

## Peer Review File

Article information: <https://dx.doi.org/10.21037/tp-23-162>

### Reviewer A

Comment 1: 41 in Abstract suggest use of partial and complete restrictive rather than two dummy variables since readers who only have access to abstract will not understand.

Reply 1: we have modified our text as advised (see Page 2, line 45).

Comment 2: 101 Suggest wording have first exposure to screens at a younger age, instead of “are younger”.

Reply 2: we have modified our text as advised (see Page 4, line 94).

Comment 3: 119 extra period.

Reply 3: we have modified our text as advised (see Page 4, line 112).

Comment 4: 123 Would change “normal” to typically developing.

Reply 4: we have modified our text as advised (see Page 5, line 116).

Comment 5: 124-126: The purpose is "to" draw attention to the potential adverse effects of lifestyle changes on children’s development during the normalized management of COVID-19, and "to" help teachers, parents, education departments, and health departments to gradually improve the policies and management for children and adolescents in epidemic control.

Reply 5: we have modified our text as advised (see Page 5, line 117,119).

Comment 6: Methods/Participants: Would describe how the sample was derived, including inclusion/exclusion criteria. Would move the actual participant numbers to the results section.

Reply 6: we have modified our text as advised.

“how the sample was derived, including inclusion/exclusion criteria” (see Page 5, line 130-131).

“move the actual participant numbers to the results section.” (see Page 7, line 199-202).

Comment 7: Procedure: Please explain what type of supervisory IRB was used for this study.

Line 150: Instead of self-made questionnaire, suggest a stating a study-specific questionnaire.

Please specify if average outdoor activity time was weekday and weekend day specific, or how it was derived. Please specify if screen time is daily screen time.

Reply 7: we have modified our text as advised.

“type of supervisory IRB” (see Page 5, line 143-145).

“Instead of self-made questionnaire” (see Page 6, line 150).

“Please specify if average outdoor activity time was weekday and weekend day specific, or how it was derived. Please specify if screen time is daily screen time.” (see Page 6, line 158-163).

Comment 8: 190 under the basic characteristics of the participants would include M and SD age of different groups. The ASD group is much younger, and this may have significantly impacted some of the comparisons, especially since screen time seems to be associated with age. Also would include this as a weakness of the study.

Reply 8: we added this limitation on limitation section. (see Page 12, line 382-384).

Comment 9: 244 should be during the pandemic not when.

Reply 9: we have modified our text as advised. (see Page 9, line 257).

Comment 10: 267 all should be plural (healthcare workers).

Reply 10: We have modified our text as advised. (see Page 9, line 279).

Comment 11: 278 Data suggests that COVID-19 pandemic prolonged screen time was associated with decreased parental restrictions on screen time, not increased parental restrictions as stated in the text.

Reply 11: we have modified our text as advised. (see Page 10, line 291).

Comment 12: 287 Recommend the use of were associated with children's screen time, rather than "affected" as this is an associational study.

Reply 12: we have modified our text as advised. (see Page 10, line 299-300).

Comment 13: 298 Suggest that sibling screen time may directly expose child to additional screen time, if it is in the form of television or on a large screen.

Reply 13: we added this in page 10, line 310-311.

Comment 14: 318 Discussion of screen time during pandemic of children with ASD compared to typical. Since the age of children with ASD is younger, these children would not likely be on screen time with classes/academics. Therefore, comparing the screen time of these groups is misleading as the screen time of the typical children may have been academic, while the screen time of 4-year-old children with ASD may not have had the same extent of hours in the "virtual school environment" This necessitates some discussion.

Reply 14: we added this in page 12, line 352-358.

Comment 15: 342 Under limitations should state that parent surveys are limited by recall bias, especially for the earlier data. Other methods may be more accurate.

Reply 15: we added this in page 12, line 376-378.

Comment 16: In the sentence "Further research should be conducted using a larger sample size to verify these results." would add and comparable ages so that it reads using comparable ages and a larger sample size

Reply 16: we added this in page 12, line 384-385.

Comment 17: Table 1: the total of subcategories for most of the study participant information does not match the total study participants. For example, participant category total (446) does

not agree with the total number (496); Boys categories total 323, total 362, etc. If including the 50 children with other findings, include a category in the table for other (intellectual disabilities/epilepsy/emotional disorders).

Reply 17: Our article focuses on the comparison of children with TD, ASD, and ADHD. If children of other developmental disorders (50 children) listed in different types of developmental disorders (intellectual disabilities/epilepsy that disorders) in table 1, each group is too few (less than 20 cases). This also does not conform to the subject of the article. Therefore, the authors still prefer to analyze only the population sample and TD/ASD/ADHD children. We hope that reviewer will consider the presentation of this table.

Comment 18: Table 2: Screen time is specified in hours. Please clarify if this is hours/day. A further description of how the categories of screen restriction were derived.

Reply 18: We have modified our text as advised. (see Page 21, table 2).

“how the categories of screen restriction were derived”, this had been added in methods section (See Page 6, line 170-172).

Comment 19: Table 3: typos on word “screen”.

Reply 19: We have modified our text as advised. (see Page 21, table 3).

Comment 20: Table 4: Suggest using word reward instead of award. Specify if this is Differences in screen time among groups during the COVID-19 pandemic.

Reply 20: We have modified our text as advised. (see Page 22, table 4).

Comment 21: Table 5: Suggest using word reward instead of award.

Reply 21: We have modified our text as advised. (see Page 23, table 5).

## **Reviewer B**

Comment 1: The abstract is well presented even if I wonder if it is necessary to present the p values in the results section of the abstract.

Reply 1: According to the general principles of TP magazine, p values are more likely to be presented in abstract. We hope that reviewer will consider the presentation of abstract.

Comment 2: It could be interesting to add a recent literature review on screen exposure under the age of 3: Guellai, B., Somogyi, E., Esseily, R., & Chopin, A. (2022). Effects of screen exposure on young children’s cognitive development: A review. *Frontiers in Psychology*, 4779.

Reply 2: we added this reference in page 4, line 84.

Comment 3: The link between lines 93 and 94 should be more straightforward (to what extend COVID-19 lockdown changes in behaviors and AAP advices for children under 2 are related?).

Reply 3: We would like use the AAP recommendation as supporting evidence that excessive electronic screens are harmful to development. During the COVID-19 pandemic, electronic screens are likely to increase more dramatically and have a greater impact on the development

of children, especially those with developmental disabilities. We've modified our text a little bit to make it clearer. (see page 3-4, line 79-90).

Comment 4: Line 123: the purpose is to draw...Please read again the article as there are some grammar corrections to do.

Reply 4: We have modified our text (see Page 5, line 117, 119).

Comment 5: Concerning the participants, the authors precise that there were 4 groups (TD, ASD, ADHD, and children with intellectual disabilities). The authors did not mention this last group earlier which makes it confusing here = what about this last group, were they included in the final sample?

Reply 5: Our article focuses on the comparison of children with TD, ASD, and ADHD. A total of 50 children presented with other developmental disorders, including global development delay, epilepsy, or intellectual disabilities, or other emotional disorders such as depression or anxiety, and these were not included in the subgroup analysis due to the small numbers in each group (less than 20 children). This also does not conform to the subject of the article. Therefore, the authors still prefer to analyze only the population sample and TD/ASD/ADHD children. We hope that reviewer will consider the presentation of this subgroups.

Comment 6: Concerning the inclusion criteria, authors mention that they included patients under 18 years old: the sample does not therefore only include children but also adolescents. What about the possible developmental factors (brain maturation, cognitive abilities, behaviors...) directly linked to the age of the participants on the results?

Reply 6: Thank you for your comments. Other factors are not negligible confounding factors may have an impact. But this study focused on changes before and during the pandemic, and the influence of family factors on children's electronic screens. So I think other age-related cognitive and behavioral factors may be another aspects of further research.

Comment 7: How did the authors construct the 'self-made' questionnaire for 'children/adolescents' and parents?

Reply 7: Before the study design, a large number of literature reading was carried out to design the questionnaire including factors that may affect all aspects of children's electronic screen time. We considered using screens Q<sup>[1]</sup> questionnaire for assessment, however, Screens Q has less investigation on related factors. Therefore, a study-specific questionnaire was designed for the purpose of this study.

[1] Klakk H, Wester C T , Olesen L G , et al. The development of a questionnaire to assess leisure time screen-based media use and its proximal correlates in children (SCREENS-Q)[J]. BMC Public Health, 2020, 20(1).

Comment 8: What does 'education/learning' screen exposure refer to?

Reply 8: Any use of electronic screens for learning purposes, including Chinese characters, English, math, online classes, AI interactive teaching, etc.

These explanations were marked on the questionnaire so that parents will not be confused when filling out the questionnaire

Comment 9: What about the weather? Could it be possible that the difference in outdoor activity could also be linked to the seasonal period in which COVID-19 appeared (= this is in the case of families having a garden)?

Reply 9: I can't agree with you more. It's a very complicated issue. We have taken some consideration. Because our questionnaires were collected over a short period of time, the weather background was the same for all participants. We also did some research on the relationship between electronic screen time and outdoor activities [2]. Previous studies have found that time spent outdoors is not a related factor in children's electronic screen time, although other studies have had different results.

[2] Dong H Y, Feng J Y, Wang B, et al. Screen time and autism: current situation and risk factors for screen time among pre-school children with ASD[J]. *Frontiers in Psychiatry*, 2021, 12: 675902.

In addition, we are concerned about the overall low level of outdoor activity during the COVID-19 pandemic. Because of the high latitudes, low temperatures and high population density of our region, garden families are really rare. This factor was not taken into account.

Comment 10: It is mentioned line 277 that 'longer screen time of siblings' was a risk factor for longer screen time exposure of the sample. Could it be possible to have precision about the age of the siblings (= does this risk factor depends of the age of the siblings?). What about single children? Are they less at risk?

Reply 10: Thank you very much for pointing out this problem, which we have not considered enough. We only analyzed the correlation between electronic screen time of sibling and screen time of participants in families with sibling. There was no analysis of the difference in screen time between children in families without siblings and those with siblings. In addition, we did not investigate the age of our compatriots, which was added in the discussion section. (see page10-11, line311-315)

Comment 11: How could the increased parental restriction on screen time be a risk factor?

Reply 11: Thank you very much for pointing out that this is a typo and has been modified. Decreased parental restriction on screen time be a risk factor (page 10, line 291).

Comment 12: The paragraph on comparison of screen time in children with TD, ASD, and ADHD is not clear enough: Could it be possible to give precisions about the mean age of the groups, and the training program for parents?

Reply 12: we added this in page 11-12, line 349-352.

The precisions mean age of the groups is shown in table 1 and the results section. The age difference of samples is one of limitations in this study, which is explained in limitation section (page 12).

**Reviewer C**

Comment 1: For the non significant result (compare TD and ASD/ADHD group), could it be related to ceiling effect? When the ASD and ADHD group already had very long screen time before the COVID, they may have even longer screen time during COVID. However, the increase may not be significant. Also, since the TD group had more screen time as well during COVID, it may be "difficult" to achieve statistical significance.

Reply 1: Thank you very much for your comments and I quite agree that ceiling effect is a possible explanation. Screen time increased by 153% for TD children, 45% for ASD children, and 155% for ADHD children. Screen time increased significantly for both TD children and ADHD children. The main consideration is that the increase in electronic screens may be related to the age of the sample. However, after correcting the age factor by statistical method, there was still no statistical significance, and the ceiling effect must be considered.

Comment 2: Please consider citing recent papers about the many possible negative effects of screen time such as <https://doi.org/10.3389/fpubh.2021.700401>

Reply 2: We have added this reference in page 3, line75, ref 5.

Comment 3: pay attention to typo e.g., "Ownership of independent electronic equipmen n (%)"

Reply 3: We have modified our text (see page21, table 2 ).

Comment 4: Don't understand why the authors used "However" at line 321.

Reply 4: This sentence is illogical. We have modified our text (see page11, line 338).

Comment 5: Line 333-334 (the findings) are not really relevant to "Since ADHD children suffer from an executive function deficit (53), they are less able to control their own behavior than children of the same age. From this point of view, our results seemed difficult to explain." (line 335-337)

Reply 5: Thank you for reminding me that there are some logical problems between sentences. I have re-written this paragraph for better understanding (see page 11-12).

Comment 6: Suggest to re-write this paragraph for better clarity and organisation/flow of your ideas (A comparison of screen time in children with TD, ASD, and ADHD)

Reply 6: I have re-written this paragraph for better understanding (see page 11-12).

Comment 7: Lacks of important implications. Did it help to fill the research or knowledge gap? Suggest to revise especially the conclusion and discussions such that the readers can understand what are the new knowledge which are added after conducting this study.

Reply 7: I have re-written discussion and added some content in conclusion section.

## **Reviewer D**

1. Please check the below Keyword. You choose it as a Keyword but it cannot be found in the main text.

56 **Keywords:** Screen exposure; physical activity; autism spectrum disorder (ASD);  
57 attention deficit hyperactivity disorder (ADHD); COVID-19 lockdown

Reply: This has been modified in the manuscript (keyword section).

2. References:

- 1) The citation of references in your text is not in order. Please check the citation of reference 6-8; it appears behind in reference 9.
- 2) There are two reference lists in your manuscript. Please remove the first one.

Reply: This has been modified in the references section and removed the first reference section.

3. Table 4:

- 1) Please unify the below word in your text and Table 4 title.

Reply: This has been modified in the text (see line 222, page 8).

229 of babysitting, and frequency of screen use as a punishment or award. The screen use  
230 of each subgroup is shown in Table 4. The significant factors of univariate analysis

degree of restriction, frequency of accompanying, frequency of electronic nanny, and  
frequency of punishment (reward), table 4a-h.

Table 4a :

Grade levels	Before kindergarten	Kindergarten	Primary	Middle school	F	P
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- 2) Please add unit for “Screen time”. And indicate how the data are presented, for example, mean ± SD.

Reply: This has been modified in table 4(see page 23).