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Incidence of smart phones in the development of brain plasticity in children between the ages of 0 to 6 years, in a context of high vulnerability

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SUMMARY
The research project that presents a complete update for a systematic review regarding the use of smartphones. The development of cerebral plasticity in children aged between 0 and 6 years.
This review is composed of three complete categories of content: Intellectual, attitudinal and behavioral, all definitions are made up of a certain number of Skills, which are expressed in the various systematic versions, including gray literature, which will provide the basis and theoretical foundations and practical ones that allow the deduction of new investigations

Keywords: Smartphones, brain plasticity, developmen, behavioral skills

I. Introduction

The Research project presented below essentially points to a systematic review regarding the use of Smartphone in the development of brain plasticity in children aged between 0 and 6 years.
This review will be composed of three main content categories: Intellectual, attitudinal and behavioral, each of which is made up of a specific number of Skills, which will be expressed according to the different systematic reviews, including gray literature, which will give basis and theoretical and practical foundations that would allow the deduction of new research.
Once exposed the review of literature and different studies in relation to the above, objectify that the dependence and misuse of Smartphone in children negatively affect brain neuroplasticity, which ultimately is the product of the above that is expressed in misconduct, low self-esteem, low cognitive level as appropriate to their age and associated skills.
From the results of this quantitative and qualitative (mixed) analysis, we can classify the level of efficient performance of children according to their age.
As there are no meta-analysis studies that would allow us to reflect a more advanced search with a higher degree of evidence, the current one is limited to conducting a systematic review study.
This research process allows to facilitate and elucidate the myths of the parents that the use of the Smartphone in their children "makes them more intellectual."
It is clear that technological development advances day by day, with a greater part of the population accessing these technological means, without measuring the consequences of the neuronal brake that occurs in children under 6 years of age in the use of indiscriminate Smartphone cell phones and discriminately without perceiving the noxa in children, from a socioeconomic context of high vulnerability.

II. Problem formulation

In recent years the entry of these devices to the Chilean market has grown steadily, either at home or at school, generating significant changes in people's behavior, thus changing their lifestyles or attitudes, for this reason it is important to understand and dimension the true effect that this technological movement has generated. Smartphone influences people's lifestyles by changing their pre-established habits, facilitating communication and information in an agile and practical way. In this way, a technological dependence has been created by transforming traditional channels into more diversified communication channels.

A quantitative and qualitative mixed research will be carried out that will help us to have clearer the influence that Smartphone has on users, in a more real and true way.
The misuse of the Smartphone both at home and kindergartens and first level of education in Chile, has helped to stop the cerebral plasticity of children from 0 to 6 years of age, a situation that occurs in highly vulnerable sectors.
The proposal presented in this research project is an evaluation of a formative nature that is aimed at improving the quality of education of young people from a vulnerable social context.
The arrival of smartphones in our daily lives has certainly changed our lives without a doubt has changed our neuronal development.
The brain is not an inert and fixed matter, but it is a true central unit of the human being. It is of great plasticity, neuronal connections are developing every day and brain stimulation triggers the creation of new neuronal circuits.
This stimulation allows the traditional learning process and this has allowed human beings to adapt and evolve. Being the powerful digital tools stimulators, like other elements, participate in the modification of our brain.
For 2018, estimates predict that one third of the world's population will have a smartphone. This represents at least 2.6 million users worldwide. And for many, the mobile phone has become an indispensable everyday object. To communicate, exchange with others, but also to follow the news or even have fun. On average, users spend at least 4.7 hours a day on their smartphones.

III. Theoretical framework

The World Health Organization (1982) defines the term neuroplasticity as the ability of nervous system cells to regenerate anatomically and functionally, after being subject to environmental or developmental pathological influences, including trauma and disease.

Other authors indicate that neuroplasticity is the potential of the nervous system to modify itself to form nerve connections in response to new information, sensory stimulation, development, dysfunction or damage. In general, neuroplasticity is usually associated with learning that takes place in childhood, but its definitions go beyond and have a historical trajectory. There are various biochemical and physiological components behind a neuroplasticity process and this leads to different chemical, genomic and proteomic biomolecular reactions that require intra and extra neuronal actions to generate a neuronal response.

The nervous system has extraordinary properties with dynamic modification capacity, a "never-ending product" resulting from the interaction between genetic and environmental factors. Neuroplasticity comprises all the properties of the brain related to the constant modifications of its structure and is applied to a large number of phenomena such as neurogenesis in adults, the reorganization of cortical maps or synaptic changes associated with memory and habits For a change to be a manifestation of functional plasticity, it must express an active process of readjustment to the requirements of the environment. Turn the Active processes must involve changes in any of these mechanisms: number of synapses, efficacy of synapses and intrinsic neuronal characteristics.
There are cellular and molecular mechanisms of neuroplasticity phenomena, which are organized around growth plasticity: axonal regeneration, collateralization, synaptogenesis, neurogenesis and functional plasticity that indicates changes in the effectiveness of synaptic transmission.

Scientists from the University of Zurich (Switzerland) and Freiburg (Germany), in a study published in the journal Current Biology in December 2014, given the recent obsession with smart phones decided to explore the plasticity of the brain in everyday situations and analyze how the use of the fingers in the handling of cell phones with touch screen molds it, producing greater brain activity.
Each region of the body has a specific area in the emotional center of the brain, where its information is processed, which is flexible and can change.
The researchers studied the activation of the sensory-motor cortex, which is activated with the movement of the fingers. To do this, they performed electroencephalograms that measured the activity of the cortical regions of the brain in 37 right-handed people, 26 of whom were users of Smartphone with touch screen and 11 of cell phones with traditional keyboards.

Thanks to the electroencephalogram they recorded the brain response when smartphone users touched the screen with the thumb, index and middle fingers to be able to then compare it with that of people who continue to use the old mobile traditional keyboards.

The results suggest that repetitive movements on the surface of the touch screens reorganize the sensory processing of the hand, with daily updates of the cerebral representations of the fingertips.
The scientists concluded that the electrical activity in the brain of smartphone users increased by touching the tips of the thumb, index and heart.

They also revealed that the use of touch screens changes the way the thumbs and brain work together and that the amount of brain cortex activity associated with the thumb and the index was directly proportional to the amount of time the smart device The sensory processing of the cortex in our brain is continually remodeled by personal digital technology. The use of Smartphone is the ideal tool to study the daily plasticity of the human brain.
Below we present studies in which reference is made to the beginnings of neuroplasticity, which is associated with behavioral changes and then details studies of which we have systematically reviewed, integrating some concepts such as: neuroplasticity, academic performance associated with the use of the Smartphone.

The first experimental evidence that neuroplasticity depends on the experience from the works of Rosenzweig and Bennet made in the years sixty. These authors observed rats raised in enriched environments and found that they developed a thicker cerebral cortex, with more synaptic contacts and a greater number of both dendrites and dendritic spines.

Erismann and Ivo Kohler conducted an experiment in which they established the association of plasticity and behavioral changes. In subjects exposed to lenses that invert the visual fields (seeing everything upside down), after days of effort and confusion, they manage to function with relative normality both to dress, eat or walk, to ski or ride a bike, and these behavioral changes are matched to transformations in the motor cortex and posterior parietal cortex
Checking phones in lectures can cost students half a grade in exams
Date: July 28, 2018
Source: Taylor & Francis Group
Checking phones at conferences can cost students half a grade on exams Date: July 28, 2018 Source: Taylor & Francis Group

background: Students perform less on end-of-trimester exams if they are allowed access to an electronic device, such as a phone or a tablet, for non-academic conferences, a new study.
Objetive: Researchers at Rutgers University in the US They conducted a class experiment to assess whether dividing attention between electronic devices and the teacher during class affected student performance on tests within the class and an end-of-trimester exam.

Methods: 118 estudiantes de psicología cognitiva de la Universidad de Rutgers participaron en el experimento durante un periodo de su curso. Las computadoras portátiles, teléfonos y tabletas fueron prohibidos en la mitad de las clases y permitidos la otra mitad. Cuando se permitieron los dispositivos, se les pidió a los estudiantes que registraran si los habían utilizado con fines no académicos durante la conferencia.

Conclusion: The study found that having a device did not lower student scores on comprehension tests within the master classes, but the lowest scores on the end-of-trimester exam were at least 5% or half grade. This finding shows for the first time that the main effect of divided attention in the classroom is long-term retention with fewer objectives of a study task recalled below. In addition, when they were allowed to use electronic devices in class, performance was also worse for students who did not use devices, as well as for those who did.

Relationship among smartphone usage, addiction, academic performance and the moderating role of gender: A study of higher education students in India
Author links open overlay panel Jogendra Kumar Nayak
Relationship between smartphone use, addiction, academic performance and gender moderating role: a study of higher education students in India Author links open the Jogendra Kumar Nayak overlay panel

Backgound: Smartphones have penetrated people's lives at a faster rate in recent times in India. They are used for various purposes in addition to speaking and sending messages such as live chat, search for information, mobile

banking and entertainment, etc. Discussions on the smartphone have taken over personal discussions and individual interactions between people. The use has become so high that it has become addiction in many cases.

Objective: In this study, the addiction of smartphones to student academic performance was measured and the effect of gender and the status of relationships on smartphone use and addiction were also verified. The use of smartphones was measured with the help of the amount of time they spent on the phone and the monthly bill.

Methods: A questionnaire was developed and administered to 429 higher education students in India to verify addiction, the effect on performance and use of smartphones, along with the main utilities of a smartphone and the demographic profile of respondents .

Conclusion: The results show that the use is more in the case of women than male students. However, the effect on performance is severe in the case of male students. In addition to behavioral changes, students were found to have hardly any effect on smartphone addiction, unlike male students who were found to neglect work, felt anxious and lost control of themselves. However, the effect on performance is severe in the case of male students.

Cell phone addiction that damages academic performance is "an increasingly realistic possibility" Date: August 28, 2014, source: Baylor University

Background: Female college students spend an average of 10 hours a day on their cell phones, while male college students spend almost eight hours, according to a study on cell phone activity. "As cell phone functions increase, addictions to this seemingly indispensable piece of technology become an increasingly realistic possibility," the researchers said.

Objective: The study notes that approximately 60 percent of college students admit that they may be addicted to their cell phone, and some indicated that they are agitated when not in sight, said Roberts, lead author of the article "The Invisible Addiction: Cellphone Activities and Addiction. " Between male and female university students. ”

Methods: The study, based on an online survey of 164 university students, examined 24 cell phone activities and found that the time spent on 11 of those activities differed significantly between the sexes. Some functions, including Pinterest and Instagram, are significantly associated with mobile phone addiction.

Conclusion: Of the main activities, respondents reported that they spent most of their time sending text messages (an average of 94.6 minutes a day), then sending emails (48.5 minutes), checking Facebook (38.6 minutes), browsing the Internet (34.4 minutes) and listening to your iPods (26.9 minutes).
Men send the same amount of emails but spend less time on each one. "That may suggest that they are sending shorter and more utilitarian messages than their female counterparts," Roberts.

Women spend more time on their cell phones. While that finding is somewhat contrary to the traditional view that men are more committed to technology, "women may be more inclined to use cell phones for social reasons such as text messages or emails to establish relationships and hold conversations. deeper. " Excessive or obsessive cell phone use can also cause conflicts inside and outside the classroom: with teachers, employers and families. And "some people use a cell phone to avoid an awkward situation. They can pretend to answer, send a text message or check their phones," Roberts.

CONCLUSIONS

From the present study and systematic literature review in addition to gray literature texts, they allow us to demonstrate and objectify that the dependence and misuse of Smartphone in children negatively affect brain neuroplasticity, which ultimately is the product of Previous that is expressed in misconduct, low self-esteem, low cognitive level as appropriate to their age and associated skills.
As we also show in our review, we indicate that the excessive use of the Smartphone, have a strong impact on the development of the neuronal plasticity of children from 0 to 6 years of age, where according to studies of neurodeveloping anatomo-physiology they indicate that it is the period where there is the greatest amount of changes in

the shape of the brain turns and grooves which are translated in the final terms in intellectual, attitudinal and behavioral form.

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