

# Self-Management Therapy and Creative Problem-Solving Technique on Smartphone Addiction among Public Colleges of Education Students in Oyo State, Nigeria

Mutiat Sola ASIYANBI\*<sup>1</sup> & PROF. Rotimi Adebayo ANIMASAHUN<sup>2</sup>

<sup>1</sup>Department of Psychology, Federal College of Education Special Oyo

<sup>2</sup>Department of Counselling and Human Development Studies, Faculty of Education, University of Ibadan

\*Correspondence Author

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## ABSTRACT

As smartphone usage rises worldwide, concerns about the detrimental impacts of smartphone addiction, particularly among college students, have grown. However, the extent to which smartphone addiction has affected College of Education students in recent years is disturbing. The magnitude of smartphone addiction does not promise well for the future, individual mental health, or the overall well-being of college students. Based on this premise, this study investigated how self-management therapy and creative problem-solving techniques affected smartphone addiction among Oyo State College of Education students.

A pretest-posttest, control group quasi-experimental design with a 3x2x3 factorial matrix was used in the study. The samples included 90 students from three public colleges of education in Oyo State, Nigeria. Participants were assigned to three groups: Self-Management Therapy (SMT), Creative Problem Solving Technique (CPST), and control). The administration of treatments lasted for eight weeks for the experimental groups. Seven hypotheses were tested at 0.05 level of significance. Data were analysed using Analysis of Covariance.

There was a significant main effect of treatments on smartphone addiction among college of education students in Oyo State ( $F_{(2, 70)} = 29.47, p < .05, \eta^2 = .459$ ). Participants exposed to SMT ( $\bar{x} = 28.81$ ) had the lowest smartphone addiction mean score, while the CPST group ( $\bar{x} = 49.89$ ) and control group ( $\bar{x} = 53.78$ ).

Self-management therapy and creative problem-solving techniques were effective in reducing smartphone addiction, but self-management therapy was more effective. It is so proposed that the two therapies be integrated into the public college of education counselling sessions and indoctrination to lower the likelihood of smartphone addiction.

**Keywords:** Smartphone addiction, Self-management therapy, Creative problem-solving techniques, College of Education Students

## INTRODUCTION

Smartphones have become an integral part of our daily lives, providing us with instant connectivity,

information and entertainment. Innovative mobile technologies and applications have evolved exponentially and, especially at the turn of the millennium, have become an integral part of the everyday lives of people around the world. Over six billion smartphone users are predicted to exist globally, with young people being the majority (Statista, 2023). Smartphones are full-featured high-end mobile phones with Personal Digital Assistant (PDA) capabilities, allowing data processing and connectivity applications to be installed (Gupta, Garg, and Arora, 2016). Smartphones are a new media technological innovation that has defined human progress by creating a new paradigm of modernity and enabling adopters and users to improve on life affairs in terms of connectivity and social interaction through a variety of applications and usage freedom referred to as a new mobile lifestyle (Jejenky, 2016).

The advent of the smartphones has brought about significant changes in the lifestyles of people. Specifically, smartphones have become an important part of the lives of individuals, especially among the youths. It is estimated that around 4.5 billion people use cell phones worldwide. It is noteworthy that a large proportion of this number consists of the youth (Goswami and Singh, 2016). The use of smartphones today has transcended its traditional luxury dimension. Beyond the luxury, smartphones have become veritable tools for information, entertainment, social networking, and many other activities. The use of smartphones among the youths has continued to generate interest from researchers. Several studies and surveys conducted on youths and smartphone-use have revealed how they consider smartphones as a crucial part of survival.

Virtually every college student these days owns a smartphone. Smartphones are increasingly providing platforms for college of education students and staff to conduct research and academic activities (Mohamed and Mostafa, 2020). According to Liew, (2016), many students rely on their smartphones to download educational materials from the internet. In recent years, most of the global population used smartphones due to its wide range of applications. While beneficial in numerous ways, smartphones have disadvantages such as reduction in work efficacy, personal attention, social nuisance and psychological addiction. Physical and psychological problems have reportedly resulted from cellphone overuse, including rigidity and muscle pain, computer vision syndrome, dry eyes and irritation, pain and weakness in the thumbs and wrists leading to an increased number of cases of de Quervain's tenosynovitis, auditory and tactile hallucinations-the sensation of having heard a ring or felt a vibration of a cell phone, sleep disturbances, insomnia, lower self-confidence, nomophobia (the fear of being without a cell phone) and mobile phone addiction disorders (Peraman and Parasuraman, 2016).

Kesari, Siddiqui and Meena, (2018), concluded that mobile phone radiation may increase the reactive oxygen species, which plays an important role in the development of metabolic and neurodegenerative diseases. Addiction refers to the relentless use of a substance or activity that becomes compulsive and impairs everyday functioning (Rozgonjuk, Saal, and That, 2018). While distraction is the diversion of attention and thought from one task to another, regarding smartphones people seem to enjoy putting off essential tasks and menial tasks on their devices (Rozgonjuk, Saal and That, 2018). Both concepts are widely recognised in the literature on smartphones, subsequently this study operationalised the term "distraction-addiction" which is the repetitive action of diverting attention and thought from daily or essential tasks to intentionally indulge in a compulsive desire.

However, the excessive use of smartphones has led to a worrying phenomenon known as smartphone addiction. Addiction to smartphone usage is a common problem among adults worldwide. It manifests itself in the excessive usage of the phones, while engaged in other activities such as studying, driving, social gatherings and even sleeping (Harwood, Dooley and Scott, 2018). However, many people fail to realize that addiction to smartphone usage is a serious issue that can hurt or harm the person's thoughts, behaviour, tendencies, feelings and sense of well-being (Mohamed and Mostafa, 2020). The signs of smartphone addiction are constantly checking the phone for no reason, feeling anxious or restless without the phone,

waking up in the middle of the night to check the mobile and communication updates, delay in professional performance because of prolonged phone activities and distracted with smartphone applications (Chen, 2016). It can be a risk factor for depression, loneliness, anxiety and sleep disturbances (Gao, Li and Zhu, 2016).

Addiction is a chronic and relapsing disease resulting from adaptive changes in brain structure and function, in which the social context where it has developed and expressed is critical. Addiction entails complex biological and environmental interactions that have made treatment particularly difficult. Attempts to understand and treat addiction as a purely biological or a purely environmental problem have not been successful. Therefore, a comprehensive definition of addiction should encompass both views. Griffiths postulates a 'components model', which defines addiction as the sum of related features: salience, mood modification, tolerance, withdrawal, conflict and relapse. These components reflect both biological and psychosocial features of the addictive phenomena, and all of them must be present to consider any behaviour as an addiction (Chen, 2016).

According to Ebiye (2015) smartphone is a smart device used for fast access to knowledge, geared towards students achieving their teaching and learning and academic research objectives. Arefin, Islam, Mustafi, Afrin, and Islam (2017) defined a smartphone as a document from which information on education and entertainment is obtained through the usage of numerous applications. Also, Technorati (2019) viewed a Smartphone as a mobile phone with highly advanced features. Besides, Technorati (2019) explained that a typical smartphone has a high-resolution touchscreen display, Wi-Fi connectivity, Web browsing capabilities, and the ability to accept sophisticated applications. The emergence of the Smartphone is traced back to the year 2000. Head and Ziolkowski (2012) Stated that Smartphone came into existence in the year 2000. Its introduction has since been widely accepted by mobile phone users. According to the report made available, about 7.5 billion people worldwide have been using the Smartphone as of 2020 (Mohamed and Mostafa, 2020). Besides, Sanal and Ozer (2017) indicated that about 60% of the world's population has access to mobile phones. Previously, Hussain, Griffiths and Sheffield (2017) confirmed that there were more mobile phone users in developing nations as compared to advanced countries. According to a Pew Survey (2016), about twenty-eight per cent of adults reported owning smartphones in Nigeria. Not done yet, the Nigerian Communication Commission disclosed that internet users in Nigeria, as of 2020, have increased to about 112 million. The report also put the number of smartphone users in Nigeria at roughly 25 and 85 million (Mohamed and Mostafa, 2020). Considering the numerous activities like texting, calling, listening to music, gaming, social media chatting and many others that could be carried out on smartphones, they have become ingrained in the lifestyles of the youths (Goswami and Singh, 2016). The use of smartphones in college of education campuses and society has increased dramatically in recent years. Whereas the academic use of the smartphone is primarily intended for learning and research, the smartphone has also become an important part of student life. The explosive growth of the smartphone over the past decade has almost certainly changed the profile of smartphone addict (Chen, 2016). With its convenient communication options and the World Wide Web, the smartphone provides remote access to other people and abundant information in all areas of interest. It is an environment that could be abused by virtually anyone, regardless of their interest in technology and science (Chen, 2016). Despite the educational and positive importance of smartphone technologies, it is unfortunate that students get addicted to and use it negatively. Also, studies have shown that smartphone addiction is prevalent among the youth of the world. The population of youths who use smartphones has increased astronomically. Pavithra (2015) noted that a greater number of youths in the world utilize the internet via different modes, with portable implements. In support of the above, ArgumosaNillar, Boada-Grau, and Vigil-Colet (2017) explained that youths are noted for adopting novel technologies promptly. Similarly, Hartlein and Twist, (2019) opined that it is a noticeable phenomenon that youth have a complex relationship with technology. That may explain their over-dependence on Smartphone. From the foregoing, students in higher institutions who form the buck of the youths, depend heavily on the Smartphone to perform their daily activities. Especially, the activities that are related to the

student's academics.

In the past, studies have been carried out on different information that university students usually sourced using their smartphones. For instance, Chen (2016) found that 49% of students used mobile phones to access websites for entertainment or concert information, 52% use it for movie viewing, 61% for news, 87% for weather reports while 57% of students reported using it for searching and 51% reported making one or more calls per day. According to Chen (2016), the Smartphone has become the tool of choice for 29% of students to search for information for online learning. Besides, the study conducted by Wang, Lee, and Yang (2015) revealed that many youths used smartphones to get information on entertainment, information upgrade, immediate communication, social relationship, and self-education. Likewise, Vogels, Rose, Roberts and Eckles, (2014) affirmed that percentages of students used smartphones on Facebook, 17 % for entertainment (particularly on YouTube), 15% for gaming, 10% in browsing and 8% for utility. 2% in news, 4% in productivity and 10% on other applications. In Nigeria, findings on the use of mobile phones at the University of Ibadan Nigeria showed that staff and students used their mobile phones principally for social activities (Alijomaa, Qudah and Albursan 2016).

This, therefore, has necessitated an investigation the use and addiction of smartphones among the youths. This is due to the assertion that these days youth is more inclined towards using mobile phones for communication activities than those who belong to an older generation (Alijomaa, Qudah and Albursan 2016). This is because in adolescence stage, people are more susceptible to changing fashion trends and style, including getting integrated with technological devices, which if not checked, could lead to certain behavioural disorders. As smartphone use has become increasingly rampant in recent years, so too have reports on smartphone addiction. Initially, researches on media addictions were limited to television and the internet (Goswami and Singh, 2016).

However, recently, there has been a lot of interest in research on how people, especially the youths could be addicted to their phones. Smartphone addiction is the inability of an individual to control his or her desire for smartphone usage which has resulted in some physical and psychological problems, which the individual may or may not be conscious of. Moreover, for an individual to be referred to as a smartphone addict, he or she must meet at least five out of the following eight criteria: the thought of previous online activity and anticipating the next online session; the need to stay longer online; several attempts to reduce excessive Internet use which may be difficult to do; eliciting withdrawal symptoms due to reduction in excessive Internet use; poor time management; conflicts with family and friends due to excessive smartphone use; lying to others about time spent online; mood modification through smartphone use (Goswami and Singh, 2016). Moreover, expectation from the use of the internet encourages its addictive usage. Internet is used for chatting, meeting friends, online gaming, gambling, shopping, creating profiles, exchanging messages and downloading music and video files which youths are prone to engage in. The gratification derived from using the Internet for these various activities encourages its addictive usage. Hence, there will always be the need to stay longer on the internet to be satisfied thereby leading to addiction (Ojo, Falaye and Adeyemi, 2016)

It has even been argued that smartphone addiction has become one of the most prevalent non-drug addictions. Terms such as "Smartphone addiction", "mobile phone addiction", "problematic mobile phone use", "mobile phone dependence", "compulsive mobile phone use" and "mobile phone overuse" have all been used to describe more or less the same phenomenon, that is, individuals engrossed in their smartphone use to the extent that they neglect other areas of life. The most used terms to describe this kind of addiction are "mobile phone addiction" and, recently, "smartphone addiction" (Chen, 2016; Goswami and Singh, 2016). Smartphone addiction has been defined by symptoms of loss of control, intolerance, withdrawal, impairment of function, reduced decision-making ability, substance experience, psychomotor agitation, anxiety, craving, hostility and constant online surfing despite negative effects on social and psychological

welfare. Studies demonstrated the positive associations of smartphone addiction with declines in the size of social circle, locus of control (Lin et al, 2016), loneliness, lower self-esteem and life satisfaction, poor mental health, subjective vitality and subjective happiness (Chen, 2016). Smartphone addiction, as an impulse control disorder that does not involve the use of an intoxicating drug, is very similar to pathological gambling (Liu et al, 2016). It is defined as a non-chemical or behavioural addiction that involves human-machine interaction that can be either passive, such as viewing movies or active, such as playing computer games. The concepts of smartphone addiction can be viewed from different aspects such as according to Lin et al (2016) inability of individuals to control their use of the smartphone, which then causes psychological, social, school, and/or work difficulties.

Moreover, according to Gao (2016), a huge number of college students found it hard to control their time spent online. Smartphone use with addictive characteristics was one of the symptoms of problematic internet use developed by the users. These symptoms include withdrawal reaction that happens when internet use is impossible, lack of control over internet use (where the users may use the Internet although they have the intention to stop or to decrease the use) and cognitive and behavioural anxiety with the Internet. For some reason all the internet enticement is present when one is online. Therefore, he or she tends to do something different than what was planned before.

The problematic use of the smartphone may be related to some unmet psychological needs of college education students and may be directed towards meeting these needs through the Internet. In this process, the internet can become problematic, and there may be negative consequences for this problematic use, it can be thought that this will cause serious harm to domestic communication and interaction. The daily lives of college education students addicted to the internet are dominated by their need to be online. In extreme cases, users feel they have no control over their presence online, and internet addiction may develop (Rachubińska, Cybulska, Szkup and Grochans, 2021). Subsequently, smartphone addiction leads to negative consequences for the affected college of education students (Rachubińska, Cybulska, Szkup and Grochans, 2021).

Smartphone use is high among students due to their increasing popularity leading to excessive use in Nigeria which has been reported to impact negatively on academic performance, including physical and psycho-social health resulting in neck stiffness, blurred vision, wrist or back pain, sleep disturbances and reduced in-person social interaction (Rachubińska, Cybulska, Szkup and Grochans, 2021; Rabiun et al., 2016; Fasae and Adegbilero, 2015). Smartphone addiction is one of the major emerging issues in Nigerian cyberspace which is prevalent among youths and students. From time to time, there are reported cases of addictive use of the internet among youths on university campuses in Nigeria. Smartphone addiction could hinder the development of youths physically, psychologically, emotionally, socially, academically and health-wise. Based on the documented prevalence and consequences of smartphone addiction, there is a need to help reduce its menace among Nigerian youths to have more well-adjusted individuals who could contribute their quota to the development of Nigeria as a nation (Ojo, Falaye and Adeyemi, 2016).

The phrases smartphone addiction, pathological smartphone usage, smartphone abuse, smartphone compulsion, smartphones obsession, problematic smartphone use, addiction to smartphones, negative use of smartphones, etc., are all aimed to describe or explain the situation in which an individual is absorbed and involved in using phones space and/or its related components so that she/he neglects other aspects or domains of life (Fasae and Adegbilero, 2015). Commenting on the psychological point of view, Mohammed and Mostafa, (2020) argued that due to increasing tolerance to the effect of being online, increased number of investment of sources on smartphone related activities, unpleasant feelings when off-line, and denial of the problematic behaviours are main reasons for dependent on the smartphone. Some individuals tend to get obsessed while getting exposed and familiarised with the internet (Mohammed et al, 2020). There are also various opinions on smartphone addiction. As a common saying, it is not an addiction if someone is

addicted to knowledge (Lin et al, 2016). However, Mohammed et al, (2020) thinks that it could be hazardous to someone's mental and physical health if the smartphone is being used excessively.

Colleges of education students using cell phones displayed more behavioural problems such as nervousness, temperament, mental distraction, and indolence, and these problems worsened if the students began using a cell phone at an early age (Alijomaa, Qudah and Albursan, 2016). Awareness regarding the severity of smartphone addiction has already been reflected in clinical science and praxis. The *Diagnostic and Statistical Manual of Mental Disorders (DSM-9)*, American Psychiatric Association (APA), 2018) introduced the diagnostic criteria for internet gaming disorder and encouraged further research for listing it as a formal diagnosis. Alijomaa et al., (2016) reported that the awareness of problems with repeated use of smartphones was underestimated, and only a few reported that they were aware of it. The few respondents reported repeated usage of a smartphone as annoying, addicting, "a trap," and distracting. They were aware that repeated use could lead to addiction; however, they were not aware of the severity of the repeated and intense use of a smartphone. If one is aware of the risks posed by smartphone addiction, one would do something against it. The awareness of the severity of smartphone addiction can, therefore, play a role in preventing it.

Smartphone addiction affects physical and psychological health (Aljomaa, Mohammad, Albursan, Bakhiet, Abduljabbar, 2016). Depression or anxiety can cause technology addiction, in that individuals with depression or anxiety use smartphones as a coping method to deal with depressive and negative emotions (Kim et al., 2015). Smartphone addicts engage in checking behaviour and react to notification sounds frequently. That is also a characteristic of depression and anxiety (Jeong, Kim and Yum, 2016). A longitudinal study on heavy users of a computer, social media, and mobile phones showed greater levels of prolonged stress, depression, and sleep disturbances (Jeong, Kim and Yum, 2016). Excessive smartphone use at night could keep one awake till late, thus impairing sleep and influencing stress and depression (Jeong, Kim and Yum, 2016). Screen time and Internet usage were found to affect sleep, and SNS addicts were reported to show poorer sleep quality than non-SNS addicts (Jeong, Kim and Yum, 2016).

The negative effects of smartphone overuse on physical health include cancer; brain tumors; nervous disturbances; weakening of the immune system; problems with the eardrum; pain in the wrist, neck, and joints; fatigue; and sleep disorders (Alijomaa et al., 2016). As stated above, the overuse of the smartphone causes health problems, but the deprivation of a smartphone can also cause health problems. For instance, smartphone addicts were reported to feel distressed when deprived of their smartphone for some time, and adolescents exhibited anxiety, depression, anger, and sleep disturbances when their smartphones were switched off (Alijomaa et al., 2016). Of note, neither smartphone addiction nor internet addiction is officially listed as a diagnosis in any major diagnostic systems and it is controversial to consider it as a diagnostic entity. However, a few other terms have been used to describe this phenomenon: problematic mobile phone use, mobile phone addiction, excessive mobile phone use, and compensatory mobile phone use (De-Sola Gutiérrez, Rodríguez, Fonseca and Rubio, 2016).

Notably, several authors have worked on the causative factors associated with social media, smartphone or internet addiction among adolescents, college students or university students in Nigeria which are organismic (Animasahun, 2015, Oluwole, 2015, Ofole and Babatunde, 2015). Some of the factors examined were gender, design, and development of internet addiction, pinging, thinking, empowerment, motivational enhancement therapy, refusal self-efficacy, Locus of control, parenting style, self-concept among others. Researchers have further developed investigating techniques that could be used on internet addiction and social media. For example, Ojo, Falaye and Adeyemi (2016) examined motivational enhancement therapy on the internet addiction of some Nigerian youths. Also, Animasahun (2015) examined the effect of social media on the academic performance of Nigerian youths. Due to the points above, there is need for the use of these two therapeutic interventions on smartphone addiction as there is a paucity of literature on the effect of

self-management therapy and creative problem-solving techniques on smartphone addiction. Hence, the choice of this study, aims to examine the effects of self-management therapy and creative problem-solving techniques on smartphone addiction among Colleges of Education students in Oyo State, Nigeria.

Self-management therapy was developed by Rehm (1977) and has been described as the wellful and intentional mechanisms by which humans may alter their own behaviour, resist temptation, change their moods, and act in ways to achieve personal goals; it is the process of overriding natural, habitual, or learned responses by altering behaviour, thoughts, or emotions (Baumeister and Vohs, 2003). Self-management involves several internal and external interactions including goals, plans, intentions, self-monitoring and self-evaluation, feedback, and corrective behaviour (Baumeister and Vohs, 2003). Metcalfe and Mischel (1999), defined self-management as the ability to inhibit impulsive responses that undo one's commitment; a commitment being akin to a goal or long-term objective. This definition is preferred to as it makes specific contrast between the immediate and long term, thus recognizing time as a key component of self-management (Fujita, Trope, Liberman and Levin-Sagi, 2006).

Self-management, more often called self-control, includes the existence of two or more response alternatives; different consequences for the alternatives; and, usually, the maintenance of self-management actions by longer-term external consequences (Thoresen and Mahoney, 2014). Similarly, self-management involves the regulation of behaviours, thoughts, and emotions, as well as modifying or inhibiting socially undesirable tendencies (Kanfer and Gaclick, 2011). It is a voluntary, conscious, effortful, and self-generated attempt to engage initially low probability behaviour rather than one that is more immediately reinforcing. Self-management tends to refer to both unconscious and conscious processes (Vohs and Baumeister, 2004).

Self-management is important skill to make less painful several emotional and behavioural problems and to motivate perseverance and achievement (Mezo, 2009). Previous research (Finkenauer, Engels and Baumeister, 2005) has found self-management is associated positively with positive affect and negatively with locus of control, anxiety, and negative affect. There have been several researches on the efficacy of self-management therapy. Muraven, Tice and Baumeister (1998) have reported self-management therapy as effective on reducing smartphone addiction. Muraven, Tice and Baumeister (1998) also investigated the effectiveness of self-management therapy in reducing smartphone addiction among adolescents. The results of the research done by Fawareh and Jusoh (2017) are also consistent on the functionality of self-management therapy.

Creativity is defined as the tendency to generate or recognize ideas, alternatives, or possibilities that may be useful in solving problems, communicating with others, and entertaining ourselves and others. One of the techniques of creativity is creative problem-solving technique. Also, Animasahun (2002) defined creativity as conscious cognitive processes stimulated by problematic situation, guided by interest and resulting in the generation of statistically infrequent, unique unique, valuable and appropriate ideas, useful in turning challenges of life into beneficial and profitable outcomes. Creative problem solving was developed by Alex Osborn and presented officially in 1957. Creative problem solving (CPS) is the association between problem solving process and creative thinking (Lin et' al, 2016). Many researchers used creative problem-solving technique for developing creative thinking or other abilities (Lin et' al, 2016). As a result, creative problem-solving process has been improved many times and adapted to various educational contexts. Creative problem-solving technique process that was modified by Isaksen, Dorval, and Treffinger and was tested in many research studies which focused on developing creative thinking, improving problem solving abilities, or reducing student's addiction toward smartphone (Chen, 2016).

The latest creative problem-solving process consisted of four main steps and eight minor steps which were (1) *understanding the challenge*: constructing opportunities, exploring data, and framing problems (2) *generating ideas* (3) *preparing for action*: developing solutions and building acceptance and (4) *planning one's approach*: appraising tasks and designing process (Treffinger, Isaksen and Dorval, 2003). However,

creative problem-solving skills are required for achieving exceptional performance in most addiction (internet and smartphone addiction). The term problem simply refers to any discrepancy between the current situation and a desired future situation. So, finding a way to exploit an opportunity is a form of problem-solving just as coping with a crisis is. Moreover, any opportunity to improve work processes or products fits that definition of a problem. Creative thinking is not just for certain jobs, like writing advertising copy or designing entertaining training programmes. Creativity can help all to progress from one 's current situation to a desired future situation.

### **Statement of the Problem**

Smartphone addiction poses significant challenges to individuals' mental health, relationships and overall well-being. To promote healthier smartphone habits and a balanced digital lifestyle, it is important to recognize the prevalence and impact of smartphone addiction. By implementing prevention and management strategies, individuals can regain control of their smartphone use and develop a healthier relationship with technology. The recent incidence of smartphone addiction among student teachers is alarming, leading to social disaster, psychological dependence, despair, separation, lowered self-confidence, nomophobia (fear of not having a cellphone), social harassment and death. This increase in smartphone addiction has consequently led to an increase in the number of students suffering from stiffness and muscle pain, computer vision syndrome, dry eyes and irritation, pain and weakness in the thumbs and wrists. There has also been a rise in smartphone addiction among students with mental health issues such as depression and generalized anxiety disorder.

Smartphone addiction has emerged as a pervasive societal concern, altering the dynamics of human power and manpower across various spheres of life. The ubiquity of smartphones has facilitated unprecedented connectivity, yet the compulsive use of these devices has engendered a series of adverse consequences that extend beyond personal well-being to impact broader aspects of manpower. One of the primary ways smartphone addictions affects human power is through the erosion of attention spans. Constant notifications, social media updates, and the allure of instant gratification create a fragmented cognitive landscape. As individuals succumb to the addictive pull of their devices, the ability to concentrate on tasks diminishes, hindering overall productivity. The consequence is a decline in academic performance and a potential erosion of the skills needed for a competitive workforce. The long-term impact on manpower becomes evident as a generation accustomed to constant digital stimuli enters the workforce with compromised critical thinking and problem-solving abilities. It is of utmost importance to know that the smartphone addiction of college students is having an impact not only on the students but on society as a whole. Impacts on Nigerian society include, but are not limited to, an increase in the dependent population, insecurity, hooliganism and rising unemployment. Therefore, based on the severity of the dangers of smartphone addiction for Nigerian youth and society at large, this study therefore, investigated the effect of self-management therapy and creative problem-solving technique on smartphone addiction among public colleges of education students in Oyo State.

### **Purpose of the Study**

The main purpose of this study is to investigate the effect of self-management therapy and creative problem-solving techniques on smartphone addiction among public college of education students in Oyo State. Specifically, this study investigated the main effects of:

1. Self-management therapy on smartphone addiction of public college of education students in Oyo State.
2. Discover the level and direction of difference among the three groups examined on smartphone addiction of public college of education students in Oyo State.



## METHODOLOGY

### Design

A Pretest-Posttest, control group, quasi-experimental design with a 3 x 2 x 3 factorial matrix. The factorial matrix consists of two treatment groups (Self-Management Therapy and Creative Problem Solving Technique) and a control group. Following that, the treatment groups (Self-Management Therapy and Creative Problem Solving Technique) were taken through therapeutic sessions because they have an impact on this research work. The group serving as a control was given a talk on effective study habits, which had nothing connected with the intervention techniques being measured in this study. All three groups were then subjected to a final post-test.

### Population

The population is comprised of all public colleges of education students in Oyo State (Federal College of Education (Special), Emmanuel Alayande and Oyo State College of Education who are smartphone-addicted.

### Sample and Sampling Technique

The multi-stage sampling procedure was used to select the participants for the study. The first stage involved the total enumeration of the three Colleges of Education in Oyo State. The three colleges of education enumerated were Emmanuel Alayande College of Education, Federal College of Education Special Oyo and College of Education, Lanlate) Oyo State, Nigeria. In the second stage, the students were screened with Kim, Cho, and Yang (2013) smartphone addiction scale and those who scored a threshold of 30 and above were selected. In the third stage, the three colleges of education selected were randomly assigned to treatment: self-management therapy (31), creative problem-solving (29) and control groups (29).

### Instrumentation

#### Smart Phone addiction Scale

Smartphone addiction was measured by the 20-item structured questionnaire adapted from the Smartphone Addiction Scale-Short Version (SAS-SV) as developed by Kwon *et al.* (2013). The SAS-SV measures participants' answers on a 6-scale level with one showing lesser agreement and six showing higher agreement. The scoring is done on a range of 10 to 60. Hence, the closer an individual's score is to 60, the higher the risk of addiction and vice versa. The cut-off point for determining addiction was not suggested in the original study that validated the SAS-SV, These cut-off points were adapted for this study. The Internal consistency of the SAS-SV was validated by Cronbach's Alpha which gave a score of 0.85.

#### Self-Management Therapy

Self-Management Therapy (SMT) is a therapeutic approach that empowers individuals to take an active role in their well-being by developing skills to manage their thoughts, emotions, and behaviours. Rooted in cognitive-behavioral principles, SMT encourages individuals to identify and challenge negative patterns, set realistic goals, and cultivate effective coping strategies. The therapy emphasizes self-awareness, self-regulation, and goal-setting, fostering a sense of autonomy and personal responsibility.

Clients undergoing SMT learn to recognize triggers, assess their emotional responses, and implement adaptive strategies to navigate challenges. This approach is particularly beneficial for individuals dealing

with stress, anxiety, or chronic health conditions. By enhancing self-efficacy and resilience, SMT equips individuals with tools to navigate life’s complexities, promoting long-term psychological well-being. Ultimately, Self-Management Therapy empowers individuals to become proactive architects of their mental and emotional health.

### Creative Problem-Solving Technique

Creative problem-solving is a dynamic approach that encourages innovative thinking to address challenges. It involves generating unique ideas and exploring unconventional solutions. One technique often employed is brainstorming, where individuals freely express ideas without judgment. Divergent thinking, a key aspect, encourages the exploration of various perspectives to uncover unexpected solutions. Another method is lateral thinking, popularized by Edward de Bono, which emphasizes approaching problems from different angles to discover unconventional answers.

Moreover, the SCAMPER technique prompts individuals to Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, or Reverse aspects of a problem to stimulate inventive ideas. Incorporating visual aids, mind mapping, and analogies also fosters creativity. Ultimately, creative problem-solving transcends traditional methods, fostering an environment where imagination flourishes, and diverse viewpoints converge to yield inventive and effective solutions.

### Procedure

A letter of introduction was collected and research assistants were trained to assist the researcher in the field. The researcher visited the selected Colleges of Education to obtain permission for the students’ participation in the study after informing the administrators the purpose of the research work and what they stood to gain from it. Also, the study was carried out in phases: pre-sessional activities, pre-test, treatment and post-test. At the pre-session, activities include the screening, recruitment and assignment of participants to the two experimental groups and control group. A preliminary meeting was organized for familiarization and soliciting the students interest to participate in the study.

Also, after administering the screening instrument to all the Colleges of Educations students in experimental group, students with high smartphone addiction were selected. The researcher held an average of 60 minutes (one hour) training session for each of the experimental groups for 10 weeks while the control group was engaged with other academic information. However, the three groups were administered with the same pre-test and post-test instrument.

### METHOD OF DATA ANALYSIS

Descriptive statistics (percentage distribution, mean and standard deviation) and Analysis of Covariance (ANCOVA) was the major statistical tools that were employed in this study. ANCOVA was used to test the hypotheses on the main and interaction effects of treatments at 0.05 level of significance.

### RESULTS

**Hypothesis One:** There is no significant main effect of treatment on smartphone addiction among college of education students in Oyo state

Table 1: Summary of 3x2x3 Analysis of Covariance (ANCOVA) of treatments on Reduction of Smartphone Addiction among College of Education Students

Tests of Between-Subjects Effects						
Dependent Variable: Post Smartphone Addiction						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	16223.716 <sup>a</sup>	18	901.318	9.738	.000	.715

Intercept	5482.267	1	5482.267	59.233	.000	.458
Pre_Smartphone_Addiction	3.640	1	3.640	.039	.843	.001
Treatment	5487.921	2	2743.960	29.647	.000	.459
Locus of Control	30.737	1	30.737	.332	.566	.005
Self-Esteem	122.845	2	61.422	.664	.518	.019
Treatment*Locus Of Control	55.057	2	27.529	.297	.744	.008
Treatment*Self Esteem	815.554	4	203.889	2.203	.077	.112
Locus Of Control*Self Esteem	527.300	2	263.650	2.849	.065	.075
Treatment*Locus Of Control*Self Esteem	656.240	4	164.060	1.773	.144	.092
Error	6478.756	70	92.554			
Total	185976.000	89				
Corrected Total	22702.472	88				
a. R Squared = .715 (Adjusted R Squared = .641)						

Table 1 revealed that there was a significant main effect of treatment on smartphone addiction among college of education students in Oyo State;  $F_{(2, 70)} = 29.647, p < 0.05, \eta^2 = .459$ . Hence the null hypothesis was not accepted. Therefore, it can be said that the treatment had a significant effect on smartphone addiction. This implies that there is a significant difference in smartphone addiction of students based on the treatment group they belong. The effect size ( $\eta^2 = .459$ ) shows that the treatment group explained a 45.9% variance in smartphone addiction

This contrasts with the pre-test difference among the three groups which was not significant as expected. Relying on the result, the mean difference of the participants exposed to either of the two psychotherapies had better reduction than those that were not exposed to any treatment (i.e., control group). This suggests that hypothesis one which proposed no significant mean group difference is invalid and stand rejected. This indicates that alternative hypothesis will rather be valid. Therefore, self-management therapy and creative problem solving technique were efficacious in reducing smartphone addiction among college of education students in Oyo state. Accordingly, there is significant main effect of treatments in reducing smartphone addiction among college of education students in Oyo state, Nigeria.

**Hypothesis Two:** What is the level and direction of difference among the three groups examined on smartphone addiction of public college of education students in Oyo State?

Table 2: Bonferroni Pair-wise comparison showing the differences among various treatment groups and control group

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig. b
Self-Management Therapy (Mean = 28.811)	Control	-24.977*	3.339	.000
	Creative Problem Solving	-21.085*	3.448	.000

Creative Problem Solving (Mean = 49.896)	Control	-3.892	2.932	.566
	Self-Management Therapy	21.085*	3.448	.000
Control (Mean = 53.788)	Self-Management Therapy	24.977*	3.339	.000
	Creative Problem Solving	3.892	2.932	.566

From Table 2, the following observations were made:

- i. The mean scores of experimental groups (creative problem solving technique and Self-management therapy) were statistically different in reducing smartphone addiction among college of education students in Oyo State. Self-management therapy (SMT) had the lowest mean score of 28.811, while Creative problem-solving technique (CPST) had a mean score of 49.896 and the Control group (mean = 53.788).
- ii. A Significant difference was observed between the mean of participants who received SMT (28.811) and participants in the control group (53.788). This result also indicates that participants in CPST outperformed their counterparts in the control group in terms of reducing smartphone addiction among college of education students in Oyo State.
- iii. Similarly, a significant difference was noticed in the mean score of participants who received CPST (49.896) and the control group (53.788). According to this result, CPST led to better in smartphone addiction among college of education students in Oyo State when compared with participants that did not receive any psychological treatment. By implication, Self-management therapy is more potent in reducing smartphone addiction than creative problem-solving techniques.

## DISCUSSION OF FINDINGS

According to the first hypothesis, there is no significant main effect of treatment on smartphone addiction among college of education students in Oyo state. The results revealed that there was the significant main effect of self-management therapy on smartphone addiction among college of education students in Oyo state. The finding also enjoyed the support of McDaniel and Coyne (2016) who investigated students exposed to self-management therapy workshops in New York High School. They reported a decrease in smartphone addiction scores after the training session and again at eight weeks after the completion of the training session programmes.

Similarly, many empirical evidences corroborated the findings of this study, with some revealing a significant decrease in college student’s smartphone addiction following participation in an intervention of self-management therapy (Wang et al, 2015) and participation in the self-management therapy training programme (Wang et al, 2015) reported a significant decrease in smartphone addiction. From all indication self-management therapy appears to provide students the skills to deal with the issues of addiction especially smartphone addiction. However, self-management involves several internal and external interactions including goals, plans, intentions, self-monitoring and self-evaluation, feedback and corrective behaviour.

Self-management therapy is effective on reducing smartphone addiction and has been found to be strong tools of reducing smartphone addiction among emerging adults (Shaw and Gant, 2002).

According to the second hypothesis, there is no significant main effect of treatment on smartphone addiction among college of education students in Oyo state. The results revealed that there was significant main effect of creative problem solving techniques on smartphone addiction among college of education students in

Oyo state. The finding is in line with the work of Bourbeau, Collet and Schwartzman (2006) who found that creative problem solving technique to be effective on reduce the smartphone addiction with longitudinal data available to demonstrate the effectiveness of this programme. In the same vein, series of empirical studies also found that emerging adults that participated in the creative problem solving technique, when compared to control emerging adults, had more decreased in smartphone addiction, improved communication with their peer in colleges, improved or maintained a high level of interactions with their friends in the long term, exhibited lower levels of negative communication, reported a significant decreased in smartphone addiction (Elhai, Levine, Dvorak and Hall, 2019; Elphinston and Noller, 2018). It can be plausible to affirm that self-management therapy appears to be very effective in a short while above creative problem solving technique. However, provides an insight that creative problem solving technique gain more effectiveness on the long run rather than on a short run.

## CONTRIBUTION TO KNOWLEDGE

The findings of this study have contributed to knowledge in the following ways;

1. This study has added to the existing literature on the effectiveness of self-management therapies and creative problem-solving techniques in the reduction of smartphone addiction among college of education students.
2. The literature reviewed in this study as well as the training sessions used in executing this study has given a better understanding of self-management therapies and creative problem-solving techniques.

## RECOMMENDATIONS

The following recommendations are given based on the findings of this study.

1. The effectiveness of self-management therapies and creative problem-solving techniques should be incorporated into both the colleges of education counseling sessions and the process of meeting the rule and regulation requirements of the colleges of education through indoctrination, as these therapies will help reduce the likelihood of smartphone addiction.
2. An orientation programme for students of colleges of education is especially suggested for unfavourable smartphone use. Self-management therapy and creative counselling strategies should be incorporated into the orientation programme, which should be overseen by college education counsellors.
3. Counselling psychologists should be aware of the issues confronting educational institutions, especially in today's more complicated society. Parents, religious leaders, and community elders should step up their efforts to educate colleges of education about the issues of smartphone addiction and the negative consequences that come with it.
4. The colleges of education management should make it a duty to organize seminars or workshop for all colleges of education students with the view of adopting some of the rudiments of the self-management therapies and creative problem-solving techniques to ensure the continuous positive survival of smartphone among users.
5. Colleges of education are encouraged to recognise the smartphone's uniqueness and to use it positively for academic purposes.

## SUGGESTIONS FOR FURTHER RESEARCH

This study found that creative problem solving technique, self-management therapy; locus of control, self-esteem had significant effects on smartphone addiction among college of education students in Oyo state, it

is suggested that the study be replicated in colleges of education in other states of Nigeria.

A non-experimental design could also be adopted where multiple variables would be used in modelling smartphone addiction among college of education students.

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