

Electronic media and symptoms of inattention/hyperactivity among children/adolescents during the COVID-19 pandemic

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Abstract

The correlation between inattention and hyperactivity symptoms/behavior manifestations and screen time was evaluated among Brazilian children and adolescents (7–18 years old) who were socially isolated due to the COVID–19 pandemic. A total of 517 legal guardians completed questionnaires about electronic media use (MAF–P) and emotional/behavioral problems (CBCL/6–18). The results showed that texting was correlated to less inattention/hyperactivity symptoms; listening to music, the use of social media and electronics for school purposes were negatively correlated to attention problems and inattention/hyperactivity symptoms and playing videos games and online videos were associated to more attention problems and inattention/hyperactivity symptoms. The results contribute to the understanding of the relationship between inattention/hyperactivity symptoms and screen time in a sample of Brazilian children and adolescents during the pandemic.

Keywords: screen time, electronic media, attention, children, covid–19

MÍDIAS ELETRÔNICAS E SINTOMAS DE DESATENÇÃO/HIPERATIVIDADE ENTRE CRIANÇAS/ADOLESCENTES DURANTE A PANDEMIA COVID–19

Resumo

Avaliou-se a correlação entre sintomas/manifestações comportamentais de desatenção e hiperatividade e tempo de uso de mídias eletrônicas entre crianças e adolescentes (7–18 anos) brasileiras em isolamento social devido a pandemia da COVID–19. Participaram 517 responsáveis que preencheram inventários de uso de mídias (MAF–P) e de problemas emocionais/comportamentais (CBCL/6–18), entre junho–agosto de 2020. Resultados indicam que mais tempo em comunicação por mensagens correlacionou-se a menos relatos de sintomas de desatenção/hiperatividade; já mais tempo ouvindo música, usando redes sociais e eletrônicos para escola/trabalho associaram-se com menor número de sintomas de desatenção/hiperatividade e de problemas atencionais. Por fim, maior em videogames e assistindo vídeos online associaram-se a mais sintomas de desatenção/hiperatividade e problemas atencionais. Os resultados contribuem para entender que existem associações entre frequência de sintomas de desatenção/hiperatividade e tempo de uso de mídias eletrônicas em uma amostra de crianças e adolescentes brasileiros durante a pandemia.

Palavras-chave: tempo de tela, mídias eletrônicas, atenção, crianças, covid–19

MEDIOS ELECTRÓNICOS Y SÍNTOMAS DE INATENCIÓN/HIPERACTIVIDAD EN NIÑOS/ADOLESCENTES DURANTE LA PANDEMIA COVID–19

Resumen

Se evaluó la correlación entre síntomas/manifestaciones conductuales de inatención e hiperactividad y tiempo de uso de medios electrónicos entre niños y adolescentes brasileños (7–18 años) en aislamiento social por la pandemia de COVID–19. Los participantes fueron 517 tutores que completaron inventarios de uso de medios (MAF–P) y problemas emocionales/conductuales (CBCL/6–18), entre junio y agosto de 2020. Los resultados indican que más tiempo dedicado a la comunicación de mensajes se correlacionó con menos informes de síntomas de inatención/hiperactividad; Escuchar música durante más tiempo, usar redes sociales y dispositivos electrónicos para la escuela/el trabajo se asoció con menos síntomas inatención/hiperactividad y problemas de atención. Finalmente, jugar más videojuegos y ver videos en línea se asoció con más síntomas de falta de atención/hiperactividad y problemas de atención. Los resultados contribuyen a comprender que existen asociaciones entre la frecuencia de síntomas de inatención/hiperactividad y el tiempo de uso de medios electrónicos en una muestra de niños y adolescentes brasileños durante la pandemia.

Palabras clave: tiempo de pantalla, medios electrónicos, atención, niños, covid–19

The literature suggests that children and adolescents have ever greater access to electronic media (EM) devices, and this has brought increased concern from parents and scientists about the impacts of exposure to prolonged screen time (Chassiakos et al., 2016). Before the COVID-19 pandemic, studies indicated that excessive use of such devices was related to inattention and hyperactivity behaviors (Domingues-Montanari, 2017) and higher odds of having symptoms of inattention and hyperactivity (Ra et al., 2018). Santos et al. (2022) conducted a literature review and found that screen time is associated with more symptoms of attention problems in children and adolescents, being that video games and television, the specific type of media associated with these symptoms, which indicates a gap in the literature regarding other EM uses.

Since the beginning of the COVID-19 pandemic in 2020, children and adolescents have been more vulnerable to behavioral difficulties, including hyperactivity (Clark et al., 2020). Available evidence from studies conducted during the first years of the COVID-19 pandemic also indicates symptoms of inattention as a psychological impact of social distancing measures (Spinelli et al., 2020; Zhang et al., 2020).

During the same period, there has been an increase in the use of EM among children and adolescents (Xiang et al., 2020). The main concerns have been about the type of media used rather than the total screen time a day, as the use of devices that promote social contacts, such as social media, and video chats/calls, have been considered beneficial during this period (Wiederhold, 2020). It's also noteworthy that remote schooling using online/electronic devices has become the main way for children/adolescents to continue to study, therefore, this use is also considered beneficial for development (Wiederhold, 2020).

The scientific community is still trying to understand the effects of the greater use of different devices on the lives of children and adolescents during the pandemic. There is a lack of knowledge regarding the associations between the use of different EM and attention and hyperactivity symptoms. Therefore, this study aimed to evaluate the correlation between the duration of use of different EM and attention problems and attention-deficit/hyperactivity symptoms among children and adolescents who were in social isolation (only in contact with the people they lived with, except for essential needs, such as contact with health services) during COVID-19 pandemic. Our hypotheses are that: the use of electronic devices for school/work or social contact purposes is associated with a reduction in attention problems and attention-deficit/hyperactivity symptoms, and that the use of devices for activities such as videogames, is associated with a higher frequency of problems/symptoms.

Method

Participants

The study participants were 517 parents/legal guardians of children and adolescents (274 boys - 53%), aged 7-18 years old ($M = 11.5$; $SD = 3.16$), with 277 children (7 to 11 years old). Data were provided by mothers (94.4%), fathers (2.7%), and 15 adults who were not the mother/

father (2.9%). The socio-economic status distribution of the families was as follows: upper income - 11%; upper-middle-income - 70%, medium income - 18.3% and D/E low income - 0.6%. This study was approved by the Research Ethics Committee (approval number: 3.584.187).

Instruments

The Brazilian version of the Child Behavior Checklist for ages 6-18 (CBCL/6-18) (Achenbach and Rescorla, 2001): this instrument obtains standardized measures of emotional/behavioral problems in children and adolescents based on parental reports. It gives scores on six DSM-oriented scales, eight syndromes, and two broadband scales (internalizing, externalizing), and there is also a total problems score. In this study, only the scales for attention problems and attention-deficit/hyperactivity symptoms were used. The CBCL is widely used and possesses well-established psychometric properties (Achenbach & Rescorla, 2001). Validity and reliability data have been reported regarding the Brazilian version (Rocha et al., 2013).

Media Activity Form - Parent Report (MAF-P) (Achenbach, 2018): This obtains measures of the length of EM use among children and adolescents (6 to 18 years old) based on parental reports. The items describe the following media activities: texting, creating online content, listening to music, using social media, playing video games (classified as adult games, with crime/violence, or as games suitable for their age), watching online videos, making calls/video calls, using EM for school/work activities, visiting websites for fun/information, watching TV/streaming platforms, and betting online. The parents indicate how much time their child uses each type of media during weekdays and weekends in terms of hours and minutes.

Socio-demographic survey: designed to determine the socio-demographic profile of the sample.

Procedure

Data were collected online during the COVID-19 pandemic (June to August 2020) using Google Forms. The link to the form was widely publicized on social media, therefore constituting a convenience sample.

The analyses were performed in jamovi (1.6.15) and a significance level of $p < 0.05$ was accepted for all comparisons. Normality was verified using the Kolmogorov-Smirnov test. As the data were non-parametric, Spearman's correlation tests were conducted to evaluate the association between attention problems and inattention/hyperactivity symptoms scales and the amount of time spent using 11 different EM media on weekdays and weekends.

Results and Discussion

The results are presented in terms of the correlations between the time spent using each EM and attention problems and deficit/hyperactivity symptoms. Texting was associated with a fewer frequency of deficit/hyperactivity symptoms (week $r_s = -.125$; $p = .005$, and weekends $r_s = -.119$; $p = .007$); Use of social media was associated with less attention problems (Week

$r_s = -.188$; $p = .007$, and weekend $r_s = -.137$; $p = .002$) and deficit/hyperactivity problems (week $r_s = -.184$; $p < .001$, and weekend $r_s = -.193$; $p < .001$). This result was not expected but could be specific to the pandemic period, as these activities promote social contact and well-being (Ra et al., 2018), possibly mitigating the negative effects of social isolation (Wiederhold, 2020), including hyperactivity, which is a reported effect of this period (Clark et al., 2020).

Listening to music was negatively associated with attention problems (week $r_s = -.089$; $p = .043$, and weekend $r_s = -.094$; $p = .032$) and attention-deficit/hyperactivity symptoms (week $r_s = -.146$; $p < .001$, and weekend $r_s = -.159$, $p < .001$). Loui and Guetta (2019) hypothesized that listening to music can promote better attention, and our results corroborate that idea, but further studies are required to establish a causal relationship.

Using electronics for school/work purposes was negatively associated with attention problems (week $r_s = -.162$; $p < .001$); and with less attention-deficit/hyperactivity symptoms (week $r_s = -.175$; $p < .001$, and weekend $r_s = -.123$; $p = .005$). These results were expected, given our initial hypotheses. The use of electronic devices for school purposes is considered a protective factor for children's development (Chassiakos et al., 2016), supporting the idea that this activity can improve executive functions (Ra et al.; 2018), which includes attention. New studies should investigate possible relationships between guardians' support for online classes in the face of the pandemic situation and possible associations with attentional aspects. Furthermore, the use of media for school/work outside the pandemic context should be considered to compare their possible effects on symptoms of inattention and hyperactivity.

Playing video games designed for adults (with violence, crime, etc.) was associated with more attention problems (week $r_s = .141$; $p = .001$, and weekend $r_s = .155$; $p < .001$) and attention-deficit/hyperactivity symptoms (week $r_s = .099$; $p = .025$, and weekend $r_s = .112$; $p = .011$). Videogames (suitable for their age) were also associated with more attention problems (week $r_s = .200$; $p < .001$, and weekend $r_s = .212$; $p < .001$) and more attention-deficit/hyperactivity symptoms (week $r_s = .182$; $p < .001$, and weekend $r_s = .190$; $p < .001$). This was expected, since the association between symptoms of attention problems and video games has been reported before (Santos et al., 2022). It's also noteworthy that video games can influence the impulse control of users and need for immediate feedback (Ra et al., 2018), which are both part of attention-deficit/hyperactivity symptoms. Moreover, longer screen time is related to difficulty in focusing and attention deficit/hyperactivity symptoms (Domingues-Montanari, 2017). In addition, playing video games with adult content might be related to emotional deregulation, contributing to inattention and poor impulse control (Radesky, 2018).

Watching videos online was positively associated with attention problems (week $r_s = .206$; $p < .001$, and weekend $r_s = .239$; $p < .001$) and attention deficit/hyperactivity symptoms (week $r_s = .164$; $p < .001$, and weekend $r_s = .209$; $p < .001$). Even before the pandemic, there has been a reported increase in the duration of this activity (Rideout & Robb, 2019), which is associated with symptoms of attention deficit and hyperactivity (Domingues-Montanari, 2017). In addition, more time spent watching videos online might reduce the time available for activities

related to school activities/homework and thereby reduce their positive influence, also causing distractions and focusing difficulties reported by parents. Further studies are necessary to evaluate this hypothesis.

Regarding online content creation, calls/video calls, browsing websites for fun/information, and watching TV/streaming platforms, no statistically significant results were found.

Conclusion

Our results confirm the importance of considering the time and the type of EM used in studies with children and adolescents. It contributes to the understanding of the relationship between attention and time spent using EM, highlighting specific activities that should be investigated in further studies. Although the study confirms our hypotheses, it is necessary to consider its limitations, such as: the use of a convenience sample, the group studied was not representative of the Brazilian population in terms of socio-economic status, the children/adolescent's perspective was not evaluated, and the instrument used is not specific to evaluate ADHD and attention. Moreover, the study design does not allow for inferences of causality to be made. We recommend that future studies should employ the use of a longitudinal design and consider the assessment from the perspective of children and adolescents.

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