

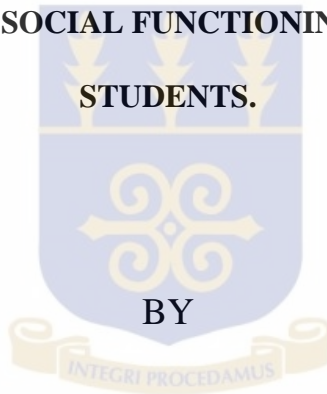
UNIVERSITY OF GHANA



DEPARTMENT OF PSYCHOLOGY

LEGON

**THE IMPACT OF INTERNET ADDICTION ON INTERPERSONAL
RELATIONSHIPS AND SOCIAL FUNCTIONING AMONG GHANAIAN
STUDENTS.**



GODSMAY AFOLEY OAKLEY

(10363300)

A THESIS SUBMITTED TO THE DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF
GHANA, LEGON, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD
OF MASTER OF PHILOSOPHY DEGREE IN SOCIAL PSYCHOLOGY

JUNE, 2014

*Internet addiction on interpersonal relationship and social functioning among students***DECLARATION****STUDENT'S DECLARATION**

I, Godsmay Afoley Oakley, hereby declare that except for references to other people's work which have been duly cited, this thesis, is the result of my own work and that it has neither in whole or in part been presented elsewhere.

Name: Godsmay Afoley Oakley

Signature:

Date:

SUPERVISORS' DECLARATION

I, hereby declare that the preparation and presentation of this thesis was supervised in accordance with the guidelines on the supervision of thesis laid down by the University of Ghana, Legon.

Name: Professor Charity .S. Akotia

Signature:.....

Date:.....

SUPERVISOR'S DECLARATION

I, hereby declare that the preparation and presentation of this thesis was supervised in accordance with the guidelines on the supervision of thesis laid down by the University of Ghana, Legon.

Name: Dr. Samuel Atindabila.

Signature:.....

Date:.....

Internet addiction on interpersonal relationship and social functioning among students

DEDICATION

This Thesis is dedicated with gratitude and affection to my family, the Oakley's family for their love, motivation and support throughout this course.



ACKNOWLEDGEMENT

This dissertation would not have been possible without the guidance and assistance of several individuals who in one way or another contributed and extended their valuable time in the preparation and completion of this study.

First and foremost, my deepest gratitude to Prof. Charity Akotia whose encouragement and patience I will never forget. To Dr. Samuel Atindanbila I say, thank you for your resourceful and constructive suggestions and corrections which have really enriched my knowledge and understanding in the field of social science research.

I thank my family for their unflinching support and encouragement. I also appreciate the support of my friends especially my research coaches namely, Mr. Prince Gandy, Mr. Daniel Akorsu and Mr. Henry Rhule. I also wish to specially appreciate the wonderful work of all the respondents who took part in this work. Truly, without your response, this work would not have been completed.

Appreciation is also extended to my mates the MPhil students' class of (2012/2013) who in one way or another assisted me in most of my course work. Last but not the least, and the one above all of us, Jehovah God, for answering my prayers for giving me the strength to press on despite the challenges i had to encounter in completing this work.

TABLE OF CONTENTS

Declaration	i
Dedication	ii
Acknowledgement	iii
Table of content	iv
Abstract	v

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study	1
1.2 Statement of the Problem	1
1.3 Objectives of the Study	8
1.4 Significance of the Study	10

**CHAPTER TWO: LITERATURE REVIEW**

2.0 Introduction	12
2.1 Theoretical Framework	12
2.1.1 Social Compensation Theory	13
2.1.2 Risk and Protective Factor Model	14
2.1.3 The Filter Model	15
2.2 Review of Related Studies	15
2.2.1 Internet addiction and interpersonal relationship	16
2.2.2 Internet Addiction and Social Functioning	20
2.2.3 Sex and Internet Addiction	24
2.3 Rational of the Study	30

Internet addiction on interpersonal relationship and social functioning among students

2.4 Statement of Hypothesis	32
2.5 Structural Model	33
2.6 Operational Definitions	33

CHAPTER THREE: METHODOLOGY

3.1 Population	35
3.2 Sample Size	37
3.3 Sampling Technique	38
3.4 Design	39
3.5 Instrument/Measures	41
3.6 Procedure	43
3.6.1 Pilot study	44
3.6.2 Main Study	44

CHAPTER FOUR: DATA ANALYSIS

4.0 Introduction	47
4.1 Preliminary Analysis	48
4.2 Analysis of Data	48
4.3 Summary of Findings	60
4.4 Description of Structural Model	61

CHAPTER FIVE: DISCUSSION

5.1. Introduction	62
5.1.1 Internet addiction and Interpersonal Relationship	62
5.1.2 Internet Addiction and Social Functioning	67

Internet addiction on interpersonal relationship and social functioning among students

5.1.3 Interpersonal Relationship and Social Functioning	69
5.1.4 Sex/Education and Internet Addiction	72
5.1.5 Education and Interpersonal Relationship	75
5.1.6 Education and Social Functioning	78
5.2 Limitations of the Study	78
5.3 Recommendations	79
5.4 Summary and Conclusions	82
REFERENCES	83
APPENDICES	84

*Internet addiction on interpersonal relationship and social functioning among students***ABSTRACT**

Internet addiction is one of the growing social problems in many African countries and Ghana is no exception. Hence, this cross-sectional study assessed the impact of internet addiction on interpersonal relationship and social functioning. It also examined whether demographic characteristics such as sex and educational levels influence internet addiction, interpersonal relationship and social functioning. A sample of 330 Student respondents from University of Ghana, Action Progressive Institute and St Peters Junior High School were used. Data was analyzed using Pearson r, One-Way ANOVA, MANOVA, Simple and Hierarchical Regression Analysis. The results from the analysis indicated that there was a significant negative relationship between internet addiction and interpersonal relationship. There was no significant relationship between internet addiction and social functioning as well as between internet addiction and the subgroups of social functioning. A significant positive relationship existed between interpersonal relationship and social functioning. Internet addiction accounted for a significant variance in interpersonal relationship compared to social functioning. No significant difference existed between males and females on internet addiction. No significant difference was found to exist in interpersonal relationship between females and males with higher levels of internet addiction. Undergraduate respondents and senior high school respondents did not differ in their level of internet addiction compared to junior high students. Undergraduate, senior high and junior high students do not differ in social functioning. Necessary implications and recommendations to the educational sector, clinicians, parents and Future research studies have appropriately been made. Based on the findings, it is recommended that parents and teachers put restrains on the use of internet among student to curb the negative consequences associated with internet addiction among students and the society as a whole.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The use of the internet on school campuses and in society has increased dramatically in recent years (Kandell, 1998). Whereas the academic use of the internet is primarily intended for learning and research, the Internet has also become an important part of student life. Internet provides a constant, ever-changing source of information and entertainment. Time spent by everyone on the internet varies and each person's internet use is also different. However, from time to time, cases of over involvement with the internet have been observed. Spending a lot of time online only becomes a problem when it absorbs too much of your time, causing you to neglect your relationships, your work, school, or other important things in your life (Young, 2001).

Internet addiction has become a prevailing problem in the modern wired society. In Ghana, as in many other parts of the world, a significant percentage of adolescent reportedly spend much time on the internet to the extent that they neglect formal studies or school-related activities (Kyeikusi, 2012). Kandell (1998) defined internet addiction as “a psychological dependence on the internet, regardless of the type of activity once logged on” (p. 12). According to Griffiths (1998), “excessive use of the internet may not be problematic in most cases but the limited case study evidence suggest that for some individuals, excessive Internet use is a real addiction and of genuine concern” (p. 73). Goldberg (2008) emphasized that Internet Addiction exists when the individual experiences decreased occupational, academic, social, work-related, family-related, financial, psychological, or physiological functioning due to the number of hours spent on the internet.

Internet addiction on interpersonal relationship and social functioning among students

Internet addiction is regarded as a form of technological addiction under the category of behavioural addiction (Griffiths, 2003). Griffiths (2003) proposed six core components of internet addiction, including salience (internet dominating one's life), mood modification (internet changing the mood of the user), tolerance (increasing time spent to obtain the desired effect), withdrawal symptoms (unpleasant physical and psychological reactions when internet activity is reduced or curtailed), conflicts (intra-individual and inter-individual conflicts because of internet behaviour), and relapse (tendency to revert to earlier pattern of addictive behaviour). An individual demonstrating any one of these six core components is said to be addicted (Griffiths, 2003).

There are different reasons why people turn to the internet. Many people turn to the internet in order to manage unpleasant feelings such as stress, loneliness, depression, and anxiety. When people have bad days and are looking for a way to escape their problems or to quickly relieve stress or self-soothe, the internet can be an easily accessible outlet. Losing one online can temporarily make feelings such as loneliness, stress; anxiety, depression, and boredom evaporate into thin air (Young, 2001). The risks of internet addiction occur when people are anxious, depressed, and stressful; suffer from any other addictions, lack of social support or when they are less mobile. For example, when an individual is depressed, the internet can be used to escape from such feelings of depression, but too much time online can lead to addiction which further contributes to stress, isolation and loneliness.

Signs and symptoms of internet addiction vary from person to person. For example, there are no set hours per day or number of messages sent that indicate internet addiction. But here are some general warning signs that indicate that internet use has become a problem: these include frequently finding yourself on the internet longer than you intended, having trouble

Internet addiction on interpersonal relationship and social functioning among students

completing tasks at work or home, isolation from family and friends because of the use of the internet, feeling guilty or defensive about your internet use and also feeling a sense of euphoria while involved in internet activities (Kim, Park, Kim Lim & Kim, 2010).

The internet has definitely had a positive impact on society. Internet has been the most useful technology of modern times, which helps us not only in our daily lives, but also our personal and professional development. In terms of educational processes, the internet serves as an important resource for learning (Tsai, Cheng, Yeh, Shih, Chen, Yang & Yang, 2009). Students and teachers can access unlimited amounts of information to broaden their education. With internet access in schools, there is almost no limit to what students can learn. Students can widely use the internet to gather information so as to complete their research or add to the knowledge of any sort of subject they have. Even the business personnel's and the professions like doctors, access the internet to filter the necessary information for their use (Kubey, Lavin & Barrows, 2001). The internet has also served to be more useful in maintaining contacts with friends and relatives who live abroad permanently. Notwithstanding, the internet is useful in providing people with fun games, movies, songs, dramas etc. thus helping them to eradicate boredom.

Though most researchers have acknowledged the incessant advantages associated with internet use, however, few have emphasized on the negative consequences in our lives (Frangos, Frangos, & Kiohos, 2009). However, knowledge on the negative consequences of internet use on individual's life can help in giving second hand information as to how one can regulate the use of the internet. Studies that have assessed the negative consequences of internet addiction have focused primarily on academic performance. However, as emphasized by Fescemeyer (2000), internet addiction has negative consequences not only on cognitive

Internet addiction on interpersonal relationship and social functioning among students

activities such as academic performance but also have social, economic and emotional consequences. One area of research that has been neglected especially on the African continent is the impact that internet addiction has on adolescent's interpersonal relationships and social functioning (Fescemeyer, 2000).

Internet addiction can destroy us in every way, and we find ourselves invariably and unwittingly chained by the shackles of the addictive elements of the internet (Fescemeyer, 2000). While time spent online can be hugely productive, compulsive internet use can interfere with daily life, work, and relationships. Numerous cross-sectional studies (e.g., Chou, Condrón, & Belland, 2005; Kandell, 1998; Kubey, Lavin & Barrows, 2001) have shown that internet addiction has an adverse effect on several lifestyle-related factors in adolescents such as their interpersonal relationship and social functioning.

Arguably, Internet addiction is said to be an emerging clinical disorder that induces the user to lost touch with the social world as well have predicaments in the behaviour patterns of the individual. It is incredible to think how much adolescents depends on their cell phones and computers in order to build relationships with people rather than the old-fashioned technique of face-face contact. Studies show that socialization is one of the magnets behind the addictive power of the internet (Preece, 2000; Wellman & Gulia, 1999). The sociability of the internet is responsible for the excessive amounts of time individuals spend having real-time interactions through the internet (Grocol, 2005). Individuals have regular chats with others on line so as to exchange information, to provide emotional support, or to merely converse with others of similar interests. In providing or deriving adequate belonging people now depend on the internet as a source of attachment in their sociological, psychological, developmental and physiological wellbeing. In effect they tend to draw away from other sources of belonging by

Internet addiction on interpersonal relationship and social functioning among students

overly depending on the use of the internet. This over dependence causes them to be deficient in their day to day interpersonal relationships with people which invariably distort their way of functioning in the society (Yang & Tung, 2007).

A lot of people argue that the internet is making the world a smaller place and making it easier for people to keep in contact. Whilst this is true, it does not mean that the chats on the internet can replace face to face communication. The Biological Influences of Social Networking (2008) found that since 1987 there has been a drop in hours per day spent with face-to-face contact due to internet addiction. The absence of face to face communication doesn't only affect our physical and mental well-being, but our safety and privacy too. This means that a great deal of our health can be affected due to the increased use of internet. Internet addiction has reduced personal interaction thus affecting interpersonal relationship. The more and more time people spend on the internet, the less time they spend with friends, family and love ones (Chou, Colo, & Balland, 2005).

Online relationships that develop as a result of profound internet use can often be more intense than those in real life. Our fantasies are given free reign and the idea of being with our online love can exceed all realistic expectations. Since few real-life relationships can compete with these wild, fantasy relationships, the internet addict will prefer to spend more and more time with their online friends. This disrupts and affects real-life relationships (Leung & Lee, 2012). People also lie about their status with regard to their employment, height, age, financial situation etc to their online friends. When the real-life person fails to match the online qualities, it can create profound emotional disappointment that affect their interpersonal relationships (Akini & Iskender, 2011).

Internet addiction on interpersonal relationship and social functioning among students

Internet addiction may have an impact on the various dimensions of social functioning in an individual. Social functioning has to do with an individual ability to normally operate at home, work, school and any environment in which he/she is located. Because increased internet use can provide an anonymous, less threatening outlet for a person to communicate and connect, time spent with family and friends becomes compromised. This can cause significant interpersonal impairment because the interest of creating interpersonal connections is satisfied through the internet, resulting in greater withdrawal from family and friends. This withdrawal might also compromise household functioning, in that basic needs (such as self-care, eating, bathing, child-care, general responsibilities, helping around the home, homework, etc.) will not be met.

Research suggests that internet addiction can negatively affect daily functioning on such a level that families are often secondarily affected, feeling a strain on the relationships and in household, academic and sporting functioning (Sawyer, 2011). Jeong (2005) examined the difference in academic performance of elementary school students by internet use. This empirical research reports that internet addiction is significantly and negatively related to students' academic performance as well as emotional attributes. According to Jeong (2005), as a result of addiction to the internet, people do not concentrate on their academic work and also show little interest in general responsibilities. Though the research proved that internet addiction have negative consequences on academic performance, academic activities form only one aspect of the daily functioning of an individual. There are numerous other consequences such as interpersonal relationship, social skills, domestic activities, self-care etc. which need to be unravelled (Leung & Lee, 2012).

Internet addiction on interpersonal relationship and social functioning among students

Moreover, one area that deserves further examination surrounds sex addiction and its relationship with excessive internet usage. Though studies have taken into consideration sex differences in internet addiction, the results have been inconsistent. Men and women have different cultural orientations that may influence the way in which they define electronic communication situations such as the internet (Obrien, 1999). Gender influences the types of applications and underlying reasons for internet addiction. Men tend to seek out dominance and sexual fantasy online, while women seek out close friendships, romantic partners, and prefer anonymous communication in which to hide their appearance.

Men compared to women seem to enjoy interactive on-line games which draw upon power and dominance. These on-line games differ from video games in that characters interact with one another allowing all the players to recognize each other's rank. Men seem to enjoy the aspects of violence and dominance in such interactive games. Cybersex is another area men seemed more attracted to than women. Men also enjoyed the ability to download available and easily accessible Cyber-porn. In general, men were more openly drawn to the sexually explicit material accessible through the internet. Internet games and most movies are predominantly male-dominated (Young, 2001).

Women on the other hand are more often than men commented on how they sought out support, acceptance, and comfort through on-line relationships. Virtual communities gave women a sense of belonging and the ability to share the company of others in a non-threatening environment. As men tended to look more for Cybersex, women tended to look more for romance in Cyberspace. According to Caplan (2002), there are more male dominated programs on the net compared to the females. Moreover, males are given more

Internet addiction on interpersonal relationship and social functioning among students

freedom and time to be on the internet than females thus making them more addicted than females.

According to Young (2001), most adolescents engage more on Cyber-Relationship Addiction than other forms of addiction with women been the higher offenders. Cyber-Relationship Addiction has to do with the addiction to social networking, chat rooms, and messaging to the point where virtual, online friends become more important than real-life relationships with family and friends. Males on the other hand are more engaged in Computer Addiction than females that are obsessive playing of off-line computer games.

Against the above background, the purpose of this study is to assess the impact that internet addiction have on interpersonal relationship and social functioning. It further examines the differences in internet addiction among males and females and the role that educational level play in internet addiction and social functioning.

1.2 Problem Statement

Internet addiction commonly refers to an individual's inability to control his or her use of the internet (including any online-related, compulsive behaviour) which eventually causes one's marked distress and functional impairment in daily life. The negative effect of Internet addiction on physical health, family and psychological health has been well documented overtime. Concerning the negative consequences of internet addiction on one's physical health, persistence sleep deprivation may harm one's immune system, thus increasing one's vulnerability to assorted diseases. The lack of exercise due to excessive use of computer by maintaining a sitting posture may also risk suffering from carpal tunnel syndrome, back pain, and eyestrain (Shek, Sun, & Yu, 2013). Family problems caused by internet addiction includes, disruption of family relationships due to the decrease in time spending with family,

Internet addiction on interpersonal relationship and social functioning among students

reluctance of performing family duties such as doing household chores, and increase of conflicts with family in the negotiation for time spent on the internet (Shek, Sun, & Yu, 2013). Academic problems caused by internet addiction include decline in study habits, significant drop in grades, missing classes, increased risk of being placed on academic probation, and poor integration in extracurricular activities (Brenner, 1996).

In a survey conducted by Brenner (1996) of 185 internet users, it was reported that 17% may be addicted to the internet, which included spending 40 or more hours per week online with nearly half of the respondents experiencing adverse effects in their work as a result of online usage as well as ten percent reporting problems with employment and school due to online activity. Furthermore, research studies in the Scandinavian countries suggested that the risk of internet addiction among young people is increasing. A study in Norway with a sample of 3,237 adolescents found out that 1.98% and 8.68% could be regarded as having internet addiction and at risk of internet abuse, respectively. Among the frequent internet users, which accounted for 49.6% of the whole sample, the percentages of participants classified as internet addicts and being at risk of internet abuse rose to 4.02% and 17.66%, respectively (Shek, Sun, & Yu, 2013).

Besides, internet addicts often suffer from severe psychological distress, such as depression, anxiety, compulsivity, feeling of self-effacement, fear that life without internet would be boring, empty, and joyless; as well as feeling of loneliness and social isolation (Akhter, 2013). The extent of sleep deprivation is very severe as a result of internet addiction. Cojac (1996) reported that there is an inverse relationship between the number of hours spent per day on the internet and the average number of sleep hours per night. However, most of the effects of internet addiction have been applied bluntly to Ghanaians without an appropriate

Internet addiction on interpersonal relationship and social functioning among students

local study to ascertain these effects. Meanwhile, anecdotal evidence suggests that internet cafes sprung up astronomically since the year 2000 leading to easy of internet accessibility to all. Hence, it is against these negative effects of internet addiction that there is the need to thoroughly examine and understand the nature of internet addiction among Ghanaian students so as to propose ways to managing this canker.

1.3 Aims of the Study

The aim of the study was to examine the impact of internet addiction on interpersonal relationship and social functioning among Ghanaian students. Specifically, the study was designed to achieve the following objectives:

1. To find the effect of internet addiction on interpersonal relationship, among Ghanaian Students.
2. to find the effect of internet addiction on social functioning among Ghanaian students
3. To ascertain sex differences in internet addiction;
4. To examine whether educational level influence a person's internet addiction, interpersonal relationship and social functioning skills.

1.4 Significance of the Study

The overall importance of this study is to provide up-to-date information about the impact internet has on our young generation, especially with regard to interpersonal relationships and social functioning. The findings of this study will go a long way to inform all stakeholders such as the educationist, counselors, the clergy, educational institutions, cooperate organization parents and the society as a whole in regulating internet use among the youth, to help improve societal norms and conduct.

Internet addiction on interpersonal relationship and social functioning among students

Aside the impact that the present findings would have on adolescents/students, it is believed that the findings will be of immense help to parents, teachers/lecturers and the general public in general. Parents will be beneficiaries of this research outcome. Most children resolve to isolation and depression by replacing family affection with the computer; however it is worth knowing that parents providing their ward with intensive care and love will avoid the problem of children becoming addicted in any form.

Teachers/lecturers will be enlightened about the dangers of adolescents becoming overly dependent on the internet in order to regulate the internet usage among their students. The findings will also be used to educate the public on how to control the use of the internet. Furthermore, the findings will add to the paucity of research on the field of internet addiction in Ghana and also provide further directives on research regarding internet addiction.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section reviews the various theoretical underpinnings of the study. The theories are followed with the review and criticisms to the studies related to the present research.

2.1. Theoretical Framework

The grounds for the impact of gender, level of study and internet addiction as predictors of interpersonal relationship and social functioning are based on the Social Compensation and Augmentation Hypothesis (Kraut, Lundmark, Patterson, Kiesler, Mukopadhyay & Scherlis, 1998), Risk and Protective Factor Model (Marsh, 1990) and the Filter Model (Sproull & Kiesler, 1985). Three main theories are used to explain internet addiction as discussed below.

2.1.1 Social Compensation and Social Augmentation Hypothesis (William, Kraut, Lundmark, Patterson, Kiesler, Mukopadhyay & Scherlis, 1998)

Social Compensation Is considered the complement of social loafing, and refers to when individuals work harder and expend more effort in a group setting - to compensate for other group members - compared to when working alone (Williams & Karaut 1991). The social compensation hypothesis states that there are two factors under which social compensation may occur: the expectation that other group members will perform insufficiently and if the group product is important to the individual. More specifically, the hypothesis states that if a group member is perceived to perform insufficiently either due to trust, reliability, or direct knowledge, or if an individual perceives a task or product as personally meaningful, then an individual may contribute more towards the collective product in order to avoid an inadequate performance. According to the social compensation hypothesis, using the internet

Internet addiction on interpersonal relationship and social functioning among students

to meet new people and to participate in online group can have augmentative effect for those with initially impoverished offline world social resources. New relationships and groups online could help compensate for the social resources those people lack in the offline world. For instance, those with stigmatized attributes who lack compatible social groups with whom to identify with can find such groups online. By giving such individuals a chance to meet new people and groups online, the internet provides these individuals with access to additional social support and sources of social identification.

The augmentation hypothesis posits that individuals often use media to develop social relations despite the limited bandwidth of media (Walther, 1996), and media use stimulates users' existing social relations to be enhanced (Valkenburg & Peter, 2007, 2009).

The social augmentation also emphasize that social communication on the internet augments peoples total social resources by providing an added avenue for everyday social interaction.

The authors argued that the internet gives people an opportunity to meet people like themselves and to express them openly. The theory in relation to the present study is that students who are addicted to the internet will use the internet to augment and replace social interaction thus reducing the amount of time higher internet addicted individuals will have for others. McKenna and Bergh (2000) have found some support for the social compensation and augmentation hypothesis. Participants in an experiment conducted by McKenna and Bergh (2000) said they were better able to express their true selves online than offline and they tended to project ideal qualities onto their online partners. These hypotheses have found support in other empirical research. Kraut et al. (1998) introduced a sample of people to the internet for the first time. After a year, those who used the internet more were spending less time with family members, had less offline world social contact and felt increased loneliness and depressive affect.

2.1.2 Risk and Protective Factor Model

Risk factors are either background characteristics or life events that may have a negative or positive impact on the wellbeing of individuals. These factors expose individuals to certain problems in the society such as poor interpersonal relationship. Protective factors are characteristics and events that positively influence individuals and help limit the impact of risk factors. Essentially, risk factors are the weaknesses and protective factors are the strengths of any given family (Marsh, 1990).

According to the Risk and Protective Factor Model, exposure to internet gadgets has a risk factor of internet addiction. Moreover, higher internet addiction is also a risk factor for adolescent's wellbeing. When adolescents are addicted to the internet, their ability to be related to others physically decreases and results in poor interpersonal relationship. In this regard, internet addiction becomes a risk factor of poor interpersonal relationship. Moreover, exposure to internet decreases the time spent on academic activities. This can also lead to lower academic performance (Marsh, 1990). Internet use as risk factor to poor interpersonal relationship has received support in a study conducted by Tsai, Cheng, Yeh, Shih, Chen, Yang and Yang (2009) who found that regular use of the internet serve as risk factor to the neglect of face to face interaction with close friends and prevent us from duly completing our duties. Individuals who are with poor interpersonal relationships also protect their depression shyness and decreased communication skills by hiding behind a computer user face to access whoever that they wish to chat with or establish relationships.

*Internet addiction on interpersonal relationship and social functioning among students***2.1.3 The Filter Model**

The filter model as developed by Sproull and Kiesler (1985) focuses on the technological or engineering components of e-mail and other forms of computer-mediated communication (CMC). According to this perspective, CMC limits the “bandwidth” of social communication, compared to traditional face-to-face communication settings (or to telephone interaction, which at least occurs in real time and includes important nonverbal features of speech).

Sproull and Kiesler (1985) considered CMC to be an impoverished communication experience, with the reduction of available social cues resulting in a greater sense or feeling of anonymity. This phenomenon has an effect on the individuals involved, producing behaviour that is more self-centred and less socially regulated than usual. This reduced-information model of internet communication assumes further that the reduction of social cues, compared to richer face-to-face situations, must necessarily have negative effects on social interaction (i.e., a weaker, relatively impoverished social interaction). However individuals who communicate via computer are likely to filter information’s without necessarily seeing the person being communicated to. This lack of face to face interaction has lead many individuals to ignore real physical presence of their loved ones and friends hereby hampering important and close relationships.

2.2 Review of Related Studies

In addition to the theories guiding the present study, this section reviews empirical studies examining the influence of gender, level of study and internet addiction on interpersonal relationship and social functioning among basic, secondary and university students. The empirical review is further categorized into three consisting of Internet Addiction and

Internet addiction on interpersonal relationship and social functioning among students

Interpersonal Relationship, Internet Addiction and Social Functioning and demographic characteristics (Sex and level of study) and Internet addiction

2.2.1 Internet Addiction and Interpersonal Relationship

Students are said to be the scapegoats of internet addiction. The effects of internet addiction are grater seen among students. However, a study conducted by Scherer's (1997), 13% of respondents reported that internet use had interfered with their daily activities, professional performance, or social lives. Among them, about 2% perceived the internet as having an overall negative effect on their daily lives and interpersonal relationships. Scherer further maintained that in order to sustain relationships and between family and friends, 98% of college students use the internet weekly. in a similar study by Brenner's (1997), 80% of nearly 600 respondents indicated at least five use-related problems such as failure to manage time, missed sleep, missed meals, and similar others suggesting such patterns as the norm. Some respondents reported more serious problems because of Internet use which included trouble with employers or social isolation except for internet friends and also low social functioning. These studies undoubtedly proved that internet addiction have significant impact on social functioning of participants; the researchers restricted themselves to workers and not students.

According to Young (2006), internet addicts often suffer from interpersonal difficulties such as introversion or social phobia they may also have limited social support systems in place, which is in part, why they turn to virtual relationships as a substitute for the missing social connection in their lives. The study by Young (1998) indicated that excessive use of the internet have negative consequences on personal, family, and occupational problems. Young (1998) assessed the negative impact of internet addiction among 396 participants. The results

Internet addiction on interpersonal relationship and social functioning among students

indicated that among the problems associated with internet addiction, time distortion, which even resulted in some physical complaints such as disrupted sleep patterns and fatigue was the paramount problem. Other problems that Young (1998) found internet addiction to create include disrupted marriages, financial problems, and relationship problems (sexual/romantic, parent–child, and friendship problems).

Similarly, Seo, Kang and Yom (2009) also examined the levels of internet addiction and interpersonal relationship in Korean middle school students. A cross-sectional survey design was used. The participants were 676 middle school students. A Korean version of the Internet addiction self-test scale and a Korean version of the Inventory of Interpersonal Problems were used. Among the participants, 547 (80.9%) were identified as general users, 108 (16%) were potential risk users, and 21 (3.1%) were high-risk users. Results indicated significant positive correlations between Internet addiction and interpersonal problems. There were significant positive correlations between Internet addiction and hours spent playing games. Internet-addicted adolescents also had more interpersonal problems. This result further shows us that internet addiction may have several related problems apart from decreased interpersonal relationships and social functioning. Another quantitative study was conducted by Bellamy **and** Hanewicz (2001) to explore the influence that personal relations and communications within Internet chat rooms has on a user's Internet addiction. Results of the study indicated that the internet addiction is significantly correlated with certain personal relations and communication variables. It further revealed stronger correlation between these factors and the internet addiction. The result also showed that internet addiction has a significant negative impact on personal relationships and communications. Gender was shown to have the strongest moderator influence upon these relationships. There is however a

Internet addiction on interpersonal relationship and social functioning among students

debate about whether sex influences the addiction level of internet on an individual. This study will unveil the relativity of this assertion.

Romano, Osborne, Truzoli, and Reed (2013) explored the immediate impact of internet exposure on the mood and psychological states of internet addicts and low internet-users. Participants were given a battery of psychological tests to explore levels of internet addiction, mood, anxiety, depression, schizotypy, and autism traits. They were then given exposure to the internet for 15 minutes, and re-tested for mood and current anxiety. Internet addiction was associated with long-standing depression, impulsive nonconformity, and autism traits. High internet-users also showed a pronounced decrease in mood following internet use compared to the low internet-users. High addicts also showed little interest interacting with colleagues.

Another study which was conducted by Milani, Osualdella, and Blassio (2009) with the objective of verifying in an Italian context the relationship among problematic internet use (PIU), the quality of interpersonal relationships, and the cognitive strategies habitually used by adolescents to face daily problems among 98 adolescents aged between 14 and 19 years. The Internet Addiction Test (IAT), and the Test of Interpersonal Relationships (TRI) were used in the data collection. Findings of the study revealed that of all the participants, 36.7% showed signs of problematic internet use. These adolescents who showed problematic internet use demonstrated worse interpersonal relations than peers who do not show signs of problematic Internet use. Moreover, the results showed no significant differences between males and females in interpersonal relationship and internet addiction.

Internet addiction on interpersonal relationship and social functioning among students

Similarly, Kaltiala-Heino, Lintonen, and Rimpela (2004) found that serious relationship problems were reported by fifty-three percent of internet addicts surveyed. Marriages, dating relationships, parent-child relationships, and close friendships were found to be seriously disrupted by internet addiction. Patients were found to gradually spend less time with people in their lives in exchange for solitary time in front of a computer. To determine whether age will account for a significant variance in internet addiction, the result proved futile. However, contact and ready availability of internet led to higher level of internet addiction.

Leung and Lee (2012) examined the interrelationships among internet literacy, internet addiction symptoms, internet activities, and interpersonal relationship. Data were gathered from a probability sample of 718 children and adolescents, aged 9–19, in Hong Kong, using face-to-face interviews. Regression results show that adolescent internet addicts tended to be male, in low-income families, and not confident in locating, browsing, and accessing information from multiple resources, but that they were technologically savvy and frequent users of social networking sites (SNS) and online games for leisure. Internet addiction was also found to be negatively linked to interpersonal relationship. The level of internet addiction was higher for males compared to the females.

Though numerous studies have indicated a negative relationship between internet addiction and interpersonal relationship, some researchers have however reported a positive relationship between internet use and interpersonal relationship. Using Taiwan college student samples, Chou and Hsiao (2000) investigated students' self-assessment of their internet use and its impact on their lives. They found that those deemed internet addicts reported more negative consequences on their studies and daily routines than did those deemed non-addicts. However, there was no difference between how the addicted groups and

Internet addiction on interpersonal relationship and social functioning among students

non-addicted groups viewed the internet's impact on relationships with friends/schoolmates, parents, and teachers. Interestingly, both the addicted group and the non-addicted group indicated that internet use had highly positive influences on these three kinds of relationships.

Other studies have also reported positive relationship between internet addiction and academic performance which is contrary to the results conducted by Young (2006). For example, Shields and Kane (2011) examined the relationship between frequency of internet use (and types of use) and several social and psychological variables, alcohol and drug use, and social functioning among 215 students at an Urban Commuter University. Frequency of internet use was not related to symptoms of depression, but three of the types of use (starting the day on the internet, visiting news sites, viewing videos) reduced symptoms of depression. Internet use was generally related to more face-to-face interaction, suggesting that internet use is used to augment rather than replace social interaction. However, the significant relationships between internet use and quality of relationships with parents and significant others tended to be negative. Binge drinking and drug use were related to internet use that might be used to promote social activities. Visiting a sexually explicit web site was the exception, and suggests it could serve a purpose similar to substance use. Grade point average (GPA) was both positively and negatively associated with specific types of Internet use, but the most surprising finding was a positive association between GPA and visiting sexually explicit sites.

This same view was shared by, Wu, Chen, Han, Meng, Luo, Nydegger and Wu-mail (2013), they assessed the prevalence of addictive Internet use and its impact on relationship with family members and academic performance. Students (n = 1,101) were randomly selected from four schools, including 638 boys and 463 girls with a mean age of 13.8. Results

Internet addiction on interpersonal relationship and social functioning among students

indicated that the prevalence rate of Internet addiction was 16.5% for boys and 9.5% for girls. Compared to non-addictive users, addictive internet users scored significantly lower on parental relationships and significantly higher on hyperactivity-impulsivity. Interaction analysis indicated that better parental relationship was associated with more reductions in risk of addictive Internet use for younger students than for older students, and with more risk of Internet addiction among higher than among lower hyperactivity-impulsivity students. Internet addiction however did not have any significant impact on academic performance among the students.

In summary, empirical results of research on the impact of internet addiction on interpersonal relationship provide no clear picture of this relationship, with some results contradictory to others. It is therefore imperative to verify these findings using different cultural context such as Ghana.

2.2.2 Internet Addiction and Social Functioning

Several studies have also reported a significant relationship between internet addiction and social functioning. Akini and Iskender (2011) examined the relationships between internet addiction and social functioning among 300 university students who were enrolled in mid-size state University, in Turkey. In their study, the Online Cognition Scale and the social functioning scale were used. In correlation analysis, internet addiction was found to be negatively related to social functioning and positively related to depression, anxiety, and stress. The results of the analyses indicated that depression, anxiety, and stress were predicted positively by internet addiction and negatively influence the extent to which individual's functions effectively in the study.

Internet addiction on interpersonal relationship and social functioning among students

Chak and Leung (2004) explored the potential influences of demographic characteristics such as age and gender on internet addiction and its impact on social functioning of the adolescents. Results indicated that the internet addiction has no significant impact on the extent to which the individual function effectively in the society. The level of internet addiction was significantly higher for males compared to that of the females. Quittner (1997) found out that individuals form on-line relationships which over time obscure time spent with real life people. The study indicated that the addicted spouse isolate socially himself or herself and refuse to engage in once enjoyed events by the couple such as going out to dinner, attending community or sports outings, or travel, and preferring the company of on-line companions. The ability to carry out romantic and sexual relationships on-line further deteriorates the stability of real life couples. However, the extent to which one performed household activities and effectively functioned in the society did not depend on the extent of internet use.

Anderson (2001) found that internet addiction has negative effect on adolescent's interpersonal relationship and social functioning. Anderson (2001) collected data from a mixture of 1,302 respondents from US and Europe with an almost equal gender split). The DSM-IV substance dependence criteria were used to classify participants into dependents and non-dependents based on their score on the internet addiction scale. Those endorsing more than three of the seven criteria were classified as being dependent. The participants in the high-users category reported more negative consequences compared to the low users participants including the ability to function effectively. Moreover, Nalwa (2003) investigated the extent to which Internet addiction influence social functioning among 100 school children between 16-18 years. The results showed that there were significant behavioral and functional usage differences between the two groups. Internet dependents

Internet addiction on interpersonal relationship and social functioning among students

were found to delay other work to spend time online, lose sleep due to late-night logons, and feel life would be boring without the Internet. The dependent group also showed significantly higher score on the loneliness measure compared to the non-dependents.

Kim, Park, Kim Lim and Kim (2010) also agreed about the fact that internet addiction also result in poor social functioning. They performed this study to examine lifestyle patterns and dietary behaviour based on the level of internet addiction of Korean adolescents. Data were collected from 853 Korean junior high school students. The level of internet addiction was determined based on the Korean internet addiction self-scale short form for youth, and students were classified as high-risk internet users, potential-risk internet users, and no risk internet users. The associations between the students' levels of internet addiction and lifestyle patterns and dietary behaviour were analyzed using a chi-square test. Irregular bedtimes and the use of alcohol and tobacco were higher in high-risk internet users than no risk Internet users. Moreover, in high-risk internet users, irregular dietary behaviour due to the loss of appetite, a high frequency of skipping meals, and snacking might cause imbalances in nutritional intake. Diet quality in high-risk internet users was also worse than in potential-risk internet users and no risk internet users. We demonstrated in this study that high-risk internet users have inappropriate dietary behaviour and poor diet quality, which could result in stunted growth and development.

Few studies have also assessed whether there is a relationship between interpersonal relationship and social functioning. Stain, Bronnick, Hegelstad, Joa, Johannessen, Langeveld, Mawn and Larsen (2013) assessed the impact of interpersonal trauma on *social* functioning. The study involved 233 participants between the ages of 15–65 years. Results of the study indicated that childhood poor interpersonal relationship measured in terms of trauma (any

Internet addiction on interpersonal relationship and social functioning among students

type) was associated with poorer premorbid functioning and was experienced by 61% of our sample. There were no associations with clinical symptoms. Interpersonal trauma in childhood was a significant predictor of social functioning satisfaction in adulthood, but this was not the case for interpersonal trauma in adulthood. However, 45% of adults who reported childhood interpersonal trauma also experienced adulthood interpersonal trauma.

Some of these studies have proved that poor interpersonal relationship leads to depression which subsequently causes poor social functioning. *Gunlicks-Stoessel, Mufson, Jekal, and Turner (2010)* examined aspects of depressed adolescents perceived interpersonal functioning as moderators of the relationship with social functioning. Sixty three participants between the ages of 12-18 took part in the study. Results using multilevel modeling indicated that poor interpersonal relationship resulted in higher level of depression among participants. The level of depression was also found to correlate significantly with poor social functioning.

In summary, studies on the relationship between internet addiction and social functioning as well as interpersonal relationship have revealed mixed results. The inconsistency of the findings of these relationships demands for further clarity. Therefore, this research further examines these relationships to gain clarity and better understanding of Ghanaian students and their internet usage level.

2.2.3 Demographic Characteristics (Sex and Level of Study) and Internet addiction

Research has indicated that gender play a major role in internet addiction, social functioning and interpersonal behaviour. However, one may ask, are male users more subject to internet addiction than female users as revealed by most researchers? Few empirical studies have examined sex differences in internet addiction and interpersonal relationship but have

Internet addiction on interpersonal relationship and social functioning among students

produced mixed results. Young (1998) used her eight-item DQ to assess self-selected samples and reported that her sample of internet Dependents included 157 males and 239 females. Young (1998) then concluded that most females are internet addicted compared to the males. This results can be due to the fact that majority of respondents were females (60%) and so cannot be used to draw valid conclusion. Egger and Rauterberg (1996) also conducted an online study by asking similar questions to those asked by Young although their categorization of addiction was based purely on whether the respondents themselves felt they were addicted. Using an online survey, they gathered 450 participants, 84% of whom were males. They reached similar conclusions to Young with females been more addicted than males. Respondents who self-reported as addicts reported negative consequences of Internet use, complaints from friends and family over the amount of time spent online, feelings of anticipation when going online, and feeling guilty about their Internet use.

On the contrary, Griffiths (1998) conducted a study on the influence of internet addiction on interpersonal relationship gleaned from more than 900 Taiwan college student respondents. Regression analysis indicates that gender is one of the predicting factors in internet addiction, that is, males were more likely than females to become internet addicts. Among the participants, their level of internet addiction was found to negatively affect their level of interpersonal relationship with actual person. Griffiths (1998) commented that because females are generally more willing than males to discuss emotional issues and problems, or perhaps because Young is a female researcher, female respondents were more willing to take part in the study than would otherwise have been the case resulting in more females been addicted. The reliability of Griffiths (1998) study can also be questioned based on the fact that, most of his participants were males.

Internet addiction on interpersonal relationship and social functioning among students

Stavropoulos, Alexandraki and Motti-Stefanidi (2013) also conducted a survey aimed at estimating the prevalence of internet addiction among adolescents of urban and rural areas in Greece, to examine gender differences in level of internet addiction and to investigate the phenomenon's association with academic achievement. Participants were 2090 adolescents (mean age 16, 1036 males, and 1050 females). Young's (1998) Internet Addiction Test and her Diagnostic Questionnaire were applied. School records' grades were retrieved. A 3.1% prevalence of internet addiction was revealed indicating a relatively insignificant percentage. Boys were found to experience higher level of internet addiction compared to girls. Moreover, there was a significantly negative impact of internet addiction on academic track among high school students.

Frangos, Frangos and Kiohos (2009) conducted a study with the aim of estimating the percentage of internet addicted among Greek university students. Quantitative data were collected from 1876 Greek university students between 18-27 years. Results of the study showed that the percentage of internet addicts was 11.6%, while problematic Internet users were 34.7%. Men were more likely to be addicted to the Internet than women, and Internet addicted students were associated with poorer academic performance. The consequences of internet addiction were equally for both males and females. Multiple logistic regressions showed that significant predictors of internet addiction included increased hours of daily Internet use, increased hours visiting chat rooms, sex pages and blogs, male gender and ready accessibility of the internet. In another related study, Kyeikusi (2012) estimated the percentage of internet addiction among 1876 Greek university students within 18-27 years; it was revealed that the percentage of internet addiction was 11.6%, while problematic internet users were 34.7%. Men were reported to be more likely to be addicted to the internet than

Internet addiction on interpersonal relationship and social functioning among students

women, and internet addicted students were associated with poorer interpersonal relationships.

Sahin (2011) also determined internet addiction levels of internet users from all age groups. The study used survey model. Study group of the survey consisted of a total of 596 people from all age groups. Personal Information Form and Internet Addiction Scale were used for data collection. The findings of the study revealed that the individuals had low levels of internet addiction both in sub-scales and in the general of the scale according to age groups. It was found that there was a significant difference between internet addiction scores of the individuals who belonged to the age group of 19 years and below and 30 years and below with older participants having higher level of internet addiction. There was a significant difference between the internet addiction scores of students and other professional groups. University students were found to be more addicted compared to the other students and professional groups. It was found that internet addiction levels of females were higher than those of males.

Scherer (1997) reported that dependent internet users included a significantly larger proportion of men to women (71% men and 29% women respectively) than the non-dependent users (50% are men and women). Morahan-Martin and Schumacker (2000) reported that males were more likely than females to be pathological users (12% vs. 3%), whereas females were more likely than males to have no symptoms (28% vs. 26%) or have limited symptoms (69% vs. 61%) of behavioural pathology. Though these studies supported the notion that males, or at least male college students, are more subject to Internet addiction than females was supported, other research findings show inconsistent results. Chen's study (2000), hierarchical regression analysis indicated that time-management problems and

Internet addiction on interpersonal relationship and social functioning among students

compulsion symptoms are common predictors for both genders' weekly time spent on the internet. Shyness and withdrawal symptoms were predictive only for female college students, whereas experiences and tolerance symptoms were predictive only for males. Chen's study (2000) study found no sex differences in internet addiction and the impact of internet addiction did not differ between males and females.

Moreover, Brenner (1997) also conducted a study to assess the level of internet addiction with respect to age and gender. Results indicated that of the 563 respondents, the majority were male (73%) and they used the Internet for (a mean average) of 19 hours per week. Older users tended to experience less problems compared to younger users despite spending the same amount of time online. No gender differences were reported on internet addiction and its consequences.

On the contrary, Oktug (2012) conducted a study with the aim of analyzing whether a gender-based difference exists between internet addiction and the tendency towards expressing emotions. The results showed that internet addiction among women is higher than among men, but there is no difference between the genders with respect to the degrees for expression of emotions associated with internet addiction.

Shek and Yu (2012) investigated the prevalence and demographic correlates of internet addiction in Hong Kong adolescents as well as the change in related behaviour at two time points over a one-year interval. Two waves of data were collected from a large sample of students (Wave 1: 3,328 students, age years) at 28 secondary schools in Hong Kong. Comparable to findings at Wave 1 (26.4%), 26.7% of the participants met the criterion of internet addiction at Wave 2 as measured by Young's 10-item Internet Addiction Test. The behavioural pattern of internet addiction was basically stable over time. While the predictive

Internet addiction on interpersonal relationship and social functioning among students

effects of demographic variables including age, gender, family economic status, and immigration status were not significant, internet addictive behaviours significantly contributed to poor interpersonal relationship.

Kubey, Lavin and Barrows (2001) surveyed 576 students in Rutgers University. Data were solicited using 43-multiple-choice items regarding Internet usage, study habits, academic performance, and personality. Internet dependency was measured with a five-point Likert-scale item, asking participants how much they agreed or disagreed with the statement. Findings indicated that of the 572 valid responses, 381 (66%) were females and the age ranged between 18 and 45 years old with a mean age of 20.25 years. Fifty-three participants (9.3%) were classified as Internet dependent, and males were more prevalent in this group compared to the females. Age was not found to be a factor, but first year students were found to make up 37.7% of the dependent group. Dependents were four times more likely than non-dependents to report academic impairment due to their Internet use, and they were significantly lonelier than other students. The impact of internet addiction was predominant among males compared to the females but the effect of internet addiction was equal among males and females.

Xu, Shen, Yan, Hu, Yang, Wang, Kotha, Zhang, Liao, Zhang **and** Shen (2012) explored the prevalence of internet addiction and its associated symptoms in a large population-based sample in Shanghai and identified potential predictors related to personal characteristics. In the survey, 5,122 adolescents were randomly chosen from 16 high schools of different school types (junior, senior key, senior ordinary and senior vocational) in Shanghai with stratified-random sampling. Each student completed a self-administered and anonymous questionnaire that included DRM 52 Scale of Internet-use. Results showed that, of the 5,122 students, 449

Internet addiction on interpersonal relationship and social functioning among students

(8.8%) were identified as internet addicts. Although adolescents who had bad (*vs.* good) academic achievement had lower levels of internet-use, they were more likely to develop internet addiction. The likelihood of internet addiction was higher among those adolescents who were male, senior high school students, or had monthly spending than females.

Sargin (2013) examined Internet addiction in adolescence in terms of gender, Internet access at home and grades. The study population consisted of second stage students attending primary school in Konya in 2010-2011 education years. To form the sample, 3 primary schools from high, medium and low socio-economic level were randomly chosen. The sample group was composed of 150 females and 150 males with their level of study ranging from 6th, 7th and 8th graders. The findings of the study showed that adolescent males were more addicted to the Internet compared to females; 8th graders were more addicted to the Internet compared to the 6th graders; and adolescents who have computers at home were more inclined to be Internet addicts.

Based on the aforementioned studies, reliable conclusions cannot be drawn that men use the internet differently from women, and that men are more likely subject to internet addiction. Moreover, relatively few studies have assessed the role of educational level on internet addiction and so further studies need to be done to add to the paucity of results on level of education and internet addiction.

2.3 Rationale of the Study

Based on the aforementioned studies, it is difficult to draw the conclusion that heavy use of the internet results in an overall negative impact on addicts' lives; only one negative impact can be conclusively identified that is time-disruption leading to interference with academic

Internet addiction on interpersonal relationship and social functioning among students

work. However, findings on the impacts of internet addiction on addicts' interpersonal relationships are inconclusive to positive. A common idea that is reported within the majority of these studies is that internet can either influence interpersonal relationship or social functioning. However, none of the studies have empirically examined the ways in which internet addiction correlates to both interpersonal relationship and social functioning. All the studies explored only one of the dependent variables.

Accordingly, studies on internet addiction have proliferated (Asdeque & Khan, 2010; Leung & Lee, 2012; Kaltiala-Heino, Lintonen & Rimpela, 2004). Surprisingly, relatively few of the studies have focused on the youth and Ghana in specific. The studies (Leung & Lee, 2012; Milani, Osualdella & Blassio, 2009; Shields & Kane, 2011) on university students differ in terms of whether they measure internet addiction or simply internet use, and the specific social and psychological variables they investigate. The results are mixed with some studies finding negative relationships (e.g., Milani, Osualdella & Blassio, 2009), some positive relationships (e.g., Morgan & Cotton, 2003), and others no relationships (e.g., Anderson, 2001).

Lastly, most studies reviewed (eg., Kyeikusi, 2012; Lin & Tsai, 1999; Milani, Osualdella & Blasio, 2009) adopted meta-analysis. However, according to Walker, Kattan and Hernandez (2008), meta-analysis is controversial in the sense that several conditions are critical to a sound meta-analysis, and small violations of those conditions can lead to misleading results. Summarizing large amounts of varied information using a single number is another controversial aspect of meta-analysis. Under scrutiny, some meta-analyses have been inappropriate, and their conclusions not fully warranted. The outcome of a meta-analysis depends on the studies included. Searches of databases such as PubMed or Embase can yield

Internet addiction on interpersonal relationship and social functioning among students

long lists of studies. However, these databases include only studies that have been published. Such searches are unlikely to yield a representative sample because studies that show a positive result are more likely to be published than those that do not. This selective publication of studies that affect meta-analysis is called publication bias (Walker, Kattan & Hernandez, 2008). Based on these shortfalls, the present cross-sectional study was conducted to ascertain the relationship between internet addiction, interpersonal relationship, and social functioning among Ghanaian students across different educational levels.

2.4 Statement of Hypotheses

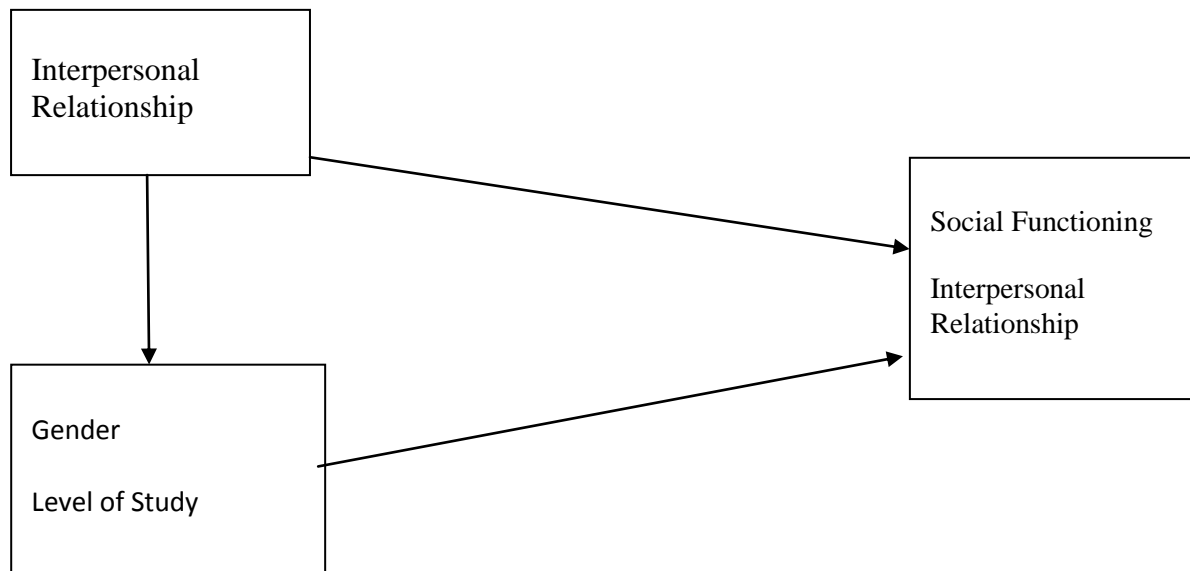
Based on the objectives and the studies reviewed above, the following hypotheses were tested:

1. There will be a significant relationship between internet addiction and interpersonal relationship.
2. There will be a significant relationship between internet addiction and social functioning.
3. A significant relationship would exist between interpersonal relationship and social functioning among students.
4. The level of interpersonal relationship will be higher than the level of social functioning skills among student addicted to the internet.
5. Males would be significantly more addicted to the internet than females.
6. Females experiencing higher level of internet addiction will have good interpersonal relationship compared to males experiencing higher level of internet addiction
7. Undergraduate respondents would be significantly more addicted to the internet than respondents in the junior and senior high levels of education.

Internet addiction on interpersonal relationship and social functioning among students

8. Senior high respondents would have significant social functioning scores than respondents in the junior and undergraduate levels of education.

2.5 STRUCTURAL MODEL



The assumption of the structural model is based on the hypotheses stated above.

2.6 Operational Definitions

1. Degree of Internet Addiction:

- a) **High internet addiction:** A score of 61 – 100 on the internet addiction scale
- b) **Low internet addiction:** A score of 20 – 60 on the internet addiction scale

2. Interpersonal relationship:

- a) **High social functioning:** A score of 91 – 100 on the social functioning scale
- b) **Low social functioning:** A score of 30 – 90 on the social functioning scale

3. **Social functioning:** The ability of an individual to be able to adjust and live normally in the society as measured by Social Functioning Questionnaire

Internet addiction on interpersonal relationship and social functioning among students

- c) ***High social functioning:*** A score of 91 – 100 on the social functioning scale
- d) ***Low social functioning:*** A score of 30 – 90 on the social functioning scale

4. Undergraduate Students: students at the University of Ghana from level 100 to level 400.

5. Senior High Students: SHS 1, 2 and 3 students at Action Progressive Institute.

6. Junior High Students: JHS 1, 2 and 3 students at Action Progressive Institute

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The chapter presents the plan of how the study was conducted in ensuring valid findings on the impact of internet addiction on interpersonal relationships and social functioning among adolescents. The chapter is divided into six (6) sections. These sections include the description of the target population of the study, a discussion of the sample size, the instruments used in the collection of data, the research design employed to ensure valid data collection and an accurate description of the data collection procedures used in the study. This chapter then ends with a section on some of the American Psychological Association (APA) ethical considerations and a clarification of how they were adhered to in this study.

3.1 Population

In the present study, the population consisted of tertiary students, senior high school, and junior high school students of ages 13 to 40 years old. Undergraduate students of the University of Ghana served as the tertiary students whilst students at Action Progressive Institute served as senior and junior high school students.

The University of Ghana was chosen because it is the oldest and largest of the seven Ghanaian public universities. It was founded in 1948 as the University College of the Gold Coast, and was originally an affiliate college of the University of London. It gained full university status in 1961, and now has nearly 42,000 students. The University of Ghana has three main campuses, namely Legon, Korle Bu and Accra City. The legon campus was selected because the legon campus is the biggest among the three campuses and the university is mainly based there. Also Legon has a student population from amongst all the

Internet addiction on interpersonal relationship and social functioning among students

regions in Ghana, moreover the population will represent characteristics of other undergraduate students from other tertiary institutions. The Legon Campus is also where most of the University's teaching and research are carried out and houses the central administration of the University.

Action Progressive Institute started initially as "Action Classes" in the year 1993. It was initially in the form of vacation classes in a rented premise. In the year 1996, the institute started organizing University Entrance Examination for S. H. S. Candidates who opted to enter the various universities. In the year 2000, the school started the full time Senior Secondary School with two main courses – Business and General Arts. As at now, the school has really progressed to the extent that it runs almost all courses in the Senior Secondary School Program. The school now has both basic (primary to junior high school) and senior sections. The school is currently having Two Thousand and Twenty Nine (2029) students in the regular Secondary Section and in the Basic School section; the population is around Four Hundred and Fifty (450) students. This school was selected because it has been graded as grade 'A' school by G.E.S and accommodates students from basic to senior level. This school was chosen because it's said to have a track record of 100% distinctions in the West African Senior High Schools Examinations (WASSCE) and Basic Education Certificate Exams (BECE) since its establishment; this has drawn many students across the regions of Ghana to better grades for further studies.

3.2 Sample Size and Sampling Techniques

As emphasized by Russell (2009), an undersized study can be a waste of resources for not having the capability to produce useful results. To avoid wasteful results from undersized sample size, an optimal sample size for achieving higher internal and external validity when conducting a research has been determined by various researchers. According to Salant and Dillman (1994), the size of the sample is determined by four factors: how much sampling error can be tolerated; population size; how varied the population is with respect to the characteristics of interest; and the smallest subgroup within the sample for which estimates are needed. Using the above methods as a guideline, the study employed two approaches in determining the sample size. These are Tabachnick and Fidel (1996) formula for computing sample size as well as Sekaran (1992) table of Sample Size selection.

The study targeted 350 respondents from the junior high level (101), senior high level (130), and tertiary level (99). According to Tabachnick and Fidel (1996), for a sample size to be appropriate for a targeted population, $n > 50 + 8M$ (n = sample size, M = number of Independent Variables). Since there are 5 possible Independent Variables in the present study, the sample size is estimated to be more than 90 ($n > 90$). According to Sekaran (1992), an estimated population size of 10,000 or more should have a minimum sample size of 300. Since, 350 is greater than the estimated minimum sample size of 90 based on the specification of Tabachnick and Fidel (1996) and also higher than the 300 based on the Sakaran (1992) estimation, the targeted sample size of 350 was appropriate to cater for non-response rate.

3.3 Sampling Techniques

In selecting the participants for the study, two non-probability sampling methods being the purposive and the convenience sampling methods and a probability sampling strategy being the stratified random sampling were employed. The purposive sampling technique was used to select the schools based on accessibility and the availability of mixed sexes. Therefore, the selected schools were University of Ghana and Action Progressive Institute.

The convenience sampling method was utilized to enhance sample selection for university respondents. That is, questionnaires were administered to respondents who were available and willing to participate in the research. However, stratified random sampling technique was used to select respondents from the basic (JHS) and the secondary level of education. Thus, students in JHS and SHS were first divided into groups known as a stratum's using the form of study (JHS 1, 2 and 3 as well as SHS 1, 2 and 3) and gender of respondents. After grouping them, the simple random sampling technique was used to select participants from each of the strata to take part in the study. This was done so that differences between the distinct subgroups in the various classes of study (form 1, 2 and 3) were represented. In all, respondents from the various stages of their respective educational levels were selected with emphasis on the gender of the respondents.

Demographic Characteristics of Respondents

Based on the estimated sample size, three hundred and fifty (350) questionnaires were distributed to participants. Out of the three hundred and fifty (350) questionnaires distributed, three hundred and thirty (330) questionnaires were returned. The completed 330 questionnaires out of the 350 distributed represent a response rate of 94.29% which indicate

Internet addiction on interpersonal relationship and social functioning among students

an excellent effort in collecting data for analyses. According to Draugalis, Coons and Plaza (2008), response rates approximating a minimal of 60% should be optimal for research.

The 330 respondents include 162 (49.1%) males and 168 (50.9%) females. ninety nine (30%) were in Junior High Level, one hundred and one (30.6%) respondents were in the Senior High level and 130 (39.4%) were in the undergraduate level. Furthermore, there were 290 (87.9%) Christians, 31 (9.4%) Muslims, 4 (1.2%) Traditionalists and 5 (1.5%) respondents who belonged to other religious group not specified. The mean age of the respondents was 18.93 years with a standard deviation of 4.92 years, and an age range of 13-40 years. These demographic characteristics are presented in Table 1.

Table 1: Demographic characteristics of the Sample.

Demographic Variables	Male (n = 162)	Female (n = 168)	Total (n = 330)
Age	Mean (SD)	Mean (SD)	Mean (SD)
	19.16 (4.88)	17.62 (3.93)	18.39 (4.92)
Educational Levels			
<i>Junior High</i>	43	56	99
<i>Senior High</i>	48	53	101
<i>Undergraduates</i>	71	59	130
Religion			
Christians	142	148	290
Muslim	15	16	31
Traditionalist	2	2	4
Others	3	2	5

3.4 Design.

The design for this study was the survey. A survey is a procedure for collecting information by asking members of some population a set of questions and the responses recorded. The cross-sectional was the specific survey design used. A five-step process for conducting cross-sectional survey research proposed by Bartlett (2005) was adhered to in the present study. This process consisted of defining the purpose and objectives, deciding on the sample,

Internet addiction on interpersonal relationship and social functioning among students

creating and pre-testing the instrument, contacting the respondents, and collecting and analyzing data. The design is cross-sectional because data were collected from students across sexes, ages, religion, and educational levels on internet addiction, interpersonal relationship and social functioning at the same time. The design was deemed appropriate because it is quantifiable and easy to generalize the entire population if the population is sampled appropriately with numerous amount of information collected in a limited period of time (Bartlett, 2005). The independent variables of the present study are sex, level of education and internet addiction and the dependent variables are social functioning and interpersonal relationship.

3.5 Measures

Data was collected using self-administered standardized questionnaires. The measures (questionnaires) used for data collection was grouped into four sections. The first section gathered data on the demographic characteristics of the participants. Among the demographic characteristics gathered include their gender, educational level and age. The second section consisted of measures of internet addiction. The internet addiction was measured using the Internet Addiction Test (IAT; Young, 2003). The third section consisted of the interpersonal relationship measure using the Interpersonal Solidarity Scale (ISS) developed by Wheelless (1976). The last section measured the social functioning using the Social Functioning Scale (SFS) developed by Latimer-Sayer and Morris (2003). Descriptions of the measures used are presented below:

Internet Addiction Test (IAT) is a reliable and valid measure of addictive use of Internet developed by Young (2003). It consists of 20 items. The psychometric properties of the IAT show that it is a reliable and valid measure that has been used in further research on Internet

Internet addiction on interpersonal relationship and social functioning among students

addiction (Young, 2003). The scale measures the extent of individuals' involvement with the computer and classifies the addictive behaviour in terms of mild, moderate, and severe addiction. The scale is measured on a five point Likert scale ranging from, 1= rarely, 2=occasionally, 3=frequent, 4 often and 5=always.

The reliability of the scale was tested by Widyanto and McMurrin (2004) and the factor analysis of the IAT revealed six factors that are salience, excessive use, neglecting work, anticipation, lack of control and neglecting social life. These factors showed good internal consistency and concurrent validity ranging from .78 - .89 with salience being the most reliable (.89) among the six factors forming the scale. Barke, Nyenhuis, and Kröner-Herwig (2012) assessed the reliability of the scale using participants from German. An online sample (n=1,041, age 24.2±7.2 years, 46.7 percent men) completed an Internet version of the IAT and a student sample off line (n=841, age: 23.5±3.0 years, 46.8% men) filled in a paper/pencil version. The internal consistencies were at a cronbach alpha level of $\alpha=0.91$ for the online sample a cronbach alpha level of $\alpha=0.89$ for the student off line. Two-week retest reliability was .83. This section is scored by summing up all respondents' responses (with respect to the Likert scale response format) to achieve a total score ranging between a minimum of 20 and a maximum of 100. Examples of items found in the scale include: I often stay on-line longer than i intends to, I often prefer the excitement of the Internet to intimacy with your partner etc.

The interpersonal relationship was measured using the Interpersonal Solidarity scale designed by Wheelless (1976). The interpersonal solidarity scale measures the feeling of closeness between people that develops as a result of shared sentiments, similarities, and intimate behaviours; Conceptually, people with strong solidarity feelings should also trust, like, and self-disclose to one another. The first part of the Interpersonal Solidarity Scale (ISS)

Internet addiction on interpersonal relationship and social functioning among students

consisted of 19 items, 12 of which formed a uni-dimensional scale with high internal consistency (Wheeless, 1976). Closeness items were added to improve the scale's content validity and the resulting 30-item Likert-type scale was factor-analyzed (Wheeless, 1978).

The questionnaire was in a 5-point Likert-type response format ranging from strongly agree to strongly disagree. The scale has been adapted to measure group solidarity and (Wheeless, Wheeless, & Dickson-Markman, 1978) and relationship with others (Sorensen, 1986). Wheeless reported split-half reliabilities of .96 (Wheeless, 1978) .94 (Wheeless, Wheeless, & Baus, 1984), and Bell and Healey (1992) reported an alpha of .90 for the 30-item scale. A possible range of score is between a minimum or maximum score of 30 and 150 respectively which is achieved by summing up all of a respondent's responses to this section of the questionnaire. Some items on the scale include: I find it difficult to depend on other people; I find it easy to get emotionally close to others etc.

The last section of the questionnaire measured the Social Functioning of the participants. The social functioning of the participants was measured using the Social Functioning Questionnaire designed by Latimer-Sayer and Morris (2003) and modified by Clifford and Morris (2008). The Social Functioning Questionnaire is designed to enable a detailed assessment of an individual's social functioning for both rehabilitation and research purposes. It is divided into 5 parts, each containing 6 items to be completed by each respondent: Self-care Skills, Domestic Skills, Community Skills, Social Skills and Responsibility. These five parts (30 items) together form the global measure of social functioning. The scale is measured on a five-point Likert scale response format ranging from strongly agree to strongly disagree with a Cronbach's alpha of 0.84. A possible respondent's score is within a minimum of 30 and a maximum of 150 after summing up a respondent's responses to the section. Some

Internet addiction on interpersonal relationship and social functioning among students

items on the scale include: needs close supervision to ensure appropriateness of dress, table manners are usually acceptable but needs occasional prompting etc.

3.6 Procedure

The study proceeded with a pilot study to ascertain the psychometric properties of the scales. The main study was carried out after the pilot study. The details of the pilot and main study are provided below.

3.6.1 Pilot Study

Pilot study is the feasibility studies which are done in small scale in preparation for the major study to assess the accuracy of your measures (Polit, Beck, & Hungler, 2001). A pilot study was conducted using a total of 30 respondents (being students from Junior High, Senior High, and Undergraduate level) to ascertain the consistency or the appropriateness of the various measures among the respondents. Data were conveniently collected from the Sakumono School Complex Junior High, Nungua Senior High and the Valley View University (Undergraduates). Three main scales were tested. The Cronbach's Alpha reliability was calculated for all the scales. The Internet Addiction Scale yielded a total alpha value of .91 ($\alpha = .91$). The Cronbach's Alpha value of $\alpha = .76$ was recorded for the total Social Functioning Scale. The Interpersonal Solidarity Scale (Interpersonal Relationship) had an alpha value of $\alpha = .63$. This indicates that the scales were reliable, hence was used in the study. Furthermore, none of the items of the scales were difficult to comprehend. Therefore, it cleared the way for the main data collection.

*Internet addiction on interpersonal relationship and social functioning among students***3.6.2 Main Study**

The researcher sought an ethical clearance from Noguchi Memorial Institute for Medical Research (Institutional Review Board, IRB) immediately the thesis title was approved (see Appendix 1). After the research was ethically cleared, introductory letters from the Psychology Department, University of Ghana, Legon were taken and attached to the clearance certificate to all the schools of interest to the study (see Appendix 2). An appointment date was set for the collection of the data in each of the selected schools. At the Action Progressive Institute, the headmaster authorized a senior teacher who aided the researcher to inform the respondents (students) about the study. The school had three forms and three classes for each form for JHS. There were twelve classes for three forms in the senior high school. The researcher then used the stratified random sampling technique in selecting participants for the study. Depending on the number of females or males in the class, simple 'yes' or 'no' sheets were made for the participants to pick from.

The convenient sampling method was used to select respondents in the University. This method involves using samples who are readily available (Leedy & Ormrod, 2010). Data was collected at the five traditional halls (Legon, Volta, Commonwealth, Akuaffo and Mensah Sarbah) and three other hostels namely the Valco Trust Hostel, the International Student's Hostel and the Ghana Hostels Limited. When the participants were contacted, the informed consent of the participants was first sought. The questionnaires measuring their level of internet addiction, social functioning, childhood attachment and interpersonal relationships were then given to the participants to complete. The researcher together with some research assistance was available to assist respondents to fill the questionnaires correctly. The questionnaires were collected on the same day to curtail high attrition rate. University of Ghana embossed pens were given to all respondents for successfully completing the questionnaire.

3.7 Ethical Consideration

Certain ethical considerations were deemed necessary and therefore were included in this study in accordance with the ethical principles governing the use of human participants for research purpose. The researcher ensured high sense of confidentiality and anonymity by making sure the data collected was managed in such a way that the identities of the respondents were protected at all times and that no information was directly traced or associated with any individual participant. With this, no names or codes traceable to the respondents was used. That is, any information that was provided by participants was kept confidential from the general public except for the general information that was reported.

Moreover participants for the study were based on voluntary participation. No individual was forced to partake in the study. In addition the researcher ensured that the collection process did not cause any harm to participant. The participants were also asked of their informed consent, which abstractly described the purpose of the study and informed participants of their right.

CHAPTER FOUR

RESULTS

4.0. Introduction

The study was guided by four main objectives in its quest to examine the impact of internet addiction on interpersonal relationship and social functioning among Ghanaian students. The first objective was to find the relationship between internet addiction and interpersonal relationship, between internet addiction and social functioning as well as between social functioning and interpersonal relationship. The second objective was to examine whether sex differences exist on internet addiction. The third objective was to examine whether differences exist between the various educational levels (junior high, senior high and undergraduate) on internet addiction, interpersonal relationship and social functioning. The fourth and last objective was to investigate the effect of internet addiction as well as other predictor variables on interpersonal relationship or social functioning among students. This chapter, therefore, presents the results of the hypotheses based on the objectives of the study.

Eight hypotheses in all were formulated based on the above objectives. Inferential statistics like the Pearson Product-Moment Correlation Coefficient (Pearson r), One-Way Analysis of Variance, Two-way ANOVA, Multivariate Analyses of Variance, Simple and Hierarchical Multiple Regression were used to test the various hypotheses. In addition, where significant difference exists for the One-Way ANOVA's result, the Scheffé test was used as a post hoc test to determine the exact difference. The sixteenth version of the Statistical Product and Service Solutions (SPSS) software was used in analyzing the data.

The results from the analyses are presented in two sections. The first section is the preliminary analysis and the second section tested the various hypotheses proposed. This chapter ends with the summary of the findings.

*Internet addiction on interpersonal relationship and social functioning among students***4.1. Preliminary Analysis**

The preliminary analysis involves testing for normality reliability and computing descriptive statistics for the variables studied. Normality test for skewness and kurtosis revealed no problems. Examination of the residuals indicated no problems of linearity and homoscedacity. A check on co-linearity also showed no problems with tolerance and Variance Inflation Factor (VIF). VIF were all less than 10 (Field, 2005) and tolerance statistics were all above .2 indicating that there were all normal and can be used for parametric analyses (Field, 2005).

Descriptive statistics of the predictor and criterion variables – means and standard deviations were computed. Intercorrelations among these variables were also computed using Pearson Product-Moment Correlation and the coefficients together with the means and standard deviations presented in Table 2. The internal reliability coefficients (Cronbach alpha values) of the whole scale ($\alpha = .86$) and the subscales were computed. The alpha values of the subscales are presented in brackets diagonal on Table 2.

*Internet addiction on interpersonal relationship and social functioning among students***Table 2:** Means, Standard Deviations and Inter-correlations among Predictor and Criterion Variables

		Mean	SD	1	2	3	4	5	6	7	8
1	Internet Addiction	43.857	16.606	(.89)							
2	Interpersonal Relationship	84.351	11.840	-.147**	(.91)						
3	Self-Care	21.227	5.983	-.045	.107*	(.74)					
4	Domestic	20.218	4.403	.035	-.108*	0.186**	(.79)				
5	Community	18.424	4.213	.086	-.101*	0.146**	0.296**	(.84)			
6	Social	22.942	5.036	.109*	-.120*	0.087	0.373**	0.305**	(.84)		
7	Responsibilities	18.497	4.154	.200**	-.157**	0.115*	0.290**	0.291**	0.431**	(.72)	
8	Social Functioning	99.439	16.292	.049	.239**	0.483**	0.494**	0.495**	0.561**	0.470**	(.88)

**p<.01, *p<.05, N=330

Note: The figures in brackets are the alpha values.

Internet addiction on interpersonal relationship and social functioning among students

The reliability coefficients of the study variables were assessed by computing the Cronbach's alpha. The analysis found all the values to be above the threshold of .70 reported as appropriate for psychometric analysis (Wells & Wollack, 2003). The reliability coefficients ranged from .74 to .91 (Table 2).

4.2 Testing the Hypotheses

The hypotheses were tested according to how they were stated. The test used for each hypothesis is stated and the summary results presented below.

Hypothesis one

There would be a significant relationship between internet addiction and interpersonal relationship. This hypothesis was tested using simple regression because the amount of relationship between interpersonal relationship and internet addiction was assessed

As indicated on Table 2, internet addiction is negatively related to interpersonal relationship ($r = -0.147, p < .01$). The regression coefficients presented in Table 3 below indicates that internet addiction made significant contribution in explaining the variations in interpersonal relationship ($\beta = -0.147, p < .01$). Internet addiction accounted for 2.2% of the variance in explaining interpersonal relationship ($R^2 = .022, F(1, 328) = 7.277, p < .01$). The results therefore support hypothesis 1 that 'internet addiction will account for significant relationship with interpersonal relationship

*Internet addiction on interpersonal relationship and social functioning among students***Table 3:*****Regression Coefficients of internet addiction as Predictor of Interpersonal Relationship***

Variable	B	Std. Error	F	B	p
(Constant)	88.958	1.826	7.277	-.147**	.000
Internet Addiction	-.105	.039			

$R^2 = .022$, ** $p < 0.01$

Hypotheses two

There would be a significant relationship between internet addiction and social functioning. This hypothesis was also analyzed using simple regression because the amount of variance accounted for social functioning by internet addiction was assessed. Result is demonstrated on Table 4.

Table 4:***Regression Coefficients of internet addiction as Predictor and Social Functioning as Criterion***

	B	Std. Error	F	B	P
(Constant)	97.314	38.361	.802	.049	.896
Internet Addiction	.048	.896		.	

$R^2 = .002$

The relationship between internet addiction and social functioning is not significant on the zero-order correlations shown on Table 2 ($r = 0.049$, $p = ns$). The regression analysis shows that

Internet addiction on interpersonal relationship and social functioning among students

internet addiction accounted for 0.2% of the variance in explaining social functioning ($F(1, 328) = .802, p = .896$). That is, internet addiction explained insignificant effect on social functioning. Hence hypothesis 2 that 'a significant higher negative variance will be accounted for social functioning by internet addiction' had not been supported.

Hypothesis Three

The third hypothesis stated that a significant relationship would exist between interpersonal relationship and social functioning. Using the Pearson Product-Moment Correlation Coefficient (Pearson r), the result can be inferred from table 2.

Inferring from Table 2 above, there is a significant positive relationship between social functioning and interpersonal relationship [$r(328) = .239, p < .01$]. Furthermore, a positive significant relationship was found between internet addiction and all the dimensions of social functioning. There was a positive relationship between internet addiction and self-care [$r(328) = .483, p < .01$], internet addiction and domestic activities [$r(328) = .494, p < .01$], internet addiction and community skill [$r(328) = 0.495, p < .01$], internet addiction and social skills [$r(328) = 0.561, p < .01$], as well as internet addiction and personal relationship [$r(328) = .0470, p < .01$]. Therefore, the third hypothesis that a significant positive relationship would exist between interpersonal relationship and social functioning was supported.

*Internet addiction on interpersonal relationship and social functioning among students***Hypothesis four**

The level of interpersonal relationship will be higher than the level of social functioning skills among student addicted to the internet. This hypothesis was tested using simple multivariate analysis of variance because there is one independent (internet addiction) variable with two dependent variables (interpersonal relationship, social functioning).

From Table 2, internet addiction has a negative relationship with interpersonal relationship ($r = -.147$) and positively relationship with social functioning ($r = .049$). As indicated on Table 5 below, internet addiction accounted for a significant relationship with interpersonal relationship [$F = 2.998, p < .01$] but the amount of variance accounted by internet addiction on social functioning is not significant [$F = 1.270, p = ns$]. Since internet addiction influences significantly only interpersonal relationship and not social functioning, hypothesis 4 that states that the level of interpersonal relationship will be higher than the level of social functioning skills among student addicted to the internet was supported.

*Internet addiction on interpersonal relationship and social functioning among students***Table 5:*****Multivariate Analysis of the Influence of Internet Addiction on Interpersonal Relationship and Social Functioning.***

Source	Dependent Variable	Type III Sum of Squares	Mean Square	F	P
Internet	Interpersonal Relationship	28534.660	439.912	2.998	.008**
Addiction	Social Functioning	19580.634	320.994	1.270	.104

**p<.0

Hypothesis five

The fifth hypothesis stated that males would be significantly more addicted to the internet than females. The Independent t test was used to analyze this hypothesis because the mean scores of two independent groups (males and females) are compared on one dependent variable (internet addiction) and the dependent variable (internet addiction) is measured on an interval scale. The result is presented in Table 6 below.

*Internet addiction on interpersonal relationship and social functioning among students***Table 6:*****Summary of Internet Addiction between Males and Females.***

Gender	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Df</i>	<i>T</i>	<i>P</i>
Males	162	44.78	16.70	328	0.995	.320
Females	168	42.96	16.51			

From the independent t-test results shown on Table 6 above, the difference in level of internet addiction between males and females was not significant [$t(328) = .995, p=ns$].

This depicts that the mean score of males ($M=44.78, SD=16.70$) on level of internet addiction was not significantly different from the mean score of females ($M=42.96, SD=16.51$) on level of internet addiction. Hence, the fifth hypothesis that male's would be significantly more likely to be addicted to the internet than females were not supported by the data.

Hypothesis six

Females experiencing higher level of internet addiction will have good interpersonal relationship compared to males experiencing higher level of internet addiction. The two-way ANOVA was used to analyze this hypothesis because there are two independent variables with each in two levels. The results are presented in Table 7 and Table 8.

*Internet addiction on interpersonal relationship and social functioning among students***Table 7:*****Gender and Internet Addiction on Interpersonal Relationship***

Sex	Addiction	N	Mean	Std. Deviation
Male	High	77	85.22	11.45
	Low	85	83.63	15.27
	Total	162	84.38	13.57
Female	High	75	83.74	9.28
	Low	93	84.77	10.43
	Total	168	84.31	9.92
Total	High	152	84.49	10.43
	Low	178	84.23	12.94
	Total	330	84.35	11.84

From Table 7, males with higher level of internet addiction had a mean of 85.22 ($SD=11.45$) on interpersonal relationship and females with higher level of internet addiction had a mean of 83.74 ($SD=9.28$) on level of interpersonal relationship. The mean score of interpersonal relationship among males with lower internet addiction was 83.63 ($SD=15.27$) and that among females with lower level of internet addiction was 84.77 ($SD=10.43$).

*Internet addiction on interpersonal relationship and social functioning among students***Table 8:*****Two-way ANOVA of Gender and Level of Internet Addiction on Interpersonal Relationship***

Source	Type III Sum of Squares	Df	Mean Square	F	P
Gender	2.301	1	2.301	.016	.898
Addiction	6.375	1	6.375	.045	.832
sex * Addiction	139.806	1	139.806	.991	.320
Error	45977.386	326	141.035		
Total	46123.224	329			

Assessing the two-way ANOVA results on Table 8 above, the interactive effect of gender and level of internet addiction on interpersonal relationship was not significant [$F(1, 326) = .991$, $p = .320$ one-Tail]. This means internet addiction does not interact with gender in predicting interpersonal relationship. Therefore, the sixth hypothesis which states that females experiencing higher level of internet addiction will have good interpersonal relationship compared to males experiencing higher level of internet addiction was not supported.

*Internet addiction on interpersonal relationship and social functioning among students***Hypothesis seven**

Undergraduate respondents would be significantly addicted to the internet than respondents in the junior and senior high levels of education. One-Way Analysis of Variance was used to test this hypothesis. Summary of the statistical analyses are presented in Tables 6 and 7

Table 9:***Means and Standard Deviations of the Educational Levels on Internet Addiction***

Educational Level	<i>N</i>	Mean	<i>SD</i>	<i>df</i>	<i>F</i>	<i>p</i>
Junior High	99	37.54	16.66	(2, 327)	7.064	.001
Senior High	101	46.21	16.10			
Undergraduate	130	44.93	15.66			

Examining the result on Table 8 reveals that the mean level of internet addiction among junior high school students was ($M = 37.54$, $SD = 16.66$), senior high school students was ($M = 46.21$, $SD = 16.10$), and undergraduate university students was ($M = 44.93$, $SD = 15.66$).

Results of the ANOVA indicate that the effect of level of education on internet addiction was significant [$F(2, 327) = 7.064$, $p < .01$ one-tail]. This means the mean scores of at least two of the groups differ significantly. The scheffé post hoc test was used to find the exact difference between the educational levels. Summary of the findings are presented in appendix Table 10.

Internet addiction on interpersonal relationship and social functioning among students

Results in appendix Table 10 reveal that with the exception of the difference in internet addiction between junior high and undergraduate students which is not significant, there is a significant difference between the other educational levels on internet addiction. Therefore, with reference to Table 8, it is evident that respondents in the senior high level of education ($M = 46.21$, $SD=16.10$) are significantly more addicted to the internet than those in the junior high ($M = 37.54$, $SD=16.66$) level of education. Furthermore, respondents in undergraduate ($M = 44.93$, $SD=15.66$) educational level are significantly more addicted to the internet than respondents in the junior high schools ($M = 37.54$, $SD=16.66$).

These results mean that undergraduate respondents and senior high school respondents did not differ in their level of internet addiction but both undergraduate and senior high students had higher level of internet addition compared to junior high students. Hence, the hypothesis, undergraduate respondents would be significantly more addicted to the internet than respondents in the junior and senior high levels of education, was not supported by the data.

Hypothesis Eight

Senior high respondents would have significant social functioning scores than respondents in the junior and undergraduate levels of education. One-Way Analysis of Variance was used to test this hypothesis because the hypothesis has an independent variable on three levels and one dependent variable. Summary of the statistical analyses are presented in Tables 10 below.

*Internet addiction on interpersonal relationship and social functioning among students***Table 10:**

Summary of *F* test, Means and Standard Deviations of the Educational Levels on Social Functioning.

Educational Level	<i>N</i>	Mean	<i>SD</i>	<i>df</i>	<i>F</i>	<i>p</i>
Junior High	99	69.07	27.93	(2, 327)	1.726	.651
Senior High	101	75.06	25.74			
Undergraduate	130	70.79	25.58			

Inspection of the means in Table 10 reveal that the mean level of social functioning among junior high school students was ($M = 69.07$, $SD = 27.93$), senior high school students was ($M = 75.06$, $SD = 25.74$), and undergraduate university students was ($M = 70.79$, $SD = 25.58$). The One-Way ANOVA was used to establish whether a significant difference exists among these three (3) means. Summary of the findings are presented in Table 10.

The One-Way ANOVA result showed that the effect of level of education on social functioning was not significant [$F(2, 327) = 1.726$, $p = .651$ one-tailed]. This means the level of social functioning does not differ among participants based on level of education. Therefore, hypothesis 8 which states that senior high respondents would have higher significant social functioning scores than respondents in the junior and undergraduate levels of education was not supported.

4.3 Summary of Results.

Altogether, the study tested eight hypotheses to ascertain the impact of internet addiction on interpersonal relationship and social functioning among students in Ghana. The findings are presented below:

1. Internet addiction negatively influenced interpersonal relationship.
2. Internet addiction does not influence an individual's social functioning skills as well as other subgroups of social functioning.
3. Interpersonal relationship and social functioning were found to relate positively.
4. Internet addiction influences interpersonal relationship of an individual more than in social functioning
5. Males and females do not differ on internet addiction levels.
6. Males and females with high internet addiction levels do not differ in interpersonal relationship.
7. Undergraduate respondents and senior high school respondents did not differ in their level of internet addiction but both undergraduate and senior high students had higher level of internet addition compared to junior high students.
8. Undergraduate, senior high and junior high students do not differ in social functioning.

4.4 Description of the Structural Model

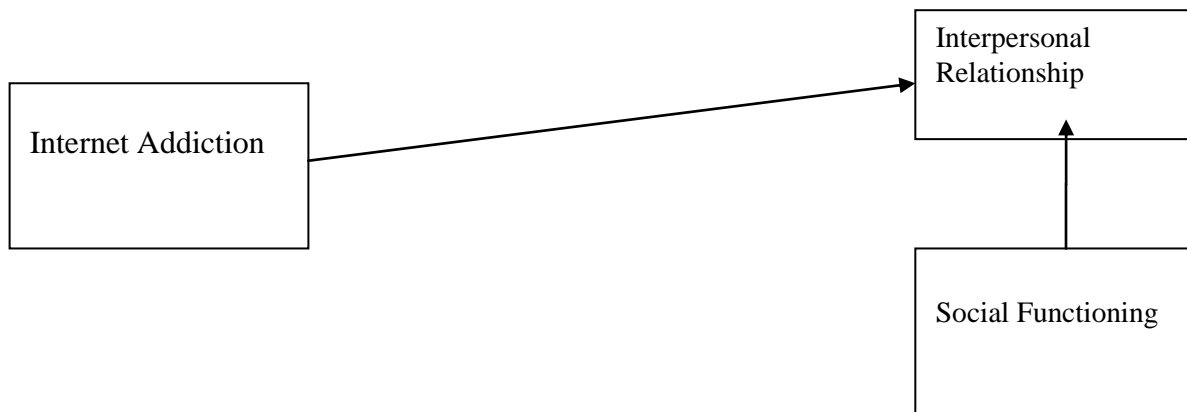


Fig 3: final structural model of the relationship between the variables

The final results model illustrates that internet addiction is significantly related to the interpersonal relationship but not social functioning as predicted in the hypothesized model. Social functioning is also significantly related to interpersonal relationship.

The difference between the final structural model and hypothetical model lies in the demographics that were assessed. Gender and level of education that were assessed to influence internet addiction, interpersonal relationship and social functioning was not found. Interpersonal relationship was not found to be related with social functioning.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Discussion

As Rudall (1996) remarks, psychologists are with the opinion that we should not be surprised at the evolution of new behavioral conditions because when technological advances are changing our society so rapidly and in such revolutionary ways. We must therefore be prepared to face the notion that the Internet is changing the way we live, and not always for the better. The technological advancement in the introduction of the internet has made the world a global village. The use of the Internet on school campuses and in society has increased dramatically in recent years. Whereas the academic use of the Internet is primarily intended for learning and research, the Internet has also become an important part of student life. However, from time to time, cases of over involvement with the Internet have been observed among students. Though the internet is more useful, addicting to it can have behavioral consequences. The present study was conducted to assess the impact of internet addition on adolescent's interpersonal relationship and social functioning. Eight hypotheses were tested with the results discussed below:

5.1.1 Internet Addiction and Interpersonal Relationship

The first objective of the study was to find out the relationship between internet addiction and social functioning, however, the first hypothesis that a significant relationship would exist between internet addiction and interpersonal relationship was supported. This finding means that students who are addicted to the internet have poor relationship with others compared to students who are not addicted to the internet. This result is not surprising because most addicted students

Internet addiction on interpersonal relationship and social functioning among students

engage in regular chats with their significant others on line so as to exchange information, to provide emotional support, or to merely converse with others of similar interests (Young, 1998). In providing or deriving adequate belonging, people now depend on the internet as a source of attachment in their sociological, psychological, developmental and physiological wellbeing. In effect, they tend to draw away from other sources of beloved ones by overly depending on the use of the internet. This over dependence causes them to be deficient in their day to day interpersonal relationships with love ones (Wu, Chen, Han, Meng, Luo, Nydegger & Wu-mail, 2013). The more and more time people spend on the internet, the less time they spend with friends, family and love ones.

This finding is inconsistent with the study by Chou and Hsiao (2000) which investigated students' self-assessment of their Internet use and its impact on their lives. The results indicated no significant relationship between internet addiction and interpersonal relationship. It also contradicts the study by Kane (2011) which found an insignificant relationship between internet use and interpersonal relationship. The inconsistency between the present finding and the result of the study by Chou and Hsiao (2000) as well as Kane (2011) can be due to the research methodology adopted by Chou and Hsiao (2000) and Shields and Kane (2011). Chou and Hsiao (2000) adopted the meta-analysis which is influenced by publication bias. According to Walker, Kattan and Hernandez (2008), meta-analysis are more unlikely to yield a representative sample because more often there is a selective publication with studies that show a positive result more likely to be published than those that do not and so more likely to be bias in its findings.

Internet addiction on interpersonal relationship and social functioning among students

Moreover, Shields and Kane (2011) compared those who use the internet and those who do not use the internet. It must however be noted that using the internet do not make one addicted.

The result is however consistent with the study conducted by Chou, Condron and Belland (2005) which indicated that adolescents with higher internet addiction had poorer interpersonal relationship than those with lower internet addiction. It is also similar to the study conducted by Young (1996) that examined the relationship between internet addiction and adolescent's interpersonal relationship. The internet addicted group was found to have poor interpersonal relationships and higher psychological disorder compared to the non-addicted participants. Moreover, Leung and Lee (2012) reported similar findings. In their study to examine the interrelationships among internet literacy, internet addiction symptoms, internet activities, and interpersonal relationship, internet addiction was found to be negatively linked to interpersonal relationship. Leung and Lee (2012) explained that internet is used to augment and also replace social interaction when one overly depends on it.

The finding is also in agreement with the study by Seo, Kang and Yom (2009) which examined the levels of internet addiction and interpersonal relationship in Korean middle school students. A cross-sectional survey design was used. Results indicated significant positive correlations between Internet addiction and interpersonal problems. There were significant positive correlations between Internet addiction and hours spent playing games. Internet-addicted adolescents had more interpersonal problems. The result also agrees with the study by Milani, Osualdella, and Blassio (2009) which verified the relationship between problematic internet use

Internet addiction on interpersonal relationship and social functioning among students

(PIU) and quality of interpersonal relationships. Results indicated that adolescents who showed problematic internet use demonstrated worse interpersonal relations than peers who do not show signs of problematic Internet use.

According to Kraut, Kiesler, Mukhopadhyay, Scherlis and Patterson (1998), heavy use of the Internet and electronic games may lead to a decline in social interaction with family members, friends and significant others. Moreover, results of the study by Bellamy and Hanewicz (2001) indicated that internet addiction is significantly correlated negatively with certain personal relations and communication variables. The result showed that internet addiction has a significant negative impact on personal relationships and communications. The most obvious explanation that can be offered for the negative relationship between internet addiction and interpersonal relationship is the social displacement effect (Lee & Eddie 2002). The assumption of the social displacement effect is that time spent on the internet will displace other and more apparent activities, such as social interaction, that are essential to children's psychosocial development (Neuman, 1991). The displacement hypothesis posits a symmetrical, zero-sum relationship between activities. According to this hypothesis, the more time spent with internet, the less time children devote to other activities such as interpersonal relationship.

This finding supports the research result of Wu, Chen, Han, Meng, Luo, Nydegger and Wu-mail (2013) that indicated that compared to non-addictive users, addictive internet users scored significantly lower on parental relationships and significantly higher on hyperactivity-impulsivity. Moreover, Kaltiala-Heino, Lintonen, and Rimpela (2004) found that serious

Internet addiction on interpersonal relationship and social functioning among students

relationship problems were reported by 53% of internet addicts surveyed. Marriages, dating relationships, parent-child relationships, and close friendships were found to be seriously disrupted by internet addiction. Patients were found to gradually spend less time with people in their lives in exchange for solitary time in front of a computer which disrupted the healthy hours spent with face-to-face interpersonal relationship.

The negative relationship between internet addiction and interpersonal relationship can be proffered using the Social Compensation and Social Augmentation Hypothesis (Kraut, Lundmark, Patterson, Kiesler, Mukopadhyay & Scherlis, 1998). According to the social compensation and social augmentation hypothesis, using the internet to meet new people and to participate in online group can have augmentative effect for those with initially impoverished offline world social resources. New relationships and groups online could help compensate for the social resources those people lack in the offline world. Adolescents who are addicted to the internet use the internet to augment and replace social interaction thus reducing the amount of time higher internet addicted individuals have for others. This has also receive support in the study by Kraut et al. (1998) that indicated that those who used the internet more were spending less time with family members, had less offline world social contact and felt increased loneliness and depressive affect.

*Internet addiction on interpersonal relationship and social functioning among students***5.1.2 Internet Addiction and Social Functioning**

The second objective of the study was verified in the second hypothesis that a significant relationship would exist between internet addiction and social functioning. The finding revealed was not supported. This means that internet addiction has no significant relationship with social functioning and that the amount of time spent on the internet does not distract the extent to which the individual functions perfectly in the society. This finding is at variance with the study conducted by Akini and Iskender (2011) that examined the relationships between internet addiction and social functioning among 300 university students who were enrolled in mid-size state University, in Turkey. The results of the analyses indicated that depression, anxiety, and stress were predicted positively by internet addiction and negatively influence the extent to which individual's functions effectively in the study. The finding is also incongruent with the study by Scherer (1997) which indicated that internet as having an overall negative effect on their daily lives and interpersonal relationships.

Incongruent with the present finding, Brenner (1997) indicated at least five behavioural problems such as failure to manage time, missed sleep, missed meals, and similar others suggesting such patterns as the norm associated with the internet use. A negative relationship was found to exist between internet use and effective social functioning. The inconsistent results between the finding of the present study and the study by Akini and Iskender (2011) and Scherer's (1997) can be attributed to how these different studies measured the social functioning. For example, Akini and Iskender (2011) as well as Scherer's (1997) all measured the distraction in performing social responsibilities as a results of been addicted to the internet, however, the present study measured

Internet addiction on interpersonal relationship and social functioning among students

social functioning as the ability to perform these responsibilities. Having the ability and the distraction associated with performing a certain task would definitely yield different results.

The finding is again in contradiction with the study conducted by Anderson (2001) who also found that internet addiction has negative effect on adolescent's social functioning. Anderson (2001) collected data from a mixture of 1,302 respondents from US and Europe with an almost equal gender split). Moreover, the results disagree with Nalwa (2003) study that investigated the extent to which Internet addiction influence social functioning among 100 school children. The results showed that there were significant behavioral and functional usage differences between the two groups. Internet dependents were found to delay other work to spend time online, lose sleep due to late-night logons, and feel life would be boring without the Internet. The inconsistencies in the findings can be due to the instrument use. The instruments used by previous studies did not differentiate between social functioning deficits and social functioning distraction. In the previous studies, they assessed how internet addiction distract people from undertaken their social duties, this does not mean the addicted persons do not know how those social functions are performed. The present study assessed social function which deals with the extent to which one is able to perform these function. Moreover, in the Ghanaian culture, most social functioning activities such as how to take care of oneself, how to cook, sweep and keep the home tidy are learnt during childhood. So by the time an individual reach the adolescents stage where there may be higher level of internet addiction, these duties might have been learnt already. Internet addiction will therefore only distract the individual from performing the task but will not cause any deficits in performing those duties.

Internet addiction on interpersonal relationship and social functioning among students

The insignificant relationship between internet addiction and social functioning is however in line with the study by Chak and Leung (2004) that examined the relationship between internet addiction and its impact on social functioning among adolescents. Results indicated that internet addiction has no significant impact on the extent to which the individual function effectively in the society. It again agrees with the study by Quittner (1997) which indicated that addicted spouse isolate themselves socially and refuse to engage in once enjoyed events by the couple such as going out to dinner, attending community or sports outings, or travel, and preferring the company of on-line companions. The ability to carry out romantic and sexual relationships on-line further deteriorates the stability of real life couples and having sexual intercourse as a responsibility.

5.1.3 Interpersonal Relationship and Social Functioning

Another objective of the study was to identify the relationship between social functioning and interpersonal relationship .The third hypothesis that a significant relationship would exist between interpersonal relationships than social functioning was supported. The finding means that students demonstrated lower social functioning when they perceived higher level of interpersonal relationship and higher level of social functioning when they perceived lower levels of interpersonal relationship. The results disagree with the study by Mathieu and Zajac (2000) that indicated that internet addiction was significantly related to social functioning but not interpersonal relationship. The variation between the present finding and that of Mathieu and Zajac (2000) is because Mathieu and Zajac (2000) adopted the meta-analytical design whilst the

Internet addiction on interpersonal relationship and social functioning among students

present study was restricted to the correlation analyses. Meta-analysis is however influenced by publication bias.

The positive relationship between interpersonal relationship and social functioning is in agreement with the study conducted by Stain, Bronnick, Hegelstad, Joa, Johannessen, Langeveld, Mawn and Larsen (2013) that assessed the impact of interpersonal trauma on social functioning. Results of the study indicated that childhood poor interpersonal relationship measured in terms of trauma (any type) was associated with poorer premorbid functioning. Results showed that 45% of adults who reported childhood interpersonal trauma also experienced adulthood interpersonal trauma.

Further to the study, the positive relationship between interpersonal relationship and social functioning has been linked to the fact that poor interpersonal relationship leads to depression which subsequently causes poor social functioning. Gunlicks-Stoessel, Mufson, Jekal, and Turner (2010) examined aspects of depressed adolescents perceived interpersonal functioning as moderators of the relationship with social functioning. Results using multilevel modeling indicated that poor interpersonal relationship resulted in higher level of depression among participants. The level of depression was also found to correlate significantly with poor social functioning.

Another objective of the study was to identify the extent of internet addiction on social functioning and interpersonal relationship. The third hypothesis that students who are addicted to the internet will experience high levels of interpersonal relationship than social functioning was

Internet addiction on interpersonal relationship and social functioning among students

supported. This means that internet addiction leads to higher level of poor interpersonal relationship compared to social functioning. This means that when individuals are addicted to the internet, it will affect the extent to which they relate to others rather than the extent to which they function effectively in the society. This finding is in accordance with the study conducted by Kim, Park, Kim Lim and Kim (2010) to examine the influence of internet addiction on internet addiction and interpersonal relationship. From the analysis, the relationship between internet addiction and interpersonal relationship was significantly higher than the relationship between internet addiction and social function.

This finding is also in line with the study conducted by Seo, Kang and Yom (2009) on the impact of the levels of internet addiction on interpersonal relationship and social functioning among Korean middle school students. Results indicated that internet addiction accounted for 24% and 16% on interpersonal relationship and social functioning respectively. This showed that internet addiction related more to interpersonal relationship than social functioning. According to Seo, Kang and Yom (2009), time spend on the internet will affect the relationship with others. The poor relationship will intend result in more social problems. This means that internet addiction first result in poor interpersonal relationship before social problems crop up. In this essence, one will expect the relationship between internet addiction and interpersonal relationship to be higher than the internet addiction-social functioning relationship.

5.1.4 Sex and Internet Addiction

The objectives of the study also took into consideration the influence of demographic characteristics on addiction of students with regard to internet. The fifth hypothesis was used to measure this objective, that males would be significantly more addicted to the internet than females. The findings were not supported. Also, the sixth hypothesis that females with higher level of internet addiction will have good interpersonal relationship compared to males with higher level of internet addiction was not supported. These findings suggest that among the basic, senior high school and university student population, females do not necessarily differ from males on internet addiction and that internet addiction does not affect any of the sexes more than the other.

The insignificant difference in internet addiction between males and females is not surprising because research on internet addiction among males and females have revealed inconsistent results. Whilst some of the results support male's higher level of internet addiction, others support higher level of internet addiction among females. For example, the study by Kyeikusi (2012) found higher internet addiction among males compared to females. Similarly, Stavropoulos, Alexandraki and Motti-Stefanidi (2013) also found boys to experience higher level of internet addiction compared to girls. On the contrary, other studies have also favored higher internet addiction among females. For example, Oktug (2012) conducted a study with the aim of analyzing whether a gender-based difference exists between internet addiction and the tendency towards expressing emotions. The results showed that internet addiction among women is higher than among men. Moreover, Sahin (2011) also determined internet addiction levels of internet

Internet addiction on interpersonal relationship and social functioning among students

users from all age groups. The findings of the study revealed higher level of internet addiction among females compared to the level of internet addiction among males.

The result is also inconsistent with the study by Young (1998) that determined the difference in internet addiction between males and females. Results indicated that internet addiction level was higher for females compared to that of the males. It also disagree with Egger and Rauterberg (1996) study that examined the extent to which males and females differ in their level of internet addiction. They reached similar conclusions to Young with females been more addicted than males. The inconsistencies can be due to disparity in the sample representatives of males and females in the study by Young (1998) and Egger and Rauterberg (1996). In the study by Young, majority of the respondents were female (60%) and so cannot be used to draw valid conclusion concerning gender differences in internet addiction. In Egger and Rauterberg (1996) study as well, the females in the study were more than three times that of the males and that could have led to the inconsistent results. The result however agrees with Milani, Osualdella and Blasio (2009) study on gender differences in internet addition. The results indicated that males and females had similar internet addiction levels.

The finding also indicated from the sixth hypothesis that females with higher level of internet addiction do not differ in level of interpersonal relationship compared to males with higher level of internet addition. This means that internet addiction has equal effect on both males and females. This finding is contradictory to the study by Youth (1998) who found that females are negatively affected by internet addiction compared to males. Griffiths (1998) commented that

Internet addiction on interpersonal relationship and social functioning among students

because females are generally more willing than males to discuss emotional issues and problems, or perhaps because Young is a female researcher, female respondents were more willing to take part in the study and to discuss their interpersonal problems compared to the males and that might have resulted in females indicating higher effect of internet addiction compared to males.

The finding is however consistent with the study by Griffiths (1998) on the influence of internet addiction on interpersonal relationship among male and female college students. Among the participants, the level of internet addiction was found to negatively affect the level of interpersonal relationship with actual person equally among males and females. It is also in line with the study by Frangos, Frangos and Kiohos (2009) that estimated the effect of internet addiction on males and females. Results of the study showed that the effect of internet addiction was similar for both males and females. Similarly, Oktug (2012) conducted a study with the aim of analyzing whether a gender-based difference exists between internet addiction and the tendency towards expressing emotions. The results showed that internet addiction among women is higher than among men, but there is no difference between the genders with respect to the degrees for expression of emotions associated with internet addiction.

With respect to the lack of significant difference between males and females on scores of internet addiction and also lack of significant difference between males and females on the effect of internet addiction, a possible reason is that the school environment prepares students to interact consistency with each other in adulthood. Both males and females regularly interact with each other on social media to constantly check facebook status updates or stalking people's profiles on

Internet addiction on interpersonal relationship and social functioning among students

Facebook, Twitter, Whatsapp etc. Phones now give readily access to the use of internet to engage in these activities which has equal potential of affecting males and females equally. The availability of phones to both genders has a greater propensity of shaping their mindsets and general usage of the internet. This makes their reaction towards the internet equal and thus equal level of internet addiction and its consequences among males and females.

5.1.5 Education on Internet Addiction and Social Functioning

The objectives of the study also sought to identify the influence of educational level of students on internet addiction. The seventh hypothesis that undergraduate respondents would be significantly more addicted to the internet than respondents in the junior and senior high levels of education was not supported. The eighth hypothesis that senior high respondents would have higher significant interpersonal relationship scores than respondents in the junior and undergraduate levels of education was also not supported. This means the level of study do not influence the level of internet addiction and interpersonal relationship.

From the analyses, undergraduate respondents and senior high school respondents did not differ in their level of internet addiction but both undergraduate and senior high students had higher level of internet addition compared to junior high students. This is contradictory to the study conducted by Sahin (2011) that determined internet addiction levels of internet users from all age groups. The findings of the study revealed that university students are more addicted compared to other students and professional groups.

Internet addiction on interpersonal relationship and social functioning among students

The higher level of internet addiction among university and senior secondary students compared to the basic school students can probably be related to the integration of an Internet course delivery system in both Senior High Schools and Universities, and the fact that students in basic schools were young and probably did not have access to internet unlike university and senior high students who have phones with internet access at any point in time. According to Pew (2002), the use of e-mail was the most common way to communicate with others and becoming addicted. Since senior high and university students have ready access to the internet, they are more likely to exhibit high level of internet addiction compared to basic school students.

Senior high school students get more access to computers as well as the internet as compared to junior high school students as it is readily available in the schools (Senior High Schools) due to internal and external examination reasons. More so is even the frequent access to computers and the internet among the university students as compared to the junior high students. There are several avenue for a university student to use internet mainly due to assignments, project works, and many similar others. Computers with internet are therefore readily accessible among senior and university students and this could have accounted for their higher level of internet addiction compared to junior high students. As indicated by Sargin (2013) students who have readily access to computers with internet are more addicted compared to those without computers with internet such as the basic school students.

The insignificant difference in level of social functioning between students from basic, senior high and university students is at variance with the study by Seo, Kang and Yom (2009). Seo,

Internet addiction on interpersonal relationship and social functioning among students

Kang and Yom (2009) found university students to have higher level of social functioning compared to high school students. The variation in the finding can be due to the cultural background in which the two studies were conducted. The present study was conducted in Ghana where children are made to undertake some social duties such as cooking, sweeping, self-care etc. at a tender age. This can be the reason why no significant difference was found among the students based on their level of study on social functioning.

It is however in line with the study by Kaltiala-Heino, Lintonen, and Rimpela (2004) that found that the level of social functioning was equal among students from different levels of study. Because a large portion of Internet users and abusers may be found on college campuses (high schools and universities), Kandell (1998) discusses the unique vulnerability of college students to internet addiction. The danger for university and secondary students lies in the possibility that their internet use may become the central focus of their campus lives particularly because most students are already negotiating the difficult terrain of identity and relationships to the neglect of social functioning. In a relationship where this is not so, the level of effect of internet on social functioning among students from university and senior high school will not be different from those in basic school. Moreover, since most social functions are learnt at tender age, no matter the effect of the internet, they skills have already been acquired.

5.2 Limitations of the Study

This study had some limitations that need to be taken into consideration when interpreting the results. First, the relationship between internet addiction and the consequential variables

Internet addiction on interpersonal relationship and social functioning among students

(interpersonal relationship and social functioning) could not be addressed over time due to the cross-sectional research design employed in the present study. The cross-sectional design of the study raised the possibility of reverse causality, for example, that poor interpersonal relationship may be a risk factor for the internet addiction (rather than the reverse). Although there is disagreement about the utility of detecting causal effects with cross-sectional data (Trochin, 2000), such analyses were chosen with the rationale that perceptions about the use of the internet might have immediate implications for one's level of interpersonal relationship. However, there is a need for research in this area to utilize longitudinal field studies. Studies that use this approach will lend themselves to more rigorous evaluation, and will address the predictive power of these constructs.

Second, the tool for collecting the data is a structured questionnaire which restricts respondents in one way or the other because it does not give room for other information. This tool was based on self-report measures and a reporting bias was possible. The adolescent respondents might not have honestly reported their internet use and symptoms of internet addiction, despite the fact that questionnaires were answered anonymously and that teachers were kept away from the classrooms where information was being collected. While this method of measurement is convenient and can provide for anonymity, other methods must be used to ensure that any consistent findings are not an artefact of this single method.

Notwithstanding, the study was also restricted to quantitative study so the disadvantages of a quantitative study which have given more reason for the internet addiction, interpersonal

Internet addiction on interpersonal relationship and social functioning among students

relationship and social functioning. It would seem that content analysis (qualitative study) of workers aside the students used might be feasible. These alternate measures, in turn, could be used for convergent operations to replicate the above findings, and thus to increase confidence in the current results.

5.3 Recommendations.

Even though the study had some limitations, it invariably yielded reliable results as it supported most of the studies conducted previously and added to the literature on the field on internet addiction, interpersonal relationship and social functioning.

Based on the findings of the research, a negative association between internet addiction and interpersonal relationship suggest the potential role of controlling student's use of the internet in curbing the poor interpersonal relationship with others. Therefore recommendations for effective prevention and interventions are made for school authorities, parents and future researches.

1. **School Authorities:** Educational curriculum for students should incorporate contents to regulate student's internet use, encourage interpersonal relationships, and educate teachers to understand the needs of their students, including Internet usage. This will also require that teachers restrict the use of the internet by the students, in other words they should guide and monitor the time frame students spend on the internet. University authorities should also devise policies that will implement timelines for online research or internet access since most universities have wireless connections for students use. Schools should also employ the services of a counselor; however psychological counseling services can be provided students who have been identified to have higher

Internet addiction on interpersonal relationship and social functioning among students

levels of Internet addiction to prevent escalating addiction levels. Different activities can be planned for children to lessen their time on the computer and the Internet and put in more advantageous tasks such as learning.

2. **Parents:** In addition to targeting adolescents/students in general, extra attention should be paid to several high-risk subgroups while devising intervention to enhance parenting skills for Internet addiction prevention. It is therefore recommended that parents regulate their wards time spent online. Parents should also engage their wards in effective communication and also provide appreciable love and support to their wards needs. This intervention will deter their wards from seeking or soliciting for attention else.

3. **Recommendations for further research:** The study yielded reliable results as it supported most of the studies conducted previously and added to the literature on the field of internet addiction, interpersonal relationship and social functioning. However, expansion on the present study would allow greater knowledge into the predictors of internet addiction, interpersonal relationship and social functioning.

To extend the findings of this study, several areas for further research are recommended below:

- a) Firstly, there should be a more integrative approach in which multiple personal characteristics such as age and course differences at school assessed simultaneously. In this regard, more research on the moderating and mediating effects of demographic

Internet addiction on interpersonal relationship and social functioning among students

characteristics on the relationships between internet addiction and interpersonal relationship is recommended in the future.

- b) Secondly, for future research, it is suggested to compare the predictive validity of the findings models to adolescents from different economic background and specific types of Internet use rather than simply time on the Internet.
- c) Lastly, further and more comprehensive studies can be carried out to examine the relation between Internet addiction levels and such variables like parents' education level, having divorced or single parents, and socio-economic level.

5.4 Summary and Conclusions

The study was a cross-sectional design that assessed the impact of internet addiction on interpersonal relationship and social functioning. Students from universities, senior high schools and basic (JHS) schools were used. Analyses from 330 respondents indicated that there was a significant negative relationship between internet addiction and interpersonal relationship. There was no significant relationship between internet addiction and social functioning as well as between internet addiction and the subgroups of social functioning. A significant positive relationship existed between interpersonal relationship and social functioning. Internet addiction accounted for a significant variance in interpersonal relationship compared to social functioning. No significant difference existed between males and females on internet addiction. No significant difference was found to exist in interpersonal relationship between females with higher level of internet addiction and males with higher level of internet addiction. Undergraduate respondents and senior high school respondents did not differ in their level of

Internet addiction on interpersonal relationship and social functioning among students

internet addiction but both undergraduate and senior high students had higher level of internet addition compared to junior high students. Undergraduate, senior high and junior high students do not differ in social functioning.

The information gathered from this study will be useful for health care professionals and youth advocates when counseling parents and adolescents on strategies for preventing internet addiction.

*Internet addiction on interpersonal relationship and social functioning among students***REFERENCES**

- American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th Ed.).
- Akini, A. & Iskender, M. (2011). Internet Addiction and social functioning, Depression, and Stress. *International Online Journal of Educational Sciences*, 3(1):138-148.
- Anderson, K. J. (2001). Internet use among college students: An exploratory study. *Journal American College Health*, 50(1): 21-26.
- Bartlett (2005). Internet Addiction among Greek University Students: Demographic Associations with the Phenomenon, using the Greek version of Young's Internet Addiction Test. *International Journal of Economic Sciences and Applied Research* 3 (1): 49-74.
- Barke, N., & Kröner-Herwig, R. (2012) The German version of the internet addiction test: a validation study. *Cyberpsychological Behaviour Social Network*, 15(10):534-42.
- Bellamy, A., & Hanewicz, C. (2001). Exploratory analyses of the social nature of Internet Addiction: A research paper submitted to the Electronic Journal of Sociology. *Electronic Journal of Sociology*, 5(3):20 - 36
- Chen, Y.F., Peng, S.S., (2008), 'University students' internet use and its relationships with academic performance, interpersonal relationships, psychosocial adjustment, and self-evaluation, *CyberPsychology & Behavior*, 11, 467-469
- Clifford and Morris (2008). Cojac (1996)

Internet addiction on interpersonal relationship and social functioning among students

- Chou, C., & Hsiao, M. (2000). Internet addiction, usage, gratification, and pleasure experience: the Taiwan college students' case. *Computers and Education*, 35, 65-80.
- Chou, C., Condron, L., & Belland, J. C. (2005) A review of research on Internet addiction. *Educational Psychology Review*, 17 (3): 363-388.
- Frangos, C.C., Frangos, C.C., & Kiohos, A.P., (2009). Internet Addiction among Greek University Students: Demographic Associations with the Phenomenon, using the Greek version of Young's Internet Addiction Test. *International Journal of Economic Sciences and Applied Research* 3 (1): 49-74
- Fescemeyer, K. (2000). Information-seeking behavior of undergraduate geography students. *Research Strategies*, 17(3):307-317.
- Gunlicks-Stoessel, M., Mufson, L. & Turner, J. B. (2010). The impact of perceived interpersonal functioning on treatment for adolescent depression: IPT-A versus treatment as usual in school-based health clinics. *Journal of consulting and clinical psychology*, 78 (2), 260-267
- Grohol, J. M. (1999). Internet addiction guide. <http://psychcentral.com/netaddiction>.
- Kaltiala-Heino, Lintonen, and Rimpela (2004). *The Turkish Online Journal OF Educational Technology* – July 2011, volume 10 Educational Technology an Examination Of Predictor Variables For Problematic Internet Use Assoc. Prof. Dr. Nergüz Bulut Serin Cyprus International University, Faculty OF Education, Nicosia-North Cyprus nserin@ciu.edu.tr
- Kim' Y., Park, J. Y., Kim, S. B., Jung Lim, Y. S. & Kim, J. (2010). The effects of Internet

Internet addiction on interpersonal relationship and social functioning among students

addiction on the lifestyle and dietary behavior of Korean adolescents. *Nutr Res Pract*, 4(1), 51–57.

Kubey, R. W., Lavin, M. J., & Barrows, J. R. (2001). Internet use and collegiate academic performance decrements: Early findings. *Journal of Communication*, 51(2), 366-382.

Kane (2011) : Shields, N., & Kane, J. (2011). Social and Psychological Correlates of Internet Use among College Students. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 5(1), 136 - 158

Kraut, Kiesler, Mukhopadhyay, Scherlis and Patterson (1998) Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53, 1017-1031

Kubey, R.W., Lavin, M.J., Barrows, J.R., (2001), 'Internet use and collegiate academic performance decrements: Early findings', *Journal of Communication*, 51, 366-382.

Kyeikusi, 2012 Causes and Effects of Internet Addiction among Students

International Journal of Economic Sciences and Applied Research 3 (1): 49-74

Kim, Park, Kim Lim & Kim, 2010). J. H., Hui, H. L. C., Lau, C. H., Kan, P., Cheuk, K. K., & Griffiths Brief report: Predictors of heavy Internet use and associations with health promoting university students. *Journal of Adolescence*, 33(1), 215-220.

Kendell, J.J., (1998), 'Internet addiction on campus: the vulnerability of college students',

Internet addiction on interpersonal relationship and social functioning among students

CyberPsychology & Behavior, 1: 11-17.

Latimer-Sayer and Morris (2003).

www.rcpsych.ac.uk/docs/Social_Functioning_Questionnaire.docx

Leung, L. & Lee, P.S.N. (2012). The influences of information literacy, internet addiction and parenting styles on internet risks. *New Media & Society*, 14(1): 115-134

Lin, S. J., & Tsai, C. C. (1999). Internet Addiction among High Schoolers in Taiwan.

Paper presented at the 107th American Psychology Association Annual Convention, Boston, USA.

Lee .W. & Eddie C.Y.K (2002) Internet and displacement effect : children's media use and activities. *Journal of computer mediated communication*. 7.1-18

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological

Internet use among college students. *Computers in Human Behavior*, 16(1): 13-29.

Morahan-Martin, J. (1998). The gender gap in Internet use: Why men use the Internet more than women– a literature review. *CyberPsychology & Behavior*, 1: 3-10.

Milani, L., Osualdella, D., & Blassio, P. (2009). Quality of interpersonal relationships and problematic Internet use in adolescence. *Cyberpsychology & behavior* 12(6): 681

Morgan & Cotton, 2003): Shields, N., & Kane, J. (2011). Social and Psychological Correlates of Internet Use among College Students. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 5(1), 12-43

Marsh, Herbert W. (1990). Two-parent, stepparent, and single-parent families: Changes in

Internet addiction on interpersonal relationship and social functioning among students

achievement, attitudes, and behaviors during the last two years of high school.

Journal of Educational Psychology, 82(2), 327-340.

Nalwa, K., & Anand, A. P. (2003). Internet addiction and Behaviour. *CyberPsychology & Behavior*, 6(6): 653-656.

Oktuğ, Z. (2012). Gender differences in Internet addiction and tendency to express emotions.

Online Journal of Counseling & Education, 1(4), 39-54.

Park, S. K., Kim, J. Y., & Cho, C. B. (2008). Prevalence of Internet and correlation with family factors among South Korea adolescents. *Adolescence*, 43(172): 895-900

Romano, M., Osborne, L. A., Truzoli, R., Reed, P. (2013). Differential Psychological Impact of Internet Exposure on Internet Addicts. *PLoS One*, 8(2): 55-62.

Shields, N., & Kane, J. (2011). Social and Psychological Correlates of Internet Use among College Students. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 5(1), 12-43

Sahin, C. (2011). An Analysis of Internet Addiction Levels of Individuals according to Various Variables. *The Turkish Online Journal of Educational Technology*, 10 (4), 60-66

Scherer, K. (1997). College life on-line: Healthy and unhealthy Internet use. *Journal of College Student Development*, 38,655-665.

Sargin, N. (2013). Internet addiction among adolescence. *African Journal of Adult Education*, 1 (5), 089-093

Seo, M., Kang, H. S., & Yom, Y. H. (2009). Internet addiction and interpersonal problems in korean adolescents. *Comput Inform Nurs*, 27(4), 226-33

Stavropoulos V., Alexandraki K., and Motti-Stefanidi F., (2013). "Recognizing Internet

Internet addiction on interpersonal relationship and social functioning among students

Addiction: Prevalence and relationship to academic achievement in adolescents enrolled in urban and rural Greek high schools". *Journal of Adolescence*, 36(3), 565-576.

Stain, B., Hegelstad, J., Johannessen, L. & Mawn, L.n (2013). The Biological Influence of Social Networking. *Journal of Internet Addiction*, 2: 128- 143

Tsitsika, A., CritselisE., Kormas, G., Filippopoulou, A., Tounissidou, D., Freskou, A., Kafetzis, D. (2009). Internet use and misuse: a multivariate regression analysis of the predictive factors of internet use among Greek adolescents. *European Journal of Pediatrics*, 168(6), 655-665.

Tsai, H. F., Cheng, S. H., Yeh, L. T., Shih, C., Chen, K. C., Yang, Y. C., and Yen Kuang Yang (2009). The risk factors of Internet addiction - A survey of university freshmen. *Psychiatry research*, 167: 294-299

Tabachnick, B.G., Fidell, L.S., (2000). Using Multivariate Statistics, 4th Ed. London: Allyn and Bacon Publications.

Wellman, G. 1999). A social influence model of consumer participation in network- and small-group-based virtual communities. *Journal of Psychiatry research*, 12, 127 -144

Wheless, W., & Baus, M. (1984) sexual communication, communicating satisfaction and Solidarity in the development stages of intimate relationships. *Western Journal of Speech Communication*, 48(3), 217-220.

Walker, Kattan & Hernandez, 2008).1 Meta-analyses: Its strengths and limitations. *Cleve Clin J Med*. 75(6):431-9.

Internet addiction on interpersonal relationship and social functioning among students

Widyanto and McMurrin (2004 'Internet addiction': A Critical Review. *International Journal of*

Mental Health and Addiction, 4(1), 31 - 42

Wheeless, I. R. (1976). Self-disclosure and interpersonal solidarity: Measurement, validation,

and relationships. *Human Communication Research*, 3, 47-61.

Wheeless, I. R., Wheelless, V. E., & Baus, R. (1984). Sexual communication satisfaction,

Communication satisfaction and solidarity in the developmental stages of intimate relationships. *Western Journal of Speech Communication*, 48, 217-230.

Wheeless, I. R., Wheelless, V. E., & Dickson-Markman, F. (1978). Research note: The relations

Among social and task perceptions in small groups. *Small Group Behavior*, 13, 373-384.

Xu, J., Shen, L. X., Yan, C. H., Hu, H., Yang, F., Wang, L., Shen, X. M. (2012). Personal

characteristics related to the risk of adolescent internet addiction: a survey in Shanghai, China. *BMC Public Health*, 12, 143 - 442

Young, K. (1997, 15 August 1997). What makes the Internet addictive: Potential Explanations,

For pathological Internet use Paper presented at the 105th annual conference of the American Psychological Association, Chicago, IL

Young, K. (1998). Caught in the net: How to recognize the signs of internet addiction

and a winning strategy for recovery New York: John Wiley & Sons.

Young, K., S., and Nabuco de Abreu, C. (ed.) (2011) *Internet addiction, A handbook and guide*

to evaluation and treatment. Hoboken: John Wiley & Sons, Inc.

Internet addiction on interpersonal relationship and social functioning among students

CONSENT FORM

Title: The impact of internet addiction on interpersonal relationship and social functioning among Ghanaian students

Principal investigator: Miss Godsmay Afoley Oakley

Address: University of Ghana Psychology Department P. O. Box. 89

Dear valued participant,

You are invited to participate in an academic research project on the topic “the impact of internet addiction on interpersonal relationship and social functioning among Ghanaian students”. This study is to examine specifically, the relationship between internet addiction and interpersonal relationship, between internet addiction and social functioning as well as between social functioning and interpersonal relationship. It also examined whether demographic characteristics effect between sex and educational levels exist on internet addiction. Recommendations would be made to support complementary improvements in quality and effectiveness of regulating internet use among Ghanaian students and school authorities. If you decide to participate, you will be asked to respond to a 45 minutes questionnaire on internet addiction, social functioning and interpersonal relationships. This study will contribute towards the researcher’s effort at meeting the requirements for the award of MPhil in Social Psychology. It should take us not more than 15-45 minutes to complete. Kindly respond to questions to the best of your ability.

*Internet addiction on interpersonal relationship and social functioning among students***Possible Risks and Discomforts**

The questionnaire will only require you to answer appropriately to questions presented. The likelihood of discomfort is faint, however the research assistants will assist you in the event of any discomfort resulting from the questionnaires.

Possible Benefits

This research will benefit you by helping you know some of the effects of impacts associated to the over use of internet. The final project output in the form of a completed dissertation will be made available to University of Ghana, and copies could be accessed for references in future for research and/ or practical application for relevant solutions to internet addiction in the society as a whole.

Confidentiality

Any information that is obtained in connection with this study and that can be identified with you will remain confidential. Results from this project will only be presented to the scientific community. In any publication, information will be provided in such a way that you cannot be identified.

*Internet addiction on interpersonal relationship and social functioning among students***Voluntary Participation and Right to Leave the Research**

Your participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your future relations with the researcher or any official. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

Contacts for Additional Information

If you have any questions, please feel free to ask. If you have any additional questions later, Miss. Godsmay Afoley Oakley (phone 0245782629) will be happy to answer them. Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research (NMIMR-IRB). If you have any questions about your rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses: nirb@noguchi.mimcom.org or HBaidoo@noguchi.mimcom.org.

*Internet addiction on interpersonal relationship and social functioning among students***VOLUNTEER AGREEMENT**

The above document describing the benefits, risks and procedures for the research title (*the impact of internet addiction on interpersonal relationships and social functioning among Ghanaian students*) 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.

Date

Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Date

Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Date

Name Signature of Person Who Obtained Consent

*Internet addiction on interpersonal relationship and social functioning among students***APPENDIX 2****DEMOGRAPHICAL DATA****SECTION A**

This Section seeks to know more about the respondent. Please tick (√) the appropriate option.

1. Gender of respondent: Male [] Female []

2. Age of respondent: _____

3. Educational Level:

[] Tertiary: 1 [] 2 [] 3 [] 4 []

[] SHS: 1 [] 2 [] 3 []

[] JHS: 1 [] 2 [] 3 []

4. Religion: Christian [] Muslim [] Traditionalist [] Other []

*Internet addiction on interpersonal relationship and social functioning among students***APPENDIX 3****SECTION B****Interpersonal Relationship Scale**

RQ— the following questions concern your opinion about how you conceive interpersonal relationship. Please mark across the alternative that you find in best accordance with your opinion. There is no right or wrong answers

NOTE: all information that will be provided will be kept confidential. Use the following options; strongly agree (SA), Agree (A), Undecided (N), Disagree (D), and strongly disagree (SD).

	Statements	Strongly Agree	Agree	undecided	Disagree	Strongly Disagree
1.	I find it difficult to depend on other people					
2.	It is very important to me to feel independent					
3.	I find it easy to get emotionally close to others					
4.	I want to merge completely with another person					
5.	I worry that I will be hurt if I allow myself to become too close to others					
6.	I am comfortable without close emotional relationships					
7.	I am not sure that I can always depend on others when I need them					
8.	I want to be completely emotionally intimate with others					
9.	I worry about being alone					
10.	I am comfortable depending on other people					
11.	I often worry that romantic partners don't really love me					
12.	I find it difficult to trust others completely					
13.	I worry about others getting too close to me					
14.	I want emotionally close relationships					
15.	I am comfortable having others depend on me					
16.	I worry that others don't value me as much as I value them					
17.	People are never there when you need them					
18.	My desire to merge completely sometimes					

Internet addiction on interpersonal relationship and social functioning among students

	Statements	Strongly Agree	Agree	undecided	Disagree	Strongly Disagree
	scares people away					
19.	It is very important to me to feel self sufficient					
20.	I am nervous when anyone gets too close to me					
21.	I often worry that romantic partners won't want to stay with me					
22.	I prefer not to have other depend on me					
23.	I worry about being abandoned					
24.	I am somewhat uncomfortable being close to others					
25.	I find that others are reluctant to get close as I would like					
26.	I prefer not to depend on others					
27.	I know that others will be there when I need them					
28.	I worry about having others not accept me					
29.	People often want me to be closer than I feel comfortable being					
30.	I find it relatively easy to get close to others					

*Internet addiction on interpersonal relationship and social functioning among students***APPENDIX 4****Internet Addiction Scale**

Please mark across the alternative that you find in best accordance with your opinion. There is no right or wrong answers

no	Statement	Does not apply	Rarely	Occasionally	Often	Always
1	I often stay on-line longer than you intended					
2	I often neglect household chores to spend more time on-line?					
3	I often prefer the excitement of the Internet to intimacy with your partner?					
4	I often form new relationships with fellow on-line users?					
5	People in my often complain to me about the amount of time you spend on-line?					
6	My grades or school work suffers because of the amount of the time I spend on-line?					
7	I often check my email before something else that I need to do?					
8	My job performance or productivity suffers because of the Internet?					
9	I often become defensive or secretive when anyone asks me what I do online.					
10	I often block out disturbing thoughts about my life with soothing thoughts of the Internet?					
11	I often lose sleep due to late-night log-ins?					
12	I often fear that life without the Internet would be boring, empty, and joyless?					
13	I often snap, yell, or act annoyed if someone bothers you while you are on-line?					
14	I often find myself anticipating when you will go on-line again?					
15	I often feel preoccupied with the Internet when off-line, or fantasize about being on-line?					
16	I often find myself saying "just a few more minutes" when on-line?					
17	I often try to cut down the amount of time you spend on-line and fail?					

Internet addiction on interpersonal relationship and social functioning among students

no	Statement	Does not apply	Rarely	Occasionally	Often	Always
18	I often try to hide how long you've been on-line?					
19	I often choose to spend more time on-line over going out with others?					
20	I often feel depressed, moody or nervous when you are off-line, which goes away once you are back on-line?					

*Internet addiction on interpersonal relationship and social functioning among students***APPENDIX 5****Social Functioning Questionnaire**

Please mark across the alternative that you find in best accordance with your opinion. There is no right or wrong answers

no	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Self-Care Skills						
1	Needs close supervision to ensure appropriateness of dress.					
2	Dresses appropriately without prompting. Wear clothing appropriate to age, sex and weather.					
3	Dresses appropriately with occasional supervision or prompting.					
4	Keeps hands and face clean independently.					
5	Changes clothing regularly and independently					
6	Uses toilet appropriately and independently.					
Domestic Skills						
7	Plans and prepares a main cooked meal independently					
8	Table manners are usually acceptable but needs occasional prompting					
9	Washes up correctly and independently.					
10	Able to prepare a simple snack with little or no supervision					
11	Needs occasional prompting to maintain adequate standard of my room					
12	Clean my room with frequent prompting					
Community Skills						
13	Knows complete address of home, so could report this if lost					
14	Major problems with use of public transport					
15	Able to use shops with some supervision					
16	Attends vocational activity regularly with minimal prompting,					
17	works with little supervision, but needs some reminding					
18	Goes to public eating facilities accompanied and needs occasional prompting.					
Social Skills						

Internet addiction on interpersonal relationship and social functioning among students

no	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
19	Will engage in leisure activities involving others with or without prompting (e.g. chatting to others, card games etc.).					
20	Can initiate and sustain a conversation with other residents					
21	Rarely initiates but responds briefly to prompting (e.g. requests, jokes).					
22	Mixes with others and forms friendships or attachments to particular individuals (staff, patients or people outside hospital).					
23	Speech is comprehensible to public					
24	Rarely, or never, participates in programmed activities					
	Responsibility					
25	Wakes and gets out of bed with minimal prompting.					
26	Rises most mornings with no prompting					
27	Has an established sexual relationship					
28	Eats adequate regular meals independently					
29	Generally does not demonstrate knowledge and/or show concern for other Residents					
30	Enjoys occasional social contact (e.g. discos, clubs).					

*Internet addiction on interpersonal relationship and social functioning among students***Appendix 6****Table 10:*****Summary of the Post Hoc (Scheffé test) Analysis on Internet Addiction***

	Junior High	Senior High	Undergraduate
Junior High	-	8.67**	7.39**
Senior High	-	-	1.28 ^{ns}
Undergraduate	-	-	-

** $p < .01$, ns = not significant