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NEUROANTHROPOLOGY, SOCIAL BEHAVIOR AND DIGITAL TECHNOLOGY

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Summary

The constant use of digital technology is modifying the neuronal structure of the brain lobes, mainly the frontal lobe, inhibiting social behavior and modifying the way of relating in society. The method of adaptation of the subjects to their social group are the so-called social skills, a group of behaviors considered correct that allow acceptance in a community. The stimulation of the frontal lobes by a digital component at early ages causes a lesion that inhibits the social behavior of infants, making it difficult for them to relate to their social environment and partially isolating them from it. If the damage produced in the frontal lobe is observed at a population level, a phenomenon of difficult correction is found that modifies the behavior of infants, isolating them from their environment and creating a digital pseudo-specialization in infants, preventing their adaptability to stressful situations or to the modification of their environment. Neuroanthropology approaches this phenomenon to explain behaviors based on modifications in brain structures, thus uniting Physical Anthropology, Neurology and Psychology. The present study seeks to investigate the development of social skills in infants in Greater Caracas, Venezuela, as well as the possible indicators that they present in their development in reading, writing and socioemotional skills, for which psychologists, teachers and representatives were interviewed, an investigation framed within the context of the COVID pandemic of 2020.

Key words: Neuroanthropology. Social Skills. Physical Anthropology. Social Behavior Technology. Digitalization. Social Relationships.

ABSTRACT
The constant use of digital technology is modifying the neuronal structure of the brain lobes, mainly the frontal lobe, inhibiting social behavior and modifying the way we relate to society. The method of adaptation of subjects to their social group are the so-called social skills, a group of behaviors considered correct that allow acceptance in a community. Stimulation of the frontal lobes by a digital component at an early age causes a lesion that inhibits the social behavior of infants, making it difficult for them to relate to their social environment and

partially isolating them from it. If the damage produced in the frontal lobe is observed at a population level, a phenomenon that is difficult to correct is found that modifies the behavior of infants, isolating them from their environment and creating a pseudo digital specialization in infants, preventing their adaptability to stressful situations or to modifying their environment. Neuroanthropology addresses this phenomenon to explain behaviors based on changes in brain structures, thus uniting Physical Anthropology, Neurology and Psychology. The present study seeks to investigate the development of social skills in children from Greater Caracas, Venezuela, as well as the possible indicators that they present in their development in literacy and socio-emotional, for which psychologists, teachers and representatives were interviewed, an investigation framed within from the context of the 2020 COVID pandemic.

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Introduction

How do we relate to each other? How have we survived so long as a species? What makes us unique? The more specialized a species is, the less likely it is to adapt to an environment and, therefore, it is doomed to extinction. Any change in its environment could invariably diminish its numbers until it disappears. In this sense, the taxonomic order to which the human being belongs has been evolutionarily privileged: primates in general do not possess any specialization, although there are particular species that can develop them, which has allowed them to survive sudden changes in their environment, spread throughout the world and colonize every continent; they have adapted to any place and have managed to survive with great expertise. But in more recent times, the adaptation mechanism of our species, culture, specifically technology, has predisposed us to specialization, slowly submitting us to the demanding destiny of extinction.

Most mammals, especially primates, are gregarious animals. They learn to survive in groups and face their environment in the same way. This social environment has allowed them to shape the world to the needs that have arisen over the millennia and even today have helped to create an external environment that satisfies them in multiple ways, limiting their behavior and allowing the species to endure. In the same way it happens with our species, "The social dimension of behavior is one of the most important aspects of human development, since the individual is in essence a social being." (De Tejada, Rios, & Silva, 2008, p. 188). Social life is limited to a number of unspoken rules that vary from one society to another, but are basically governed by a criterion, those who manage to integrate are part of the group and those who do not, perish under the demands of the same; the means of integration into the social environment, this set of unconscious regulations, are known as Social Skills.

The brain is a fundamental part of integration and survival, since "what happens on a cultural scale has repercussions in one way or another on the formation, modification and evolution of the brain" (Ros Velasco, 2013, p. 201). (Ros Velasco, 2013, p. 201)Therefore, it is understood that the brain is formed by cultural experiences and in turn helps to modify its environment, "the environment causes changes in the organism at the same time that the organism causes them in the environment" (Ros Velasco, 2013, p. 201). (Ros Velasco, 2013, p. 202). Under this perspective, any early stimulus could abysmally modify the formation of brain regions, atrophy them or modify their connection, creating important modifications in the behavior of the individual, if this stimulus is standardized, the same behavior could be found at the level of populations.

Taking into account that "The Nervous System is the most cultural organ of the human being, it is immature during the first moments of life and it is highly susceptible to be culturally formed." (Ros Velasco, 2013, p. 201)If it is exposed to an addictive stimulus that, in turn, reacts

in the same brain region as other functions from a very early age, it can be easily molded, leaving aside other functions of the same region. Thus, the continued use of digital technology in infants has been modifying their brain connections, while leaving aside essential functions in a gregarious being such as social skills, "unfortunately it seems that the current obsession with computer technology and video games is atrophying the development of the frontal lobe of many adolescents, from which their social and reasoning skills suffer" (Small & Vorgan, 2009, 2009, Small & Vorgan, 2009, Small & Vorgan, 2009). (Small & Vorgan, 2009, p. 48)If at earlier stages of development the same type of technology is used or over-stimulated with technological devices such as smart phones, tablets, computers, the damage to the nervous system can be greater and its implications on a large scale social level. Since social interactions are a basic pillar in the development of our species, mainly of infants, the damage to the nervous system can be greater and its implications on a large scale. (De Tejada, Rios, & Silva, 2008, p. 188)it is essential to study the stimuli that may affect them.

"The question is whether we are not specializing our brain to perform certain activities and thus configuring a brain structure that grows adapting to these demands without first asking ourselves what are the cognitive costs that the process may entail" (Quiroga Mendez, 2011, p. 149). (Quiroga Mendez, 2011, p. 149).

This so-called neural plasticity allows the brain to adapt to new stimuli, but "the current explosion of digital technology is not only changing the way we live and communicate, but is rapidly and profoundly altering our brains" (Small & Vorgan, 2009, p. 4). (Small & Vorgan, 2009, p. 15)The social damage that this set of technologies can cause, the very dependence of society on them and how they are changing us as a species should be evaluated, since leaving aside our means of socialization can gradually specialize us to the use of technology and thus reduce our ability to adapt to changes in our environment; it is also necessary to investigate "...whether the training of these skills will lead to a new cognitive functioning, and whether the constant repetition of them can cause changes in brain structure due to brain plasticity" (Quiroga Mendez, 2009, p. 15). (Quiroga Mendez, 2011, p. 149).

Neuroanthropology

The term Neuroanthropology was first used in the 1970s by Warren Tenhouten Sociologist in his article: More on split-brain research, culture, and cognition. (More on Split-brain research, culture, and cognition)although due to the refusal of many researchers, it is not until more recent times that it has emerged as a branch of neuroscience and anthropology that investigates the relationship of culture and the brain. (Ros Velasco, 2013). The development and evolution of the brain of H. sapiens has been of great interest throughout history, its structure and functions, but only in recent decades has the interaction of culture with the body been studied; how they relate.

Neuroanthropology emerges as an interdisciplinary branch of Physical Anthropology that unites the knowledge of Anthropology, Neurology and Psychology to explain the relationship between the brain and culture, and how it is reflected in human behavior. To study it, the human brain and its evolution must be addressed. This discipline:

"...attempts to synthesize a series of theoretical, methodological and empirical contributions of the last four decades, about the origin and evolution of mental functions, cognition, language and emotions, emphasizing the relationship of culture and social life with neurological structures." (Mandujano, et al., 2013, p. 508).

The human brain is privileged over the rest of the animals, evolutionarily speaking, because it has participated in an extremely rapid and unique evolution that involves a large number of mutations in a short period of time that were perpetuated and were beneficial to the species, although this fact does not fully explain the progress so advanced that it has had but if interrelation with the culture that has allowed the development of the frontal lobes, but specific sunciones in the same (Mandujano, et al., 2013)..

"Cultural development of became a dominant evolutionary force in the human species. Its inception and development were only possible because of that unique biological endowment." (Mandujano, et al., 2013, p. 512)Therefore, it is necessary to talk about the interaction of culture and brain as shapers of each other; these issues and all those related to human behavior and its regulation are topics addressed by Neuroanthropology, but it is not the only topic addressed in this discipline, because addressing it in isolation is useless because "without either of the two parts, brain or culture, is forgotten, it is complicated to understand how and why one or the other has developed to the current point"..." (Ros Velasco, 2013, p. 202).

Thus, we find ourselves in a novel area, difficult to delimit and to investigate. "The field of study of Neuroanthropology is very broad and it is up to it to address the bases of human activity, including sensations, perception, motor behavior, cognition, language and art, among other elements." (Mandujano, et al., 2013, p. 511)Among these other elements it is important to add social behavior, since man is a social being and his current evolution has been due, in part, to this fact.

It is therefore important to address the formation of the brain and how it has been shaped by culture, according to Ros Velazco (2013): "the formation of the brain requires many non-genetic agents; such as those derived from the interaction with culture (encultured) or with the body (embodiment)" (p. 202).

"Culture not only shapes pre-existing or basic patterns of neural activity, by influencing brain function, culture changes brain structure as well" (Mandujano, et al., 2013, p. 508). The brain and culture are constantly and equally modified, creating a kind of vicious circle, where culture modifies the nervous system and in turn the nervous system molds the cultural world, this phenomenon is known as Brain-saped culture (Ros Velasco, 2013).

Nowadays, human beings are invaded by multiple stimuli that modify them in different ways, especially in the digital environment, as the latter can alter our brain, since "a purely cultural phenomenon is capable of modifying neuronal connections" (Ros Velasco, 2013, p. 203). (Ros Velasco, 2013, p. 203). If we establish that digital technology is present in almost all areas of the life of a human being today, mainly in early ages where it is learned by environmental reinforcements and all activities performed by the infant are learned through trial and error, therefore the nervous system is more alterable; it is not wrong to assume that it can and will modify its functions.

According to Nogués-Pedregal, et al. (2016)"The efficiency in the transmission of electrical signals, the dynamic behavior of specific neuronal circuits, gene expression and protein synthesis in the brain are modulated by learning" (p.30), so it would not be wrong to assume that the same interactions that the infant has in early times would be assumed as such and would modify these structures. "The change that the use of technology is causing is so important that we must seriously assess the impact of this great evolution in development" (Quiroga Mendez, p.30). (Quiroga Mendez, 2011, p. 148)

Addressing another extremely important topic, social behavior. This is controlled by the brain and delimits part of the action and interaction of the individual with his social environment. These two factors are closely related by various components, as the stimulation given by digital technology can inhibit the development of social behavior through social skills. This behavioral variation is a topic to be undertaken within the field of Neuroanthropology, as well as the effect by which it is possible.

To begin to address this relationship between brain and culture, and digital technology and social skills, it is essential to address social skills, the brain neurophysiology that enables them, and how these digital stimuli impact the brain.

Social skills

the term social skills is difficult to define, as it refers to a large set of strategies that are very complex and difficult to delimit. In the literature, multiple general concepts can be found that are correct to a certain extent or are only limited to a partial view of reality, which is why correct and incorrect meanings of the term arise; the social context also has an influence in defining them, since this set of accepted behaviors varies from one society to another.

Therefore, defining and delimiting them is a difficult but necessary task because "Social skills are an essential part of human activity since the course of life is determined, at least partially, by the range of social skills" (Betina Lacuña & Contini de Gonzalez, 2011, p. 160). (Betina Lacuña & Contini de Gonzalez, 2011, p. 160)Social skills are intimately linked to the social life of the individual and his capacity to adapt to a social environment, his response to specific situations and the correct integration into a group; to fully expand on this point, we have to go into different meanings of what social skills are, their common points and limitations.

According to Cabello (2005) cited by Betina and Contini (2011, p. 164)social skills are a set of behaviors that allow the individual to develop in an individual or interpersonal context by expressing feelings, attitudes, desires, opinions or rights in a way that is appropriate to the situation". To be able to express these desires, one must recognize oneself in the other, be able to differentiate emotions, desires and rights of another without the intervention of articulated language, there must also be a given context with a preset code of conduct.

Rubio and Anzano (1998) define it in a simpler way, but it encompasses in a more comprehensive way the social sphere, according to them social skills are: "the ability to execute those learned behaviors that cover our interpersonal communication needs and/or respond to

the demands and requirements of social situations in an effective way" (Betina Lacuña & Contini de Gonzalez, 2011, p. 164). (Betina Lacuña & Contini de Gonzalez, 2011, p. 164).. It can be concluded that for the existence of social skills these must be learned, mostly by imitation and repetition in a social group; there needs to be more than one subject, a society with which to interrelate in order to develop them, the same from where this set of skills is learned; the way to approach or develop them depends on the society where one is immersed, since successful behaviors vary between cultures; and finally, the effectiveness they have to help a subject to address a specific situation. All this is learned in the first years of life.

The definition that is most appropriately articulated with the anthropological component is the one given by Kelly (2002), according to which they are a "set of learned behaviors that individuals employ in interpersonal situations to obtain and maintain reinforcement from the environment" (Betina Lacuña & Contini de Gonzalez, 2011, p. 164). (Betina Lacuña & Contini de Gonzalez, 2011, p. 164).In order to really integrate into the social group you must interrelate properly and be positively reinforced by it, when this happens there is an existence of social skills on the part of the individual adequate to cope with their social environment.

This cultural environment should not be left aside, since "the context in its multiple meanings... is decisively linked to how social skills are learned and practiced" (Betina Lacuña & Contini de Gonzalez, 2011, p. 161). (Betina Lacuña & Contini de Gonzalez, 2011, p. 161). Therefore, the social environment shapes the structure of social skills appropriate for a given group, the influences of our environment allow the inhibition or development of these skills, so that a small digital stimulus can have an invaluable influence on the inhibition of the development of social skills.

The learning component of these is hindered by cognitive variation, "culture and the brain interact constantly." (Ros Velasco, 2013, p. 201) for "socialization occurs in interrelation with cognitive development" (Betina Lacuña & Contini de Gonzalez, 2011, p. 161). Any disruption to cognitive capacity or cognitive development in infants or adolescents can modify the learning of behaviors that allow the individual to integrate into the group. If we delve into the literature, we can see that "different studies indicate that social skills have an impact on self-esteem, role adoption, self-regulation of behavior and academic performance, among other aspects, both in childhood and in adult life" (Betina Lacuña & Continued). (Betina Lacuña & Contini de Gonzalez, 2011, pp. 160, 161).

Today's cultural universe includes a variable that is constantly resizing and affecting our social environment (both positively and negatively): Digital Technology. The digitalization of our environment is palpable, from an early age we are exposed to digital technology in its many forms and is installed in every aspect of life, including social. It has been replaced, unconsciously, the interpersonal relationship of the family environment by a digital component that is delivered to the infant early, something extremely worrying. "Digital technology, in addition to influencing how we think, is changing the way we feel and behave, and the way our brains function." (Small & Vorgan, 2009, p. 16)To understand the reason for this situation, we must delve into the field of neurophysiology, specifically in that region of our nervous system that allows the existence of social skills, cognition and behavior.

Neurophysiology and Social Behavior

To begin the study of behavior, it is essential to approach the brain, to leave aside its study would mean to ignore a part of our world that inevitably shapes our reality because: "Everything we think, do and stop doing happens in our brain. The structure of that fantastic machine determines our possibilities, our limitations and our character: we are our brains" (Swaab, 2014, p. 27).

The brain is one of the organs that form the Central Nervous System, it is located in the encephalon. The Central Nervous System is divided into two segments: the encephalon and the spinal cord; the first of these is divided in turn into three encephalic vesicles which are: Rombo encephalon, Mesencephalon and Prosencephalon. The latter is composed of what is called the neo cerebral cortex, the cerebral hemispheres and the interhemispheric formations (Rouviere & Delmas, 2002). (Rouviere & Delmas, 2005)..

According to the Triune brain theory, it is composed of three major regions with their primary functions: the reptilian brain, the limbic brain, and the rational brain or neo cerebral cortex. The neo cortical brain or neo cerebral cortex is the most developed human brain and the last to appear in an evolutionary approach. (Seijo & Barrios, 2012).

The human brain in its neo cerebral cortex, is divided into two hemispheres, these in turn are made up of four lobes (frontal, parietal, temporal, occipital) interconnected; each of these lobes is divided into regions that together form the incredible biological machine that is the human being. Each of our acts, the way we face the world, the conscious and unconscious actions start from different regions of our Central Nervous System, making it the object of study of human behavior.

We will approach the human brain as one would explore a machine, looking for the function of each component and how they can be modified, as Minsky rightly said "the human brain is basically nothing more than a machine. A complex machine, the product of a long evolution." (Sorman, 1991, p. 136).

And as a structure we will delve into the mechanisms that allow socialization and limit, to some extent, our behavior. But addressing the brain in general would be a long and fruitless work if we only want to address the bases of human behavior, the human brain is a complex organ, difficult to explore and describe, it is constantly evolving, therefore describing it in its entirety to understand the social factor would be nonsense; we must select the gear of that machine that relates to the topic we wish to study. As mentioned above, the area affected by the continued use of digital technology is the frontal region, corresponding to the frontal lobes of the brain, so we must focus on them to explain this phenomenon.

"The surface of the cerebral hemispheres is crossed by numerous grooves that delimit on this surface the cerebral lobes..." (Rouviere & Delmas, 2005, p. 74). Within the Neo cerebral cortex, the frontal lobes are those structures that developed in more recent times, evolutionarily speaking, they are a system of regulation, control and planning of human actions and psychological processes..." (Rouviere & Delmas, 2005, p. 74). (Flores Lazaro & Ostrosky-Solis, 2008).. They control many activities of human development, as well as the interaction

with members of our species, as they channel our behavior, regulate our actions and plan those behaviors or actions that are considered useful, discerning between wrong and right.

"Because of this ability to regulate, plan and supervise the most complex psychological processes of the human being, the frontal lobes are considered to represent the executive center of the brain." (Flores Lazaro & Ostrosky-Solis, 2008, p. 48). It would not be wrong to think that any affection to this brain region, stimulating or inhibiting it, would completely change the individual's behavior, this includes digital stimulation. Among the executive functions of the frontal lobes are planning, behavioral control, mental fluency, working memory and fluency, and social behavior. (Flores Lazaro & Ostrosky-Solis, 2008)..

"Damage or functional impairment of the frontal lobes has very heterogeneous and important consequences in the most complex human behaviors, from alterations in emotion regulation and social behavior to alterations in abstract thinking and cognition" (Flores Lazaro & Ostrosky-Solis, 2008, p. 48).

The damage that can be caused to the frontal lobe can not only be caused by physical damage such as blows, head injuries, etc.; it can also be caused by the lack of neuronal stimulation in the region, or over stimulation of the same. The damage that can occur is as varied as the causes of the damage, therefore in order to infer some of the damage, the specific functions of the brain regions must be addressed in depth. "The frontal lobes are the most anterior structures of the cerebral cortex, they are located in front of the central fissure and above the lateral fissure" (Flores Lazaro & Ostrosky-Solis, 2008, p. 48).

It is divided into three large regions with their respective areas which are: Dorsolateral Frontal Cortex, Motor and Premotor Cortex and Dorsolateral Prefrontal Cortex, in relation to our topic of interest, we will focus on the last one.

The dorsolateral dorsolateral prefrontal cortex is located in the anterior region of the motor and premotor cortex. It is the most developed neo-cortical structure; its development and organization is unique to the human species. It is considered a region of cognitive association, since it does not directly process sensory stimuli. It is divided, in turn, into two portions (lateral and anterior dorsum) and three regions (superior, inferior and frontal pole). (Flores Lazaro & Ostrosky-Solis, 2008)..

The previous portions are related to meta-cognition, allowing self-evaluation and behavioral adjustment, approving behavioral change in stressful situations or correcting behaviors considered erroneous. Referring to the psychological aspect, it allows behaviors such as self-knowledge and social cognition, being able to differentiate behaviors, learn and modify them, as well as the continuous learning of the necessary skills for socialization. (Flores Lazaro & Ostrosky-Solis, 2008)..

One of the processes regulated by the frontal lobes, as mentioned above, is social behavior. This is the capacity of infants to assimilate, learn and develop diverse systems of cognitive and social rules, which allow them to interact positively with their environment. It allows them to learn and implement social rules, adapting their behavior to specific social situations. Damage to the frontal lobes (both perinatal and in early childhood) can cause social and behavioral

learning disabilities, inhibiting the development of social skills that allow us to adapt to and interact with our environment. (Flores Lazaro & Ostrosky-Solis, 2008)..

Currently, infants at early ages are exposed to constant digital stimuli in the form of videos, video games, etc., which serve as a center of distraction and affective shelter in these early stages, damaging their frontal lobe and inhibiting their later social behavior.

The brain's ease of change and adjustment is amazing, allowing adaptation to different stimuli and environments. "The encephalon can change to adapt to various circumstances, not only during childhood and adolescence, but also during adulthood and even in situations of brain injury, which means that the brain is flexible and modifiable" (Garces-Vieira & Suarez-Escudero, 2014, p. 120).

This process of adaptation at the nervous system level is called Neuroplasticity. According to Garces-Vieira & Suarez-Escudero (2014), Neuroplasticity is the: "Capacity of the nervous system to change its reactivity as a result of sensory activities." (p. 126). These activities are the various repetitive stimuli to which the subject is exposed throughout his life, as would be the digital stimulation. It can also be defined as "...a process that represents the capacity of the nervous system to change its reactivity as a result of successive performances." (Garces-Vieira & Suarez-Escudero, 2014, p. 121).

This capacity possessed by the brain is extremely important at the evolutionary level, as it allows adaptation and reorganization at the neuronal level, which facilitates adaptation to new environments and situations (Garces-Vieira & Suarez-Escudero, 2014)However, this same reconnection capacity is modifying the human brain to the use of digital technologies from an early age, reconnecting or restructuring its functionality, so it replaces activities that, because they are not repetitive, are not considered necessary and establishes or specifies stimuli that, by use, are considered necessary. It also adapts to levels considered necessary of certain neurotransmitters, creating what is known as addicted brain, and the continuous use of digital technology affects the formation of this condition.

Digitalization and Social Skills

In the development of this article, the incidence of the digital component in the development of the brain and how it influences it has been highlighted. The exact relationship was recounted, but the consequences, beyond inhibiting the development of social skills in infants, have not been described. "Without sufficient face-to-face interpersonal stimulation, the child's neural circuits may atrophy and the brain may not develop normal social interaction skills" (Small & Vorgan, 2009, p. 44). The entire life of today's children is stimulated and saturated with digital technology, since they are able to sit they are given a cell phone or a Tablet to distract them, since preschool (and because of the current situation) they have video classes, their games went from being outdoors, to be centered on a console or a computer; therefore, they are leaving aside human contact and interaction.

The continued use of digital technology can cause different consequences in children that may or may not have repercussions in their daily lives and in the future, has predisposed this generation to manifest attention problems, not due to lack of skills in the area, but by a partial attention to multiple factors that predispose them to a false attention deficit; just as a cell phone has many applications open, so the child's brain is predisposed, it is aware of so many things that in the end it does not have the necessary attention to any of them. (Small & Vorgan, 2009). "Digital natives tend to have shorter attention spans, especially when faced with traditional forms of learning" (Small & Vorgan, 2009, p. 41).

Another component to assess is language development, which is encoded in the Frontal Broca's Area, so it is affected by the same stimuli, "...recent studies indicate that excessive exposure to videos, even so-called educational videos, can delay language development in children" (Small & Vorgan, 2009, p. 42).

Methodological strategies and results

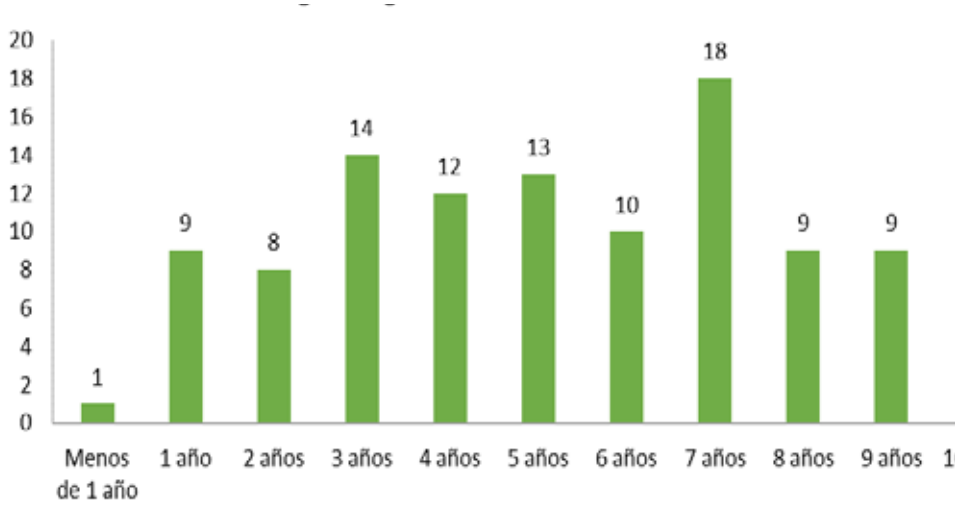
This article is presented as a mixed research, being the same one that has characteristics of a documentary and field nature (Zorrilla, 1993); as this study is a union of these two investigative natures, it is catalogued in this way. So far, its documentary nature has been emphasized, but from this moment on, field research will take precedence, using one of its primary instruments, the survey.

For practical purposes, in order to evaluate the consequences of digitalization on current generations, three aspects will be taken into account, as proposed by Small & Vorgan (2009) Language development problems, Attention problems (lack of) and difficulties to integrate into their social group. This was contrasted with reality through digital surveys in Google Form format addressed to parents, psychologists and educators whose children, students and patients are under ten years of age.

Parent Survey

Ninety-nine (99) anonymous and random surveys were conducted, being all respondents representatives of children living in La Gran Caracas, Venezuela and having access to digital technology. The surveys yielded the following results:

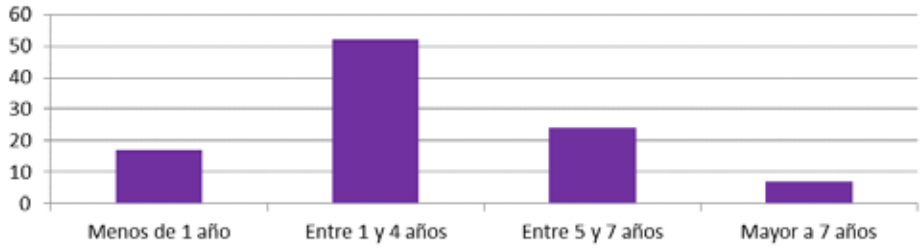
The infants evaluated, based on the information provided by their parents, have an average age of 5.65 years, distributed from under 1 year old to 10 years old inclusive, as shown in Graph 1.



Among them, 87.9% know how to use and get by easily with digital technology, as shown in Figure 2: 17.2% learned to use them before one year of age, 52.5% between one and 4 years of age, between 5 and 7 years of age learned 24.2%, and the remaining 7.1% learned to use them being older than 7 years of age, as can be seen in Graph 3; this reflects a high rate of early use of digital technology, mostly before 4 years of age, ages in which language is developed in infants and consolidated.

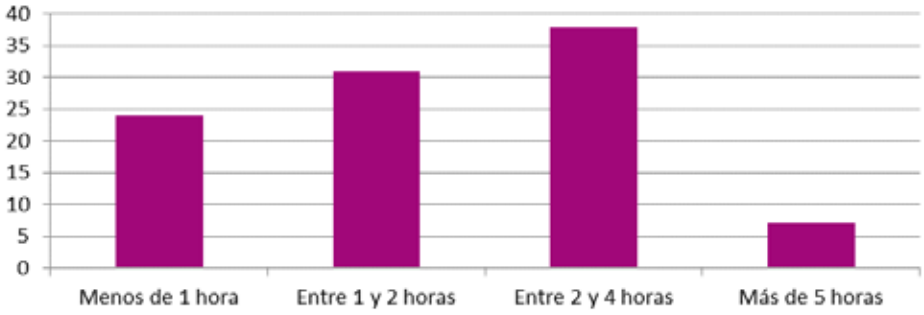
Figure 2: Knowledge and use of digital technology in the children evaluated.

Figure 3: Age at which the evaluated children started using digital technologies



The daily use of digital technology varies in children, 24.2% use it less than one hour a day, 31.3% between one and two hours a day, most of the children evaluated use it between two and four hours a day, being 38.4% of the study and a minority of 7.1% use these devices more than five hours a day, which is reflected in Figure 4. Although there is a large number of hours of use of technological devices per day, this result may also be due to the digital classes that were established this 2020 due to the pandemic caused by the SARS-COV-2 virus, although the survey was conducted during the holiday period.

Graph 4: Hours of use per day of digital technology in the children evaluated.



Of the group evaluated, 18.2% present or have presented problems in language development, as shown in Graph 5; the number is significant, since it can be inferred that 18 out of every 100 children have developed language problems at some point in their growth. It cannot be affirmed that all of them are caused by the use of digital technologies, but it can be an influential factor in the development of this problem. The same happens with the development of attention problems, 19.2% of the children evaluated have presented them, while in 14.1% of the cases the parents consider that they may have attention problems, as can be seen in Figure 6.

Figure 5: Presence of language problems in the children evaluated.

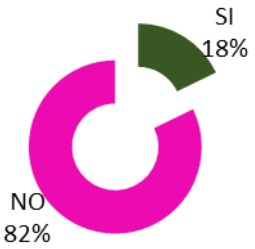
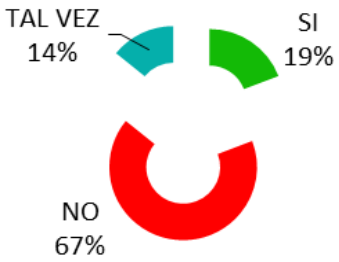


Figure 6: Presence of attention problems in the children evaluated.



At the time they started school, 17.2% had problems integrating into their group, 65.7% had no problems at all and 17.2% had not started school, as shown in Figure 7. Taking into account this last group that did not attend school, they were asked whether being in an environment with other children unknown to them made it easier for them to integrate, and 76.8% integrated, 15.2% did not manage to integrate and 8.1% might not be able to integrate, as shown in Figure 8.

Figure 7: Presence of integration problems at the start of schooling

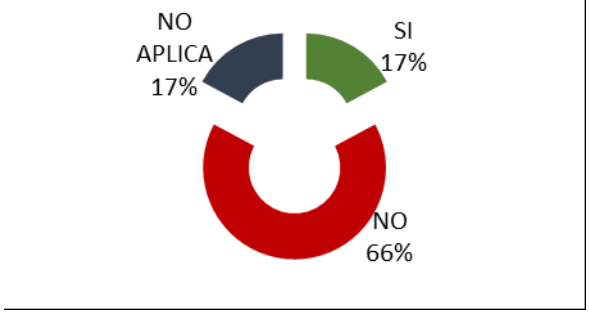
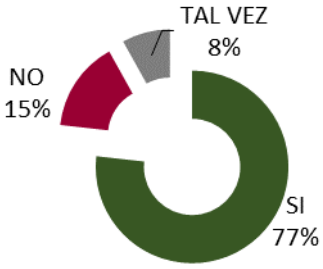
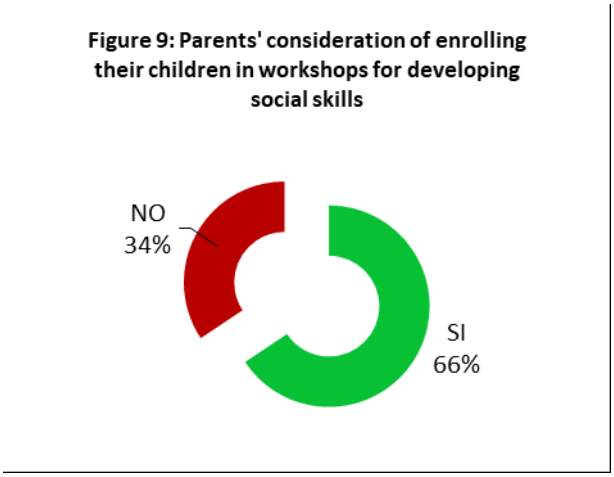


Figure 8: Presence of difficulty in integrating into an unfamiliar group



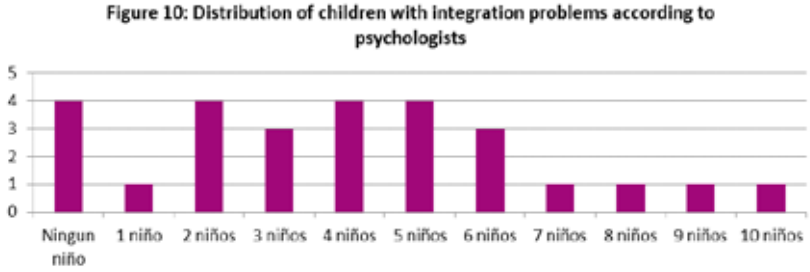
Regarding concern for the development of social skills, 65.7% of parents would consider enrolling their children in a social skills development workshop, as reflected in Figure 9. This reflects their concern about addressing these skills in their children.



Survey to Psychologists

The second survey was addressed to psychologists who work with children under 10 years of age and consisted of four simple questions referring to problems in the development of social skills in their patients or integration into their social group. Twenty-seven (27) anonymous and random surveys were carried out, yielding the following results:

On average, out of every 10 children evaluated, 3.55 present integration problems in their group, representing, on average, almost 36% of the psychological consultation in children. This figure varies from one professional to another and is unevenly distributed as can be seen in Figure 10.



In spite of dealing with such a disparate number of children in this situation, 85.2% consider that the number of children who present integration problems has increased (see Graph 11); delving deeper into this area, they were asked if they consider that current children have or

present problems in developing social skills, to which 63% responded affirmatively and 22.2% consider that they may have problems in developing them (see Graph 12).

Graph 11: Increase in the number of children with social skills problems, according to psychologists.

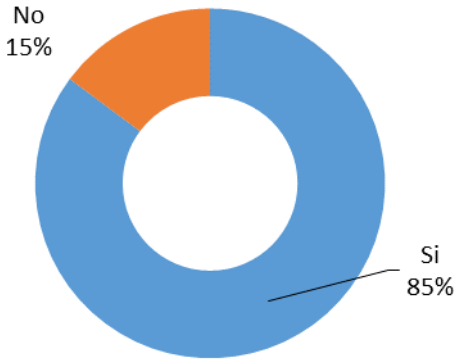
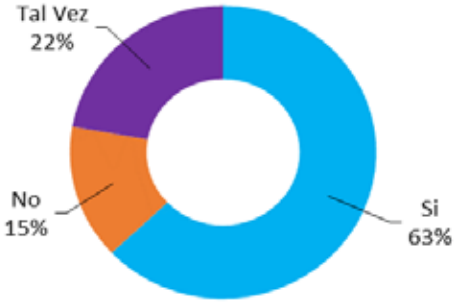
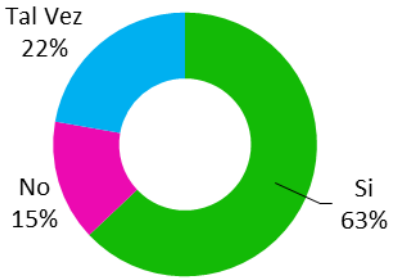


Figure 12: Social skills development problems in current children according to psychologists.



Regarding the use of digital devices and their relationship with the delay in the development of social skills, the main topic of interest in this study, 63% affirm that the use of these media can cause loss or delay in the development of these faculties, 22.2% consider that perhaps it could be related and only 14.8% believe that there is no relationship between both factors, as can be seen in Figure 13.

Graph 13: Relationship between use of digital technologies and loss or delay in the development of social skills According to psychologists

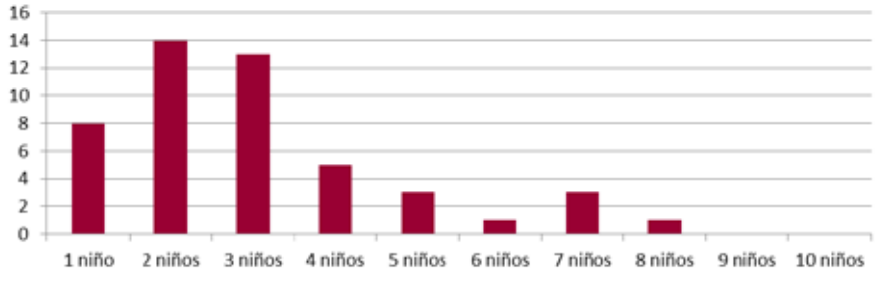


Educator Survey

The third battery of surveys was directed to educators in any field (academic or sports), who work with children up to 5th grade of elementary school and were asked the same questions as the psychologists. It should be noted that teachers work with groups whose number normally exceeds 20 children, having a larger population to be evaluated than that of psychologists. Forty-eight (48) anonymous and random surveys were conducted, yielding the following results:

On average, out of every 10 children, 3.02 present integration problems in their group, which would represent 30% of a school classroom, a large number of children who have had problems in the development of their social skills. To represent it graphically, in a classroom of 40 children, 12 have difficulty integrating, which hinders teamwork and didactics in the classroom. As in the survey directed to psychologists, the dispersion is variable, as can be seen in Graph 14.

Figure 14: Distribution of children with integration problems according to educators



Regarding the increase in the number of children with integration problems, 77.1% of the educators consider that the number of children who find it difficult to integrate has increased, coinciding with the data provided by the psychologists, as shown in Graph 15.

Graph 15: Increase of children with integration problems according to Educators

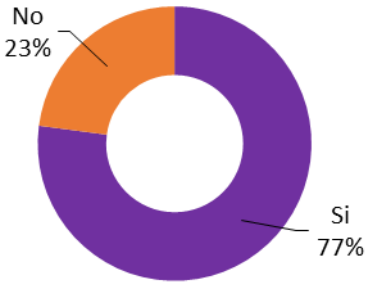
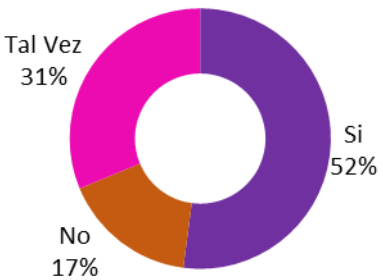


Figure 16: Social skills development problems in current children according to educators

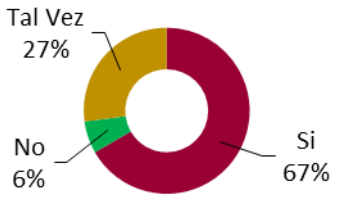


A total of 52.1% of the educators consider that current children have problems in developing social skills, and 31.3% that children may have this problem, data that coincide again with those obtained in the survey of psychologists and can be seen in Figure 16.

Referring to the relationship between the use of digital devices and the loss or delay in the development of social skills, 66.7% of educators believe that both factors are related and 27.1%

that there may be a relationship between the two, while only 6.3% do not believe that there is a relationship between the two. Again, the figures are similar to those of the psychologists, as can be seen in Figure 17.

Graph 17: Relationship between use of digital technologies and loss or delay in the development of social skills According to educators



Conclusion

Although it is not possible to affirm a direct relationship between the use of digital technologies and the inhibition of the development of social skills in children, a growing number of phenomena associated with them can be observed. More than 15 percent of the children evaluated present language and/or attention problems, a worrying situation not only in their social development, but also at school. At the same time, professionals who are in constant contact with children show an increase in the number of children who lack or find it difficult to develop their social skills, although these skills can be developed, the phenomenon is worrying. If a child fails to integrate into his environment, he will be partially segregated from the society in which he develops, voluntarily isolating himself in a technological device.

The doubt does not lie in the modification of neuronal connections, since this is already happening, but in the medium and long term consequences of the phenomenon. With the loss of social skills, the development of empathy is inhibited (this being a fundamental social skill), consequently, by isolating themselves from their social environment they are predisposing themselves to the effects of life without a protective group. As mentioned at the beginning of this article, human beings are gregarious: they have survived and develop in a social environment that protects them from external stimuli.

Leaving aside social life and basing interactions on a digital device is reconfiguring the brain, predisposing us to a sensitivity to changes in the environment. This is not a specialization, since it lacks the genetic component that characterizes it; therefore, we will speak of a digital pseudo-specialization in the new generations. This change, although it seems insignificant, limits infants in adapting to new environments, lacking tools that allow them to integrate into a

group, they are changing the very dynamics of society and, if a balance is not achieved, any environmental change that eliminates the digital component of their lives can, irremediably, condemn our species.

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