

# Effects of Cognitive and Behavioural Therapies on Internet Surfing Behaviour and Text Messaging Behaviour of University Students

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**Abstract:** The study sought to examine the effects of cognitive and behavioural therapies on student's internet surfing behaviour and text messaging behaviour at the University of Cape Coast. The sample comprised 60 undergraduate regular students from three Colleges in the University of Cape Coast (College of Health and Allied Sciences, College of Humanities and Legal studies, and College of Education studies) in the Central Region of Ghana. The study was conducted using a quasi-experimental pre-test, post-test (non-equivalent) control group design. Three groups made up of two experimental groups and a control group were involved in the study. Using an adapted form of Cholz (2012) Test of Mobile Phone Dependence, the data for the study was gathered. The instrument which was in the form of a structured questionnaire was on a 5-point Likert-type scale, comprising twenty-three items. One-way Analysis of Covariance (ANCOVA) at the alpha level of .05 was used to test the hypotheses. The result was that Cognitive and behavioural therapies had positive effects on Students' Internet Surfing Behaviour and Students' Text Messaging Behaviour. Students have the ability and capacity to succeed in readjusting and controlling their mobile phone addictive behaviours using cognitive and behavioural strategies. It was recommended that counsellors should be encouraged to use either of the therapies to reduce mobile phone addictive behaviours of students.

**Keywords:** Internet Surfing Behaviour, Mobile Phone Addictive Behaviour, Text Messaging Behaviour, Cognitive and Behavioural Therapies

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## 1. Introduction

The mobile phone is a technological device that is more prevalent on the market. It is common to see students using mobile phones on various university campuses. Mobile phones which have been turned into a social tool is now deeply embedded in student's daily lives. A study by Shaw and Fairhurst [61] portrayed that university students are avid users of mobile phones. They are extremely zealous in knowing about the latest advancements in communication technology. The various functionalities such as text messaging (WhatsApp and SMS), surfing of the internet, taking of pictures and recording of videos among others being associated with mobile phones have made most students exhibit interest in their use. A study by Chen and Katz [17] shows that through the use of mobile phones, students are helped to get in touch with their relatives. The use of mobile phones facilitates collaborative and other forms of

learning through internet connectivity. Students are versatile in retrieving information from the internet. The use of the internet by students helps to broaden their academic experience, access vital information and communicate with others within the academic community [71]. Students perceive internet use as having a positive impact on their lives as it assists in the completion of assignments, research opportunities, and communication with friends and families. A number of studies have documented internet use among students in higher educational institutions. Chan and Fang [16], for example, found that, students use internet for the following purposes: having fun, shopping, making friends, listening to music, searching for information on further education, and completing homework, among others. Studies by Udende and Azeez [77] and Ola [54] revealed that with the use of internet, university students mainly search for academic-related information. Bankole and Oludayo [6], on the contrary found university students (90.6%)

predominantly use internet for communication, whereas 43.5% use internet for class assignments.

In addition, many students continue to express interest in texting messages (WhatsApp and SMS) using their mobile phones. Texting of messages has also become common among students and it plays an important role in their lives. Bryant, Sanders-Jackson, and Smallwood [13] have documented that, in terms of communication, students prefer using text messages to e-mails. Many students' daily lives are now entangled with the application of WhatsApp due to its beneficial effects. Presently, the usability rate of the WhatsApp application on mobile phones by students is not only limited to communication alone but also for discussion on educational assignments [37]. They utilize it on daily basis [2]. Appiah [4] assessed the influence of WhatsApp on the study habit of university students in the Kumasi Metropolis of Ghana. His study showed that students use WhatsApp frequently more than nine times within a day. They used it to study, share content (videos, news, and photos), as well as for group discussions, killing of loneliness and engaging in a romantic relationship. It is also found in a study by Kibona and Mgya [41] that most students use WhatsApp for their own social and personal relations rather than for academic purposes.

Although the attachment to mobile phones, particularly the frequent use of texting of messages and surfing of the internet by students on their mobile phones is associated with myriads of benefits, it is causing more harm than good. Texting messages and internet applications on students' mobile phones often get in the way of other important things. In a research study, it was also found that the majority of the students (86%) were addicted to the WhatsApp application. They always gave recognition to their mobile phones and accessed their messages swiftly even when they were in class. This practice reduced their concentration in class [41]. Tindell and Bohlander [74] reported in their study that, a significant number of the students being surveyed believed that texting distracts those sitting close to them. In another research study, it was found that variety of psychological and physical health challenges, namely, interrupted sleep, pain in the neck and hand, increased stress and anxiety levels, increased heart and breathing rate, depression as well as psychological discomfort have positive relationship with excessive text messaging [38, 43, 47, 59, 60].

The extensive growing reliance on text messaging (WhatsApp and SMS) and internet surfing applications on mobile phones is becoming extremely disturbing. Many students now exhibit addictive characteristics such as preoccupation, tolerance, withdrawal symptoms, inability to control cravings, impairment of daily life functions, and disregard to harmful consequences [48]. Mobile phone addiction, a new diagnostic entity under International Classification of Diseases -10 (ICD-10) and The Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) is generating severe disarray among students. Many students are ignorant about the fact that the frequent and excessive dependency upon mobile phone technology in terms of

texting and internet surfing can result in serious psychological and behavioural problems. The problematic use of mobile phones with their harmful or potentially disturbing behaviours have been investigated [62, 52]. However, the use of phones as a form of behavioural addiction has not attracted so much attention from many researchers, especially in Ghana. Besides, though there are treatments for behavioural addictions such as alcohol, drugs, sex and eating addictions, treatment for phone addiction is gradually emerging. Interestingly treatment regimens for behaviour addictions have in many cases focused on cognitive behavioural therapy. In this study, however, the researcher recognises cognitive behavioural therapy as a combination of two different therapies. As such the interest, was to separate and test the efficacy of each of them in treating phone addiction among university students in Ghana.

### ***1.1. The Objectives of the Study***

The study was to investigate the following:

1. The effects of cognitive therapy and behavioural therapy on student's internet surfing behaviours.
2. The effects of cognitive therapy and behaviour therapy on student's text messaging behaviours.

### ***1.2. Research Hypotheses***

H<sub>1</sub> 1: There is a significant effect of cognitive therapy and behavioural therapy on student's internet surfing behaviour.

H<sub>1</sub> 2: There is a significant effect of cognitive therapy and behavioural therapy on student's text messaging behaviour.

### ***1.3. Theoretical Framework***

#### ***1.3.1. Behavioural Therapy***

Skinner [66] and Pavlov [57] are the theorists who explain behaviour modification as an approach to psychotherapy based on the operant and classical conditioning learning theories. It is a treatment approach that is based on the idea that behaviour can be learned and unlearned. Behavioural therapy (BT) involves a systematic application of the principles of learning to the treatment of psychological disorders whereby a client modifies his or her learned behaviours that are negatively affecting his or her life. It involves treatment that helps change potentially self-destructing behaviours through techniques (positive reinforcement, fixed interval schedule, negative punishment and shaping) that are designed to reinforce desired behaviours while eliminating undesired behaviours. In other words, the therapy offers clients the opportunity of learning new or adaptive behaviours as replacement of old or maladaptive behaviours. The goal of behavioural therapy is to teach clients new behaviours to minimize or eliminate problems, rather than digging deep into their subconscious. The behavioural model holds that most behaviours that are problematic are developed, maintained, and changed primarily through learning.

Behavioural therapy regularly starts in a step-by-step progressive manner. It thus, moves from simple to complex,

from less threatening to more threatening, or from easier to harder. The therapy generally involves fewer therapy sessions, which are relatively brief, and often less time consuming than many other therapies. The therapy offers clients the opportunity to monitor problem behaviours while performing their daily activities and practice as they apply coping skills. An indispensable activity in behavioural therapy is homework assignments [15, 40]. According to Seligman [63], there are many steps a therapist can utilize when in a session with a client. The steps include the following:

1. Problem Identification – This stage has to do with investigating the nature and history of the problem as well as the baseline information such as the severity of the problem, and frequency.
2. Identification of goals – This is the stage, where realistic, measurable, and specific goals that are related to the problem are identified. These goals should be relevant to the clients and also sustain their motivation.
3. Strategies – This stage entails identification and development of strategies to assist in the change process. The clients are taught new skills and are also provided with relevant information. The counsellor then implements behavioural strategies that would help the client change, plan change, and plan how success will be monitored.
4. Implementation of the plan - This stage has to do with the implementation of the plan that has been developed to effect a change.
5. Progress Assessment – At this stage, assessment is done on the progress of the plan and the plan is evaluated thereafter. Modifications are made where necessary, and successes are reinforced. The process of reinforcement helps keep the motivation of the client, and this ensures success.
6. Continuation of the process - This step ensures that the plans are continued, and this include prevention of relapse of problems.

### **1.3.2. Cognitive Therapy**

Beck's [8] cognitive therapy (CT) is one of the therapeutic approaches that seeks to help clients overcome difficulties by identifying and changing dysfunctional thought patterns that mostly cause maladaptive behaviours. It is a psychological treatment that addresses the interactions between thoughts, emotions, and behaviours. Cognitive therapy includes several treatments and practices [68] which share fundamental propositions that our cognitions or what we think affects what we feel and how we choose to act or behave, and that desired behaviour change may be effected through changes in our cognitions [23].

The major principle of CT is that the way individuals perceive and process reality influence the way they feel and behave. The basic assumption is that thought precedes a mood; therefore, learning to substitute healthy thoughts for negative thoughts will improve a person's mood, self-concept, behaviour, and physical state. The therapeutic goal of CT is to

reframe and correct distorted thoughts, and collaboratively endeavour pragmatic solutions to engender behavioural change and ameliorate emotional disorders. Thoughts are viewed as a key point of intervention in cognitive therapy.

Cognitive therapy is active, directive, present-centred, problem-oriented, collaborative and empirical, makes use of homework and requires explicit identification of problems and the situations in which they occur [11]. Homework is often used as a part of cognitive therapy. It is tailored to the client's specific problem and arises out of the collaborative therapeutic relationship. The purpose of homework is not merely to teach clients new skills but also to enable them to test their beliefs in daily-life situations [75, 76]. CT helps clients to understand the thoughts and feelings that influence behaviours. Cognitive therapy aims to instruct the individual to control his/her mind and thoughts to produce alternative ways of judging and behaving [10, 5, 49]. Thus, through the use of CT, people can be helped to change their addictive thought patterns as well as to prevent relapse and improve their quality of life.

Cognitive therapy also changes the way people react emotionally, which in turn changes the way they behave. It provides tools to individuals to control their maladaptive behaviours. This is because a key element of cognitive therapy is helping clients to implement the skills taught in therapy on their own, outside the therapist's office.

According to Beck [9], during cognitive therapy sessions, the therapist assists the client work through several steps. First, the therapist assists the client to accept that some of his/her interpretations and perceptions of reality may be false. This may be largely due to hereditary or biological reasons or experience and such interpretations may lead to negative thoughts. The client then learns to identify the negative thoughts and as alternative, discovers thoughts that are close to reality. The client then makes a decision as to whether the evidence supports the negative thinking or the alternative. Ideally, the client will notice the distorted thinking and "reframe" the situation [36]. Cognitive therapy focuses more on reframing the deeply held or core beliefs about one's self and the world. Assisting clients to become aware of their distorted cognitive thinking will enable them recognize anytime they are engaged in such negative self-talks, and this makes it difficult to ignore. Once clients are in the known of their faulty thinking patterns, they begin to challenge these thoughts more, independently of the therapy. In this way, they will find it more difficult to rationalize or justify their dysfunctional mobile phone use and to break the sequence of associating mobile phone dependency with a better life. Cognitive therapy techniques being used in the study include cognitive rehearsal, thought challenging, thought recording and thought stopping.

## **1.4. Empirical Review**

### **1.4.1. Students' Text Messaging Behaviour (WhatsApp and SMS)**

WhatsApp is a medium of conversation that involves a sender typing in a message on a mobile phone and sends it to a

mobile receiver, regardless of the location or provider of the recipient. It is an application for instant messaging and serves as an effective means of sharing information such as photos, documents in text, videos, PDF, among others. Its daily usage is widely seen among students [2]. Due to its advantageous effects, categories of students use it. WhatsApp usage among students has both positive and negative effects on student's performance depending on how it is being used [81]. A research study by Patil, Deepthi, and Tadasad [55] on the usage of WhatsApp among university students showed that most of the students (56.8%) use the application for educational purposes.

Findings of a study by Gasaymeh [31], revealed that WhatsApp use among students is of great benefits. He concluded that students are willing to integrate WhatsApp into their education because they believe it would be easy to use WhatsApp in their education and disagree that WhatsApp can be problematic to their education. A study by Tawia, Nondzor, and Alhaji [70] showed that students prefer to be on WhatsApp since it is convenient for meeting purposes, cost less, among others. In our present-day life, WhatsApp is very necessary [21].

However, a study by Golam [34] on the impact of WhatsApp messenger concerning the students of Begum Rokeya University, Rangpur, and Bangladesh revealed that WhatsApp has profound negative impacts on students and adversely affects their education, behaviour and routine lives. It messes up the abundance of study time of students and distracts them from finishing their assignments.

Also, in a study by Sharma and Shukla [64] on the effect of WhatsApp on students from Gwalior, and India, the research outcome showed that WhatsApp hurts the lifestyle of students particularly in their studies. It affects their educational language and spoils their writing skills and the construction of sentences. WhatsApp application is highly addictive and can create a great impact on students, and apart from that, it can leave a trace that becomes difficult to control.

Texting, in addition, has also become very common among students [28]. In a study by Tessa [72], texting was mentioned by 83.1% of students as the most used feature, followed by calling by 10.8%. They use texting to discuss private activities for which an audible conversation may not be appropriate, and to update plans in real-time [33]. Text messaging was found to be the most prevalent use of mobile phones by students in the USA [12], with the majority of students sending and receiving between 30 and 80 text messages a day [42].

Students are mostly seen as voracious texters, with the average person exchanging over 100 messages a day, or the equivalent of over 3,000 a month [67]. According to Dresler-Hawke and Mansvelt [24] and Lenhart et al. [42], most university students are avid users of text messaging. The attachment to mobile phones, and particularly the frequent use of texting, is described as a ritual by Ling [45]. He discussed that the "ritual interaction" increases cohesion between individuals and facilitates bonding within a relationship. Also, a report on a survey conducted at the University of Colorado and several other universities in 2010 revealed that one of the

most commonly used functions on smartphones among college students is a text messaging [22]. Text messaging plays an important role in college student's life.

#### **1.4.2. Students' Internet Surfing Behaviour**

Students are fond of surfing the internet for information and they tend to express interest in online activities. College students perceived internet use as having a positive impact on their lives as it assists in assignment completion, research opportunities, and communication with friends and family. Internet usage enables students to access vital information and communicate with others within the academic community to increase their academic experience [71]. Among 664 undergraduate students at the Obafemi Awolowo University, Nigeria, (97.1%) as well as (53.9%) used internet for e-mail and search for academic information respectively [55].

The Internet has the power to cut across social and geographic distance and help find new ways of facilitating the flow of information and knowledge thus making it an attractive medium for communication [3]. Chan and Fang [16], in a study among young people in Hong Kong found that the internet was used for having fun, shopping, making friends, listening to music, searching for information on further education, and completing homework. In another study by Philomina and Abiola [58] on the rate of internet usage on their mobile phones, it was revealed that 83.8% browsed the internet daily with their mobile phones, 4.7% did so once a week, 3.4% once in a month, whereas 8.1% of them did not use their phones to browse at all. This showed that daily use of mobile phone for internet is the highest followed by weekly use, then monthly. This depicts that a major means through which the respondents browse the internet is through their mobile phones. Studies by Udende and Azeez [77] and Ola [55] revealed that university students use the internet mainly to search for academic information. However, the findings with other studies [6] showed that 90.6% of university students use the internet for communication and only 43.5% use it to do class assignments.

Internet application on students' mobile phone often gets in the way of other important things. A study by Nakornthap and Masateianwong [51] among Thai young people revealed that a significant proportion reported having problems with their eyesight (78.3%), wasting money and time (70.8%), having no time for homework (62.4%), having insufficient rest (51.6%), and exhibiting more violent behaviours than previously (37.5%).

Surfing the internet can be addictive because individuals receive short-term gratification every time they go online, making it very desirable to continue to go online to receive this gratification [62]. Younger internet users (i.e., between 18 and 24 years old) are more at risk of becoming internet addicts than older users [69].

## **2. Methodology**

The quasi-experimental pre-test, post-test (non-equivalent) control group design was employed to conduct the study. Three groups were involved in the study: two experimental

groups and a control group. This was a preferred design because the random assignment of participants to conditions was not involved. Also, the design was more practical and feasible to be used in conducting research.

### 2.1. Sample and Sampling Procedure

A multi-stage sampling technique was used to select a total sample of sixty (60) third-year undergraduate regular students for the study. Twenty (20) students each were chosen from three out of the five Colleges at the University of Cape Coast. The Colleges were selected randomly. This was a preferred

sample, because according to Frankeal and Wallen [30], in experimental studies, at least 30 individuals per group is recommended. Although, sometimes, experimental studies with only 15 individuals in each group can be defended if they are very tightly controlled; studies using only 15 subjects per group should probably be replicated, however, before too much is made of any findings.

Participants who had mobile phones and exhibited mobile phone addictive behaviours were purposively selected using an adapted form of Cholz [19] Test of Mobile-Phone Dependence. (See Table 1).

*Table 1. Selection of Participants for the Study.*

Colleges	Departments	Class Size	Mobile Phone Addicts	Sample Size
Health and Allied Sciences	Medical Laboratory Sciences	140	80	20
Humanities and Legal Studies	Population and Health	29	27	20
Education Studies	Health, Physical Education and Recreation	53	39	20

### 2.2. Instrumentation

An adapted form of Cholz [19] Test of Mobile-phone Dependence (TMD) was used for the study. The instrument consisted of 22 items and they were put into two sections (A & B). Section A consisted of demographic information. Section B was categorized under two sub-scales, and it elicited participant's reactions to statements on the two components of mobile phone addictive behaviours (student's internet surfing behaviour, and student's text messaging

behaviour). A 5-point Likert-type scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree) was used for the measurement.

The adapted instrument was validated by three experts in the Department of Guidance and Counselling at the University of Cape Coast. The reliability coefficients of the questionnaire were determined using Cronbach's alpha reliability coefficient. This was used to estimate the internal consistency of the items on the questionnaire. The reliability coefficients of the sub-scales are presented in Table 2.

*Table 2. Reliability Coefficients.*

Sub-Scale	No. of Items	Reliability Coefficients
Student's Internet Surfing Behaviour	10	.86
Student's Text Messaging Behaviour	10	.85

### 2.3. Procedure

Ethical clearance was obtained from the College of Education Studies Ethical Review Board to carry out the study. The objectives of the study were explained to the participants by the researcher. Respondents were also assured that they had the freedom to decline or withdraw from the study at any time.

Three graduate research assistants were trained and recruited to assist in the data collection. Two days of training sessions were held for them before pilot testing the research tools to ensure that they understood the context of the research topic. They were briefed on the objectives of the study. They were also taught the various learning principles and techniques of cognitive and behavioural approaches and how they are applied to modify behaviour.

The researcher used non-differential selection to assign participants to experimental and control groups. In other words, the research participants for the study remained in their intact groups without any random assignment. The same structured instrument {adapted form of Cholz [19] Test of Mobile-phone Dependence (TMD)} was administered to all the three groups for pre-test (screening of participants) and

post-test. The two experimental groups received a treatment each, that is the experimental group A received the cognitive therapy and the experimental group B received the behavioural therapy while the control group was exposed to lessons (treatment) that added value to their lives but were not related to the use of the therapies (cognitive and behavioural) in reducing mobile phone addictive behaviours. Also, to ascertain full participation, seriousness and avoidance of experimental mortality (a situation where participants quit in the mid experiment), the researcher kept the treatment sessions lively, interesting, arresting and highly rewarding.

Under the supervision of the researcher, each experimental group was taught twice a week. Each session lasted for 50 minutes. The study lasted for 11 weeks, during which participants were taught the various learning principles and approaches in Cognitive therapy (Thought Challenging, Cognitive Rehearsal, Thought Recording and Thought Stopping) and Behavioural therapy (Positive reinforcements, Fixed interval schedule, Negative reinforcement and shaping) to reduce mobile phone addiction. All the treatment sessions were held after lecture hours to avoid disrupting participant's

regular lectures and other university programmes. To minimize any form of interaction that could affect the outcome of the study, the researcher ensured that each experimental group attended scheduled periods on the same day but in different venues.

#### 2.4. Data analysis

The researcher edited and coded the data, followed by data entry, error detection and data tabulation. In analysing the data, inferential statistics specifically One-way Analysis of Covariance (ANCOVA) was used to test the hypotheses.

### 3. Results

#### 3.1. Demographic Data of Participants

The demographic data of participants focused on their gender and marital status.

*Table 3. Sex Distribution of Participants.*

SEX	Control		GROUPS Behavioural		Cognitive		Total	
	N	%	N	%	N	%	N	%
Male	13	65.0	12	60.0	12	60.0	37	61.7
Female	7	35.0	8	40.0	8	40.0	23	38.3
Total	20	100.0	20	100.0	20	100.0	60	100.0

From Table 3, out of 60 participants in the study, 37 (61.7%)

*Table 5. ANCOVA Test for Cognitive Therapy and Behavioural Therapy for Students' Internet Surfing Behaviour.*

Component	Source	Df	Mean Square	F	Sig.	Partial Eta Squared ( $\eta^2$ )
SISB	Pre-test	1	1.641	.055	.815	.001
	Group	2	462.276	15.510*	.000	.356
	Error	56	29.805			

\*Significant at .05 level.

Note: SISB Student Internet Surfing Behaviour.

*Table 6. Sidak Adjustment for Pairwise Comparisons for Student Internet Surfing Behaviour.*

Component	(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.
SISB	Control	Behavioural	8.878*	1.755	.000
		Cognitive	8.036*	1.748	.000
	Behavioural	Control	-8.876*	1.755	.000
		Cognitive	-.840	1.727	.949
	Cognitive	Control	-8.036*	1.748	.000
		Behavioural	.80	1.727	.949

\*Mean Difference is significant at .05 level.

From Table 5, there was a significant difference in the post-test scores on internet surfing behaviour of participants in the experimental and control groups,  $F(2, 56) = 15.510$ ,  $p < .001$ ;  $\eta^2 = .356$ . This implies that cognitive therapy, behavioural therapy and control group contributed to 35.6% of the variation in participants' internet surfing behaviour. A post-doc analysis was further performed to compare the group means. Table 6 presents the pairwise comparisons.

The result indicated that both therapies were effective in reducing mobile phone addiction on Student's Internet Surfing Behaviour. The adjusted means are presented in Table 7.

were males and 23 (38.3%) were females. There were 13 (65.0%) of the males in the control group and 12 (60%) each in the behavioural and cognitive groups respectively.

In the case of the females, 7 (35%) were in the control group while 8 (40%) each were in the behavioural and cognitive groups respectively. It can therefore be said that male participants dominated the study.

*Table 4. Distribution of Participants by Marital Status.*

MARITAL STATUS	Control		GROUPS Behavioural		Cognitive		Total	
	N	%	N	%	N	%	N	%
Married	3	15.0	5	25.0	5	25.0	13	21.7
Single	17	85.0	15	75.0	15	75.0	47	78.3
Total	20	100.0	20	100.0	20	100.0	60	100.0

From Table 4, most of the participants 47 (78.3%) were single whereas 13 (21.7%) were married.

#### 3.2. Hypothesis 1

$H_1$  1: There is a significant effect of cognitive therapy and behavioural therapy on students' internet surfing behaviour.

This hypothesis sought to determine the relative impact of cognitive therapy and behavioural therapy on Students' Internet Surfing Behaviour. The one-way ANCOVA was used to compare the post-test scores for control and experimental groups. Table 5 presents the results for this hypothesis.

*Table 7. Adjusted Means for Groups.*

Component	Groups	Adjusted Means	Std. Error
SISB	Control	35.104	1.236
	Behavioural	26.228	1.227
	Cognitive	27.068	1.223

#### 3.3. Hypothesis 2

$H_1$  2: There is a significant effect of cognitive therapy and behavioural therapy on students' text messaging behaviour.

This hypothesis sought to determine the relative impact of cognitive therapy and behavioural therapy on Students' Text Messaging Behaviour. The one-way ANCOVA was

used to compare the post-test scores for control and experimental groups. Table 8 presents the results for this hypothesis.

**Table 8.** ANCOVA Test for Cognitive Therapy and Behavioural Therapy for Student's Text Messaging Behaviour.

Components	Source	df	Mean Square	F	Sig.	Partial Eta Square ( $\eta^2$ )
STMB	Pre-test	1	1167.144	2.634	.110	.045
	Group	2	729.899	11.504*	.000	.291
	Error	56	63.446			

\*Significant at .05 level.

From Table 8, there was a significant difference in the post-test scores on students' text messaging behaviour of participants in the experimental and control groups,  $F(2, 56) = 11.504$ ,  $p < .001$ ;  $\eta^2 = .291$ . An implication of this finding also indicated that cognitive therapy, behavioural therapy and

control group contributed to 29.1% of the variation in participants' text messaging behaviour. A post-doc analysis was further performed to compare the group means. Table 9 present the pairwise comparisons.

**Table 9.** Sidak Adjustment for Pairwise Comparisons for student's text messaging behaviour.

Components	(I) Groups	(J) Groups	Mean Difference	Std.	Sig.
STMB	Control	Behavioural	10.538*	2.524	.000
		Cognitive	10.694*	2.587	.000
	Behavioural	Control	-10.538*	2.524	.000
		Cognitive	.156	2.555	.999
	Cognitive	Control	-10.694*	2.587	.000
		Behavioural	-.156	2.555	.999

\*Mean Difference is significant at .05 level.

The result indicated that both therapies were effective in reducing Students' Text Messaging Behaviour. The adjusted means are presented in Table 10.

**Table 10.** Adjusted Means for Groups.

Components	Groups	Adjusted Means	Std. Error
STMB	Control	37.744	1.799
	Behavioural	27.206	1.783
	Cognitive	27.050	1.813

## 4. Discussion

The change in behaviour as reported in the findings is reflected in the reduction in mobile phone use. The indication was that participants were prepared to unlearn the undesirable dependency behaviours affecting them. Behavioural therapy as an action-based therapy is highly focused on the idea that we learn from our environment and it suggests that since old learning led to the development of a problem, then new learning can fix it. According to behaviourists' perspective, behaviours that are learned can be unlearned. Using Skinner's [66] operant conditioning learning principles such as shaping, negative punishment and positive reinforcement that participants experienced during the experimental sessions positively impacted on them. The systematic application and the stepwise progression of the various behavioural techniques being used in the study aroused the participant's interest and willingness to learn and changed their mobile phone dependency. The homework assignments being performed by the participants outside the therapy sessions also facilitated the effective and dramatic

change in their behaviours. This confirms research studies by Addis and Jacobson [1], Burns and Sprangler [15], Kazantis, Deane, Ronan, and L'Abate [40], that homework assignment, are an integral part of behavioural therapy.

The various cognitive therapy techniques such as thought challenging, cognitive rehearsal, thought recording and thought stopping that participants were exposed to during the experimental sessions helped in restructuring their negative thoughts about mobile phone addiction. The indications are that participants continue to use the appropriate skills they acquired during the sessions to manage their mobile phone dependency behaviours. Cognitive and behavioural therapies are effective in changing peoples' lives for the better. This confirms a study by Bully [14] and Lipsey, Chapman and Landerberger [46] that cognitive therapy and behavioural therapy change individuals' lives for the better.

## 5. Conclusion

Cognitive therapy and behavioural therapy are effective treatments for Students' Internet Surfing and Text Messaging Behaviours. Students can adjust and control their mobile phone use with the therapies.

## 6. Counselling Implications

1. Behavioural addiction like mobile phone addiction can be unlearned using the appropriate operant and classical conditioning learning principles and strategies.
2. Cognitive therapy and behavioural therapy can complement each other in reducing mobile phone addiction.

3. Cognitive therapy and behavioural therapy can be used as a single treatment for more effective treatment outcomes.
4. Counsellors need to make regular follow-ups on clients to avoid relapse.

## 7. Recommendations

Based on the findings of the study, the following recommendations are made:

1. The Counselling Centre of the University of Cape Coast should on regular basis organize inter-faculty and inter-hall lectures on the efficacy of counselling therapies (e.g. Cognitive Therapy and Behavioural Therapy) to allay the fears of students who may be phone addicts.
2. Counsellors should use the orientation programmes to educate fresh students about the addictive nature of mobile phones and encourage them to visit the Counselling Centre for support.
3. Counsellors should arrange to feature on the campus broadcasting station to raise public awareness of the addictive nature of phones and treatments available.

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