



New Trends  
in Psychology

## The Excessive Use Of “Screens” by Children - A Case Study for Developing Possible Therapeutic Approaches

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**Abstract:** The technological advances of the last 20 years have had a profound impact on modern society, bringing along important transformations. The advent of the internet, mobile phones and other remote communication devices has accelerated the exchange of information, exponentially increasing the amount of information being exchanged and processed by their users, which has put additional strain on cognitive capacities. Moreover, social changes have been observed, for example, with children and young people moving away from physical interaction towards a solitary lifestyle. *Method-* The online questionnaire method was used on a sample of 94 respondents. The results of the questionnaire will be discussed in this article. *Results* -This analysis includes the results of the questionnaire that led to the conclusions that will be stated in this article. *Discussion and conclusions* - Most psychologists believe that we are still far from obtaining scientific evidence on the duration of use of devices involving screens to be able to provide relevant recommendations for therapeutic approaches. The implications of excessive use of screen devices go beyond the realm of psychology and, as we shall see throughout this paper, imaging investigations on children and adolescents reveal a significant negative impact on the cortex, with tailored significance for each case studied, but more importantly, on the associated disorders that arise as a result of excessive screen time.

**Keywords:** screen; aggression; neural changes; diagnosis; parental control

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## 1. Introduction

In the context of the accelerating development of technology, the WHO and the APA have issued recommendations regarding screen time for pre-schoolers (it should be as low as possible or not at all for children under 2). Obviously, there are critics who argue that these guidelines are only correlational, cross-sectional or self-reported, although there are longitudinal studies in the mix. Moreover, not all research differentiates screen time by category.

Studies have shown that children from poor economic backgrounds had higher literacy rates than those from better economic backgrounds, precisely because of their reduced exposure to screen devices.

Subsequently, the problem of controlling this phenomenon has arisen through various methods: some provided by the creators of the devices themselves and others by independent specialists (IT specialists, psychologists, doctors).

Dr. Jon Lasser, Psy.D at the Texas State University, co-author with Mike Brooks, Psy. D, of the book “Tech Generation: Raising Balanced Kids in a Hyper-Connected World” believes that simply banning screens could be counterproductive. He said, “*It is important for children to develop the capacity for self-regulation, and parents who try to micromanage screen time may inadvertently interfere with this development of self-regulation*”. His recommendation is that “*parents spend engaged time with their children*” to promote a healthy relationship (Lasser, Brooks, 2018, *Tech Generation: Raising Balanced Kids in a Hyper-Connected World*, Oxford University Press, August 1, 2018)

How many times have we fought with our children to give up devices with screens (phones, tablets or laptops)? How many times have we not heard it from them: “You're the worst mom/You're the worst dad in the world”. How many times have we warned them that we would turn off their device within minutes and most of the time we have been ignored? (Ramona Dinescu (2018), *How do you combat children's screen addiction?*)

Obviously, this reaction is perfectly normal and to be expected from children, especially since it is difficult, even for an adult, to get out of that state of pure pleasure, let alone a child.

In order to understand these reactions that occur when the stimulus we call “screen” disappears, we must first of all understand what happens in our brain, the

mechanisms that regulate dopamine and cortisol levels and how neuroplasticity is influenced.

## **2. Dopamine-Cortisol Regulatory System**

Dopamine and cortisol are two neurotransmitters involved in regulating mood, reward, stress and other physiological processes. The regulatory mechanism between these two neurotransmitters is complex and involves complex interactions in the brain. Here is an overview of how dopamine and cortisol are regulated in the body:

### 1. Dopamine production:

- Dopamine is produced mainly in two areas of the brain: the nucleus accumbens and the substantia nigra.
- Dopamine is often associated with rewards, pleasure and motivation.

### 2. Dopamine receptors:

- Dopamine binds to specific receptors on nerve cells called dopamine receptors.
- There are several types of dopamine receptors, such as D1, D2, etc.

### 3. Negative feedback and reuptake:

- After dopamine fulfils its role, a process called reuptake takes place. This involves the reuptake of dopamine into the sender cell for recycling.
- This reuptake process serves as a kind of negative feedback to regulate dopamine levels.

### 4. Cortisol and stress:

- Cortisol is released in response to stress by the adrenocortical glands, which are located above the kidneys.
- This hormone is involved in regulating the stress response and can affect dopamine levels.

### 5. Complex interactions:

- Stress can negatively influence the dopaminergic system. Cortisol can affect the way dopamine is released and regulated in the brain.

- High cortisol levels can inhibit the activity of the dopaminergic system, and this can contribute to the fatigue and lack of motivation associated with chronic stress.

#### 6. Long-term adjustment:

- The way dopamine and cortisol are regulated can have long-term effects on mental health and behaviour.

- The chronic imbalance of these two neurotransmitters can contribute to psychiatric disorders such as depression or anxiety.

### 3. Using Imaging to Directly Observe the Effects of Overuse of Screen Devices

According to a study published by CNN in 2019 (Stephanie Pappas (2022), *What do we really know about kids and screens?*), after scanning the brains of 3- to 5-year-olds, it was found that those who used the screen for more than an hour without parental consent had lower levels of white matter development. This is known to be a key area for the development of language, literacy and cognitive skills.

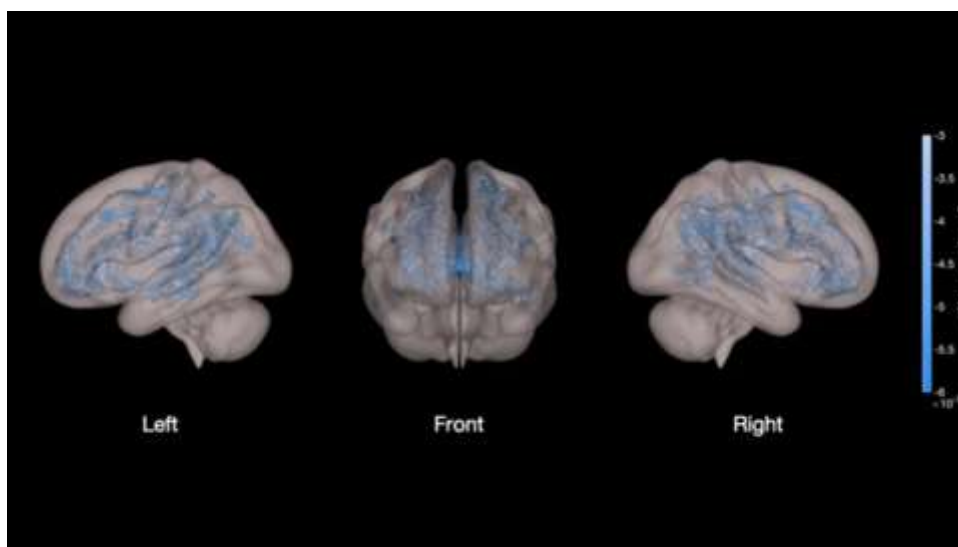


Image processed by Dr. John S. Hutton

Dr. John S. Hutton says this is the first study to document the association between longer screen use and underdeveloped cerebellar structures in pre-schoolers. Dr. Hutton says the brain develops most rapidly in the first five years of life because of

very high plasticity, when children absorb everything and form connections that last a lifetime.

The new study used a special type of MRI, called diffusion tensor imaging, to examine the brains of 47 healthy children (27 girls and 20 boys) who had not yet started kindergarten. White matter is responsible for creating connections between different parts of the brain and the absence of these connecting 'wires' can slow down the brain's processing speed. On the other hand, physical activities or studying a musical instrument improve the organisation and structure of white matter.

Test results showed that those children who used the screen for more than the APA recommended duration (1 hour per day), without interaction with parents, had disorganized and underdeveloped white matter.

Furthermore, cognitive tests revealed less literacy and expressive language skills in children with overexposure to screens. Therefore, there is a risk that in the future, children who start out with an underdeveloped brain infrastructure will not possess well-developed reading skills at school.

#### **4. Method**

The first step in successful research is to create the most accurate testing infrastructure possible so that we have access to relevant information that will give us the most accurate approach to solving these dilemmas about screen time.

To this end, I created an online questionnaire to collect basic information on the number of children in a household, the number of devices available, how much screen time they spend, but more importantly, what behavioural changes occur as a result of excessive device use.

The next step is to examine the content viewed by the children and observe clinical and behavioural changes over time (how they react when they have a video conference with grandma compared to how they react when playing a computer game). This stage will be the subject of a further research paper.

There are studies which conclude that the benefits of using screen devices for educational purposes are limited, in that those who were not exposed to screens for longer periods of time had better academic results because the physical presence of the teacher led to better assimilation and processing of information.

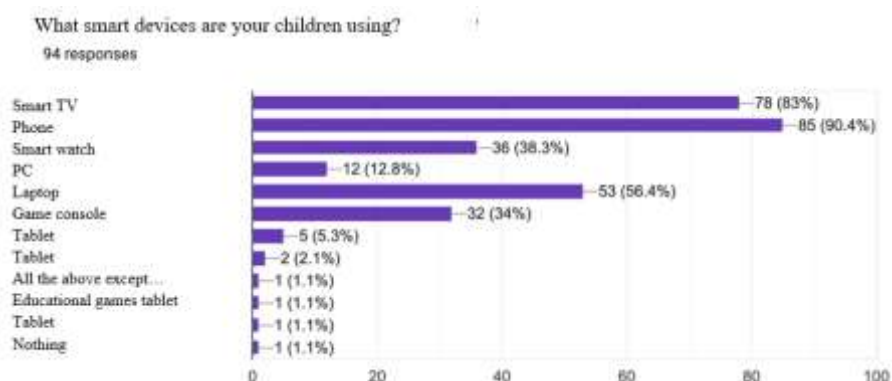
The third step is the development of complex interdisciplinary tests for the early detection of any cognitive or behavioural lapses that may adversely affect the normal development of the individual.

The fourth step will be to develop targeted, individualised treatment plans, depending on inclusion in one or more diagnostic categories (working with GPs and specialists is essential in order to create the specific methodology and the related information infrastructure - here we refer to the use of big data).

## 5. Interpretation of Questionnaire Results

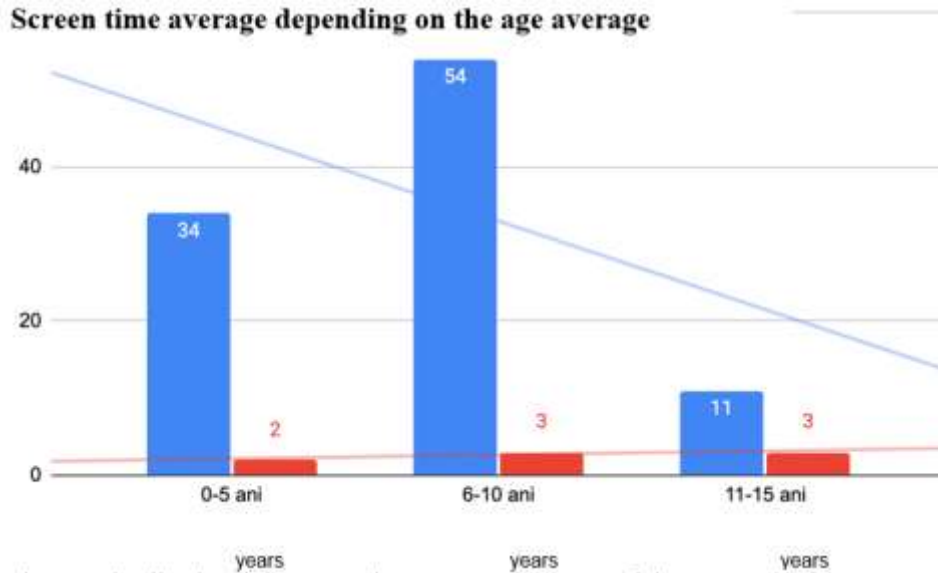
The study was conducted on a sample of 94 mothers with a total of 156 children aged 0-15. The study was conducted through a questionnaire on Google docs. The study found the following.

According to the survey, the following devices with screens are in use (Figure 1):



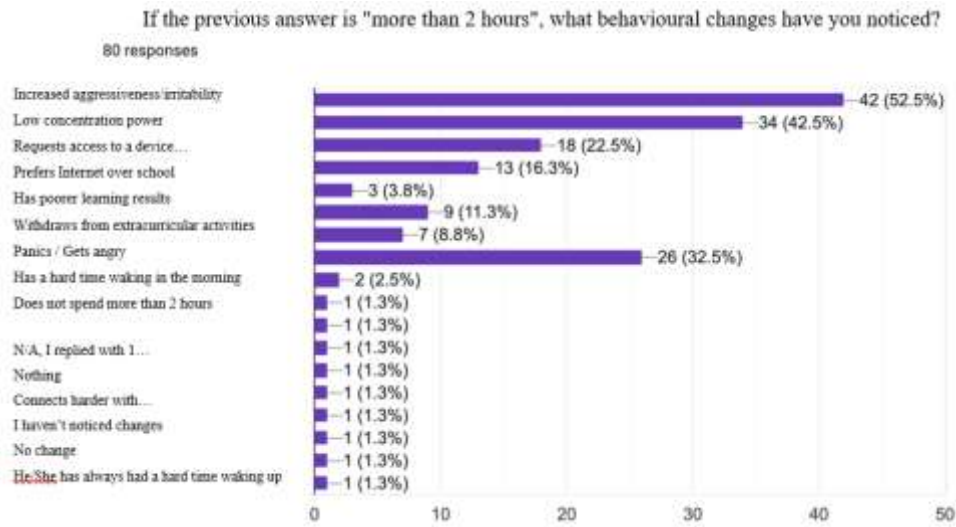
**Figure 1. Devices with Screens**

The 156 children exposed to screens, aged 0-15 years according to the questionnaire, spend between 0 and 4 hours per day (Figure 2).



**Figure 2. Distribution of Average Hours Spent in Front of the Screen by Average Age**

It was also found that as the number of hours spent in front of screens increased, the number of behavioural changes increased (Figure 3).



**Figure 3. Proportion of Behavioural Changes According to the Number of Hours Spent in Front of Screens**

As a result of the above, parents used different ways to limit this screen time for their children (Figure4).

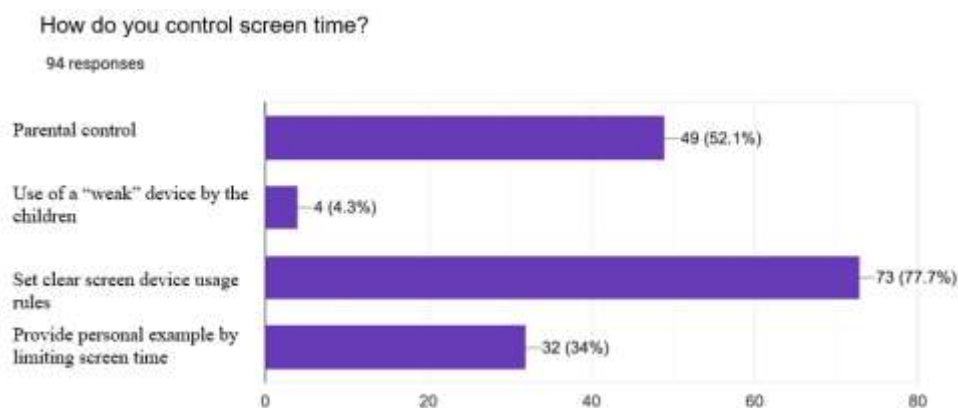


Figure 4. Ways to control screen time

## Conclusions

The questionnaire revealed that exposure to screens for more than 2 hours increases aggression/irritability (50.8%), reduces concentration (41.3%), causes hard time to wakes up in the morning (33.3%), demands access to a device during meals (19%), prefers the internet to physical socialising (15.9%), withdraws from regular extracurricular activities to spend more time in front of a device (11.1%). Given that all these children who spend more time in front of a screen have a specific symptomatology of addiction (spending long periods in front of screens, which affects their other daily tasks, withdrawing from activities they previously enjoyed such as playing with siblings, friends or spending time outside, withdrawing from family and friends, demanding access to media screens during mealtimes, becoming irritated and angry when access to screens is restricted; technology use has a negative effect on grades and school activities, or prefers online socialising to face-to-face socialising (Anonymous (2023), *Children's screen addiction*), all the precursor steps to developing targeted therapy for remediation should be taken.

The application of psychological therapies, such as CBT, is not sufficient for preschoolers and schoolchildren, and it is necessary to involve other family members (adolescents or adults), especially through their personal example. Given the results of the medical investigations carried out on children, I believe that we need to monitor them more closely, carefully following their educational and social



pathways in order to notice in time any deviations that may appear (including signs of ADHD or autism).

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