Internet and the Smartphone: Really Generate Addiction to the Students? A Theoretical Reflection

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Abstract

Nowadays, communications have innovated with the emergence of the internet and mobile telephony (smartphone). Undoubtedly, this technological innovation has favored every sector of the worldwide population, thanks to the various forms of interaction in communication. Therefore, the aim of this essay focuses on the analysis of the literature about constructs of the internet and Smartphone addiction, and how this symptom has become present in the user population. For this purpose, a review of the literature on the subject is carried out, which allows us to identify some aspects that relate to both constructs. In the final reflections from the analyzed literature, we observe that some elements that most influence internet addiction are: leisure, online games, random games, cybersex, social networks to interact with other people, and sometimes to search for information. About this, it has already been reported in several studies, however, a question arises, has little been seen or at least it was not located, that the use of the internet is being the preferred channel of people to their academic training?, or just forced by the global health contingency? Today, the worldwide activity will no longer be the same after the COVID-19 pandemic that we are suffering from, and it is possible that the teaching-learning processes will frequently be taught through the different electronic media, hence this technology is emerging to be an agent of change in education worldwide.

Keywords: addiction, internet, mobile phone, smartphone.

1. Introduction

The purpose of this essay focuses on the theoretical debate about Internet addiction (IA) and with it, the addiction to excessive use of mobile phones, known as Smartphones (AS). Therefore, these two constructs are analyzed in order to identify some aspects that relate them, since internet connectivity is the gateway to the different applications that are installed on the Smartphone, among which are the social networks to name a few of them, and is one of the applications where some attachment is generated that ultimately detonates in addiction.

That is why the Internet and Smartphone binomial have been configured into a tool for communication. We must consider that today several applications (apps) are being designed for all kinds of uses, ranging from social networks, internet sales or electronic commerce in which companies have adopted this type of service, to name a few of the uses of these technologies.

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On the construct of internet addiction, one of the main referents in this field is Dr. Kimberly Young who founded the Center for Internet Addiction in 1995 (The Center for Internet Addiction Recovery) and professor at St. Bonaventure University. Her studies on the new disorder that was emerging in relation to the addiction that was presented by the excessive use of the Internet caught the attention of the scientific community giving way to the development of studies on the subject in question.

Recently García-Santillán (García-Santillán, 2020) conducted a study in which he sought to measure the level of Internet addiction in high school students in a public institution. A total of 203 students between 14 and 18 years of age were evaluated. For this purpose, the instrument used was the Internet Addiction Test by Young (Young, 1997), with which a data matrix was obtained, which was evaluated for internal consistency, resulting optimal in theoretical terms, and then the data were analyzed by means of an exploratory factor analysis with component extraction.

The findings reported by García-Santillán (García-Santillán, 2020) gave evidence of the non-existence of some level of IA, in addition the analysis yielded a structure of six factors, different from what Young (Young, 1997) had originally proposed, although other studies had already reported similar behavior with the obtaining of six factors (Widyanto, McMurran, 2004). A similar case is the study by Navarro, García-Santillán and Molchanova (Navarro et al., 2020), who carried out a study involving 463 university students from different career and semester profiles in Sonora, Mexico. The results show a factorial structure of four factors with a very acceptable variance (50.35 %). They also identified in most cases, that the level of internet addiction is in a range of mild to moderate, with no gender difference.

In another study García-Santillán, Mexicano-Fernández and Molchanova (García-Santillán et al., 2021) reported a factorial structure of six components that explained 63 % of the total variance that coincides with the proposal of Young (Young, 1998), however the indicators are integrated differently in each factor. The level of Internet addiction that they identified is not within the normal range, i.e. the highest percentage is mild, which does not generate an alert that should be given immediate attention and also reported not having found a difference in relation to gender.

While internet addiction may be constituted as one of the disorders that is becoming present in the population, then it could be thought that the excessive use of smartphones goes hand in hand in this type of addiction, since it is precisely the internet, the conduit through which contact with other people has been established, either through social networks, emails, and any type of platforms that allow communication between people. This idea can be placed in a construct that explains that the excessive use of smartphones is derived from the ease that gives the internet connectivity for the user to interact with people. About the addiction to the smartphone, studies have been reported that have suggested that it is necessary that its use is moderate, and not fall into excess. While it is true that it is a fundamental communication tool for people's lives, it is clear that its use should be regulated. Cerit, Bilgin and Ak (Cerit et al., 2018) point out that proper use, brings an increase in productivity, which will be an element of motivation. There are even those who do not turn off their phone when they sleep, and get annoyed if they are asked to turn it off, they already show excessive codependence towards their smartphone.

The use of the smartphone has been used in the educational field, although this has been on a smaller scale, since students often check their phone inside the classroom, but for purposes other than academic, they do it to be consulting their social networks *WhatsApp, Instagram, Twitter* among others (Alkhunzain, 2019). When connecting to social platforms, it necessarily has to be through internet connectivity, then the technological relationship that exists between the internet and the Smartphone leads them to be constituted as a binomial that goes hand in hand.

However, several studies have analyzed it separately, i.e., internet addiction has been referred to in the seminal studies of Young (Young, 1997; 1998) from the field of psychology and in the clinical field as a disorder. Currently addictions are not limited to the uncontrollable use of substances; there are also behavioral habits that tend to interfere significantly in the daily lives of those affected. These urges are often accompanied by loss of control (Shah et al., 2014).

It is from these considerations that it is interesting to make a brief theoretical discussion on both constructs (IA and AS), to answer some concerns about the way in which both issues come together in something that we could call the addiction to mobile connectivity, which ultimately is summarized in the binomial of the Internet and the smartphone.

2. Discussion and results

State of the art of internet and mobile phone (Smartphone) addiction
About the construct of Internet Addiction

On the construct of Internet addiction, some studies have shown that Internet addiction (IA) occurs more in men than in women, i.e., addiction in men occurs more because they are more interested in online games, gambling, cybersex and sometimes to search for information. On the other hand, addiction in women is more related to certain behaviors such as: sending messages, checking blogs, chatting, updating personal pages and searching for information (Choi et al., 2015; Cooper et al., 2002; Fattore et al., 2014; Ginige, 2017; Goel et al., 2013; Heo et al., 2014; Johansson, Gotestam, 2004; Martins et al., 2019; Mo et al., 2020; Müller et al., 2016).

In the same idea about addiction, some studies have tried to explain the relationship between the level of IA and social anxiety in both men and women, for example the work of Weinstein et al. (Weinstein et al., 2015) whose purpose was to explain the association between IA and social anxiety in two samples composed of 60 women and 60 men, they found that there is a correlation between IA and social anxiety, however they found no differences by gender, similarly they found no preference for some social networks with high level of social anxiety. For their part Chen and Nath (Chen, Nath, 2016) focused on discovering the differences in the properties of IA from a cross-cultural perspective, for this they collected data 488 students from the United States, 453 from Africa and 209 from China, the results indicate that they are totally different according to their culture, economy and technological context.

Gedam et al. (Gedam et al., 2016) carried out a comparative study on IA between 597 medical and dental students, from which the results show a severe level of IA in dental students compared to medical students, in addition, this study reported that women presented greater IA than men among dental students, perhaps due to the existence of more women than men in that institution. Students with IA prefer to use the internet to play games or to browse their social networks, rather than for educational purposes.

There are also countries where access to the internet is limited and this could be a determining variable in the presence of the IA phenomenon. In this regard the work of Chen and Nath, (Chen, Nath, 2016) reported interesting findings in the comparative study they conducted with African, North American and Chinese students, where the IA score stood out in Africa (2.42), compared to the United States (2.28) and China (2.25). Interesting findings emerge from this study, as African university students make use of the Internet to modify their mood, different from the use in the USA and China. Furthermore, these results suggest that IA is not only present in places where internet access is restricted, neither that one should be online for too long, for example in this study 20 % of African university students mentioned that they spent at least two hours online per day as opposed to 42 % of Chinese university students and 40 % of American university students (Chen, Nath, 2016).

In their study Chen and Nath (Chen, Nath, 2016) found that emotional dependence on the internet was the most important indicator when it comes to IA, on the other hand, the problem with time management was the indicator that stood out most in terms of IA in Chinese university students, as they mentioned spending the most time online on a daily basis and showing a low level in terms of multitasking efficiency compared to the other two places, so the loss of control and giving in to desires and impulses before the internet makes sense to get that score. Regarding the American university students, the indicator that stood out the most was psychological and emotional conflicts, they obtained a low level of dependence on the internet for relaxation or mood enhancement purposes, however the use of the internet generates a bad mood despite the social interaction, being defensive and in denial about the IA's behavior.

Connectivity to social networking, online gaming and cybersex

The excessive use of social networks brings addiction; such is the case of the study developed by Muller et al., (Muller et al., 2016), who applied two questionnaires to 9173 adolescents aged 12-19 years. The main findings showed that IA had been generated by the excessive use of social networks and that their use was related to symptoms of psychosocial distress, they also reported that the extroverted personality is associated with the frequency of using the social networking service.

There are countries where a higher percentage of cases of IA has been detected, according to different studies that have provided empirical evidence about it, for example the case of China and South Korea, which according to Ginige (Ginige, 2017) are the most affected countries in terms of IA. Similarly, they refer that although in the United States it is considered a silent epidemic, most of the

research points to IA in activities such as games, gambling, cybersex and social networks, and this occurs more frequently in those children and young people who had parents with low educational level.

On the other hand, the internet is a very functional tool for both children and adolescents, so it is not advisable to prohibit its use. Online games are usually very attractive and addictive, as they are designed for the player to become the character or avatar you want, in the same idea, there are games that allow you to compare mansions, cars, which means having a virtual "second life", which allows people to spend or invest in that second "virtual" life even at the expense of their real life that is in decline.

The use of social networks is one of the activities that are probably more related to AI, applications such as *Facebook, Instagram, WhatsApp, Twitter, My Space,* chats, among others, where endless notifications will appear that will invariably be a distractor in the daily activities either academic, work or family of those who use it, because their life can revolve around receiving and sending messages at every moment, without leaving aside the children and young people who are exposed to strangers and can cause them some harm (Ginige, 2017).

In the study by Panea-Pizarro et al. (Panea-Pizarro et al., 2020), they focused on analyzing whether there was an association between the presence of an eating disorder, IA and *Facebook* addiction in women with an eating disorder by applying a test to 124 Spanish women. The results showed that the use of social networks such as *Facebook* can be associated with body dissatisfaction but not with the eating disorder, although it is associated with excessive time spent online by social networks, so their use leads to a sense of social and emotional support, they feel less lonely and this is positively related when they have an eating disorder.

Another activity that is associated with IA is cybersex, in addition to relating to alcohol, drugs, having more sexual partners, low self-esteem, and having poor interpersonal relationships in real life (Ginige, 2017).

Chia et al. (Chia et al., 2020) associate IA with a high level of individualism, manifested by a greater need for autonomy, achievement and mastery and less need for affiliation in Western countries such as America and Europe than Southeast Asian countries. In addition, Chia et al. (Chia et al., 2020) noted that both adolescents and adults were found to be more attached to online games unlike children; this may be because with it they build an identity and social relationships or also to compensate for some needs that are not satisfied in their real life as Ginige (Ginige, 2017) had pointed out.

Social anxiety, depression and mood

In the work of Yücens and Üzer (Yücens, Üzer 2018) they surveyed 392 medical undergraduates, and their results suggest that addictive internet use may be a way to decrease negative emotions, they also find a relationship between IA with social anxiety and depression, on the other hand, phobic social avoidance is a predictor of IA, finally they point out that impulsivity is not associated with IA. Similar the case of the study of Longstreet et al. (Longstreet et al., 2018) who points out that the positive rewards that are received by being online are the driving force behind AI behavior acting negatively, stressing who makes use of that tool and avoids facing the events of his real life, the internet comes being the facilitator and promoter of an avoidance behavior, where they seek positive experiences, a sense of relief from routine tasks but that most of the time does not come to pass.

In addition, IA was related to loneliness (24 %) and depression (21 %) and positive emotions such as satisfaction and happiness decreased as long as the IA score was high. Another finding is the existence of a gender difference with respect to IA, with men being more likely to experience a decrease in positive emotions than women. Similarly, men and women use technology differently, women are motivated to experience positive emotions when they set out to use the internet and men look for what to entertain themselves when they use it and not necessarily because they feel sad, unlike women when they feel depressed use the internet to shop (Longstreet et al., 2018).

In the same idea Martins et al. (Martins et al., 2019) developed a research with the purpose of determining the prevalence of IA in Portuguese adolescents and assessing how parental control could be related to IA. For this purpose, he had the collaboration of 1916 participants, whose age range was between 15 and 18 years. In the selected sample, 53.3 % of the participants were slightly female, but when it came to IA, it was the men older than 15 years who were found to have IA. This increased when their family structure was also single-parent; they had repeated a grade in school, showed poor well-being, had problems sleeping or slept less than the recommended amount of time. Sixty percent claimed to use the internet before bedtime, 26 % of AIs were less likely to have

any parental control, 28 % were less likely to keep track of the time they spent online, and almost half were unlikely to have restrictions on the content they searched for online. Along the same lines, those teens who used the internet in gatherings such as at mealtimes were twice as likely to be AI and three times as likely to use it in the same environment, regardless of whether there was another family member who also did so.

The study by Ndasaukaa et al. (Ndasaukaa et al., 2019) focused on evaluating the psychometric properties of the IA scale in Urdu language, for this purpose 506 questionnaires were administered to students living near a province in Pakistan. Through exploratory factor analysis, four factors were identified: salience, conflict, tolerance and mood modification; in addition, a correlation was found between IA and duration of internet use; the item with the highest score was: "fear that life without internet will be empty, boring and sad", this may be because it is a feeling that students have in common in relation to the internet.

In China, Li et al. (Li et al., 2019) assess for six months a sample of 1545 Chinese students. In their study, they examined longitudinal associations between depression, anxiety, and IA, considering gender and obesity, the findings point out that over time, anxiety and depression are positively associated with IA; however, obesity was not related to IA; on the other hand, gender seems to be the key to understanding IA, as males showed a higher mean IA score at baseline and also a faster and decreasing rate of change over the six months of study relative to females, unfortunately the study could not explain this situation due to lack of other extraneous variables.

In relation to maternal mediation, adolescents' perception of invasion of privacy, defensive response to this invasion of privacy and IA, Liu (Liu, 2020) examined this behavior for two consecutive years. The findings showed that restrictive mediation by the mother was related to the adolescent's perception of invasion of privacy, which was related to generating defensive responses and this in turn led to greater IA, and there was no difference by gender: The results suggest that parents should respect the adolescent's privacy limits, in addition to adopting mediation strategies that are based on communication in order to be able to regulate the adolescent's behavior on the Internet.

Mo et al. (Mo et al., 2020) conducted a study in which 11 % of the students who participated were classified as AI, the most alarming figure was the age of 13.78 years, which could represent a public health problem, so those students who were classified as AI were more likely to increase the time on the Internet, reducing in turn the time for academic purposes and a decrease in their school aspirations. Participants with IA have low self-esteem and prefer to be online to maintain virtual communication which affects their school performance; social skills and self-esteem, for this study were men were more susceptible to suffer from IA.

Based on a random sample, Chi et al. (Chi et al., 2020) invited a total of 2,059 Chinese students. In their study, they found that those adolescents who did not live with their parents, experienced more family conflicts, less family communication or low academic achievement were more likely to fall into IA, and there was also gender difference, males were more IA than females, suggesting that more attention should be paid to those adolescents who have low school performance as well as improving their family relationship, which would reduce being prone to IA.

Recently studies were conducted in the Mexican context, in the northern region of the Mexican Republic Navarro-Ibarra, García-Santillán and Molchanova (García-Santillán, Molchanova 2020) carried out a study to determine the level of Internet addiction. This study involved 463 university students, who were administered Young's (Young, 1998) IAT test. In their findings they identified a factorial structure of four factors that explain 50.35 % of the variance, also the highest percentage of cases that measure the level of Internet addiction, was in the mild and moderate range. In addition, it was shown that there is no gender difference in addiction.

In the same idea, García-Santillán (García-Santillán, 2020) evaluated the Internet use behavior of high school students to determine if there is an underlying structure of variables that explain the existence of some characteristics of Internet addiction. The study involved 203 students ranging in age from 14 to 18 years old who were administered Young's (Young, 1997) IAT test. The findings showed a large percentage of students who are not in the range of Internet addiction, also identified a structure of six factors, different from the seminal author of the scale and other studies that have reported findings with different number of factors.

There are various positions and findings about internet addiction. What is clear is that the excessive use of this technology has already captured the attention of researchers who have developed a considerable contribution to the field of knowledge, recognizing the great contribution that Dr. Kimberly Young has left us. It is for this reason that the contributions to this field, give us

the guideline to identify in the studied populations the levels of addiction to this phenomenon of the Internet and with it to be able to design prevention strategies. In addition, the internet connection is made from a smartphone, hence the importance of discussing this variable of addiction to the Smartphone.

On the construct of Smartphone addiction

According to Kim et al. (Kim et al., 2014), smartphone addiction is understood as the problematic or excessive and obsessive use of any mobile phone device. In addition to the above Billieux et al. (Billieux et al., 2015) refers that frequent use of Smartphone cannot be defined as a pathological behavior, unless it is accompanied by symptoms that are characterized as addictive disorders.

Demirci et al. (Demirci et al., 2014) conducted a study where they identified that the highest levels of addiction to Smartphone is given in women and with respect to their excessive use, this was more than 16 hours compared to those who only used it 4 hours.

On the other hand, on the topic of Smartphone addiction, Kim et al. (Kim et al., 2014) conducted the design of the Smartphone Addiction Propensity Scale (SAPS) which was applied to 795 students in South Korea. The participants were high school students, 461 males and 324 females. The results revealed that excessive use of digital media devices can have negative social, physical and psychological consequences in the lives of adolescents, as well as lead to delinquent behavior.

In the study of Lopez-Fernandez (Lopez-Fernandez, 2015), adapts the short version of the Smartphone Addiction Scale (SAS-SV) to Spanish and French, the surveys are administered online to 281 and 144 volunteers over 18 years old and from both countries respectively, the results show excessive Smartphone use of 12.5 % for Spaniards and 21.5 % for the Belgians, no differences by gender were found, it was found that the Spanish are those who have more Smartphone and triple the time of use compared to the Belgians, however the Belgians use in an addictive way the Smartphone compared to the Spanish, that is, the Belgians presented abstinence, loss of control and tolerance, while the Spanish presented tolerance, then loss of control and finally abstinence.

There were 448 university students in South Korea who completed the Smartphone Addiction Scale, the results obtained by Choi et al. (Choi et al., 2015) are the risk factors for Smartphone addiction in women such as internet consumption, alcohol consumption and suffering from anxiety symptoms, negatively associated with depression and temperance (involves self-regulation), on the other hand, in men the risk factors were associated with internet addiction and Smartphone addiction with anxiety symptoms, with gaining knowledge, negatively associated with strength-courage (has to do with vitality and courage). The differences may be due to the high availability and use of the smartphone as a tool to maintain interpersonal relationships.

In the same idea, Penjira et al. (Penjira et al., 2016) conducted a study whose purpose focused on investigating the impact of self-regulation (self-control of the individual) and compulsivity (discomfort, distress, anxiety, tension) on smartphone addiction. For the study, 157 Thai university students participated and were surveyed, with 57.3 % being male and the remaining 42.7 % being female. Data analysis was conducted using multiple regression analysis, the resulting conceptual model explained 60.4 % of the variance in Smartphone addiction and only compulsivity is found to be a determinant of Smartphone addiction.

The negative consequences and psychological feelings of not being able to use the smartphone are characteristics of a compulsive behavior, which can affect interpersonal relationships depending on the amount of time spent on the smartphone, according to the findings obtained by Pavia et al. (Pavia et al., 2016) after applying the Smartphone Addiction Inventory (SPAI) to 485 Italian university students. In Ankara, Turkey, the online application of a questionnaire was conducted to analyze the roles of Smartphone use, self-regulation, general self-efficacy and cyberspace in Smartphone addiction, there were 598 university students who answered and the results showed that those students with self-regulation skills will show less addictive behavior to Smartphone, In addition, both the time spent on the Smartphone and cyberloafing (cyberloafing, i.e., wasting time during the student or work day checking social networks, personal messaging, among others) will affect the addiction to the Smartphone (Gökçearslan et al., 2016).

The research by Yehuda et al. (2016) reported that smartphone addiction was highly correlated with internet addiction, due to the easy access and availability of information at the time it is required, which makes it a way to increase their addiction by quickly satisfying their need.

Meanwhile Hawi and Samaha (Hawi, Samaha, 2016) conducted a study at the University of Notre Dame-Louaize, Lebanon, which involved the participation of 293 university students who were tested using the Short Scale of Smartphone Addiction (SAS-SV). In their findings they showed that both males and females were susceptible to being addicted to smartphones, they also identified that those students at high risk of smartphone addiction were less likely to achieve a higher cumulative grade point average or to be awarded a distinction. In addition those students who spend more time on their Smartphone, then participation in group activities and the amount of reading related to academic assignments will be reduced, also it hinders to maintain adequate concentration in their studies (Hawi, Samaha, 2016).

In the work of Kahyaoglu et al. (Kahyaoglu et al., 2016) surveyed 785 students, of which 91.7 % had a Smartphone, similarly they identified that the highest level of addiction in Smartphone use, was in students aged 20 years or younger, the highest scores revealed that addiction affects social life, verbal communication and presents academic difficulties. Similar the work of Elhai et al. (Elhai et al., 2017) who surveyed 308 English-speaking North American participants of Amazon's Mechanical Turk who were at least 18 years old, their aim was to investigate two types of smartphone use: process use involving non-social functions such as news consumption, entertainment, relaxation and social use involving social networking and messaging, in their findings they discovered that the latter was strongly associated with symptoms of anxiety and depression, on the other hand, non-social process use was linked between the severity of anxiety symptoms and Smartphone addiction.

At the University of Bangladesh, Arefin et al. (Arefin et al., 2017) collected 247 questionnaires from Business students, of which 54.25 % were males and 45.75 % were females aged 18-27 years. Out of 35 variables identified in Smartphone addiction, they categorized into five factors which were found from the rotated factor matrix analysis, which are:

1. Disruption of daily life: it is the most important factor with respect to Smartphone addiction for having obtained the highest value, which indicates that the use of the Smartphone is not only a concern of academic performance but also disrupts the physical strength, family relationships, timely presentation in classes and planned work, including variables such as "*my family relationship has decreased*", "*I feel pain in my wrists*", "*the lack of planning hinders my concentration*", "*I feel tired or unable to sleep enough*".

Positive anticipation: variables such as "*feeling pleasant or excited*", "*life would be empty without my Smartphone*", "*I can get rid of stress*".

3. Withdrawal: this section involves abstinence, which includes variables such as "*I feel impatient and restless*", "*I take my Smartphone to the bathroom*", "*I can't stop using my Smartphone*", "*I feel anxious about not being able to receive important calls*", among others.

Cyber friendship: it is composed of variables such as "*the relationship I have with my Smartphone friends is more intimate*", "*I constantly check my Smartphone*", "*I check my social networks*".

5. Increased impatience or tolerance: the main characteristic of this section is that the increased use of the Smartphone generates impatience among students to perform their usual activities, as they consume more of their valuable time, it includes variables such as "*I feel the need to use my Smartphone*", "*I have always thought that I should shorten the time I use the Smartphone*", "*I spend my breaks thinking, just give me a few more minutes to keep using it*".

This study showed that the regular academic performance of students will be hindered by the excessive use of the Smartphone, as they use it more than they plan, it is also an obstacle to their family relationship, since their need to use it is so great that they take it to the bathroom, even at school at recess time they use it when it is supposed to be time to relax or use it late at night. All this can generate tension, pain in wrists or neck, impatience and poor school performance, in addition to the above, research suggests that they should reduce the excessive use of the Smartphone to perform their daily activities without difficulty (Arefin et al., 2017).

In Istanbul Turkey Darcin et al. (Darcin et al., 2017) conduct a study in which 367 university students were surveyed in order to determine the relationship between Smartphone addiction, social phobia and loneliness. The results showed that 95 % had an account in one of the social networks, in addition, social phobia as Smartphone addiction was related, because younger people use it excessively to access their social networks compared to those who only used it to surf the internet or phone calls. Another aspect highlighted by Darcin et al. (Darcin et al., 2017) is that people with social anxiety preferred to use their Smartphone for texting while people with feelings

of loneliness preferred to surf the internet or play games, this feeling of loneliness was correlated with a high risk to Smartphone addiction in most of the study sample, having that feeling of loneliness can be associated with social anxiety, which in turn generates the excessive use of Smartphone to avoid face-to-face communication. More than half of the respondents refer that they use Smartphone during classes or meetings, also that they use it at night in their bed, which showed a risk behavior in sleep behavior, also 65 % of the students mentioned that they use it while walking and 12% reported that they use it while driving (Darcin et al., 2017).

It was 324 nursing undergraduates in Seoul, Korea who participated in the research conducted by Lee et al. (Lee et al., 2018), the results pointed out that the level of Smartphone addiction showed a lower range than other college students, which means that they exercise self-control to achieve long-term academic results. It was also shown that cyberspace-oriented relationships and social support are positively correlated with nursing undergraduates, which implies that Smartphone strengthens family ties, facilitates proximity of callers and enhances their interpersonal networks through social networking. In addition its use is also for academic issues where they consult websites to obtain specialized and advanced knowledge, so probably benefits are obtained to develop effective teaching methods where Smartphones are incorporated to increase the motivation of university students.

In the same idea Cerit, Bilgin, and Ak (Cerit et al., 2018) conduct a study in a the Faculty of Health, University of Turkey, where they applied 214 questionnaires, of which 172 were women and 42 were men. In their findings they reported to have identified low levels for Smartphone addiction, likewise they point out that in case of increasing the use of Smartphone, this would create an addiction which would probably cause to decrease the communication skills of nursing college students. These findings seem to be in line with many studies (Choi et al., 2015; Darcin et al., 2017; Demirci et al., 2014; Gökçearslan et al., 2016; Kahyaoglu et al., 2016; Lee et al., 2018; Yehuda et al., 2016 and others).

It is clear that the excessive use of mobile phones must be addressed in the different contexts where a population vulnerable to this phenomenon is located, since with the implementation of strategies according to each need, this damage could be reversed if it exists, or in its case, as a preventive measure. For example we can cite what refers Alkhunzain (Alkhunzain, 2019), who points out that college students consume more than eight hours on their Smartphone, that is, its use is becoming more and more frequent, since apparently it is becoming an essential element for daily life therefore its addiction is common. In a study where 174 Saudi university students participated, aged between 19 and 23,99 males and 75 females, Alkhunzain (Alkhunzain, 2019) shows the findings obtained where women were the ones who spend more time in using Smartphone on a daily basis, he also found that for learning purposes, its use is reduced. Alkhunzain's (Alkhunzain, 2019) findings point out that Saudi students are addicted to Smartphone as they do not turn it off even if they sleep, they get stressed or upset if they are asked to put it aside for a moment or for a certain time, they become anxious about their battery level, 80 % of their addiction is not due to academic reasons, it was identified that they constantly check their Smartphone, the applications they use the most are *WhatsApp, Twitter* and Sports, in addition, 81 % of respondents use it to browse their social networks.

On this topic, some more recent studies and according to the time in which this essay is developed, Smartphone addiction has been analyzed by Saad (2020) who develops a study in four schools, where 68 students were selected to explore the combined effects of self-regulated learning and academic procrastination regarding Smartphone addiction, in his findings he concludes that those students who use the Smartphone in excess, it is very rare the time that they can achieve high academic performance with what they can delay the completion of the assigned tasks, so training students in strategies to self-regulate learning effectively, will be fundamental and beneficial for them.

On Smartphone addiction García-Santillán and Escalera-Chávez (García-Santillán, Escalera-Chávez, 2020) developed a study with the purpose of determining the level of addiction to the use of mobile phones and whether this differs by gender. For their study they used the SAS-CV scale (Smartphone addiction scale - short version) designed by Kwon, Kim, Cho and Yang (Kwon et al., 2013), which consists of ten items with a Likert response format. Unlike some previous studies (Alkhunzain, 2019; Hawi,Samaha, 2016; Kahyaoglu et al., 2016), high levels of addiction were not found, although this does not mean that they are exempt from it, on the contrary 43 % presented medium levels of addiction, which without being alarming the data, if it may require preventive attention so that it does not escalate to a bad. In relation to the difference by gender, they reported

the existence of a gender difference in item 1, which refers to the fact that due to the use of smartphones, students do not plan their work.

Smartphone addiction may be associated with personality aspects, probably due to the feeling of wanting to be seen and be connected with people, even studies have been reported that have shown a higher prevalence in women (Beranuy et al., 2009; Chóliz et al., 2009; Takao et al., 2009) which has brought severe negative consequences of Smartphone abuse.

Finally, in the Mexican context, García-Santillán and Espinosa-Ramos (García-Santillán, Espinosa-Ramos, 2021) conducted a study, in which, by way of preamble, they justified the need to carry it out because of the global health crisis caused by COVID-19, and although their study does not analyze the pandemic crisis as such, it does raise the concern to know what is happening with students and above all, what is the use they are giving to the mobile phone (Smartphone). For their study they had the participation of 184 high school students from a public sector institution in the Port of Veracruz, Mexico. In their findings they identified three components: physiological, dependence and distraction and also showed that there are no differences by gender.

3. Conclusion

At the end of this essay we can reflect on these two variables: the Internet and the Smartphone or smartphone. Both variables are related, since we could say that one is connectivity and the other is the tool to connect. In addition, the entire population has already adopted it beyond being a simple fashion, as a tool for work, status, permanent communication with family, friends, service providers, as payment platforms for some services, to be connected with the whole world if it were the case, just to mention some of its uses and attributes.

It is clear that today the use of the Internet has become not a fashion, but a necessity for the daily work in any activity that develops the human being, from the simple domestic use, to the academic, business and all kinds without overlooking any activity that could not have been mentioned, in short, in everything is present the need to use this technology.

In a tour on the use of this technology, we could even start inside the home, that is, from its domestic use in which all members of the family parents, children and other members that make up the nuclear family, each of them in one way or another use connectivity for different functions or activities. But let's look at a specific population, and this is precisely the children, these little ones who come revolutionized or with a new "chip", since the ease with which they learn to use the internet and use it for their social networks, for children's games and other material according to their age, also becomes a red alert for parents, since cyberspace offers information that is not suitable for minors and if they are not supervised, they could run unnecessary dangers. That is why the care of these minors by parents should not be an optional function, but rather of strict observance.

The internet can be one of the technologies that have come to revolutionize the world, but it can also be a tool that generates disorders in its users, hence the topic discussed in this essay. When we talk about disorders, we refer specifically to the addiction that the internet generates. In addition, the internet is the key factor or element we could say, since it is through this technology that connectivity allows us to enter social networks and all kinds of platforms that are normally used with smartphones, called Smartphone. This communication technology has become a necessity for the population to be permanently connected and this has brought with it the phenomenon of addiction to the Smartphone, hence the importance in this essay to analyze and discuss both constructs.

Something very important that can be identified in the review of the specialized literature, is that its use is considered as a fundamental part of life and will continue to increase in the future, therefore it is vital that it is used effectively to avoid becoming addictive, on the other hand, the Smartphone is used as a communication tool and will provide positive results as long as it is used in a regulated manner. Appropriate use increases productivity and motivation, decreases stress, provides access to online knowledge sources and supports receiving information in clinical practices with access to pathophysiology forms and diseases as suggested by Cerit, Bilgin, Ak (Cerit et al., 2018). Recall that the mobile phone is used for various tasks or applications, the problem would be when the learner's life is influenced by the use of the phone.

References

Alkhunzain, 2019 – *Alkhunzain, A.* (2019). An Empirical study on smartphone addiction of the university students. *International Journal of Interactive Mobile Technologies (iJIM)*. 13: 184. DOI: 10.3991/ijim.v13i12.11120

Arefin et al., 2017 – *Arefin, S., Islam, R. y Mustafi, M., Afrin, S., Islam, N.* (2017). Impact of Smartphone addiction on academic performance of business students: a case study. *Independent Journal of Management & Production*. 8(3): 955-975.

Beranuy et al., 2009 – *Beranuy, M., Chamarro, A., Graner, C., Carbonell, X.* (2009). Validación de dos escalas breves para evaluar la adicción a Internet y el abuso de móvil. *Psicothema*. 21: 480-485.

Billieux et al., 2015 – *Billieux, J., Maurage, P., Lopez-Fernandez, O., Kuss, D.J., Griffiths, M.D.* (2015). Can disordered mobile phone use be considered a behavioral addiction? An update on current evidence and a comprehensive model for future research. *Current Addiction Reports*. 2:156e162. DOI: http://dx.doi.org/10.1007/s40429-015-0054-y

Cerit et al., 2018 – *Cerit, B., Bilgin, N., Ak, B.* (2018). Relationship between smartphone addiction of nursing department students and their communication skills. *Contemporary Nurse*. 54: 532-542. DOI: 10.1080/10376178.2018.1448291

Chen, Nath, 2016 – *Chen, L., Nath, R.* (2016). Understanding the Underlying Factors of Internet Addiction across Cultures: A Comparison Study. *Electronic Commerce Research & Applications*. 17: 38-48. DOI: https://doi.org/10.1016/j.elerap.2016.02.003

Chi et al., 2020 – *Chi, X., Hong, X., Chen, X.* (2020).Profiles and Sociodemographic Correlates of Internet Addiction in Early Adolescents in Southern China. *Addictive Behaviors*.106385. DOI: 10.1016/j.addbeh.2020.106385

Chia et al., 2020 – Chia, D.X.Y., Ng, C.W.L.,Kandasami, G.,Seow, M.Y.L.,Choo, C.C., Chew, P.K.H., Lee, C., Zhang, M.W.B. (2020). Prevalence of Internet Addiction and Gaming Disorders in Southeast Asia: A Meta-Analysis. *Int. J. Environ. Res. Public Health*.17: 2582.

Choi et al., 2015 – *Choi, S.W., Kim, D.J., Choi, J.S., Ahn, H., Choi, E.J., Song, W.Y., Kim, S., Youn, H.* (2015). Comparison of risk and protective factors associated with smartphone addiction and internet addiction. *Journal of Behavioral Addictions*. 4(4): 308-314. DOI: 10.1556/2006.4.2015.043

Choi et al., 2015a– *Choi, S.W., Kim, D.J., Choi, J.S., Ahn, H., Choi, E.J., Song, W.Y., Kim, S., Youn, H.* (2015). Comparison of risk and protective factors associated with smartphone addiction and internet addiction. *Journal of Behavioral Addictions*. 4(4): 308-314. DOI: 10.1556/2006.4. 2015.043

Chóliz et al., 2009 – *Chóliz, M., Villanueva, V., Chóliz, M.C.* (2009). Ellas, ellos y su móvil: Uso, abuso (¿y dependencia?) del te-léfono móvil en la adolescencia. *Revista Española de Drogodependencias*. 34: 74-88.

Cooper et al., 2002 – *Cooper, A., Morahan-Martin, J., Mathy, R.M., Maheu, M.* (2002). Toward an increased understanding of user demographics in online sexual activities. *Journal of Sex and Marital Therapy*. 28(2): 105-129.

Darcin et al., 2017 – *Darcin, A.E., Kose, S., Noyan, C.O., Nurmedov, S., Yılmaz, O., Dilbaz, N.* (2017). Smartphone addiction and its relationship with social anxiety and loneliness. *Behaviour and Information Technology*. 35(7): 520-525. DOI: 10.1080/0144929x.2016.1158319

Demirci et al., 2014 – *Demirci, K., Orhan, H., Demirdas, A., Akpinar, A., Sert, H.* (2014). Validity and reliability of the Turkish version of the Smartphone Addiction Scale in younger population. *Bulletin of Clinical Psychopharmacology*. 24(3): 226-34. DOI: 10.5455/bcp.201407 10040824

Elhai et al., 2017 – *Elhai, J.D., Levine, J.C., Dvorak, R.D., Hall, B.J.* (2017). Non-social features of smartphone use are most related to depression, anxiety and problematic smartphone use. *Computers in Human Behavior*. 69: 75-82. DOI: https://doi.org/10.1016/j.chb.2016.12.023

Fattore et al., 2014 – *Fattore, L., Melis, M., Fadda, P., Fratta, W.* (2014). Sex differences in addictive disorders. *Frontiers in Neuroendocrinology*. 35(3): 272-284.

García-Santillán et al., 2021 – *García-Santillán, A., Mexicano-Fernández, E., Molchanova, V.S.* (2021). Internet Addiction scale: a parametric study through the EFA and Polychoric Correlation Matrices. *European Journal of Contemporary Education*. 10(2): 338-358. DOI: 10.13187/ejced. 2021.2.338

García-Santillán, 2020 – *García-Santillán, A.* (2020). Addiction toward internet: empirical evidence in high school students: A parametric analysis. *Journal of Psychological and Educational Research*. 28(1): 97-124.

García-Santillán, Escalera-Chávez, 2020 – *García-Santillán, A., Escalera-Chávez, M.A.* (2020). Adicción hacia el teléfono móvil en estudiantes de nivel medio superior. ¿Cómoes el comportamientoporgénero? [Addiction toward smartphone on high school students: How is the behavior by gender?]. *Acta de Investigación Psicológica*. 10(3): 54-65. DOI: https://doi.org/10.22201/fpsi.20074719e.2020.3.358

García-Santillán, Espinosa-Ramos, 2021 – *García-Santillán A., Espinosa-Ramos, E.* (2021). Addiction to the smartphone in high school students: How it's in daily life? *Contemporary Educational Technology*.13 (2): 1-14. Article No: ep296. DOI: https://doi.org/10.30935/cedtech/9609

Gedam et al., 2016 – *Gedam, S.R., Shivji, I.A.,Goyal, A., Modi, L., Ghosh, S.* (2016). Comparison of internet addiction, pattern and psychopathology between medical and dental students. *Asian J. Psychiatr*. 22: 105-110. DOI: 10.1016/j.ajp.2016.06.007

Ginige, 2017 – *Ginige, P.* (2017). Internet addiction disorder.Child and adolescent mental health. *In Tech Open*. 141-163. DOI: 10.5772/66966

Goel et al., 2013 – *Goel, D., Subramanyam, A., Kamath, R.* (2013). A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. *Indian Journal of Psychiatry*. 55(2): 140-143.

Gökçearslan et al., 2016 – *Gökçearslan, Ş., Mumcu, F.K., Haşlaman, T., Çevik, Y.D.* (2016). Modelling smartphone addiction: The role of smartphone usage, self-regulation, general self-efficacy and cyberloafing in university students. *Computers in Human Behavior*. 63: 639-649.

Hawi, Samaha, 2016 – *Hawi, N., Samaha, M.* (2016). To excel or not to excel: Strong evidence on the adverse effect of smartphone addiction on academic performance. *Computers & Education*. 98: 81-89.

Heo et al., 2014 – *Heo, J.H., Oh, J.W., Subramanian, S.V., Kim, Y., Kawachi, I.* (2014). Addictive internet use among Korean adolescents: A national survey. *PLoS One*.9(2):e87819.

Johansson, Gotestam, 2004 – *Johansson, A., Gotestam, K.G.* (2004). Internet addiction: Characteristics of a questionnaire and prevalence in Norwegian youth (12–18 years). *Scandinavian Journal of Psychology*. 45(3): 223-229.

Kahyaoglu et al., 2016 – *Kahyaoglu, S.H., Kurt, S., Uzal, O., Ozdilek, S.* (2016). Effects of smartphone addiction level on social and educational life in health sciences students. *Euras J Fam Med*. 5(1): 13-9.

Kim et al., 2014 – *Kim, D., Lee, Y., Lee, J., Nam, J.K., Chung, Y.* (2014). Development of Korean smart phone addiction proneness scale for youth. *PloS one*. 9(5): e97920. DOI: https://doi.org/10.1371/journal.pone.0097920

Lee et al., 2018 – *Lee, S., Kim, H.J., Choi, H.G., Yoo, Y.S.* (2018). Smartphone addiction and interpersonal competence of nursing students. *Iranian journal of public health*. 47(3): 342-349.

Li et al., 2019 – *Li, G., Hou, G., Yang, D., Jian, H., Wang, W.* (2019). Relationship between anxiety, depression, sex, obesity, and internet addiction in Chinese adolescents: A short-term longitudinal study. *Addictive Behaviors*. 90: 421-427. DOI: 10.1016/j.addbeh.2018.12.009

Liu, 2020 – *Liu, Y.L.* (2020). Maternal mediation as an act of privacy invasion: The association with internet addiction. *Computers in Human Behavior*. 106474. DOI: 10.1016/j.chb. 2020.106474

Longstreet et al., 2018 – *Longstreet, P., Brooks, S., Gonzalez, E.S.* (2018). Internet addiction: When the positive emotions are not so positive. *Technology in Society*. DOI: 10.1016/j.techsoc. 2018.12.004

Lopez-Fernandez, 2015 – *Lopez-Fernandez, O.* (2015). Short version of the smartphone addiction scale adapted to Spanish and French: Towards a cross-cultural research in problematic mobile phone use. *Addictive Behaviors*. DOI: 10.1016/j.addbeh.2015.11.013

Martins et al., 2019 – *Martins, M.V., Formiga, A., Santos, C., Sousa, D., Resende, C., Campos, R., Nogueira, N., Carvalho, P., Ferreira, S.* (2019). Adolescent internet addiction e role of parental control and adolescent behaviours. *International Journal of Pediatrics and Adolescent Medicine*. DOI: https://doi.org/10.1016/j.ijpam.2019.12.003

Mo et al., 2020 – *Mo, P.K.H., Chan, V.W.Y., Wang, X., Lau, J.T.F.* (2020). Gender difference in the association between internet addiction, self-esteem and academic aspirations among adolescents:

A structural equation modelling. *Computers & Education*. 103921. DOI: 10.1016/j.compedu. 2020.103921

Müller et al., 2016 – *Müller, K.W., Dreier, M., Beutel, M. E., Duven, E., Giralt, S., Wölfling, K.* (2016). A hidden type of internet addiction? Intense and addictive use of social networking sites in adolescents. *Computers in Human Behavior*. 55: 172-177. DOI: 10.1016/j.chb.2015.09.007

Navarro-Ibarra et al., 2020 – *Navarro-Ibarra, L., García-Santillán, A., Molchanova, V.* (2020). Addiction Levels Toward the Internet: Empirical Evidence in College Students at Instituto Tecnológico de Sonora, México. *European Journal of Contemporary Education*. 9(2): 378-393. DOI: 10.13187/ejced.2020.2.378

Ndasaukaa et al., 2019 – *Ndasaukaa, Y., Pitafib, A., Kayangec, G.* (2019). Psychometric properties of Young's Internet Addiction Test (IAT) in Urdu language. *Asian Journal of Psychiatry*. 40: 39-44.

Panea-Pizarro et al., 2020 – *Panea-Pizarro, I., López-Espuela, F., Martos-Sánchez, A., Domínguez-Martín, A.T., Beato-Fernández, L., Moran-García, J.M.* (2020). Internet addiction and Facebook addiction in Spanish women with eating disorders. *Archives of Psychiatric Nursing*. DOI:10.1016/j.apnu.2020.07.023

Pavia et al., 2016 – *Pavia, L., Cavani, P., Di Blasi, M., Giordano, C.* (2016). Smartphone Addiction Inventory (SPAI): Psychometric properties and confirmatory factor analysis. *Computers in Human Behavior*. 63: 170-178.

Penjira et al., 2016 – *Penjira, K., Felicito, F., Ruangrit, R., Penjuree, K.* (2016). An empirical study on the impact of self-regulation and compulsivity towards smartphone addiction of university students. *13th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2016)*.

Saad, 2020 – *Saad, M.* (2020). Self-Regulated Learning and Academic Procrastination as Predictors of Smartphone Addiction among Second Year- Middle School Learning Disabled Students. *Amazonia Investiga*. 9(26): 236-243.

Shah Alam et al., 2014 – *Shah Alam, Syed, Hazrul Nik Hashim, Nik Mohd., Ahmad, Maisarah, Che Wel, Che Aniza, Mohd Nor, Sallehuddin, Asiah Omar, Nor* (2014). Negative and positive impact of internet addiction on young adults: Empirical study in Malaysia. *Intangible Capital*. 10(3): 619-638.

Takao et al., 2009 – *Takao, M., Takahashi, S., Kitamura, M.* (2009). Addictive personality and problematic mobile phone use. *CyberPsychology & Behavior*. 12: 501-507. DOI: 10.1089/cpb. 2009.0022

The Center... – The Center for Internet Addiction Recovery [Electronic resource]. URL: http://netaddiction.com/kimberly-young/

Weinstein et al., 2015 – *Weinstein, A., Dorani, D., Elhadif, R., Bukovza, Y., Yarmulnik, A., Dannon, P.* (2015). Internet addiction is associated with social anxiety in young adults. *Annals of Clinical Psychiatry*. 27(1): 4-9.

Widyanto, McMurran, 2004 – *Widyanto, L., McMurran, M.* (2004). The psychometric properties of the Internet addiction test. *Cyberpsychol Behav*. 7: 443-450.

Yehuda et al., 2016 – *Yehuda, L.B., Greenberg, L., Weinstein, A.* (2016). Internet addiction by using the smartphone-relationships between internet addiction, frequency of smartphone use and the state of mind of male and female students. *J Reward Defic Syndr Addict Sci*. 2(1): 22-27. DOI: 10.17756/jrdsas.2016-024

Young, 1997 – *Young, K.S.* (1997). What makes the Internet addictive: Potential explanations for pathological Internet use? Communication presented en el Annual Meeting of the American Psychological Association, Chicago.

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

Yücens, Üzer, 2018 – *Yücens, B., Üzer, A.* (2018). The relationship between internet addiction, social anxiety, impulsivity, self-esteem, and depression in a sample of Turkish undergraduate medical students. *Psychiatry Research*. 267: 313-318. DOI: 10.1016/j.psychres. 2018.06.033