UNDERSTANDING THE RELATIONSHIP BETWEEN SELF REGULATION AND SMART PHONE ADDICTION AMONG UNDERGRADUATES OF THE UNIVERSITY OF LAGOS, NIGERIA

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Abstract

The study examined self-regulation of smart phone addiction among undergraduate students in the University of Lagos. The study involved a cross sectional survey of 248 undergraduates, 132 females and 116 male students. A paper and pencil self-report questionnaire which included questions on participants’ demographics and two standardized psychological instruments namely Self-Regulation Questionnaire developed by Kanfer (1970) and the Smart Phone Addiction Scale (SPAS) by Young and Leung, (2008) was used to gather data. The result established a statistically significant relationship between self-regulation and smart phone addiction ($r=0.265$, $p=0.000$, $p<0.01$, 2 tailed). The finding also showed that there was no statistically significant difference between female and male students to smart phone addiction $t(246) = -0.647$, $P>0.05$; this implies that neither the male or female respondents reported a higher level smart phone addiction. The study concluded that self-regulation influences addiction to smart phones among undergraduate students.

Introduction

The rapid advancement in technology has created many gadgets, including the smartphone. (Nishad & Rana, 2016). Worldwide, about 472 million smartphones were sold in 2011, making up 31% of mobile phones sales, a rise of 58% from sales in 2010 Silva, (2013). Of the 95% of Americans that own a cell phone, 77% are smartphones. Across the world, 1.85 billion individuals owned smartphones in 2014, this is expected to rise to 2.87 billion in 2020 Cha & Seo, (2018).

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Smartphones are one of the most popular mobile devices with a large number of applications and it is more affordable than other mobile devices, (Nishad & Rana, 2016). Smart phones are carried everywhere: in bed, at the classroom, at the restroom, at work, at restaurants and so on. Also, people often do not turn off their smart phones, do not go out without them, and use them for business, relaxation, and socializing, Carbonell, Oberst & Beranuy, (2013).

Smartphone usage can lead to addictive behaviour (Wood & Neal, 2007; La Rose & Eastin, 2004). Addiction mostly begins with habits such as playing games, visiting social media or forums (Young, 1999). The relationship between people and their smart phone is much more developed compared to the fixed telephone and other mobile devices (Carbonell, Oberst & Beranuy, 2013). This change has also altered the pattern of smart phone use and left this technology subject to potentially problematic usage. Such problematic usage of smart phones interferes with other activities in daily life, alters interpersonal relationship and may even affect people’s health and happiness (Augner & Hacker, 2012; Ch_oliz, 2012; Leung, 2008). Smartphone addiction results in physical, psychological and academics effects like stress, anxiety, depression and Sleep deficit (De-Sola Gutiérrez et. al., 2016).

Compared to older people, undergraduates rely more heavily on smartphones and are likely to become addicted to smartphones, Smetaniuk, (2014). As young people, undergraduates are digital natives who have grown up in the smart phone age and have integrated this appliance into their lifestyle Haverila, (2013). According to Walsh, White, & Young, (2007), problematic use of smart phones can be categorized into three; (i) dangerous use (for example using a mobile phone while driving), (ii) inappropriate use (for instance using a phone in cinemas or classrooms) and (iii) overuse (for example an individual who is always using his/her smart phone, Walsh, et al., (2007). All three categories are useful indicators that someone is on a trajectory to smartphone addiction Choi, Lee, & Ha, (2012). “Addiction to smartphones can be divided into four components: a) compulsive use: that is, activity like repeated checking of one’s smartphone; b) tolerance: that is, using your smartphone for long periods with intensity; c) withdrawal: feeling agitated or distress without your smartphone; and d) functional impairment: interference with other life activities and face to face social relationships, Lin, Chiang, Lin, Chang, Ko, Lee, & Lin, (2016). All these are very similar to the characteristics of internet addiction Block, (2008).

However, a growing body of research indicates astronomical growth in smartphone addiction, compared to other mobile devices and applications. (Barkley, 2012).
phenomenological research, smartphone addiction has resulted in problematic behaviours such as desperate efforts to connect with others, excessive time spent on smart phones, losing temper, psychological disorders and disruptions in daily work have been reported (Ko, Lee & Kim, 2005). Smartphone addiction is a behavioural addiction different from other addictions such as alcohol or drugs, Everitt and Robbin, (2005). Behavioural addiction is a disorder, where a behaviour (only) functions to produce pleasure and to relieve feelings of pain and stress in a person who may fail to control the behaviour, thus, continues to execute the (addictive) behaviour despite significant harmful consequences Everitt & Robbin, (2005).

This study, explored the influence of self-regulation on smart phone addiction among undergraduates. According to Gökçearslan, (2016), self-regulation is simply the ability to focus on predetermined goals, without being distracted. Self-regulation also refers to “self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals” Zimmerman, (2000).

Karoly, (1993) described self-regulation as a number of processes ‘internal and/or transactional, that help people guide their goal-directed actions, over a period of time and across changing situations (contexts). An intention, a goal, or desire cannot be functional or give little direction, unless people consciously self-direct their behaviour and their actions, (La Rose and Eastin, 2004; Bandura, 1991). The process of self-regulation can be summarized as how individuals monitor their own behaviour, judge it in relation to personal and social standards, and apply self-reactive incentives to moderate their behaviour Bandura, (1991). Self-regulation has an indirect effect on smart phone use and smart phone addiction” (Diehl, Siemegon, & Schwarzer, 2005).

There is a link between cyber loafing and self-regulation. Cyber loafing has been defined as voluntary acts of employees’ using their company’s internet access during office hours to surf non-work related web sites, for personal purposes Lim, (2002). Although there is a difference between cyber loafing at work and cyber loafing in school, both activities are analogous, in that, both activities constitute non-productive use of time during work, Baturay & Toker, (2015). When students use internet for personal purposes during classes, they are not focusing their efforts and attention on learning and this is like employees not focusing their energies on work ”Baturay & Toker, (2015). A number of studies on cyber loafing among students have been carried out, (Akbulut, Dursun, Deonmez, & Sahin, 2016; Baturay & Toker 2015 Yılmaz., 2015). Lacking self-regulation has been identified as an important determinant of cyber loafing (Prasad, Lim, & Chen, 2010; Yellowees & Marks, 2007). Research by Wagner, Barnes, Lim, & Ferris
Understanding the Relationship between Self Regulation and Smart Phone Addiction

(2012) found that a high level of self-regulation is a significant variable in resisting cyber loafing in most individuals. Deborah and Robert (2011) in a survey of College Students use of mobile devices among 269 college students from 21 academic majors at a small northeastern university in Norway, found that 95% of the students bring their phones to class every day, 92% use their phones to send a text message during lectures, and 10% admitted even sending text messages, during an exam on at least one occasion.

Self-regulation works through psychological sub-functions that must be developed; otherwise, self-directed change is uncertain, (La Rose and Eastin, 2004; Bandura, 1991). An intention, goal, or desire is not very functional or give little direction if people cannot self-direct their behaviour, their actions are then controlled by impulses (Bandura, 1991; La Rose and Eastin, 2004). “Studies have proven that self-regulatory skills, enable students to maintain good societal standards and solve other social issues in the society (Pape, 2005). Self-regulation includes the following characteristics Self-Monitoring, Attention and observation of your own performances. Without self-monitoring, influencing motivation or actions is not adequate. Successful self-regulation partly lies in self-monitoring, if it is precise self-monitoring is influenced by self-belief and the cognitive structure of a person, which means how actions are perceived (Bandura, 1991).

The present study is also interested in sex as a predictor of smartphone addiction (problematic use) among undergraduate students. Studies have been conducted on self-regulation, smart phones addiction and other related factors like sex that, influence addiction to smartphone use, by different researchers, Sohn, Rees, Wildridge, Kalk & Carter, (2019). In a study on the Prevalence of Problematic Smartphone Usage (PSU) and associated mental health outcomes amongst children and young people (CYP), using a systematic review and meta-analysis among 41,871, 55% were females. They found that PSU was reported in approximately one in every four CYP and accompanied by an increased predisposition to poorer mental health.

Kanthawongs, Jabutay, Upalanala, Kanthawongs, (2016) in their survey of the impact of self-regulation and compulsivity towards smartphone addiction among 157 private universities students in Thailand. Analysis of data with multiple regression showed that self-regulation had no significant influence on smartphone addiction Yang, Asbury, & Griffiths, (2018), examined problematic smartphone usage (PSU) among 475 university Students in China: using a paper-based survey during class breaks. They concluded that PSU predicted academic procrastination and academic anxiety. It was also found that, self-regulation predicted PSU, academic anxiety, academic procrastination and life satisfaction. A study by Sahin & Gokcearslan, (2015) on smart phone usage, self-
regulation, general self-efficacy and cyber loafing among 614 undergraduates (71% of the participants were females and 29% of them were male). In a university in Ankara, Turkey. Using an accidental sampling method, they found that, both the duration of smartphone usage and cyber loafing positively affected smartphone addiction. The influence of self-regulation on smartphone addiction was negative and significant. In addition, neither general self-efficacy nor self-regulation had an influence on cyber loafing.

Chen, Liu, Ding, Ying, Wang & Wen, (2017), carried out a cross sectional survey, of medical college students on gender differences and factors associated with smartphone addiction, using 1441 undergraduate students of Wannan Medical College, China. Participant’s demographics, and usage of smartphone was elicited by the Smart Addiction Scale short version (SAS-SV). Multivariate logistic regression models was used for analysis, they found a prevalence of 29.8% (males 30.3% and females 29.3%) addiction to smartphone among the participants.

Sarwar & Soomro, (2013) studied the relationships between, age, gender, phenotype and smartphone addiction among Younger and older German adolescents in south-west, Germany. 342; (176 boys and 165 girls) younger German adolescents, and 208 older adolescents (146 girls and 62 boys) participated in the study. Two measures of smartphone addiction; the Smartphone Addiction Proneness Scale (SAPS) and the Smartphone Addiction Scale (SAS) was applied to both samples. The most remarkable result of this study was that, gender is an important predictor for smartphone addiction and girls are more prone to becoming addicted. In another study by Morahan-Martin & Schumacher (2000), to determine the influence of gender, grade level, internet use and place of residence on problematic mobile phone use, feelings of shyness and loneliness among university students. Problematic Mobile Phone Usage Scale, (UCLA), Loneliness Scale and Shyness Scale were used. Male student’s use of smartphones was more problematic than female students. Frangos, Frangos, and Kiohos (2010) found that males are more likely to become smartphone addicts due to gambling, playing games, and watching porn.

Statement of the problem
There is a phenomenal increase in smartphone use by young people, due to features ranging from camera and video recording, to music playing, internet access, which may result in undergraduates and young adults having an ever-increasing repertoire of use (Pew Research Centre, 2015). Worldwide, the reliance on smartphones by many individuals has been on the rise, since the turn of this century, Kwon (2013). As estimated the use of smartphones, in the world is expected to raise from 1.85 billion people in 2014

The predicted rise in smartphone usage worldwide, comes with the probability of an increase in the number of individuals who may become addicted to their smartphones. According to Smetaniuk, (2014), undergraduate students, are more likely to make heavy use of smartphones, because of the smart options and hence, are potentially vulnerable to smart phone addiction. Hawi and Samaha, (2016). Many studies have focused on smart phone addiction among students in universities (Aljomaa, 2016; Hawi & Samaha, 2016; Gökçearslan, 2016). A few of the studies, examined the influence self-regulation on smartphone addiction. Most of the earlier studies, suggested that self-regulation controls smartphone addiction (Asbury, & Griffiths, 2018; Gokcearslan, 2015; Kanthawongs, Jabutay, Upalanalan & Kanthawongs, 2016; Muraven and Baumeister, 2000). Studies suggest that the Internet addiction, fear of missing out, and self-control predicted smart phone addiction (Chotpitayasunondh & Douglas, 2016).

Although smartphone use, results in increased productivity, enhanced social connection, and dynamic ways of working, and living, but studies suggest that people overuse their phones in ways that interfere with their daily lives (Cazzulino, et al., 2016; Cheever, Rosen, Carrier & Chavez, 2014) and physical health-related problems such as blurred vision and pain in the wrists or neck (Min, et al., (2013). Smartphone overuse may lead to mental or behavioural problems, such as changes in attitude towards school or work, reduction of social interaction in real life, and psychological disorders, Kuss, Griffiths, Karila & Billieux (2013).

In Nigeria, penetration of smart phones has remained on the upward swing, with about 94% penetration. Data from Africa InfoTech Consulting (AIC) showed that smart phone penetration has increased, gaining about 30% penetration, with features phones having a 70% penetration. Also, Statista, a Portal for data, estimated that, in 2016, the number of new users of mobile phones in Nigeria grew
by 15.5 million. (Africa Infotech Consulting (AIC), 2016). In the 2015 profiling of countries for Smartphone usage by eMarketer, Nigeria was ranked 17th with 23.1 million Smartphones in 2015, a figure projected to increase to 34 million in 2018. Although, studies have be carried out to assess the influence smart phone usage and addiction around the world (Cazzulino, et al., 2016; Cheever, Rosen, Carrie & Chavez, 2014; Min, et al., (2013; Kuss, Griffiths, Karila & Billieux, 2013). Few studies, have been done in the area of self-regulation and its influence on smartphone addition (Gokcearslan, 2015; Kanthawongs, Jabutay, Upalanala, Kanthawongs, 2016; Asbury, & Griffiths, 2018; Muraven & Baumeister, 2000). There is a dearth of studies in this area in Nigeria. Also, the present study would consider differences in sex as a predictor of addition to smart phones among undergraduates hence, this study

**Method**

**Research Design:** The research design for the present study is a cross sectional survey design. This will allow the establishment of the relationship between the independent (self-regulation and sex difference) and dependent variables (smart phone addiction). Also, none of the variables were actively manipulated.

**Participants:** The sample for the study was two hundred and forty eight (248) students drawn from a population of university of Lagos undergraduates using an accidental sampling method. The sample included 132 females and 116 male students.

**Research Instrument:** A paper and pencil self-report questionnaire, which included questions on demographic information of participants and two standardized Psychological instruments namely self – Regulation Questionnaire developed by Kanfer (1970) and evaluation by Miller and Brown (1998). It is a 31 item scale that was used to elicit information about participant’s self-regulatory skills such as motivation, self-efficacy, task value, goal-orientation and cognitive strategies. The motivational scale consists of 9 self-efficacy items (example, I can control what I do.), 6 items for task value (example, I know the right thing to do for myself.). Goal-orientation sub scale consists of 7 items (example, I look for solution when I have something to do.). The strategic scale consists of 9 items for cognitive self-regulation strategy (example, I learn from my mistakes.), and the use of meta-cognitive strategy (example, I learn from my mistakes.). The scores for, items 2, 3, 4, 6, 7, 9, 10, 11, 16, 19, 22, 23, 27 and 31 are reversed when scoring. Responses to each of the 31 items are rated using a 5-point Likert scale framed
as: 1 = strongly disagree, 2 = Disagree, 3 = Uncertain or Unsure, 4 = Agree, 5 = Strongly Agree.

The Smart Phone Addiction Scale (SPAS) developed by Young and Leung, (2008), is a 19 item scale sub-divided into five quadrants namely: Disregard of harmful consequences (5 items), Preoccupation (5 items), Inability to control craving (4 items), Productivity loss (3 items) and Feeling anxious and lost (2 items) respectively. In this scale, responses to the 19 items are rated using a 5-point Likert scale framed as 1 = not true at all; 2 = not true; 3 = ordinary; 4 = true; 5 = extremely true. Questions 4, 5, 9, 10, 12, 16, 18 and 19 are reversed when scoring. The validity of Smart Phone Addiction Scale (SPAS) have high face validity, because items were selected specifically to represent the constructs of interest. The indices for the scales are Disregard of harmful consequences .67, Preoccupation .86, Inability to control craving .87, Productivity loss .83 and Feeling anxious and lost .91 . While the reliability of Smart Phone Addiction Scale (SPAS) according to Young and Leung (2008) estimates (using Cronbach's alpha) are Disregard of harmful consequences .88, Preoccupation .82, Inability to control craving .82, Productivity loss .86 and Feeling anxious and lost .79 respectively.

Procedure
The researchers first provided adequate information concerning the study objectives to participants before seeking the consent of the respondents. Thereafter, the questionnaires were handed over to them. The questionnaires were administered to the students in their various departments and retrieved immediately after completion. A total of 300 questionnaires were distributed, 270 were retrieved, but 248 questionnaires were found to have been properly completed and then used for data analyses for the present study.

Guiding Statement of Hypotheses:
1. Self-regulation will significantly influence smart phone addiction among undergraduates.
2. Female students will report a significantly higher level of Smartphone addiction than their male counterparts.

Results
The stated hypotheses were tested using Pearson product moment correlation statistics and T-test for Independent Sample.
Table 1: Showing descriptive statistics of the relationship between self-regulation and smart phone addiction among undergraduates (n=250).

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Regulation</td>
<td>102.80</td>
<td>10.50</td>
<td>247</td>
</tr>
<tr>
<td>Smartphone Addiction</td>
<td>53.56</td>
<td>13.65</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 1 above shows the mean of Self-Regulation score as 102.80 and standard Deviation as 10.50. While the mean of Smartphone Addiction score as 53.56 and Standard Deviation as 13.65.

**Hypothesis 1:** Self-regulation will significantly influence smart phone addiction among undergraduates. States that. This hypothesis was tested by means of Pearson product moment correlation. The result of the analysis is presented in table 2.

Table 2: Summary of the correlation between self-regulation and smartphone addiction

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Regulation</td>
<td>1</td>
<td>s</td>
<td>247</td>
</tr>
<tr>
<td>Smartphone Addiction</td>
<td>.265**</td>
<td>N</td>
<td>245</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2 tailed)**

The result indicates that there was a statistically significant relationship between self-regulation and smart phone addiction at 0.01 level of significance (r=0.265, p=0.000, p<0.01, 2 tailed).

Therefore, hypothesis, which stated that “Self-regulation will significantly influence Smart phone addiction among undergraduates.” was accepted.

The second hypothesis states that “Female students will report a significantly higher level of Smartphone addiction than their male counterparts.” The hypothesis was tested by means of the t-test for independent Samples. The result of the analysis is presented in the Table 3 below
Table 3: Summary of t-test comparison of smart phone addiction between male and female.

<table>
<thead>
<tr>
<th>Sex</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p&gt;0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone</td>
<td>Male</td>
<td>116</td>
<td>52.96</td>
<td>13.2</td>
<td>-0.647</td>
<td>246</td>
</tr>
<tr>
<td>addiction (SPAS)</td>
<td>Female</td>
<td>132</td>
<td>54.09</td>
<td>14.03</td>
<td>0.55</td>
<td></td>
</tr>
</tbody>
</table>

The table shows that the mean of male respondents with smart phone addiction (M=52.96, SD 13.2) score was lower than the mean of female respondents with smart phone addiction (M=54.09, SD=14.03) but the score was not significant at 0.05 level of significance t(246) = -0.647, P>0.05; this implies that neither the male or female respondents reported a higher level smart phone addiction. Therefore, the hypothesis, that stated that “Female students will report a significantly higher level of Smartphone addiction than their male counterparts, was rejected.

Discussion

The present study examined self-regulation and smart phone addiction among undergraduates of university of Lagos with the aim of examining the influence of Self-regulation on smart phone addiction among undergraduates. The study, also assessed the influence of sex on smart phone addiction. The study found interesting outcomes. The result of this study shows that self-regulation had an influence on smart phone addiction among undergraduate students. The result is in consonant with that of Sahin & Gokcearslan, (2015), who found that self-regulation had a negative influence on smart phone addiction. The present study is also in harmony with Kanthawongs, Jabutay, and Upalanala & Kanthawongs, (2016) who found a significant influence of self regulation on smartphone addiction. The present finding, also agrees with the study by Yang, Asbury, & Griffiths, (2018,) that self-regulation was a predictor of problematic smartphone use. The result was also in agreement with that of Muraven & Baumeister, (2000) who found that self-control like self-regulation had a negative relationship between perceived organizational justice and cyber loafing among employees with high level of self-control.

The present study also found that female and male undergraduates had a similar level of smart phone addiction. The result of the present study is in consonant with Chen, et al., (2017), who found a prevalence rate of 29.3% of smart phone addiction in medical students in a Chinese university but no significant difference in the percentage of male
and female students addicted to the use of their smartphones. The result of this study is not in harmony with Sarwar & Soomro, (2013), who found that females are more prone to mobile phone addiction that their male colleagues. The finding of both studies, may have been compromised by the difference in the participants both studies sampled. The present study used university students while the earlier study had adolescence as participants. The result of this study was not in consonant with that of Morahan-Martin & Schumacher (2000) who found that male students had a higher level of problematic mobile phone use than their female counterparts. The difference in the result of this study and theirs, may be due to the difference in the years the studies were carried out; the previous study was carried out two decades ago, while the present study was conducted in the present year. The findings of Moreso, Frangos, Frangos, and Kiohos (2010) were not also in agreement with the finding of the present study. While the present study found no difference between male and female students addiction to their smartphones, Moreso, et al., (2010) found that, male students had a higher level of smart phone addiction than female students. The difference in the finding of both studies might be due to the 10 years difference between this study and the previous study.

**Conclusion**

This study assessed self-regulation and smart phone addiction among undergraduates in university of Lagos. The study demonstrated that, self-regulation has an influence on Smartphone addiction, among undergraduates of the University of Lagos. The study also concluded that there is no difference in the level of smartphone addiction between male and female undergraduates. In conclusion, the study reveals that, self regulation can control undergraduates from being addicted to their smartphones.

**Recommendation**

The findings of the present study has elicited some practical implications and recommendation. More understanding of the factors that contribute to student’s use of their smartphones, will go a long way in controlling them from becoming addicted to their Smartphones. Although this study found no difference in the level of smartphone addiction between male and female undergraduates, more studies should be carried out to confirm this finding to enhance its generalization of previous findings that sex has an influence of smartphone addiction.
Reference


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