectively had a significant negative impact on internet addiction thus supporting these hypotheses. Additionally, Extraversion (β = .058, p = .010), representing hypothesis 1c had a significant positive impact on

internet addiction, hence the working hypothesis was supported.

The agreeableness (β = .039, p = .216) and neuroticism (β = -.024, p= .315), representing hypotheses 1d and 1e respectively did not have a statistically significant impact on internet addiction. Therefore, the findings provide insufficient evidence to reject the null hypotheses (Ho), confirming that Agreeableness and Neuroticism do not predict internet addiction in the study context.

Hypothesis 2

Ho: There is no statistically significant difference between men and women university students regarding internet addiction.

H_1: There is a statistically significant difference between men and women university students regarding Internet addiction.

The focus of this hypothesis was to examine the difference between men and women university students regarding their addiction to the Internet.

The hypothesis was tested using the independent samples t-test. The independent samples t-test is suitable for comparing the means of two independent groups to ascertain whether a significant difference exists between them. This test is ideal for examining differences between groups on a continuous dependent variable, such as the level of internet addiction, based on a categorical independent variable, in this case, sex (Rodriguez et al., 2023). It also provides a robust and interpretable way to assess differences in the levels of internet addiction between male and female students.

Table 8: ***Difference Between Men and Women University Students Regarding Internet Addiction***

	Man		Woman					95% CI		
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*Sig(2-tailed)*	*LL*	*UL*	*d*
Scores	34.89	12.78	38.81	15.54	1.98	203	.052	-7.87	.028	.15

N=205

M= means SD= standard deviation CL= confidence interval LL=lower level UL=upper level

The findings in Table 8 indicate no statistically significant difference in internet addiction between men and women university students. The p-value (.052) is slightly above the conventional significance level of .05, suggesting a failure to reject the null hypothesis cautiously. Based on the provided results, there is limited evidence to support the assertion that there is a statistically significant difference in internet addiction scores between men and women university students. Stemming from the above result, the researcher concludes that there is no difference between men and women Ghanaian University students in terms of their addiction towards the internet.

Hypothesis 3

Ho: The number of hours spent online will not moderate the relationship between Big Five Personality Traits and Internet Addiction.

H_1: The number of hours spent online will moderate the relationship between the Big Five Personality Traits and Internet Addiction.

Hypothesis 3 explored the moderating role of hours spent online on the impact of specific Big Five Personality Traits (BFI) on Internet Addiction (IA). Hayes Process Macro - Model 1 was used for analysis. Hayes Process Macro-Model 1 is suitable for this analysis as it allows for the examination of H3 about

various intervening factors by which causal effects operate (Chiu & Ho, 2023). Additionally, it offers an index of moderated mediation, which is utilised to determine whether W is moderating the indirect influence of X on Y through M (Hayes et al., 2017).

Table 9: ***Matrix Procedure of hours Spent online on BFI and IA***

					95%CL	
	coeff	*se*	*t*	*p*	*LLCL*	*UCL*
Ext x hrs	.005	.029	.171	.865	-.052	.062
Open x hrs	.041	.039	1.059	.291	-.036	.118
Con x hrs	.103	.031	3.315	.001	.042	.165
Agre x hrs	.180	.043	4.217	.000	.096	.263
Neur x hrs	.700	.027	2.544	.012	.015	.121

The moderation analyses of the amount spent online with Extraversion, Openness, and Conscientiousness predicted internet addiction produced mixed results. The interaction of Extraversion with hours spent online was not statistically significant, (β=.005, 95% Cl [-.052, .062] t= .171, p=.865), indicating that hours spent online did not significantly moderate the relationship between Extraversion and internet addiction. Moreover, the interaction of Openness with hours spent online was not statistically significant (β = .04, 95%Cl [-.036, .118] t= 1.059, p = .291), thus suggesting that hours spent online do not moderate the relationship between Openness and internet addiction.

However, there was a statistically significant interaction between conscientiousness and the hours spent online, (β =.103, 95%Cl [.042, .165], t=3.315, p <.001). The result showed the time spent online significantly moderated the relationship between conscientiousness and internet addiction;

that is, students who are higher in conscientiousness may show a stronger relationship between time spent online and their vulnerability to internet addiction.

Hours spent online significantly moderated the relationship between Agreeableness and internet addiction, (β = .180, 95% Cl [.096, .263], t = 4.217, p < .001). This indicated that the relationship between Agreeableness and internet addiction varied depending on the number of hours spent online. Additionally, hours spent online also significantly moderated the relationship between Neuroticism and internet addiction, (β = .700, 95% Cl [.015, .121] t= 2.544, p = .012). This suggests that the relationship between Neuroticism and internet addiction is influenced by the number of hours spent online. Therefore, the hypothesis that the number of hours spent online will moderate the relationship between Agreeableness(H1d), neuroticism (H1e) and internet addiction was supported.

Discussion

The discussion addressed the prevalence rates, common online activities, and the influence of personality traits and sex. Findings indicated mild addiction levels, with social networking as a prevalent activity. Personality traits like Openness, Conscientiousness, and Extraversion were important factors in understanding internet addiction, while Agreeableness and Neuroticism do not appear to be substantial predictors of internet addiction. No significant sex difference in addiction was found. Additionally, the duration of online activity moderated the impact of certain personality traits on addiction.

What is the Prevalence Rate of Internet Addiction among University Students in Ghana?

This study aimed to assess the prevalence rate of internet addiction among university students in Ghana. The current study's findings indicate that most students exhibited mild levels of internet addiction, suggesting a rising yet manageable issue within universities in Ghana. This is consistent with worldwide patterns indicating that university students are becoming more susceptible to issues related to internet usage (Zenebe et al., 2021; Kolaib et al., 2020).

In a study conducted by Zenebe et al. (2021) among Ethiopian undergraduates, a prevalence rate of 47.7% for internet addiction was reported, along with significant associations identified with psychological conditions including anxiety, stress, and depression. In a similar vein, Kolaib et al. (2020) investigated internet addiction among medical students at Taibah University in Saudi Arabia, revealing a significant prevalence rate of 33%. They associated internet addiction with neurological issues, depression, and diminished academic performance.

The findings of this study align with previous empirical evidence that highlights the connection between internet addiction and various negative consequences, such as psychological distress, diminished academic performance, and sleep disturbances (Mahmoud et al., 2022; Younes et al., 2016; Hasmujaj, 2021). Numerous studies provide additional evidence of the significant link between internet addiction and insomnia, anxiety, depression, and stress, underscoring the perspective that excessive internet use poses a mental health risk for young adults (Al-Khani et al., 2021; Mohammadbeigi et al., 2021).

Within the context of Ghana, the occurrence of internet addiction

appears to be associated with students' growing dependence on digital resources for academic and social interactions. Danso et al. (2023) indicate that university students in Ghana often utilise the internet for both academic research and social networking, potentially leading to increased screen time and a reliance on digital platforms. Furthermore, the shift to online learning amid the COVID-19 pandemic markedly increased students' interaction with digital platforms (Kwapong, 2022). The transition to digital platforms, although essential, appears to have obscured the distinctions between constructive and compulsive internet engagement.

Additionally, Okyere-Kwakye and Nor (2020) discovered that a majority of Ghanaian students favour general search engines like Google and Yahoo rather than using academic databases subscribed to by their institutions. This illustrates a capacity for digital adaptability, yet it also indicates a propensity for informal and possibly distracting online conduct, which could elevate the risk of internet addiction as time progresses.

The collective findings highlight the pressing necessity for awareness initiatives, digital literacy education, and organised academic support to assist students in developing positive internet practices. Furthermore, it is essential for university counselling centres to incorporate assessments of internet usage patterns into standard mental health screenings. This approach will help in identifying students who may be at risk and enable the provision of timely interventions.

What Online Activities Do University Students Engage in Frequently?

The second objective of the study was to identify the online activities that university students in Ghana commonly participate in. The current study's

findings indicate that social networking was the most frequently reported online activity among students. This discovery holds considerable importance for comprehending the online behaviours, preferences, and internet usage trends among university students within the context of higher education in Ghana.

The significance of social networking among students highlights the widespread impact of digital platforms on the ways young adults communicate, engage socially, and access information (Salehi et al., 2014; Chen et al., 2022). Social networking involves the utilisation of online platforms—like Facebook, Instagram, Snapchat, Twitter (X), WhatsApp, and TikTok—that enable interaction, self-expression, and content sharing among users (Sutherland et al., 2018; Ahenkorah-Marfo & Akussah, 2016; Dzogbenuku et al., 2019).

The prevalent use of social networking among university students in Ghana indicates that these platforms are essential components of their daily lives, fulfilling both academic and non-academic roles. Their support encompasses a range of needs such as social interaction, peer communication, entertainment, academic collaboration, and access to up-to-date information (Qian, 2023; Chen et al., 2022).

This observation reflects worldwide patterns, indicating that university students and young adults rank among the most engaged users of social networking platforms. Numerous global studies affirm the significant influence of social media on students, emphasising its essential role in cultivating social connections, shaping identity, and engaging in digital communities (Li & Dong, 2017; Nie et al., 2021; Yu et al., 2011; Tammisalo et al., 2022; Abrevaya et al., 2021).

From the perspective of Ghana, investigations have further underscored

this trend. Ahenkorah-Marfo and Akussah (2016) noted that university students in Ghana extensively utilise social media for various purposes, including entertainment, communication, and academic activities. In a similar vein, Osei-Akoto and Asiedu (2023) observed that students frequently utilise platforms like WhatsApp and Telegram for collaborative study sessions, exchanging lecture notes, and obtaining academic updates, highlighting the educational value of social networking.

The Uses and Gratifications Theory (UGT) provides a robust framework for analysing these results. The theory suggests that individuals deliberately choose media channels that fulfil particular psychological and social requirements. University students seem to utilise social networking platforms to meet their needs for information seeking, self-expression, peer affiliation, social interaction, and entertainment (Katz, Blumler & Gurevitch, 1974; Şimşek & Salı, 2014). The ongoing engagement with these platforms is likely influenced by the fulfilment of various needs, rendering social networking both attractive and potentially addictive.

Furthermore, the results of this study align with the work of Qian (2023), which indicates that high levels of interaction with social networking sites play a substantial role in the development of internet addiction among university students. Additional studies have shown that regular engagement with social media correlates with ineffective time management, academic distractions, heightened anxiety, and symptoms of depression, particularly when the usage is problematic or compulsive (Asare et al., 2022; Chen et al., 2022; Stout et al., 2014).

The extensive dependence on social networking highlights its function

in promoting civic engagement and digital activism, especially among young people (Stout et al., 2014). As the distinction between productive and non-productive use continues to fade, it is crucial for educational institutions to foster digital literacy and encourage healthy internet habits among students.

In conclusion, the findings of this study indicate that social networking is the predominant online activity among Ghanaian university students, reflecting global digital behaviour trends. The results further emphasise the importance of comprehending students' media consumption within a theoretical and cultural framework, considering both the benefits obtained and the possible dangers linked to excessive use.

Hypothesis 1

The impact of the Big Five Personality Traits on Internet Addiction

The first hypothesis sought to investigate the impact of personality traits on internet addiction among university students in Ghana. The findings of the study offer empirical backing for the hypothesis, indicating that specific dimensions of the Big Five Personality Traits—specifically Openness, Conscientiousness, and Extraversion—are significant predictors of internet addiction levels, whereas Agreeableness and Neuroticism do not show statistically significant effects in the present sample.

The findings indicated that there is a negative association between openness ($\beta = -0.107$, $p < .001$) and conscientiousness ($\beta = -0.138$, $p < .001$) and internet addiction. This indicates that individuals who exhibit elevated levels of these traits are less prone to engaging in addictive internet behaviours. The results align with earlier studies indicating that those with high levels of openness—marked by curiosity, creativity, and intellectual engagement—tend to have more effective coping strategies and greater self-awareness, which can lead to a decreased susceptibility to maladaptive internet usage (Kuss et al., 2013; Kuss et al., 2014; Montag et al., 2015). While high openness is occasionally associated with novelty-seeking and exploratory online behaviour, it does not inherently lead to compulsive use, owing to the cognitive flexibility and adaptive functioning of such individuals (Mazzoni et al., 2020).

Similarly, conscientiousness, characterised by self-discipline, responsibility, and goal-oriented behaviour, has been consistently recognised as a protective factor against different types of behavioural addiction, including problematic internet use. Individuals exhibiting elevated conscientiousness tend

to effectively manage their screen time, establish boundaries, and prioritise their academic and personal obligations over excessive online activities (Stodt et al., 2018; Şenormancı et al., 2014; Wang et al., 2023).

Conversely, a positive correlation was observed between extraversion and internet addiction, suggesting that students with extroverted traits might be more prone to excessive use of the internet. This can be explained by the tendency of extroverts to be very sociable and seek stimulation, with the internet—especially social media and interactive platforms—providing numerous opportunities to fulfil these desires (Yu et al., 2021; Eichenberg et al., 2021). For these individuals, the internet functions as a platform for ongoing engagement, validation, and amusement, which, over time, may result in compulsive usage behaviours.

Nonetheless, the characteristics of agreeableness and neuroticism did not demonstrate statistically significant correlations with internet addiction in this investigation. Although agreeableness is frequently linked to interpersonal harmony, trust, and altruism, its effectiveness in predicting internet addiction has shown variability in different studies. Certain studies indicate that those with a tendency towards agreeableness might refrain from excessive use out of consideration for others and a commitment to social norms (Andreassen et al., 2013). However, other research has not identified a direct correlation (Kuss et al., 2013), consistent with the findings of the current study.

The lack of a significant effect of neuroticism stands in contrast to multiple studies that have associated this trait with a heightened risk of internet addiction, especially owing to tendencies related to anxiety, emotional instability, and negative affect (Yan et al., 2013; Fu et al., 2022;

Mohammadbeigi et al., 2021). Emotional vulnerabilities frequently lead individuals to turn to the internet as a means of coping with distressing emotions or social discomfort. The absence of significance in this study may be linked to contextual or cultural factors, including social support structures or coping resources accessible to students in Ghana, which could influence the effect of neuroticism on internet-related behaviours.

The findings of this hypothesis are strongly backed by the Big Five Personality Theory (McCrae & Costa, 1999), which suggests that consistent personality dimensions can elucidate individual behavioural tendencies, including internet usage. The observed negative associations with Openness and Conscientiousness highlight the adaptive regulation and cognitive control mechanisms linked to these traits, whereas the positive association with Extraversion indicates the reward-seeking and socially-driven motives that underlie internet engagement.

Furthermore, Caplan's Social Skills Theory (2003) offers a supportive framework, especially in exploring the possible influence of Neuroticism and Extraversion. The theory suggests that individuals lacking in offline social skills might seek refuge in the internet as an alternative to in-person interactions, aiming to alleviate social anxiety or satisfy unfulfilled interpersonal needs. While Neuroticism did not show a significant predictive relationship with internet addiction in this study, its theoretical links to challenges in emotional regulation and tendencies towards interpersonal avoidance are noteworthy and may deserve additional investigation in various Ghanaian populations or through qualitative approaches.

Hypothesis 2

Differences between men and women university students regarding internet addiction

The second hypothesis sought to investigate the potential differences in internet addiction levels between men and women university students in Ghana. The results of this study indicated that there was no statistically significant difference in internet addiction levels between the sexes. In summary, both men and women students exhibited comparable trends in their internet usage and vulnerability to internet addiction.

This discovery calls into question the long-held belief that sex significantly influences internet addiction. It indicates that various elements, like psychological needs, online motivations, and contextual influences, could play a more significant role in addictive behaviours than biological sex by itself. This viewpoint corresponds with the Uses and Gratifications Theory (Katz et al., 1974), which suggests that individuals interact with media according to their specific needs and preferences. Consequently, both men and women students might seek out the internet for analogous purposes, such as entertainment, social engagement, academic inquiry, or emotional relief, leading to similar patterns of usage and the possibility of addiction.

The results align with earlier empirical investigations. Li et al. (2019) found no significant gender disparities in internet addiction among university students in China, linking this trend to enhanced digital inclusion and universal internet access. The findings suggest that behavioural patterns based on gender may be diminishing in significance within highly interconnected societies. Similarly, Černja et al. (2019) observed varied patterns in the responses of males

and females: females indicated lower levels of work neglect, yet exhibited reduced self-control, resulting in no definitive gender difference in overall addiction levels.

The findings of this study stand in contrast to previous research that often indicated a higher susceptibility to internet addiction among men (Li, 2022). Historically, it has been thought that men have a higher propensity to participate in gaming or risky online activities, which are frequently linked to problematic usage. Nonetheless, the emergence of social networking platforms that attract all sexes, along with the variety of online activities available, has led to a reduction in the differences in internet usage motivations. As a result, there is a growing trend of women participating in diverse online activities for social interaction, educational objectives, and leisure, potentially balancing their vulnerability to addiction risks.

Furthermore, Sechi et al. (2020) investigated the interplay of trait emotional intelligence, self-esteem, age, and gender in relation to internet addiction. The results demonstrated that emotional and psychological factors were more indicative of addictive behaviours than gender. This suggests that the lack of a notable gender difference in this study could be attributed to the intricate interaction of various psychosocial factors that go beyond simple binary gender categories.

From a theoretical standpoint, the finding underscores the necessity for an advanced understanding of internet addiction that transcends basic demographic classifications. This approach advocates for a shift towards personalised, motivation-driven models of internet usage and intervention, instead of relying solely on gender-based risk assumptions.

The current findings add to the expanding literature indicating that sex may not significantly influence internet addiction among university students. It emphasises the significance of taking into account individual motivations, online behaviours, mental health, and situational elements when tackling internet addiction. Although men and women students might interact with online content in distinct ways, their susceptibility to addiction seems to be similar. Nonetheless, additional investigation is required to examine sex-specific trends and the underlying psychosocial mechanisms, especially within the cultural and educational framework of Ghana.

Hypothesis 3

The moderating effect of the number of hours spent online on personality traits and internet addiction among university students

This study's third hypothesis examined the potential moderating effect of hours spent online on the relationship between the Big Five personality traits and Internet Addiction (IA) among university students in Ghana. The findings of the analysis offer significant understanding of the intricate relationship between personality traits and the behavioural patterns associated with internet usage. In particular, although extraversion and openness did not show significant moderating effects, conscientiousness, agreeableness, and neuroticism revealed important interaction effects with online hours. This indicates that the connection between personality traits and internet addiction is not fixed but rather fluid, influenced by behavioural engagement.

The lack of notable moderation effects for extraversion and openness is consistent with current literature, which has demonstrated inconsistent or weak

links between these traits and internet addiction. Extraversion, often linked to sociability, assertiveness, and a tendency for direct interpersonal communication, might protect individuals from compulsive internet use. Individuals with extroverted traits tend to pursue in-person interactions, resulting in a decreased dependence on digital platforms for fulfilling their social needs (Kuss et al., 2013; Zhang et al., 2022). Consequently, the amount of time spent online does not inherently strengthen the connection between extraversion and IA, since extroverts might participate in online activities for social enhancement instead of for reasons of escape or compulsion.

In a similar vein, openness to experience, characterised by intellectual curiosity, creativity, and a pursuit of novelty, has yielded inconsistent results in prior studies. Although individuals who are open may often delve into new digital content or platforms, this engagement is not necessarily maladaptive by nature. Previous research has indicated that while a high level of openness might be linked to increased internet usage, it does not show a strong correlation with addictive usage patterns, particularly when the usage is driven by specific goals or exploratory activities (Kuss et al., 2013; Öztürk et al., 2015). The absence of a moderating effect in this study reinforces the conclusion that the amount of time spent online does not amplify the influence of openness on internet addiction in university students.

The study uncovered notable moderation effects for conscientiousness, agreeableness, and neuroticism, offering a deeper insight into the interplay of these traits with students' online behaviours. The observation that conscientiousness influences the connection with internet addiction is especially significant. Conscientiousness encompasses characteristics like self-discipline,

organisation, and a focus on achieving goals. Individuals exhibiting elevated levels of conscientiousness might demonstrate a greater ability to manage their internet usage, even during prolonged periods spent online. These individuals are inclined to emphasise their academic duties, effectively manage their time, and participate in purposeful online activities, which in turn minimises the likelihood of cultivating addictive behaviours (Müller et al., 2013; Sugiarta & Dewi, 2021). On the other hand, individuals exhibiting low levels of conscientiousness may demonstrate a deficiency in self-regulatory skills. When this trait is coupled with extended periods of internet engagement, it can lead to an increased susceptibility to compulsive and unrestrained internet usage.

The influence of agreeableness introduces an additional dimension of intricacy. Agreeableness includes traits like compassion, cooperation, and an inclination to foster positive social connections. Individuals with a high level of agreeableness are likely to engage with the internet mainly for the purpose of social communication and fostering emotional connections, especially via platforms that enhance interpersonal interaction. Nevertheless, with the rise in online hours, the altruistic intentions of those who are more agreeable might unintentionally result in overuse, especially if these individuals are looking for validation or emotional support through digital platforms (Saini et al., 2016). The capabilities of the internet for continuous interaction and feedback could amplify usage, particularly among individuals who prioritise relational harmony and connection.

Neuroticism, defined by emotional instability, anxiety, and moodiness, exhibited a noteworthy moderating relationship with internet addiction. This finding aligns with extensive studies suggesting that individuals with elevated

levels of neuroticism tend to utilise the internet as a means to cope with stress, loneliness, or negative emotions (Yan et al., 2013; Dong et al., 2012; Miškulin et al., 2022). For these individuals, the internet provides a readily available means to alleviate emotional discomfort. With the increase in time spent online, there is a corresponding rise in the potential for addictive behaviours, as the internet serves as a key mechanism for emotional regulation and avoidance coping.

The results are corroborated by the Big Five Personality Theory as well as Caplan's Social Skills Theory. The Big Five model offers a solid structure for comprehending the interplay between enduring personality traits and behaviour in various situations. Conscientiousness and neuroticism have consistently shown a connection to self-regulation and emotional vulnerability, respectively, both of which are crucial in the development of behavioural addictions. Furthermore, Caplan (2003) posits that those who struggle with offline social skills or emotional regulation tend to overindulge in online interactions, utilising the internet as a replacement for genuine real-world relationships. This theory plays a crucial role in elucidating the interaction effects noted for neuroticism and agreeableness in the current study.

From a practical standpoint, these findings highlight the necessity of creating tailored interventions for internet addiction that consider individual personality traits and behavioural patterns, including the amount of time spent online. Prevention strategies ought to recognise the diversity among students rather than viewing them as a uniform group; they should take into account risk profiles informed by individual personality traits. Interventions designed for students exhibiting low levels of conscientiousness might prioritise enhancing

time management and self-regulation abilities. Conversely, strategies for students with high neuroticism could include emotional regulation training and access to mental health support services.

In conclusion, the results of this study enhance our comprehension of internet addiction by illustrating that the impact of personality traits on IA is influenced by online behaviour, especially the duration of internet usage. Some traits, such as extraversion and openness, seem to remain stable regardless of online activity. In contrast, other traits—conscientiousness, agreeableness, and neuroticism—show dynamic relationships that can either heighten or reduce the risk of addiction based on the level of online engagement. The findings underscore the importance of incorporating psychological and behavioural elements in the development of evidence-based approaches aimed at reducing internet addiction in university students.

Chapter Summary

This chapter discusses findings obtained from data gathered from 205 university students in two public universities in Ghana. The analysis utilised frequencies and percentages for Research Questions 1 and 2, while multiple linear regression and independent samples were employed for Hypotheses 1 and 2, respectively. Additionally, Hayes' Process Model 1 was utilised for Hypothesis 3. Demographically, the majority of participants across both universities were predominantly female (53.2%) and primarily aged between 18 and 24 years old (73.7%). A significant portion of the participants were final-year students (33.7%). Insights into their spending habits indicated that most students spend between GH₵ 200-300 monthly on data bundles and dedicate roughly 4-6 hours daily to online activities (46.3%). Findings from Research

Questions 1 and 2 indicated that a substantial number of Ghanaian students exhibit mild levels of internet addiction, with social networking being the most prevalent online activity. Hypothesis 1 suggested that certain traits like Openness, Conscientiousness, and Extraversion might play a notable role in influencing internet addiction, whereas Agreeableness and Neuroticism do not. Hypothesis 2 concluded that there were no discernible gender differences in internet addiction. Lastly, Hypothesis 3 unveiled a complex relationship between personality traits, hours spent online, and internet addiction.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This section provides a summary, conclusion and recommendations for future research. The synopsis encapsulates the entire investigation, while the conclusions reflect its findings. This study will provide suggestions to policymakers, including the Ministry of Communications, the National Communications Authority, the Ghana Tertiary Education Commission (GTEC), and the Ghana Psychology Association.

Summary

The study's main purpose was to investigate how students' personality traits can influence or predict addiction to the internet. Specifically, this study sought to determine the prevalence rate of internet addiction among university students in Ghana, discover the online activities university students engage in frequently, and assess the impact of the Big Five Personality Traits on internet addiction. This study aimed to determine variances in internet addiction between men and women university students, as well as ascertain how the number of hours spent online moderates the relationship between personality traits and internet addiction among university students. As mentioned earlier, the objectives were transformed into two (2) research questions and three (3) hypotheses, which guided the study.

This study used the quantitative research approach and the cross-sectional research design. The target group was the undergraduate University students from the University of Cape Coast and the University of Ghana, Legon. A total of 205 completed the online survey, and the data was used for

analysis. The study adopted convenience sampling, specifically the maximum variation sampling approach to get the participants. The study adopted two standardised scales; the Big Five Personality Traits (BFI-10), by Rammstedt and John (2007) made up of 10 items and the Internet Addiction Test by Young (1998), which had 20 items on the scale. The study employed frequency and percentage analysis to address Research Questions 1 and 2, while multiple linear regression and independent samples t-tests were utilised to investigate Hypotheses 1 and 2, respectively. Additionally, Hypothesis 3 was examined using Hayes' Process Model 1.

Key Findings

The key findings of the study are as follows;

1. Most university students have mild levels of internet addiction, which indicates a prevalent but relatively mild degree of internet addiction.
2. Social networking is the most common online activity that university students in Ghana engage in.
3. The Big Five Personality Traits impacted internet addiction of university students in Ghana. Specifically, traits like openness, conscientiousness and extraversion play a significant role in predicting internet addiction, whereas agreeableness and neuroticism do not show any substantial relationship in this context.
4. The sex (man or woman) of university students does not determine their addiction to the internet. In other words, the study revealed that there is no difference between male and female Ghanaian University students in terms of their addiction towards the internet.

5. The number of hours spent online each day had a complex moderating effect on the personality traits of Ghanaian University students and their addiction to the internet. While Extraversion and Openness did not exert a significant impact, Conscientiousness, Agreeableness, and Neuroticism had an interaction with online hours.

Conclusions

The findings of the study reveal a significant prevalence of mild levels of internet addiction among Ghanaian university students. This prevalence suggests that internet addiction is a notable concern among university students in Ghana, albeit at a relatively moderate degree. This finding is consistent with previous research that has highlighted the growing prevalence of internet addiction globally, particularly among young adults and university students. The analysis of this prevalence rate implies that internet addiction constitutes a significant concern that necessitates focused attention and intervention within the sphere of higher education in Ghana.

The study's results indicate that social networking stands out as the primary online activity that students regularly participate in. This holds profound implications for understanding their digital behaviour and preferences, providing valuable insights into the dominant online activities that occupy their time and attention. The interpretation of this finding suggests that social networking plays a central role in the digital lives of Ghanaian university students, serving as a primary avenue for communication, social interaction, and information sharing. It signifies the need for a nuanced understanding of the impact of these online activities on

academic performance, mental well-being, and social dynamics within the university environment. The dominance of social networking as a frequent online activity raises questions about its potential influence on students' time management, productivity, and interpersonal relationships.

The findings of this study provide significant insights into the relationship between personality traits and internet addiction. Specifically, Openness and Conscientiousness were found to have a significant negative impact on internet addiction, indicating that individuals who are more open to experiences and conscientious tend to have lower levels of internet addiction. These results confirm the substantial role these traits play in mitigating excessive internet use. Conversely, Extraversion demonstrated a significant positive relationship with internet addiction, suggesting that more extroverted individuals are more prone to internet addiction. This finding reinforces the idea that social engagement and stimulation-seeking behaviour, common in extroverts, may lead to higher internet use. However, the traits of Agreeableness and Neuroticism were not predictors of internet addiction. Thus, Agreeableness and Neuroticism do not appear to be key factors influencing internet addiction. By acknowledging the influence of personality traits on internet addiction, researchers and practitioners can advance targeted interventions and preventive strategies that align with the diverse psychological profiles of individuals, contributing to the promotion of healthy digital habits and the well-being of university students in Ghana.

This study asserts that there are no discernible gender differences in internet addiction. This assertion challenges traditional assumptions and stereotypes regarding gender-specific patterns of addictive behaviours,

particularly in the context of internet usage. It suggests that gender may not be a significant determinant of internet addiction, highlighting the need to critically examine and challenge preconceived notions about gender-based differences in digital behaviours and addictive tendencies. It emphasises the need to adopt a more inclusive and nuanced approach to understanding and addressing internet addiction, one that considers diverse factors beyond gender as influential determinants of addictive behaviours.

The study's findings, which emphasise the complex moderating impact of daily online hours on the correlation between personality traits and internet addiction among Ghanaian university students, provide a holistic insight into the intricate dynamics of internet addiction. The interpretation of this finding underscores the need to consider both individual dispositions and online engagement patterns in understanding and addressing addictive behaviours, providing a foundation for the development of targeted interventions that align with the diverse psychological profiles and digital behaviours of university students in Ghana.

Recommendations

1. Although the prevalence of internet addiction among this sample was low, the researcher would like to recommend that the Ghana Tertiary Education Commission (GTEC) and the universities in Ghana acknowledge the existence of internet addiction and implement proactive measures to address it. Such measures may include the development of educational programmes, counselling services, and support networks aimed at promoting healthy internet usage and mitigating the risk of addiction among students. Again, the interventions

should consider the peculiar personality traits of the individual and tailor the intervention appropriately.

2. Students must actively self-regulate their internet usage, especially for non-academic online activities like social networking, and establish routines that harmonise digital interaction with offline academic, social, and recreational activities. Implementing mindful internet usage, establishing personal daily time constraints, and seeking assistance upon recognising indicators of obsessive behaviour are crucial for mitigating the danger of internet addiction. Students are also encouraged to participate in peer-led awareness efforts to foster healthy online practices within the academic community.
3. The University Guidance and Counselling Centre should formulate focused intervention programs that tackle the personality-related risk factors linked to internet addiction. This may encompass time management and self-regulation seminars for students with poor conscientiousness, emotional coping skills training for individuals displaying elevated neuroticism, and social balance tactics for very pleasant persons susceptible to excessive online participation. Counsellors must to incorporate digital wellness education into current mental health services, emphasising the consequences of extended online engagement and offering pupils tailored solutions for safe internet usage.
4. By acknowledging the absence of discernible sex differences in internet addiction, researchers and practitioners can direct their focus towards identifying universal risk factors, protective mechanisms, and intervention strategies that are applicable across genders. This inclusive approach is essential for developing comprehensive and equitable responses to internet addiction, particularly within the context of university students in Ghana.

5. The Ghana Psychology Association should initiate research initiatives to explore further the nuanced relationship between specific personality traits and internet addiction within the Ghanaian university student population. This research can provide valuable insights into the psychological factors contributing to internet addiction and inform the development of targeted interventions.

Suggestions for Further Studies

The recommendations for future research are based on the specific areas of investigation and the research approach employed in the current study:

1. Future research should look at conducting longitudinal studies to explore the trajectory of internet addiction among university students in Ghana over an extended period. Longitudinal research can provide valuable insights into the stability of personality traits, changes in internet usage patterns, and the development of internet addiction over time, offering a comprehensive understanding of the dynamic interplay between these factors.
2. Future studies can expand the scope of research by conducting comparative studies across multiple universities in Ghana to examine potential variations in the prevalence of internet addiction, online activities, and the impact of personality traits. Comparative studies can shed light on the influence of institutional factors and cultural differences on internet addiction among university students.
3. In future, researchers can complement the quantitative findings with qualitative research methods, such as in-depth interviews and focus group discussions, to acquire an in-depth knowledge of the real-life

experience, and motivations experiences, perceptions, and motivations related to internet usage and addiction among university student. Qualitative research can provide rich, contextual insights that enhance the interpretation of quantitative findings.

4. Future research may also explore the cross-cultural dimensions of internet addiction and personality traits by comparing the findings from Ghanaian university students with those from students in other cultural contexts. Cross-cultural studies can elucidate the cultural influences on internet usage patterns, personality traits, and the prevalence of internet addiction, contributing to a broader understanding of these phenomena.
5. Future research can utilise advanced statistical analyses, such as structural equation modelling (SEM), to examine complex relationships between personality traits, online activities, and internet addiction. Advanced statistical techniques can provide a more nuanced understanding of the underlying mechanisms and interactions shaping internet addiction among university students.

REFERENCES

A Decade in Digital — DataReportal –Global Digital Insights (2023). https://datareportal.com/reports/a-decade-in-digital

Abdel-Salam, D. M., Alrowaili, H. I., Albedaiwi, H. K., Alessa, A. I., & Alfayyadh, H. A. (2019). Prevalence of Internet addiction and its associated factors among female students at Jouf University, Saudi Arabia. *Journal of the Egyptian Public Health Association*, *94*, 1-8.

Abrevaya, J., Dai, L., & Peng, Y. (2021). The rise of social networking and its impact on youth engagement. *Social Media & Society*, 7(2), 1–12. https://doi.org/10.1177/2056305121994567.

Adeniyi, A. L., Oyekanmi, A. O., & Tijani, M. O. (2011). *Essentials of business research methods*. Lagos: CSS Bookshops Limited.

Adger Jr, H., & Saha, S. (2013). Alcohol use disorders in adolescents.

Aertgeerts, B., Buntinx, F., & Kester, A. (2004). The value of the CAGE in screening for alcohol abuse and alcohol dependence in general clinical populations: a diagnostic meta-analysis. *Journal of Clinical Epidemiology, 57*(1), 30-39.

Aertgeerts, B., Buntinx, F., Bande-Knops, J., Vanderrneulen, C., Roelants, M., Ansoms, S., & Fevery, J. (2000). The value of CAGE, CUGE, and AUDIT in screening for alcohol abuse and dependence among college freshmen. *Alcoholism: Clinical and Experimental Research, 24*(1), 53-57.

Ahenkorah-Marfo, M., & Akussah, H. (2016). Being where the users are: readiness of academic librarians to satisfy information needs of users through social media. *Library Review*, *65*(8/9), 549-563.

Ahmad, M. (2018). Online shopping behavior among university students: case study of must university. *Advances in Social Sciences Research Journal, 5*(4). https://doi.org/10.14738/assrj.54.4429

Ahmed, H. (2020). Internet addiction and psychosocial functioning among university students. *Scholedge International Journal of Multidisciplinary & Allied Studies, 7*(9), 181-187.

Alheneidi, H., AlSumait, L., AlSumait, D., & Smith, A. P. (2021). Loneliness and problematic internet use during COVID-19 lock-down. *Behavioral Sciences*, *11*(1), 5-32.

Ali, S. M., Abdul Rasool, M. S., & Ahmad, S. N. A. Internet Addiction in Malaysia: An Overview Of Uses And Gratifications Theory (UGT). *European Proceedings of Multidisciplinary Sciences*.

allied health sciences students in northern Tanzania: a cross-sectional.

Allport, G. W., & Odbert, H. S. (1936). Trait-names: A psycho-lexical study. *Psychological Monographs*, *47*(1), i.

Amedahe, F. K., & Asamoah Gyimah, E. (2002). *Introduction to educational research.* Cape Coast: Centre for Continuing Education of the University of Cape Coast.

American Psychiatric Association, A. P., & American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders: DSM-IV (Vol. 4). American psychiatric association.

American Psychiatric Association, D., & American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders: DSM-5 (Vol. 5, No. 5). American Psychiatric Association.

Amofah–Serwaa, N., & Dadzie, P. S. (2015). Social media use and its

implications on child behaviour: A study of a basic school in Ghana. *International Journal of Social Media and Interactive Learning Environments, 3*(1), 49-62.

An, J., Sun, Y., Wan, Y., Chen, J., Wang, X., & Tao, F. (2014). Associations between problematic internet use and adolescents' physical and psychological symptoms: possible role of sleep quality. *Journal of Addiction Medicine, 8*(4), 282-287.

Anderson, L. M. (2008). MySpace use as a potentially dysfunctional Internet behaviour. Puerta-Cortes, D. X., & Carbonell, X. (2013). The model of the big-five personality factors and problematic Internet use in Colombian youth. *Adicciones, 26*(1), Unpublished Master's Thesis. Texas: The University of Texas Department of Psychology.

Andreassen, C., Griffiths, M., Gjertsen, S., Krossbakken, E., Kvam, S., & Pallesen, S. (2013). The relationships between behavioural addictions and the five-factor model of personality. *Journal of Behavioral Addictions, 2*(2), 90-99. https://doi.org/10.1556/jba.2.2013.003

Ariani, P., Suryani, S., & Hernawaty, T. (2018). Relationship between academic stress, family and peer attachment with internet addiction in adolescents. *Journal Keperawatan Padjadjaran, 6*(3), 33-38.

Armstrong, L., Phillips, J., & Saling, L. (2000). Potential determinants of heavier internet usage. *International Journal of Human-Computer Studies, 53*(4), 537-550. https://doi.org/10.1006/ijhc.2000.0400

Arpaci, I., Kesici, Ş., & Baloğlu, M. (2018). Individualism and internet addiction: the mediating role of psychological needs. *Internet Research*, *28*(2), 293-314.

Asare, M., Asamoah-Boakye, O., & Ampong, M. (2022). Social media use and psychological well-being among university students in Ghana. *Journal of Media and Communication Research*, 14(1), 34–47.

Aslanbay, Y., Aslanbay, M., & Çobanoğlu, E. (2009). Internet addiction among turkish young consumers. *Young Consumers Insight and Ideas for Responsible Marketers, 10*(1), 60-70.

Babbie, E. (2007). *Survey research methods*. (5th ed.) Belmont: Wadsworth.

Babbie, E., Wagner III, W. E., & Zaino, J. (2022). *Adventures in social research: Data analysis using IBM SPSS statistics*. Sage Publications.

Bala, M. (2021). Internet usage among college students of hoshiarpur in relation to gender. *International Journal of Information Technology and Computer Engineering*, (12), 19-25. https://doi.org/10.55529/ijitc.12.19.25.

Barnett T., Pearson A. W., Pearson R., & Kellermanns F. W. (2015). Five-factor model personality traits as predictors of perceived and actual usage of technology. *European Journal of Information Systems 24*, 4, 374-390.

Basu, D., Ghosh, A., Hazari, N., & Parakh, P. (2016). Use of Family CAGE-AID questionnaire to screen the family members for diagnosis of substance dependence. *The Indian Journal of Medical Research, 143*(6), 722.

Bergdahl, N., Nouri, J., & Fors, U. (2019). Disengagement, engagement and digital skills in technology-enhanced learning. *Education and Information Technologies, 25*(2), 957-983.

Bernardi, S., & Pallanti, S. (2009). Internet addiction: a descriptive clinical

study focusing on comorbidities and dissociative symptoms. *Comprehensive Psychiatry, 50*(6), 510-516.

Bhandari, P. M., Neupane, D., Rijal, S., Thapa, K., Mishra, S. R., & Poudyal, A. K. (2017). Sleep quality, internet addiction and depressive symptoms among undergraduate students in Nepal. *BMC Psychiatry, 17*, 1-8.

Bisen, S. & Deshpande, Y. (2018). Understanding internet addiction: a comprehensive review. *Mental Health Review Journal, 23*(3), 165-184.

Boumosleh, J. & Jaalouk, D. (2017). Depression, anxiety, and smartphone addiction in university students- a cross sectional study. *Plos One, 12*(8), e0182239.

Brenner, V. (1997). Psychology of computer use: xlvii. parameters of internet use, abuse and addiction: the first 90 days of the internet usage survey. *Psychological Reports, 80*(3), 879-882.

Buabeng-Andoh, C., & Issifu, Y. (2015). Implementation of ICT in learning: A study of students in Ghanaian secondary schools. *Procedia-social and Behavioral Sciences, 191*, 1282-1287.

Buckner, J. E. V., Castille, C. M., & Sheets, T. L. (2012). The five factor model of personality and employees‘ excessive use of technology. *Computers in Human Behavior, 28*, 1947e1953.

Bulut-Serin, N. (2011). An examination of predictor variables for problematic internet use. *Turkish Online Journal of Educational Technology-TOJET, 10*(3), 54e62.

Cao, F., & Su, L. (2006). Internet addiction among Chinese adolescents: prevalence and psychological feature. *Child Care Health and Development, 33*, 275e281.

Cao, F., Su, L., Liu, T., & Gao, X. (2007). The relationship between impulsivity and internet addiction in a sample of chinese adolescents. *European Psychiatry, 22*(7), 466-471.

Cao, H., Sun, Y., Wan, Y., Hao, J., & Tao, F. (2011). Problematic Internet use in Chinese adolescents and its relation to psychosomatic symptoms and life satisfaction. *BMC Public Health, 11,* 1-8.

Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication Research, 30*(6), 625-648.

Caplan, S. E., Williams, D., & Yee, N. (2009). Problematic Internet use and psychosocial well-being among MMO players. *Computers in Human Behavior, 25*(6), 1312-1319.

Carver, C. S., & Connor-Smith, J. (2010). Personality and coping. *Annual Review of Psychology, 61*, 679e704.

Cattell, R. B. (1943). The Principle Trait Clusters for Describing Personality. *Journal of Abnormal and Social Psychology, 38*, 476-506.

Cazan, A. (2019). Exploring the relationship between personality, loneliness, self-esteem and internet addiction. https://doi.org/10.15405/epsbs.2019.08.03.21

Černja, I., Vejmelka, L., & Rajter, M. (2019). Internet addiction test: Croatian preliminary study. *BMC Psychiatry, 19*(1). https://doi.org/10.1186/s12888-019-2366-2

Chak, K., & Leung, L. (2004). Shyness and locus of control as predictors of internet addiction and internet use. *Cyber Psychology & Behaviour, 7*(5), 559-570.

Chen, H., Wang, X., & Li, L. (2022). Problematic social media use and depressive symptoms among college students: A meta-analytic review. *Computers in Human Behavior*, 126, 106987. https://doi.org/10.1016/j.chb.2021.106987

Chen, S., Gau, S., Pikhart, H., Peasey, A., Chen, S., & Tsai, M. (2014). Work stress and subsequent risk of internet addiction among information technology engineers in Taiwan. *Cyberpsychology Behavior and Social Networking, 17*(8), 542-550. https://doi.org/10.1089/cyber.2013.0686.

Chen, V., Chen, C., & Yang, H. (2008). An empirical evaluation of key factors contributing to internet abuse in the workplace. *Industrial Management & Data Systems, 108*(1), 87-106. https://doi.org/10.1108/02635570810844106.

Chen, Y. L., & Gau, S. S. F. (2016). Sleep problems and internet addiction among children and adolescents: A longitudinal study. *Journal of Sleep Research, 25*(4), 458-465.

Chiu, C. L. & Ho, H. (2023). Impact of celebrity, micro-celebrity, and virtual influencers on Chinese gen z's purchase intention through social media. *SAGE Open, 13*(1), 215824402311640.

Chiu, S. I., Hong, F. Y., & Chiu, S. L. (2013). An analysis on the correlation and gender difference between college student's Internet addiction and mobile phone addiction in Taiwan. *International Scholarly Research Notices*, *2013*.

Chou, C. & Hsiao, M. (2000). Internet addiction, usage, gratification, and pleasure experience: the Taiwan college student's case. *Computers &*

Education, 35(1), 65-80.

Chu, Y. & Li, Y. (2022). The impact of online learning on physical and mental health in university students during the covid-19 pandemic. *International Journal of Environmental Research and Public Health, 19*(5), 29-66.

Chwaszcz, J., Lelonek-Kuleta, B., Wiechetek, M., & Palacz-Chrisidis, A. (2018). Personality traits, strategies for coping with stress and the level of internet addiction—a study of polish secondary-school students. *International Journal of Environmental Research and Public Health, 15*(5), 9-87.

Cohen, D. J. (2009). Numerical representations are neither abstract nor automatic. *Behavioural and Brain Sciences, 32*(3-4), 332-333.

Cohen, L., Manion, L., & Morrison, K. (2002). *Research methods in education*. Routledge.

Cole, S. H., & Hooley, J. M. (2013). Clinical and personality correlates of MMO gaming: anxiety and absorption in problematic Internet use. *Social Science Computer Review 31*, 4, 424-436.

Collier, R. (2009). Internet addiction: New-age diagnosis or symptom of age-old problem?.

Costa, P. T., & McCrae, R. R. (1992). NEO PI-R Professional Manual.

Costa, P. T., & McCrae, R. R. (1999). A five-factor theory of personality. In L. A. Pervin & O. P. John (Eds.), Handbook of personality: Theory and research (2nd ed., pp. 102–138). Guilford Press.

Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.

D'Souza, L., Sukesh, P., & Ravi, M. (2018). Personality correlates of internet addiction among college students. *International Journal of Indian Psychology, 6*(4). https://doi.org/10.25215/0604.075.

Daniels, B. T., Robinson, S. E., & Howie, E. K. (2023). Relationships between personality traits, high school sports participation, and physical activity of college students in the United States. *Journal of American College Health*, 1-7.

Davis, R. A. (2001). A cognitive-behavioural model of pathological Internet use. *Computers in Human Behaviour, 17*(2), 187-195.

Dhalla, S., & Kopec, J. A. (2007). The CAGE questionnaire for alcohol misuse: a review of reliability and validity studies. *Clinical and Investigative Medicine*, 33-41.

Dhir, A., Chen, S., & Nieminen, M. (2015). Predicting adolescent internet addiction: the roles of demographics, technology accessibility, unwillingness to communicate and sought internet gratifications. *Computers in Human Behavior, 51*, 24-33. https://doi.org/10.1016/j.chb.2015.04.056.

Dickerson, M., & O'Connor, J. (2006). *Gambling as an addictive behaviour: Impaired control, harm minimisation, treatment and prevention*. Cambridge University Press.

Digman, J. (1997). Higher order factors of the Big Five. *Journal of Personality and Social Psychology, 73*, 1246–1256.

Digman, J. M., & Takemoto-Chock, N. K. (1981). Factors in the Natural Language of Personality: Reanalysis and Comparison of Six Major Studies. *Multivariate Behavioural Research, 16*, 149-170.

Dillman, D. (2007). *Mail and Internet surveys* (2nd ed.). Hoboken, NJ: Wiley.

Dong, G., Wang, J., Yang, X., & Zhou, H. (2013). Risk personality traits of Internet addiction: A longitudinal study of Internet-addicted Chinese university students. *Asia-Pacific Psychiatry*, *5*(4), 316-321.

Dossari, S. K., AlZahrani, R., Alutaibi, H., Al Shuhayb, B., Alsultan, T., Albenayyan, H. A., & Al Furaikh, B. F. (2022). The effect of online education on healthy eyes of Saudi teachers in the COVID-19 pandemic: a local study. *Cureus*, *14*(5).

Durak-Batıgün, A., & Kılıç, N. (2011). Internet bagımlılıgı ile kis¸ilik ozellikleri, sosyal € destek, psikolojik belirtiler ve bazı sosyo-demografik degis¸kenler arasındaki ilis¸kiler [The relationships between internet addiction, social support, psychological symptoms and some socio-demographical variables]. *Türk Psikoloji Dergisi, 26*(67), 1e10.

Durak, M., & Senol-Durak, E. (2014). Which personality traits are associated with cognitions related to problematic Internet use? *Asian Journal of Social Psychology, 17*(3), 206e218.

Durkee, T., Carli, V., Floderus, B., Wasserman, C., Sarchiapone, M., Apter, A., ... & Wasserman, D. (2016). Pathological internet use and risk-behaviors among European adolescents. *International Journal of Environmental Research and Public Health, 13*(3), 294.

Dzogbenuku, R. K., Amoako, G. K., & Kumi, D. K. (2020). Social media and student performance: the moderating role of ICT knowledge. *Journal of Information, Communication and Ethics in Society*, *18*(2), 197-219.

Eichenberg, C., Schott, M., & Schroiff, A. (2021). Problematic smartphone

use—comparison of students with and without problematic smartphone use in light of personality. *Frontiers in Psychiatry*, *11*, 599241.

Endomba, F. T., Demina, A., Meille, V., Ndoadoumgue, A. L., Danwang, C., Petit, B., & Trojak, B. (2022). Prevalence of internet addiction in Africa: A systematic review and meta-analysis. *Journal of Behavioral Addictions, 11*(3), 739-753.

Environmental Research and Public Health, 18(3), 1220.

Essel, H. B., Vlachopoulos, D., Adom, D., & Tachie-Menson, A. (2021). Transforming higher education in Ghana in times of disruption: Flexible learning in rural communities with high latency internet connectivity. *Journal of Enterprising Communities: People and Places in the Global Economy, 15*(2), 296-312.

Essel, H. B., Vlachopoulos, D., Nyadu-Addo, R., Tachie-Menson, A., Baah, Essel, H. B., Vlachopoulos, D., Tachie-Menson, A., Johnson, E. E., & Ebeheakey, A. K. (2021). Technology-induced stress, socio-demographic factors, and association with academic achievement and productivity in Ghanaian higher education during the COVID-19 pandemic. *Information, 12*(12), 497.

Essel, H. B., Vlachopoulos, D., Tachie-Menson, A., Nunoo, F. K. N., & Johnson, E. E. (2022). Nomophobia among Preservice Teachers: A descriptive correlational study at Ghanaian Colleges of Education. *Education and Information Technologies, 27*(7), 9541-9561.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149-1160.

Feldman, T. (2003). *An introduction to digital media*. Routledge.

Feng, X. (2022). Research of online discussion among college students in xi'an china in the context of covid-19., 860-869. https://doi.org/10.2991/978-2-494069-05-3_105.

Frey, L., Botan, C. H., & Kreps, G. (2000). *Investigating communication*. NY: Allyn & Bacon.

Friedman, M., & Rosenman, R. H. (1959). Association of specific overt behavior pattern with blood and cardiovascular findings: blood cholesterol level, blood clotting time, incidence of arcus senilis, and clinical coronary artery disease. *Journal of the American Medical Association*, *169*(12), 1286-1296.

Fu, S. C., Pang, N. T. P., & Wider, W. (2022). Relationship between internet addiction, personality factors, and emotional distress among adolescents in Malaysia. *Children*, *9*(12), 1883.

Fu, X., Wang, X., & Liu, L. (2022). The role of neuroticism and emotion regulation in internet addiction among college students. *Current Psychology*, *41*(8), 4983–4993. https://doi.org/10.1007/s12144-020-00918-6.

Gao, F., Guo, Z., Tian, Y., Si, Y., & Wang, P. (2018). Relationship between shyness and generalized pathological internet use among Chinese school students: the serial mediating roles of loneliness, depression, and self-esteem. *Frontiers in Psychology, 9*, 18-22.

Gerber, A., Huber, G., Doherty, D., & Dowling, C. (2010). Personality traits and the consumption of political information. *American Politics Research, 39*(1), 32-84. https://doi.org/10.1177/1532673x10381466.

Ghamari, F., Mohammadbeigi, A., Mohammadsalehi, N., & Hashiani, A. A. (2011). Internet addiction and modeling its risk factors in medical students, Iran. *Indian Journal of Psychological Medicine*, *33*(2), 158-162.

Goel, D., Subramanyam, A., & Kamath, R. (2013). A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. *Indian Journal of Psychiatry, 55*(2), 140.

Goldberg, L. R. (1981). Language and individual differences: The search for universals in personality lexicons. *Review of Personality and Social Psychology*, *2*(1), 141-165.

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment, 4*(1), 26.

Golderg, L. R. (1990). An Alternative "Description of Personality": The Big-Five Factor Structure. *Journal of Personality and Social Psychology, 59*(6), 1216-1229. doi:10.1037/0022-3514.59.61216.

Groves, R. M., Fowler Jr, F. J., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2011). *Survey methodology*. John Wiley & Sons.

Guedes, E., Sancassiani, F., Carta, M., Campos, C., Machado, S., King, A., … & Nardi, A. (2016). Internet addiction and excessive social networks use: what about facebook?. *Clinical Practice and Epidemiology in Mental Health, 12*(1), 43-48. https://doi.org/10.2174/1745017901612010043.

Günaydin, H. D. (2021). Personality Traits, Gender, Frequency of Internet Use as Predictors of Turkish Teenagers' Internet Addiction. *Turkish Online Journal of Educational Technology-TOJET, 20*(4), 44-52.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning, 46*(1-2), 1-12.

Hamburger, Y. A., & Ben-Artzi, E. (2000). The relationship between extraversion and neuroticism and the different uses of the Internet. *Computers in Human Behavior, 16*(4), 441-449.

Hamburger, Y. A., & Ben-Artzi, E. (2000). The relationship between extraversion and neuroticism and the different uses of the Internet. *Computers in Human Behavior*, *16*(4), 441-449.

Haramain, M. (2022). Analysis of the effects of personal traits and internet addiction on indonesian students‘ learning motivation. *International Journal of Arts and Humanities Studies, 2*(2), 13-18.

Hardie, E., & Tee, M. Y. (2007). Excessive internet use: the role of the personality, loneliness and social support networks in internet addiction. *Australian Journal of Emerging Technologies and Society, 1*(5), 34e47.

Hasmujaj, E. (2021). The relationship between internet addiction and psychopathological variables among students of Albania‘s universities. *Global Journal of Guidance and Counseling in Schools: Current Perspectives, 11*(1), 45-52.

Hawi, N., & Samaha, M. (2019). Identifying commonalities and differences in personality characteristics of Internet and social media addiction profiles: traits, self-esteem, and self-construal. *Behaviour & Information Technology, 38*(2), 110-119.

Hayes, A. F., Montoya, A. K., & Rockwood, N. (2017). The analysis of mechanisms and their contingencies: process versus structural equation

modeling. *Australasian Marketing Journal, 25*(1), 76-81.

Heidari, E., Mehrvarz, M., Marzooghi, R., & Stoyanov, S. (2021). The role of digital informal learning in the relationship between students' digital competence and academic engagement during the covid-19 pandemic. *Journal of Computer Assisted Learning, 37*(4), 1154-1166.

Henderson, M., Selwyn, N., Finger, G., & Aston, R. (2015). Students‘ everyday engagement with digital technology in university: exploring patterns of use and usefulness‘. *Journal of Higher Education Policy and Management, 37*(3), 308-319.

Hoare, E., Milton, K., Foster, C., & Allender, S. (2016). The associations between sedentary behaviour and mental health among adolescents: a systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, *13*, 1-22.

Hosmer Jr, D. W., Lemeshow, S., & May, S. (2008). *Applied survival analysis: regression modeling of time-to-event data* (Vol. 618). John Wiley & Sons.

Hosťovecký, M., & Prokop, P. (2018). The relationship between internet addiction and personality traits in Slovak secondary schools students. *Journal of Applied Mathematics, Statistics and Informatics, 14*(1), 83-101.

Hotar, N., Demir, K., Kabasakal, Z., Yilmaz, M., Kandemir, E., Uyanik, G.,… & Özer, P. (2021). Investigation of the effect of peer awareness training activity on internet addiction and cyberbullying level. *Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi,* (52), 692-706.

Hutchens, N. (2012). You can't post that . . . or can you? legal issues related to

college and university students' online speech. *Journal of Student Affairs Research and Practice, 49*(1), 1-15. https://doi.org/10.1515/jsarp-2012-6377.

Hwang, J. Y., Choi, J. S., Gwak, A. R., Jung, D., Choi, S. W., Lee, J., et al. (2014). Shared psychological characteristics that are linked to aggression between patients with Internet addiction and those with alcohol dependence. *Annals of General Psychiatry, 13*(1), 6-34.

Ineme, M. E., Ineme, K. M., Akpabio, G. A., & Osinowo, H. O. (2017). Predictive roles of depression and demographic factors in Internet addiction: a cross-sectional study of students in a Nigerian university. *International Journal of Cyber Criminology, 11*(1), 10-23.

Jackson, D. (2000). The long journey back: the bumpy road to recovery from cybersex addiction. *Australian Journal of Rehabilitation Counselling, 6*(2), 96-110. https://doi.org/10.1017/s1323892200000934.

Jamison, R. N., Serraillier, J., & Michna, E. (2011). Assessment and treatment of abuse risk in opioid prescribing for chronic pain. *Pain Research and Treatment*, *3*(6), 44-52.

Jiang, Z., Wang, Z., Chen, J., Tian, G., Cheng, X., He, Q., ... & Liu, J. (2022). *The relationship between Internet addiction and family environment among junior high school students in China*.

Jie, W., & Haider, S. A. (2022). Impact of internet usage on consumer impulsive buying behavior of agriculture products: Moderating role of personality traits and emotional intelligence. *Frontiers in Psychology*, *13*, 951103.

Joe, B. &Lokesh, B.R., (1997). Effect of curcumin and capsaicin on arachidonic acid metabolism and lysosomal enzyme secretion by rat peritoneal

macrophages. *Lipids, 32*(11), pp.1173-1180.

Johnson, J. A., & Ostendorf, F. (1993). Clarification of the five-factor model with the abridged big five dimensional circumplex. *Journal of Personality and Social Psychology, 65*(3), 563.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, *33*(7), 14-26.

Joorabchi, T. & Samadi, M. (2023). The relationship between gratification of internet usage and negative behavior among youth in Malaysia. *The Journal of Society & Media, 6*(2), 392-421.

Kalichman, S. C., Cain, D., Zweben, A., & Swain, G. (2003). Sensation seeking, alcohol use and sexual risk behaviours among men receiving services at a clinic for sexually transmitted infections. *Journal of Studies on Alcohol, 64*(4), 564-569.

Kandell, J. J. (1998). Internet addiction on campus: The vulnerability of college students. *Cyberpsychology & Behavior, 1*(1), 11-17.

Karmacharya, I., Bhujel, K., Yadav, D., & Subedi, K. (2019). Prevalence of internet addiction among higher secondary level students in Kathmandu district. *Journal of Health and Allied Sciences, 7*(1), 40-46.

Karunakaran, N. & Jacob, L. (2020). Online shopping among college students in kasaragod: pattern and preference. *Journal of Management Research and Analysis, 7*(2), 68-72. https://doi.org/10.18231/j.jmra.2020.015.

Katz, E., Blumler, J. G., & Gurevitch, M. (1974). Uses and gratifications research. *Public Opinion Quarterly*, 37(4), 509–523.

Kayiş, A. R., Satici, S. A., Yilmaz, M. F., Şimşek, D., Ceyhan, E., & Bakioğlu, F. (2016). Big five-personality trait and internet addiction: A meta-analytic review. *Computers in Human Behavior, 63*, 35-40.

Khan, M., Shabbir, F., & Rajput, T. (2017). Effect of gender and physical activity on internet addiction in medical students. *Pakistan Journal of Medical Sciences, 33*(1). https://doi.org/10.12669/pjms.331.11222.

Khosravi, M., Khosrobaki, M., & Foroutan, A. (2022). Personality traits and college students' internet addiction: the mediating roles of general health and self-esteem. *Scandinavian Journal of Psychology, 63*(6), 689-697. https://doi.org/10.1111/sjop.12848.

Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry, 23*, 212-218.

Kim, H. K., & Davis, K. E. (2009). Toward a comprehensive theory of problematic Internet use: Evaluating the role of self-esteem, anxiety, flow, and the self-rated importance of Internet activities. *Computers in Human Behaviour, 25*(2), 490-500.

Kim, H., Hong, A., & Song, H. (2018). The relationships of family, perceived digital competence and attitude, and learning agility in sustainable student engagement in higher education. *Sustainability, 10*(12), 35-46.

Kim, H., Hong, A., & Song, H. (2019). The roles of academic engagement and digital readiness in students‘ achievements in university e- learning environments. *International Journal of Educational Technology in Higher Education, 16*(1). https://doi.org/10.1186/s41239-019-0152-3.

Kim, J. & Haridakis, P. (2009). The role of internet user characteristics and motives in explaining three dimensions of internet addiction. *Journal of Computer-Mediated Communication, 14*(4), 988-1015. https://doi.org/10.1111/j.1083-6101.2009.01478.x.

Kircaburun, K., Sural, I., March, E., Balta, S., Emirtekin, E., & Griffiths, M. (2021). Study addiction and dark‘ personality traits: a cross-sectional survey study among emerging adults. *Journal of Addictive Diseases, 39*(3), 307-315. https://doi.org/10.1080/10550887.2021.1872469

Kırcaburun, K. & Griffiths, M. D. (2018). The dark side of internet: preliminary evidence for the associations of dark personality traits with specific online activities and problematic internet use. *Journal of Behavioural Addictions, 7*(4), 993-1003. https://doi.org/10.1556/2006.7.2018.109

Ko, C. H., Yen, J. Y., Yen, C. F., Chen, C. S., & Chen, C. C. (2012). The association between Internet addiction and psychiatric disorder: a review of the literature. *European Psychiatry, 27*(1), 1-8.

Kolaib, A. M. A., Alhazmi, A. H. H., & Kulaib, M. M. A. (2020). Prevalence of internet addiction and its associated factors among medical students at Taiba University, Saudi Arabia. *Journal of Family Medicine and Primary Care*, *9*(9), 4797-4800.

Kolaib, A., Al-Hazmi, A., & Kulaib, M. (2020). Prevalence of internet addiction and its associated factors among medical students at Taiba university, Saudi Arabia. *Journal of Family Medicine and Primary Care, 9*(9), 4797. https://doi.org/10.4103/jfmpc.jfmpc_655_20.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.

Kotov, R., Gamez, W., Schmidt, F., & Watson, D. (2010). Linking ―big‖ personality traits to anxiety, depressive, and substance use disorders: A meta-analysis. *Psychological Bulletin, 136*(5), 768–821. https://doi.org/10.1037/a0020327

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607-610.

Kurniasanti, K. S., Assandi, P., Ismail, R. I., Nasrun, M. W. S., & Wiguna, T. (2019). Internet addiction: a new addiction?. *Medical Journal of Indonesia, 28*(1), 82-91.

Kuss, D. & Griffiths, M. (2011). Internet gaming addiction: a systematic review of empirical research. *International Journal of Mental Health and Addiction, 10*(2), 278-296. https://doi.org/10.1007/s11469-011-9318-5.

Kuss, D. J. (2012). Substance and behavioural addictions: Beyond dependence. *Addiction Research & Therapy, S6.*

Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction—a review of the psychological literature. *International Journal of Environmental Research and Public Health, 8*(9), 3528-3552.

Kuss, D. J., & Griffiths, M. D. (2012). Online social networking and addiction—a review of the psychological literature. *International Journal of Environmental Research and Public Health, 9*(7), 2125-2147.

Kuss, D. J., Griffiths, M. D., & Binder, J. F. (2013). Internet addiction in students: Prevalence and risk factors. *Computers in Human Behavior,*

29(3), 959-966.

Kuss, D. J., Van Rooij, A. J., Shorter, G. W., Griffiths, M. D., & van de Mheen, D. (2013). Internet addiction in adolescents: Prevalence and risk factors. *Computers in Human Behavior*, *29*(5), 1987-1996.

Kuss, D., D Griffiths, M., Karila, L., & Billieux, J. (2014). Internet addiction: A systematic review of epidemiological research for the last decade. *Current Pharmaceutical Design, 20*(25), 4026-4052.

Kuss, D., Shorter, G., Rooij, A., Mheen, D., & Griffiths, M. (2014). The internet addiction components model and personality: establishing construct validity via a nomological network. *Computers in Human Behavior, 39*, 312-321. https://doi.org/10.1016/j.chb.2014.07.031.

Kwapong, O. A. T. F. (2022). Online learning experiences of adult applicants to a university in Ghana during the covid-19 outbreak. *E-Learning and Digital Media, 20*(6), 598-617. https://doi.org/10.1177/20427530221125858

Laier, C., Pawlikowski, M., Pekal, J., Schulte, F., & Brand, M. (2013). Cybersex addiction: experienced sexual arousal when watching pornography and not real-life sexual contacts makes the difference. *Journal of Behavioral Addictions, 2*(2), 100-107. https://doi.org/10.1556/jba.2.2013.002.

Landers, R. N., & Lounsbury, J. W. (2006). An investigation of Big Five and narrow personality traits in relation to Internet usage. *Computers in Human Behavior, 22*(2), 283-293.

LaRose, R. (2007). Uses and gratifications of Internet addiction. *Internet addiction: A handbook and guide to evaluation and treatment*, 55-72.

Lau, R. Y. (2012). An empirical study of online social networking for enhancing

university students' learning. *International Journal of e- Education, e-Business, e-Management and e-Learning*, *2*(5), 425.

Lavrakas, P. J. (2008). *Encyclopedia of survey research methods.* Sage Publications.

Lee, G., & Ham, O. K. (2018). Behavioral and psychosocial factors associated with suicidal ideation among adolescents. *Nursing & Health Sciences, 20*(3), 394-401.

Lee, J. Y., Shin, K. M., Cho, S. M., & Shin, Y. M. (2014). Psychosocial risk factors associated with internet addiction in Korea. *Psychiatry Investigation, 11*(4), 380.

Lee, S. & Lim, S. (2021). Predicting internet addiction with the dark triad: beyond the five-factor model. *Psychology of Popular Media, 10*(3), 362-371. https://doi.org/10.1037/ppm0000336.

Lei, Z., & Bashah, N. S. B. K. (2022, August). A Systematic Literature Review on Relationship Between Internet Usage Behavior and Internet QoS in Campus. In *International Conference on Mobile Web and Intelligent Information Systems* (pp. 223-236). Cham: Springer International Publishing.

Leung, L. (2002). Loneliness, self-disclosure, and ICQ (" I seek you") use. *CyberPsychology & Behavior, 5*(3), 241-251.

Leung, L. (2014). Predicting internet risks: a longitudinal panel study of gratifications-sought, internet addiction symptoms, and social media use among children and adolescents. *Health Psychology and Behavioral Medicine, 2*(1), 424-439.

Leung, L., & Lee, P. S. (2012). The influences of information literacy, internet

addiction and parenting styles on internet risks. *New Media & Society*, *14*(1), 117-136.

Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence- Based Dentistry, 7*(1), 24-25.

Lewis, M., Bromley, K., Sutton, C. J., McCray, G., Myers, H. L., & Lancaster, G. A. (2021). Determining sample size for progression criteria for pragmatic pilot RCTs: the hypothesis test strikes back!. *Pilot and Feasibility Studies, 7*(1), 1-14.

Li, D., & Kirkup, G. (2007). Internet addiction among university students in Hong Kong: prevalence and psychosocial correlates. *Social Science & Medicine, 65*(3), 524-535.

Li, G. (2022). Hierarchical linear model of internet addiction and associated risk factors in Chinese adolescents: a longitudinal study. *International Journal of Environmental Research and Public Health, 19*(21), 14008. https://doi.org/10.3390/ijerph192114008

Li, J. & Wu, Y. (2022). Evaluation of internet addiction exercise intervention effect for teenagers based on intelligent psychological strategy technology. *Wireless Communications and Mobile Computing, 2022*, 1-11. https://doi.org/10.1155/2022/7029855.

Li, Q., Dai, W., Yang, Z., Wang, L., Dai, B., & Liu, X. (2019). The mediating role of coping styles on impulsivity, behavioural inhibition/approach system, and internet addiction in adolescents from a gender perspective. *Frontiers in Psychology*, 10. https://doi.org/10.3389/fpsyg.2019.02402.

Li, Q., Guo, X., Bai, X., & Xu, W. (2018). Investigating microblogging

addiction tendency through the lens of uses and gratifications theory. *Internet Research, 28*(5), 1228-1252. https://doi.org/10.1108/intr-03-2017-0092.

Li, S., Ren, P., Chiu, M., Wang, C., & Lei, H. (2021). The relationship between self-control and internet addiction among students: a meta- analysis. *Frontiers in Psychology*, 12. https://doi.org/10.3389/fpsyg.2021.735755.

Li, W., O'Brien, J. E., Snyder, S. M., & Howard, M. O. (2015). Characteristics of internet addiction/pathological internet use in US university students: a qualitative-method investigation. *PloS One, 10*(2), e0117372.

Li, Y., Zhang, X., Lu, F., Zhang, Q., & Wang, Y. (2014). Internet addiction among elementary and middle school students in china: a nationally representative sample study. *Cyberpsychology Behavior and Social Networking, 17*(2), 111-116. https://doi.org/10.1089/cyber.2012.0482.

Lin, S., Liu, D., Niu, G., & Longobardi, C. (2022). Active social network sites use and loneliness: The mediating role of social support and self-esteem. *Current Psychology, 41*(3), 1279-1286.

Lohr, S. L. (2021). *Sampling: design and analysis*. CRC Press.

Lopez-Fernandez, O. (2015). Cross-cultural research in internet addiction: A systematic review. *International Archives of Addiction Research and Medicine, 1*(2), 011.

Lu, X., Zhang, M., & Zhang, J. (2023). The relationship between social support and internet addiction among chinese college freshmen: a mediated moderation model. *Frontiers in Psychology*, *13* (3). 66-82.

Mahmoud, O. A. A., Hadad, S., & Sayed, T. A. (2022). The association between

internet addiction and sleep quality among sohag university medical students, Middle East. *Current Psychiatry, 29*(1). https://doi.org/10.1186/s43045-022-00191-3

Maisto, S. A., & Saitz, R. (2003). Alcohol use disorders: screening and diagnosis. *The American Journal on Addictions*, *12*, s12-s25.

Malak, M. Z., Khalifeh, A. H., & Shuhaiber, A. H. (2017). Prevalence of Internet Addiction and associated risk factors in Jordanian school students. *Computers in Human Behavior*, *70*, 556-563.

Mamun, M. A., Rafi, M. A., Al Mamun, A. S., Hasan, M. Z., Akter, K., Hsan, K., & Griffiths, M. D. (2021). Prevalence and psychiatric risk factors of excessive internet use among northern Bangladeshi job-seeking graduate students: a pilot study. *International Journal of Mental Health and Addiction, 19*, 908-918.

Marbach, J., Lages, C., Nunan, D., & Ekinci, Y. (2019). Consumer engagement in online brand communities: the moderating role of personal values. *European Journal of Marketing*, *53*(9), 1671-1700.

Mark, G., Iqbal, S. T., Czerwinski, M., Johns, P., & Sano, A. (2016, May). Neurotics can't focus: An in situ study of online multitasking in the workplace. In *Proceedings of the 2016 CHI conference on human factors in computing systems* (pp. 1739-1744).

Matthews, G., Deary, I. J., & Whiteman, M. C. (2003). Personality Traits (2nd ed.). Cambridge University Press. Retrieved August 9,2020, from

Mboya, I. B., Leyaro, B. J., Kongo, A., Mkombe, C., Kyando, E., & George, McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of*

Personality and Social Psychology, 52(1), 81-102.

McCrae, R. R., & Costa, P. T. (1995). Trait explanations in personality psychology. *European Journal of Personality, 9*, 231–252.

McElroy, J. C., Hendrickson, A. R., Townsend, A. M., & DeMarie, S. M. (2007). Dispositional factors in internet use: personality versus cognitive style. *MIS Quarterly*, 809e820.

McKenna, K. Y., Green, A. S., & Gleason, M. E. (2002). Relationship formation on the Internet: What's the big attraction?. *Journal of Social Issues, 58*(1), 9-31.

McShane, G., Walter, G., & Rey, J. M. (2001). Characteristics of adolescents with school refusal. *Australian and New Zealand Journal of Psychiatry, 35*(6), 822-826.

Mehroof, M., & Griffiths, M. D. (2010). Online gaming addiction: The role of sensation seeking, self-control, neuroticism, aggression, state anxiety, and trait anxiety. *CyberPsychology & Behavior, 13*(3), 313-316.

Memon, T., Baloch, G., Khan, M., Zehravi, F., Soomro, M., & Motlani, J. (2021). Internet use and its addiction among medical students in hyderabad, Pakistan. *Journal of Islamabad Medical & Dental College, 10*(4), 227-232. https://doi.org/10.35787/jimdc.v10i4.724.

Meng, S. Q., Cheng, J. L., Li, Y. Y., Yang, X. Q., Zheng, J. W., Chang, X. W., ... & Shi, J. (2022). Global prevalence of digital addiction in general population: A systematic review and meta-analysis. *Clinical Psychology Review, 92*, 102128.

Miezah, D., Batchelor, J., Megreya, A. M., Richard, Y., & Moustafa, A. A. (2020). Video/computer game addiction among university students in

Ghana: Prevalence, correlates and effects of some demographic factors. *Psychiatry and Clinical Psychopharmacology*, *30*(1), 17-23.

Miškulin, I., Pavlović, N., Kovacevic, J., Fotez, I., Kondža, G., Palenkić, H., & Miškulin, M. (2022). Personality traits of Croatian university students with internet addiction. *Behavioral Sciences, 12*(6), 173.

Missaoui, S. G., Brahim, T., Bouriga, W., & Abdelaziz, A. B. (2014). Prevalence and consequences of internet addiction in a cohort of Tunisian adolescents: a pilot study. *Journal of Child and Adolescent Behaviour*. *6*(1), 22-32.

Mohammadbeigi, A., Absari, R., Valizadeh, F., Saadati, M., Sharifimoghadam, S., Ahmadi, A., & Ansari, H. (2021). Sleep quality and internet addiction level in university students. *Journal of Preventive Medicine and Hygiene, 62*(1), E22–E27. https://doi.org/10.15167/2421-4248/jpmh2021.62.1.1526.

Montag, C., Lachmann, B., Herrlich, M., & Zweig, K. (2015). Addictive features of social media/messenger platforms and their relationship to personality traits. *Computers in Human Behavior*, 49, 211–219. https://doi.org/10.1016/j.chb.2015.03.041

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior, 16*(1), 13-29.

Moreno, M. A., Jelenchick, L. A., & Christakis, D. A. (2013). Problematic internet use among older adolescents: A conceptual framework. *Computers in Human Behavior, 29*(4), 1879-1887.

Muche, H., & Asrese, K. (2022). Prevalence of internet addiction and associated

factors among students in an Ethiopian University: A cross- sectional study. *Journal of Social Work Practice in the Addictions, 22*(2), 143-159.

Mugenda, O. M., & Mugenda, A. G. (2003). *Research methods: Quantitative & qualitative approaches* (Vol. 2, No. 2). Nairobi: Acts Press.

Müller, K., Koch, A., Dickenhorst, U., Beutel, M., Duven, E., & Wölfling, K. (2013). Addressing the question of disorder-specific risk factors of internet addiction: a comparison of personality traits in patients with addictive behaviors and comorbid internet addiction. *Biomed Research International*, *13*, 1-7. https://doi.org/10.1155/2013/546342.

National Telecommunications and Information Administration (NTIA) and Economics and Statistics Administration. (2000). Executive Summary FFTN00. Retrieved January 15, 2023, from http:// www.ntia.doc.gov/ntiahome/digitaldivide/execsumfttn00.htm.

Nie, N., Hillygus, D. S., & Erbring, L. (2021). Internet use, interpersonal relations, and sociability: A time-diary study. *American Behavioral Scientist*, 45(3), 420–435.

Nikdel, F., & Nasab, M. P. (2022). Family communication patterns and internet addiction among Iranian female high school students: The mediating role of psychological needs satisfaction. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *16*(5).

Norman, W. T. (1963). Toward an Adequate Taxonomy of Personality Attributes: Replicated Factor Structure in Peer Nomination Personality Ratings. *Journal of Abnormal and Social Psychology, 66*, 574-583.

Novikova, I. (2013). Trait, Trait Theory. In K. D. Keith (Ed.), *The encyclopedia*

of Cross-Cultural Psychology (1st ed., pp. 1-2). John Wiley Publishing Company.

Okyere-Kwakye, E. & Nor, K. M. (2020). Examining the intentions of a Ghanaian technical university students to use e-library. *Digital Library Perspectives, 38*(1), 69-87. https://doi.org/10.1108/dlp-05-2020-0034

Omar, B. & Subramanian, K. (2013). Addicted to Facebook: examining the roles of personality characteristics, gratifications sought and Facebook exposure among youths. *GSTF Journal on Media & Communications,1*(1). https://doi.org/10.5176/2335-6618_1.1.6.

Osei-Akoto, I., & Asiedu, E. (2023). Social media use for academic purposes among university students in Ghana: Benefits and challenges. *International Journal of Educational Technology*, 10(2), 88–100.

Özarıcı, E., & Cangöl Sögüt, S. (2022). The relationship between internet addiction and risky health behaviours in university students: A cross-sectional study in Turkey. *Perspectives in Psychiatric Care, 58*(1).

Özdemir, H. Ö. & Arslan, H. N. (2018). The moderating roles on the relation between internet addiction and burnout. *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 4*(1), 31-41. https://doi.org/10.31592/aeusbed.404411

Öztürk, C., Bektas, M., Ayar, D., Öztornacı, B. Ö., & Yağcı, D. (2015). Association of personality traits and risk of internet addiction in adolescents. *Asian Nursing Research*, *9*(2), 120-124.

Pallant, J. (2011). Survival manual. A step by step guide to data analysis using SPSS, 4(4). Sage publication.

Papastylianou, A. (2013). Relating on the internet, personality traits and

depression: research and implications. *The European Journal of Counselling Psychology, 2*(1), 65-78.

Patil, S. D., Deshmukh, J. S., & Dagdiya, K. R. (2017). Prevalence and pattern of internet addiction among medical students in Nagpur, Maharashtra. *International Journal of Community Medicine and Public Health, 4*(7), 12-24.

Pavlinovic, S. & Orešković, S. (2018). Adolescent personality profile and internet addiction. https://doi.org/10.2196/preprints.9863

Pereira, H., Fehér, G., Tibold, A., Esgalhado, G., Costa, V., & Monteiro, S. (2021). The impact of internet addiction and job satisfaction on mental health symptoms among a sample of Portuguese workers. *International Journal of Environmental Research and Public Health, 18*(13), 43-69.

Peris, M., Barrera, U. d. l., Schoeps, K., & Montoya-Castilla, I. (2020). Psychological risk factors that predict social networking and internet addiction in adolescents. *International Journal of Environmental Research and Public Health, 17*(12), 45-98. https://doi.org/10.3390/ijerph17124598.

Persegani, C., Russo, P., Carucci, C., Nicolini, M., Papeschi, L. L., & Trimarchi, M. (2002). Television viewing and personality structure in children. *Personality and Individual Differences, 32*(6), 977-990.

Pervin, L. A., & John, O. P. (1997). *Personality: Theory and research (*7th ed.). Oxford: John Wiley and Sons.

Peters, C. S., & Malesky, L. A. (2008). Problematic usage among highly-engaged players of massively multiplayer online role playing games. *CyberPsychology & Behavior, 11*(4), 480-483.

Petrosyan, A. (2023). Number of internet users worldwide from 2005 to 2022.

Ponterotto, J. G. (2005). Qualitative research in counseling psychology: A primer on research paradigms and philosophy of science. *Journal of Counseling Psychology*, *52*(2), 126.

Porter, G., Starcevic, V., Berle, D., & Fenech, P. (2010). Recognizing problem video game use. *Australian and New Zealand Journal of Psychiatry, 44*(2), 120-128.

Priego-Parra, B. A., Triana-Romero, A., Pinto-Gálvez, S. M., Ramos, C. D., Salas-Nolasco, O., Reyes, M. M., ... & Remes-Troche, J. M. (2020). Anxiety, depression, attitudes, and internet addiction during the initial phase of the 2019 coronavirus disease (COVID-19) epidemic: A cross-sectional study in México. *MedRxiv*, 2020-05.

Primecz, H., Lugosi, P., Zølner, M., Chevrier, S., Barmeyer, C., & Grosskopf, S. (2023). Organizations and migrant integration: Towards a multiparadigm narrative approach. *International Journal of Cross Cultural Management*, *23*(1), 7-30.

Pristyna, G., Mahmudiono, T., Rifqi, M. A., & Indriani, D. (2022). The relationship between Big Five Personality Traits, eating habits, physical activity, and obesity in Indonesia based on analysis of the 5th wave Indonesia Family Life Survey (2014). *Frontiers in Psychology, 13*, 881436.

Puerta-Cortés, D. X., & Carbonell, X. (2013). Problematic internet use in a sample of Colombian university students/Uso problematico de internet en una muestra de estudiantes universitarios colombianos/Uso problematico da internet em uma amostra de estudantes universitarios

colombianos. *Avances en Psicología Latinoamericana*, *31*(3), 620- 632.

Putri, A. P. S., Poerwandari, E. K., & Rusli, E. (2017, September). Social anxiety and internet addiction: CBT intervention module development based on self-reflection. In *1st International Conference on Intervention and Applied Psychology (ICIAP 2017)* (pp. 437-450). Atlantis Press.

Qian, X. (2023). Social networking and internet addiction among university students: The mediating role of time spent online. *Addictive Behaviors Reports*, 17, 100521. https://doi.org/10.1016/j.abrep.2023.100521

Quaglieri, A., Biondi, S., Roma, P., Varchetta, M., Fraschetti, A., Burrai, J., ... & Mari, E. (2021). From emotional (Dys) regulation to internet addiction: A mediation model of problematic social media use among Italian young adults. *Journal of Clinical Medicine, 11*(1), 188.

Rachubińska, K., Cybulska, A., Szkup, M., & Grochans, E. (2021). Analysis of the relationship between personality traits and Internet addiction. *European Review for Medical & Pharmacological Sciences*, *25*(6).

Rahmani, S., & Lavasani, M. G. (2011). The relationship between internet dependency with sensation seeking and personality. *Procedia-Social and Behavioral Sciences, 30,* 272e277.

Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of research in Personality*, *41*(1), 203-212.

Randler, C., Horzum, M. B., & Vollmer, C. (2014). Internet addiction and its relationship to chronotype and personality in a Turkish university student sample. *Social Science Computer Review, 32*(4), 484e485.

Rigelsky, M., Megyesiova, S., Ivankova, V., Al Khouri, I., & Sejvl, J. (2021).

Gender Differences in Internet Addiction among University Students in the Slovak Republic. *Addictology/Adiktologie*, *21*(1).

Rodriguez, J. E., Williams, D. R., & Bürkner, P. -. C. (2023). Heterogeneous heterogeneity by default: testing categorical moderators in mixed-effects meta-analysis. *British Journal of Mathematical and Statistical Psychology, 76*(2), 402-433. https://doi.org/10.1111/bmsp.12299

Romani, L., Primecz, H., & Topcu, K. (2011). Paradigm interplay for theory development: a methodological example with the kulturstandard method. *Organisational Research Methods, 14*(3), 432-455. https://doi.org/10.1177/1094428109358270.

Ruggiero, T. E. (2000). Uses and gratifications theory in the 21st century. *Mass Communication & Society*, *3*(1), 3-37.

Saini, V. K., Baniya, G. C., Verma, K. K., Soni, A., & Kesharwani, S. K. (2016). A study on relationship of facebook and game addictive behaviour with personality traits among medical students. International *Journal of Research in Medical Sciences, 4*(8), 3492-3497.

Salehi, M., Khalili, M. N., Hojjat, S. K., Salehi, M., & Danesh, A. (2014). Prevalence of internet addiction and associated factors among medical students from Mashhad, Iran in 2013. *Iranian Red Crescent Medical Journal*, *16*(5).

Salehi, M., Marashi, S. A., & Esfahani, A. N. (2014). The impact of social networks on college students. *International Journal of Academic Research in Business and Social Sciences*, 4(8), 372–383.

Salubi, O. & Muchaonyerwa, N. (2018). Uses and gratifications of the internet and library information resources: an integrated model proposal.

Desidoc Journal of Library & Information Technology, 38(6), 429. https://doi.org/10.14429/djlit.38.6.13281.

Samarein, Z. A., Far N. S., Yekleh, M., Tahmasebi, S., Yaryavi, F. & Ramezani, V. (2013). Relationship between personality traits and Internet addiction of student at Kharazmi University. *International Journal of Behaviour Research 2*,1, 10-17.

Sanchez, J. I., Bonache, J., Paz-Aparicio, C., & Oberty, C. Z. (2023). Combining interpretivism and positivism in international business research: The example of the expatriate role. *Journal of World Business*, *58*(2), 101419.

Sarantakos, S. (2005), *Social Research*, (3rd edn). Palgrave Macmillan, New York.

Saunders, M., Lewis. P., & Thornhill, A. (2007). *Research methods for business students* (4th ed). Pearson Education limited.

Scealy, M., Phillips, J. G., & Stevenson, R. (2002). Shyness and anxiety as predictors of patterns of Internet usage. *CyberPsychology & Behavior,* 5(6), 507-515.

Seabra, L., Loureiro, M., Pereira, H., Monteiro, S., Marina Afonso, R., & Esgalhado, G. (2017). Relationship between Internet addiction and self-esteem: Cross-cultural study in Portugal and Brazil. *Interacting with Computers, 29*(5), 767-778.

Sechi, C., Loi, G., & Cabras, C. (2020). Addictive internet behaviours: the role of trait emotional intelligence, self-esteem, age, and gender. *Scandinavian Journal of Psychology, 62*(3), 409-417.

Senol-Durak, E., & Durak, M. (2011). The mediator roles of life satisfaction

and self-esteem between the affective components of psychological well-being and the cognitive symptoms of problematic Internet use. *Social Indicators Research, 103*, 23-32.

Şenormancı, Ö., Konkan, R., Güçlü, O., & Şenormancı, G. (2014). Evaluation of internet addiction in university students in terms of personality traits. *Journal of Psychiatry and Neurological Sciences, 27*(3), 233–238. https://doi.org/10.5350/DAJPN2014270303.

Serdar, C. C., Cihan, M., Yücel, D., & Serdar, M. A. (2021). Sample size, power and effect size revisited: simplified and practical approaches in pre-clinical, clinical and laboratory studies. *Biochemia Medica*, *31*(1), 27-53.

Servidio, R. (2014). Exploring the effects of demographic factors, Internet usage and personality traits on Internet addiction in a sample of Italian university students. *Computers in Human Behavior, 35*, 85-92.

Servidio, R. (2019). A discriminant analysis to predict the impact of personality traits, self-esteem, and time spent online on different levels of internet addiction risk among university students. *Studia Psychologica, 61*(1), 56-70. https://doi.org/10.21909/sp.2019.01.772.

Shaffer, D. R. (2000). *Social and personality development* (4th ed.). Belmont, CA: Wadsworth/Thomson Learning.

Shaffer, H. (1996). Understanding the means and objects of addiction: technology, the internet, and gambling. *Journal of Gambling Studies, 12*(4), 461-469. https://doi.org/10.1007/bf01539189.

Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazoritz, M., Gold, M. S., & Stein, D. J. (2003). Problematic internet use: proposed

classification and diagnostic criteria. *Depression and Anxiety, 17*(4), 207-216.

Shaw, M., & Black, D. W. (2008). Internet Addiction: Definition, Assessment, Epidemiology and Clinical Management. *CNS Drugs, 22*, 353-365.

Shehata, W. M., & Abdeldaim, D. E. (2021). Internet addiction among medical and non-medical students during COVID-19 pandemic, Tanta University, Egypt. *Environmental Science and Pollution Research, 28*, 59945-59952.

Shehata, W. M., & Abdeldaim, D. E. (2021). Internet addiction among medical and non-medical students during COVID-19 pandemic, Tanta University, Egypt. *Environmental Science and Pollution Research*, *28*, 59945-59952.

Shek, D. & Yu, L. (2016). Adolescent internet addiction in Hong Kong: prevalence, change, and correlates. *Journal of Pediatric and Adolescent Gynecology, 29*(1), S22-S30. https://doi.org/10.1016/j.jpag.2015.10.005

Shek, D. T. L & Yu, L. (2012). Internet addiction phenomenon in early adolescents in Hong Kong. *The Scientific World Journal, 2*, 1–9.

Simcharoen, S., Pinyopornpanish, M., Haoprom, P., Kuntawong, P., Wongpakaran, N., & Wongpakaran, T. (2018). Prevalence, associated factors and impact of loneliness and interpersonal problems on internet addiction: A study in Chiang Mai medical students. *Asian Journal of Psychiatry, 31*, 2-7.

Şimşek, E., & Salı, J. (2014). The role of social networking sites in students' academic life. *Procedia - Social and Behavioral Sciences*, 116, 4789–

4793. https://doi.org/10.1016/j.sbspro.2014.01.1024

Sinha, N. K., Kumar, P., Kumar, S., & Priyadarshi, P. (2021). Problematic internet use and psychosocial well-being: role of mindfulness mediated by self-control and negative affect. *IIM Kozhikode Society & Management Review, 10*(1), 99-112.

Smita, G., & Azhar, F. (2018). Prevalence and characteristics of internet addiction among university students in Mauritius. *SM J Case Rep, 4*(1), 1077.

Smith, S. D., Herrmann, E. V., & Bartlett, K. A. (2011). A content analysis of brief alcohol screening inventories. *Counseling Outcome Research and Evaluation, 2*(1), 37-58.)

Soh, P., Charlton, J., & Chew, K. (2014). The influence of parental and peer attachment on internet usage motives and addiction. *First Monday*. https://doi.org/10.5210/fm.v19i7.5099.

Song, I., LaRose, R., Eastin, M., & Lin, C. (2004). Internet gratifications and internet addiction: on the usesand abuses of new media. *Cyberpsychology & Behavior, 7*(4), 384-394. https://doi.org/10.1089/cpb.2004.7.384.

Stafford, T., Stafford, M., & Schkade, L. (2004). Determining uses and gratifications for the internet. *Decision Sciences, 35*(2), 259-288.

Starcevic, V., & Aboujaoude, E. (2017). Internet addiction: Reappraisal of an increasingly inadequate concept. *CNS Spectrums, 22*(1), 7-13.

Statista (2023). Number of internet and Social Media Users Worldwide as of January 2023. Accessed 15 February 2023 https://www.statista.com/statistics/617136/digital-population-

worldwide.

Statista (2024). Total Number of Internet Users in Ghana from 2017 to 2024. Available online:https://www.statista.com/statistics/1171416/number-of-internet-users-ghana. (accessed on 25 July 2024).

Stodt, B., Brand, M., Sindermann, C., Wegmann, E., Li, M., Zhou, M., ... & Montag, C. (2018). Investigating the effect of personality, internet literacy, and use expectancies in internet-use disorder: a comparative study between China and Germany. *International Journal of Environmental Research and Public Health*, *15*(4), 579.

Sugiarta, R., & Dewi, F. I. R. (2021, August). The correlation between the big-five personality and internet addiction among early-adult individuals. In *International Conference on Economics, Business, Social, and Humanities* (ICEBSH 2021) (pp. 1437-1443). Atlantis Press.

Sulaiman, A., Shin, K., & Rofaie, N. (2019). Personality traits and internet addiction among selected financial institution employees. *International Journal of Ethics and Systems, 35*(2), 260-271. https://doi.org/10.1108/ijoes-12-2017-0220.

Suliman, A. M., AbdelRahman, A. A., & Abdalla, A. (2010). Personality traits and work performance in a duty-free industry. *International Journal of Commerce and Management, 20*(1), 64-82.

Surís, J. C., Akre, C., Piguet, C., Ambresin, A. E., Zimmermann, G., & Berchtold, A. (2014). Is Internet use unhealthy? A cross-sectional study of adolescent Internet overuse. *Swiss Medical Weekly*, 144.

Sussman, S., McCuller, W. J., & Dent, C. W. (2003). The associations of social self-control, personality disorders, and demographics with drug use

among high-risk youth. *Addictive Behaviors, 28*(6), 1159-1166.

Sutherland, K., Davis, C., Terton, U., & Visser, I. (2018). University student social media use and its influence on offline engagement in higher educational communities. *Student Success*, *9*(2), 13-24.

Taha, M. H., Shehzad, K., Alamro, A. S., & Wadi, M. (2019). Internet use and addiction among medical students in Qassim University, Saudi Arabia. *Sultan Qaboos University Medical Journal*, *19*(2), e142.

Tammisalo, E., Tiainen, M., & Kuusinen, T. (2022). Social networking site use and student engagement: An empirical investigation. *Computers & Education*, 180, 104426. https://doi.org/10.1016/j.compedu.2022.104426

Temitope, B. E., Oyekola, A., & Mary, B. A. (2019). Personality traits and financial strain as determinants of gambling behaviour among youth in Nigeria: A case study of youths in Oyo State and Ekiti State. *American International Journal of Social Science Research, 4*(1), 1-8.

Thabet, B., Ellouze, A. S., Ghorbel, N., Maalej, M., Yaich, S., Omri, S., ... & Charfi, N. (2019). Factors associated with Internet addiction among Tunisian adolescents. *L'encephale*, *45*(6), 474-481.

Thatcher, A., & Goolam, S. (2005). Defining the south African internet 'addict': prevalence and biographical profiling of problematic internet users in South Africa. *South African Journal of Psychology*, *35*(4), 766-792.

Tonioni, F., D'Alessandris, L., Lai, C., Martinelli, D., Corvino, S., Vasale, M., ... & Bria, P. (2012). Internet addiction: hours spent online, behaviors and psychological symptoms. *General Hospital Psychiatry*, *34*(1), 80-87.

Tsai, H. F., Cheng, S. H., Yeh, T. L., Shih, C. C., Chen, K. C., Yang, Y. C., et al. (2009). The risk factors of Internet addiction a survey of university freshmen. *Psychiatry Research, 167*(3), 294e299.

Tupes, E. C., & Christal, R. C. (1992). Recurrent Personality Factors Based on Trait Ratings. *Journal of Personality, 60*, 225-251.

Tuten, T. L., & Bosnjak, M. (2001). Understanding differences in web usage: The role of need for cognition and the five factor model of personality. *Social Behavior and Personality: An International Journal*, *29*(4), 391-398.

Tuurosong, D., & Amadu, M. F. (2014). The social media scourge among university students: a study of the University for Development Studies, Ghana. *Journal of Asian Development Studies, 3*(2), 62-74.

Ullah, A., & Ameen, K. (2022). Statistical analysis used in LIS research produced by Pakistani authors. *Online Information Review*, *46*(4), 698-714.

Umeta, G. T., Regasa, S. D., Taye, G. M., Ayeno, H. D., & Tefera, G. M. (2022). Prevalence of internet addiction and its correlates among regular undergraduate medicine and health science students at ambo university. Cross-sectional study. *Substance Abuse*: *Research and Treatment, 16*, 11782218221080772.

University of Cape Coast (2023). Enrolment Facts. Retrieved from http://ucc.edu.gh/main/explore-ucc/summary-statistics

University of Cape Coast. (2023). ―History‖. University of Cape Coast. Retrieved 12 August 2023. https://ucc.edu.gh/about-colleges/history-

University of Ghana (2023). Enrolment and Graduation Statistics. Retrieved

from 22 July 2023. http://www.ug/about/enrolment-and-gradation-

University of Ghana. (2023). About UG. Retrieved from https://www.ug.edu.gh/about/overview

Uyanık, G. K., & Güler, N. (2013). A study on multiple linear regression analysis. *Procedia-Social and Behavioral Sciences*, *106*, 234-240.

Van den Eijnden, R. J. J. M. (2009). Daily and compulsive Internet use and well- being in adolescence: A diathesis-stress model based on Big Five personality traits. *Journal of Youth and Adolescence, 38*, 765- 776.

van der Aa, N., Overbeek, G., Engels, R. C. M. E., Scholte, R. H. J., Meerkerk, G.-J., & Veen, W., & Vrakking, B. (2006). *Homo zappiens: Growing up in a digital age.* Network Continuum Education.

Wallace, P. (2015). *The Psychology of the Internet*. Cambridge University Press.

Wang, H., Zhao, X., & Liu, Z. (2023). Conscientiousness and internet addiction among Chinese college students: The mediating role of self-control. *Personality and Individual Differences, 204,* 112055. https://doi.org/10.1016/j.paid.2022.112055

Wang, Y., & Wang, Y. (2014). Neuroticism and impulsivity as predictors of Internet addiction among adolescents: a structural equation modeling approach in China. *Computers in Human Behavior, 36*, 431-437

Weibel, D., Wissmath, B., & Groner, R. (2010). Motives for creating a private website and personality of personal homepage owners in terms of extraversion and heuristic orientation. Cyberpsychology: *Journal of Psychosocial Research on Cyberspace, 4*(1), 44-52.

Whang, L. S., Lee, S., & Chang, G. (2003). Internet over-users' psychological

profiles: a behavior sampling analysis on internet addiction. *Cyber Psychology & Amp; Behavior, 6*(2), 143-150.

Wojdan, W., Wdowiak, K., Witas, A., Drogoń, J., & Brakowiecki, W. (2020). The impact of social media on the lifestyle of young people. *Polish Journal of Public Health, 130*(1), 8-13.

Wolfradt, U., & Doll, J. (2001). Motives of adolescents to use the Internet as a function of personality traits, personal and social factors. *Journal of Educational Computing Research*, *24*(1), 13-27.

Wu, K. D., & Clark, L. A. (2003). Relations between personality traits and self-reports of daily behavior. *Journal of Research in Personality, 37*(4), 231-256.

Xin, M., Xing, J., Pengfei, W., Houru, L., Mengcheng, W., & Hong, Z. (2018). Online activities, prevalence of Internet addiction and risk factors related to family and school among adolescents in China. *Addictive Behaviors Reports*, *7*, 14-18.

Yan, W., Li, Y., & Sui, N. (2014). The relationship between recent stressful life events, personality traits, perceived family functioning and internet addiction among college students. *Stress and Health*, *30*(1), 3-11.

Yang, W., Morita, N., Zuo, Z., Kawaida, K., Ogai, Y., Saito, T., … & Hu, W. (2021). Maladaptive perfectionism and internet addiction among Chinese college students: a moderated mediation model of depression and gender. *International Journal of Environmental Research and Public Health, 18*(5), 2748. https://doi.org/10.3390/ijerph18052748.

Yao, M. Z., & Zhong, Z. J. (2014). Loneliness, social contacts and Internet addiction: A cross-lagged panel study. *Computers in Human Behavior,*

30, 164-170

Yao, M., He, J., Ko, D., & Pang, K. (2014). The influence of personality, parental behaviors, and self-esteem on internet addiction: a study of Chinese college students. *Cyber Psychology Behavior and Social Networking, 17*(2), 104-110. https://doi.org/10.1089/cyber.2012.0710.

Yasin, A., Chakim, A., Susilawati, S., & Muhammad, S. H. (2023). Development of Islamic religious education learning in forming moderate Muslims. Tafkir: *Interdisciplinary Journal of Islamic Education, 4*(1), 22-36. https://doi.org/10.31538/tijie.v4i1.227

Yin, B. & Shen, Y. (2023). Compensatory beliefs in the internet gratification behavior: a study of game-based assessment. *Frontiers in Public Health*, 11. https://doi.org/10.3389/fpubh.2023.997108.

Yolanda, N., Marzona, Y., Husna, L., & Azmir, S. (2021). The effect of addiction online game factor by private high school students in padang city. *International Journal of Global Operations Research, 2*(1), 24-

Younes, F., Halawi, G., Jabbour, H., Osta, N. E., Karam, L., Hajj, A., … & Khabbaz, L. R. (2016). Internet addiction and relationships with insomnia, anxiety, depression, stress and self-esteem in university students: a cross-sectional designed study. *Plos One, 11*(9), e0161126. https://doi.org/10.1371/journal.pone.0161126

Young, K. (1998). Internet addiction: the emergence of a new clinical disorder. *Cyber Psychology & Behavior, 1*(3), 237-244. https://doi.org/10.1089/cpb.1998.1.237.

Young, K. (2009). Internet addiction: Diagnosis and treatment considerations.

Young, K. & Rogers, R. (1998). The relationship between depression and

internet addiction. *Cyber Psychology & Behavior, 1*(1), 25-28. https://doi.org/10.1089/cpb.1998.1.25.

Young, K. S. (1998). Internet addiction: the emergence of a new clinical disorder. *Cyber Psychology & Behavior, 1*(3), 237-244.

Young, K. S. (1999). The evaluation and treatment of Internet addiction.

Yu, C. Y., Kim, J., & Chen, Q. (2011). Social media use among college students and its impact on academic performance and well-being. *Journal of College Student Development*, 52(1), 1–12.

Yu, L., Shek, D. T., & Zhu, X. (2021). Internet addiction and personality traits among Chinese university students: A meta-analysis. *International Journal of Environmental Research and Public Health, 18*(2), 1–16. https://doi.org/10.3390/ijerph18020709

Yu, T., Zhao, Y., Lv, F., Qin, N., & Chen, P. (2021). Associations among the big five personality traits, maladaptive cognitions, and internet addiction across three time measurements in 3 months during the covid-19 pandemic. *Frontiers in Psychology,* 12. https://doi.org/10.3389/fpsyg.2021.654825.

Yun, I., Kim, S., & Kwon, S. (2015). Low self-control among south korean adolescents. *International Journal of Offender Therapy and Comparative Criminology, 60*(10), 1185-1208.

Zenebe, Y., Kunno, K., Mekonnen, M., Bewuket, A., Birkie, M., Necho, M., & Akele, B. (2021). Prevalence and associated factors of internet addiction among undergraduate university students in Ethiopia: a community university-based cross-sectional study. *BMC Psychology, 9,* 1-10.

Zeng, G., Zhang, L., Fung, S. F., Li, J., Liu, Y. M., Xiong, Z. K., ... & Huang,

Q. (2021). Problematic internet usage and self-esteem in Chinese undergraduate students: the mediation effects of individual affect and relationship satisfaction. *International Journal of Environmental Research and Public Health, 18*(13), 6949.

Zewde, E. A., Tolossa, T., Tiruneh, S. A., Azanaw, M. M., Yitbarek, G. Y., Admasu, F. T., ... & Melaku, M. D. (2022). Internet addiction and its associated factors among African high school and university students: systematic review and meta-analysis. *Frontiers in Psychology*, *13*, 847274.

Zhang, S., Su, W., Han, X., & Potenza, M. N. (2022). Rich get richer: extraversion statistically predicts reduced internet addiction through less online anonymity preference and extraversion compensation. *Behavioural Sciences, 12*(6), 193. https://doi.org/10.3390/bs12060193

APPENDICES

APPENDIX A

RESEARCH INSTRUMENT

SECTION A

Demographic Information

1. Sex: Man [ ] Woman [ ]
2. Age: 18-24 [ ] 25-30 [ ] 31-40 [ ] 40+ [ ]
3. Educational level

   First-year undergraduate [ ]

   Second-year undergraduate [ ]

   Third-year undergraduate [ ]

   Fourth-year undergraduate [ ]
4. University

   University of Cape Coast [ ]

   University of Ghana [ ]
5. Program of Study……..
6. Online activities engaged in frequently

   Social networking [ ]

   Online gaming [ ]

   Streaming videos/movies [ ]

   Online shopping [ ]

   Studying/researching [ ]
7. How many hours do you spend online each day?

   Less than 1 hour [ ]

   1-2 hours [ ]

   2-4 hours [ ]

   4-6 hours [ ]

   More than 6 hours [ ]
8. On the average, how much money do you spend on data bundles per month?

   Less than 100 cedis [ ]

   100-200 cedis [ ]

   200-300 cedis [ ]

   300-400 cedis [ ]

More than 400 cedis [ ]

9. Have you ever felt you should cut down on your drinking or drug use? Yes or No
10. Have people annoyed you by criticizing your drinking or drug use? Yes or No
11. Have you ever felt bad or guilty about your drinking or drug use? Yes or No
12. Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a hangover (eye-opener)? Yes or No
13. Have you received a diagnosis of any mental disorder within the last 6 months? Yes or No

SECTION B

A Brief Version of the Big Five Personality Inventory.

Big Five Inventory-10 (BFI-10)

Instructions: How well do the following statements describe your personality?

I see myself as someone who …	Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1. … is reserved	(1)	(2)	(3)	(4)	(5)
2. … is generally trusting	(1)	(2)	(3)	(4)	(5)
3. … tends to be lazy	(1)	(2)	(3)	(4)	(5)
4. … is relaxed, handles stress well	(1)	(2)	(3)	(4)	(5)
5. … has few artistic interests	(1)	(2)	(3)	(4)	(5)
6. … is outgoing, sociable	(1)	(2)	(3)	(4)	(5)
7. … tends to find fault with others	(1)	(2)	(3)	(4)	(5)
8. … does a thorough job	(1)	(2)	(3)	(4)	(5)
9. … gets nervous easily	(1)	(2)	(3)	(4)	(5)
10. … has an active imagination	(1)	(2)	(3)	(4)	(5)

SECTION C

Internet Addiction Test

This questionnaire consists of 20 statements. After reading each statement carefully, based upon the 5-point Likert scale, please select the response (0, 1, 2, 3, 4 or 5) which best describes you. If two choices seem to apply equally well, circle the choice that best represents how you are most of the time during the past month. Be sure to read all the statements carefully before making your choice. The statements refer to offline situations or actions unless otherwise specified.

0 = Not Applicable

1 = Rarely

2 = Occasionally

3 = Frequently

4 = Often

5 = Always

1. How often do you find that you stay online longer than you intended?
2. How often do you neglect household chores to spend more time online?
3. How often do you prefer the excitement of the Internet to intimacy with your partner?
4. How often do you form new relationships with fellow online users?
5. How often do others in your life complain to you about the amount of time you spend online?
6. How often do your grades or school work suffer because of the amount of time you spend online?
7. How often do you check your email before something else that you need to do?
8. How often does your job performance or productivity suffer because of the Internet?
9. How often do you become defensive or secretive when anyone asks you what you do online?
10. How often do you block out disturbing thoughts about your

life with soothing thoughts of the Internet?

11. How often do you find yourself anticipating when you will go online again?
12. How often do you fear that life without the Internet would be boring, empty, and joyless?
13. How often do you snap, yell, or act annoyed if someone bothers you while you are online?
14. How often do you lose sleep due to being online?
15. How often do you feel preoccupied with the Internet when off-line, or fantasize about being online?
16. How often do you find yourself saying "just a few more minutes" when online?
17. How often do you try to cut down the amount of time you spend online and fail?
18. How often do you try to hide how long you've been online?
19. How often do you choose to spend more time online over going out with others?
20. How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back online?

APPENDIX B

INFORMED CONSENT FORM FOR ADULT

Title: Personality Traits and Internet Addiction: A Study Among University Students in Ghana

Principal Investigator: Henry Herbert Edzii

Address: University of Cape Coast, Department of Education and Psychology

General Information about Research

I am Henry Herbert Edzii, a MPhil. Clinical Health Psychology student at the University of Cape Coast. I invite you to participate in my research survey on Personality Traits and Internet Addiction: A Study Among University Students in Ghana. Before you conclude on whether to partake or not, it is pertinent to comprehend the aims of the study and what it will entail. Therefore, you are advised to read the information below carefully, and if you have any questions or would like more information, please get in touch with me directly at henry.edzii@stu.ucc.edu.gh or 0501154133.

Procedures

To find answers to the questions in the Internet Addiction Test (IAT) and the Big Five Inventory (BFI-10), I invite you to take part in this research project. If you accept, you will be required to fill out a survey which will be provided and collected by the researcher.

I am interested in your personality traits and how they influence your internet addiction. Therefore, questions will be posed based on the above information and socio-demographic characteristics. This information will help the researcher answer the research questions and hypotheses. You are not required to participate in this study. You get to choose whether you wish to participate. If you choose to participate, you will be given a copy of this information sheet to retain and asked to sign a consent form. If you choose to participate, you can leave the study at any time without giving a reason up until the point at which your data has been anonymised and cannot be used to identify you. This will occur a month from the day you complete your consent form. Please email Henry Herbert Edzii at henry.edzii@stu.ucc.edu.gh or 0501154133 if you wish to cease your participation in the study within this

time. There are no consequences if you decide not to participate or withdraw from the study.

You will be invited to participate in a survey online through WhatsApp or email. You will be asked to check boxes indicating how strongly you agree or disagree with a list of statements. It should take between 10 and 15 minutes to complete the survey. During this period, you should read the participant materials, such as this information sheet, and complete the survey. There are no right or wrong answers, and I am curious how others may respond differently. Therefore, please, be sincere. A session will be devoted to asking about your demographic information before you finish the main survey questions. This is so I can get a feel of who is involved in the study. You will be required to confirm that you are willing to take part in the study before proceeding. Please note that I reserve the right to incorporate incomplete surveys in my research. To ensure your complete survey is included, please get in touch with me through email or the telephone number above to withdraw from the study.

Possible Risks and Discomforts

The researcher does not anticipate any risk to you partaking in this study. However, due to the possibility of research questions raising some level of distress, the researcher has provided a list of facilities that provide counselling and therapeutic support at a low cost. Nationwide Resources 37 Military hospital (Therapy and wellness department) therapyandwellnessdept@gmail.com / https://www.ghana.gov.gh/mdas/ee0f1b1bcc/, Police hospital (Psychology Unit) https://police.gov.gh/en/index.php/police-hospital-accra/, SSNIT hospital (Psychology Department) https://www.ssnit.org.gh/media/hospitals/, Accra Regional Hospital (Psychology Unit) https://garh.gov.gh/ and Cape Coast Teaching Hospital (Psychology Unit) https://ccthghana.org.gh

Possible Benefits

As a participant, you get the opportunity to participate in a topic which has been one of the top issues occurring in Ghana and causing damage and distress to students. This research will help policymakers such as the Ministry of Communications, the National Communications Authority, the Ghana Tertiary Education Commission, and the Ghana Psychology Council to

understand the factors contributing to internet addiction and develop policies addressing these issues. How do I withdraw from the research? Your participation in this study is voluntary. It is up to you to decide whether to participate in this study. Withdrawing from this study will not affect your relationship with the researcher, if any. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

Confidentiality

Your responses to this study will be anonymous. Please do not write any identifying information in your study response. The researcher will make every effort to preserve your confidentiality, which will include; data retrieved from the respondents will be coded into SPSS, stored on the researcher's laptop, and data passcode protected. There will be a strict restriction on who gets access to the data.

Voluntary Participation and Right to Leave the Research

Your participation in this study is voluntary. It is up to you to decide whether to participate in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you can withdraw anytime without giving a reason. Withdrawing from this study will not affect your relationship with the researcher, if any. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

Contacts for Additional Information

Suppose you have questions at any time about this study or experience adverse effects as a result of participating in this study. In that case, you may contact the researcher on 0501154133 and Dr Charlotte Omane Kwakye- Nuako, supervisor, on 0244826472. If you have questions regarding your rights as a research participant, or if problems arise that you feel you need to discuss with the Primary Investigator, please contact the Institutional Review Board at 0558093143/0508878309.

Contact of Ethical Review Board

This research has been reviewed and approved by the Institutional Review Board of the University of Cape Coast (UCCIRB). If you have any questions about your rights as a research participant you can contact the Administrator at the IRB Office between the hours of 8:00 am and 4:30 p.m. through the phone lines 0558093143/0508878309 or email address: irb@ucc.edu.gh.

PART II: VOLUNTEER'S AGREEMENT

The above document describing the benefits, risks and procedures for the research title *(Personality traits and internet addiction: a study among some universities in Ghana)* has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Volunteer's Name:……

Volunteer's Signature/Thumbprint……..

Date: ……

APPENDIX C

ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICER
CAPE COAST, GHANA

Our Ref: CES/ERB/ucc.edu/v8-23/77

Date: 28th August, 2023

Your Ref: ....

Chairman CES-ERB
Prof. J. O. Omotosho
jomotosho@ucc.edu.gh
0243784739

Vice Chairman, CES-ERB
Prof. K. Edjah
kedjah@ucc.edu.gh
0244742357

Secretary CES-ERB
Prof. Linda Dzama Forde
lforde@ucc.edu.gh
0244786680

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

The bearer, Henry H. Ecbi
Reg. No. EF/CHP/21/0009
M.Phil ~~/Ph.D~~ student in the Department of Education and Psychology in the College of Education Studies University of Cape Coast, Cape Coast, Ghana. He/She wishes to Undertake of research study on the topic: Personality traits and internet addiction: A study of University students in Ghana

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed his/~~her~~ proposal and confirmed that the proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence his/~~her~~ study. The ERB would be grateful if you would give him/~~her~~ the necessary assistance to facilitate the conduct of the said research.

Thank You,

Yours faithfully,

Prof. Linda Dzama Forde
(Secretary, CES-ERB)