Reviewer's report

Title: Screen-based media use clusters are related to other activity behaviours and health indicators in adolescents.

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Reviewer: Kaigang Li

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Major Compulsory Revisions

In this paper the authors report the results of latent class analysis that identified three screen-based media classes and examined the relationship of identified classes with potential auxiliary distal outcomes. Although there are some strengths of this study such as large sample and using valid and reliable tools, I have a few concerns and comments.

1. The data was collected before 2006 so is kind of out-of-date because electronic devices including handheld electronic game media have updated very quickly. Do the authors think there is a gap in handheld electronic games between now and time when the data was collected? Can the results based on the data collected seven years ago still be applied to current children?

2. The authors stated that the data in this study is representative (p.7). The sampling procedure needs to be clarified. How was the sample selected? Are there any design variables available such as weights, cluster, and strata? Were the analyses controlled for those variables?

3. Although latent class analysis is a special type of cluster analysis they are different as the authors stated "using latent class analysis (LCA) which offers several analytic advantages over cluster analysis." So, people usually used the term "class" for the identified groups instead of "cluster" to avoid confusion.

4. Although Bootstrapped p-value of likelihood-ratio and BIC show that the 3 class model fit a little better than others but the difference is really subtle. Also, when looking at the goodness-of-fit measures the 1-class model fit is the best (with entropy = 1 and classification error = 0). So, more model fit statistics may be more informative such as AIC, adjusted BIC, and chi-square test testing departure of the model from the observed data.

5. It surprised me that none of girls was classified into the multi-modal e-gamers class. Are there previous data supporting this finding, that is, girls only like computer games instead of handhold device?

6. Why only sex was included in the model as a covariate? Why not include race/ethnicity or other demographic variables?

7. The gender has been included in the LCA model as a control variable which means that the information in gender has been taken into account. Is it redundant or appropriate that the authors compared the difference in within each gender?
8. A reference needs to be cited for the model fit statistics.
9. There were 0 hour/week for computer graphics and word processing overall and in either males and females (table 2). Why were they still included in the LCA model given that there is not discrepancy between individuals?
10. Validity and reliability information should be provided for the measures of psychological health.
11. Why were covariates included in the Figure?
12. In the discussion the authors state that “This is the first study ....” Have the authors done thorough lit review to verify this is the first study? Or just did not find similar studies?

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests