Author's response to reviews

Title: Relation of adiposity, television, and total screen time in offspring to their parents

Authors:

Lyn M Steffen (steffen@umn.edu)
Alan R Sinaiko (sinai001@umn.edu)
Xia Zhou (zhoux062@umn.edu)
Antoinette Moran (moran001@umn.edu)
David R Jacobs Jr (jacob004@umn.edu)
Yoel Korenfeld (koren036@umn.edu)
Donald R Dengel (denge001@umn.edu)
Lisa S Chow (chow0007@umn.edu)
Julia Steinberger (stein055@umn.edu)

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Author's response to reviews: see over
Dear Ms Olino,

We apologize for the delay in responding to reviewer comments. Our programmer was out of the country and she just returned. We did respond to reviewer comments as described below. The manuscript was revised accordingly. All of the authors on this manuscript are English speakers; we reviewed it again for quality of English. Please let me know if further revision is required.

Thank you,

Lyn Steffen, PhD, MPH on behalf of the other co-authors
Reviewer 1

The manuscript is well written and the data is very interesting. However, I consider that authors should clarify some issues.

1. Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

- Introduction section is properly focused and the study question is clearly established.
  **Response:** Thank you.

- What does it mean “minority representation” in the first paragraph at the results section? How did you calculate the percentages?
  **Response:** Thank you for your comment. ‘Minority representation’ is awkward. I revised the sentence to ‘The proportion of non-white parents was 38.5% and offspring was 48%’ (Results section, page 6). I corrected the proportion of minority offspring to 48% (Results section and Table 1). Percentages were calculated as ‘number of white divided by total number’ and ‘number of non-white divided by total number’ of parents. The same calculation was made for offspring.

- Some used references at introduction section are from more than 20 year ago. Please, find more recent studies in order to justify your study.
  **Response:** We did find more recent studies and replaced some of the ‘old’ references.

- At table 1 indicate “strenuous exercise” but along the text you use “vigorous PA”.
  **Response:** To be consistent, ‘strenuous exercise’ was changed to ‘vigorous PA’ in Table 1.

2. Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

- Please, add more information about the administered questionnaires at methods section. The questionnaires were validated? Is this a limitation of the study?
  **Response:** A description of the physical activity questionnaires was reported in the Methods section (Lifestyle characteristics; page 5) as well as validation information.

- Please, check references along the manuscript. Some references included at references section are not cited (e.g. 32 – 35), and in-text reference 11 appears before reference 10.
  **Response:** The references were renumbered and references 32-35 were omitted from the revised manuscript.

- Tables should be self-explanative and easy reading. Please, re-write the
headings in order to offer more information about the statistical analysis.

**Response:** Table 1 title was revised to show that correlations were reported in this table. Otherwise, the other tables report the estimates of characteristics reported by group stratification.

- It was unable to compare physical activity between parents-child and offspring due to the use of different questionnaires. This should be included as a limitation of the study.

**Response:** Thank you for pointing this out. Differences between the physical activity instruments were reported as a limitation in the paper (Limitations paragraph, page 11).

- Please, look for other more appropriated keywords.

**Response:** We omitted ‘obesity’ and ‘children’ and added ‘adiposity’ and ‘television’ to the list of key words.

3. Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)
   - None.

**Reviewer 2**

Steffen and colleagues present an interesting analysis on a well-described cohort of parents and their off-spring who have participated in metabolic studies. Their findings confirm what others have reported in that adiposity (total and regional) of parents is related to similar measures in their off-spring. In addition, adiposity measures of parents during childhood are related to corresponding measures of their offspring. The authors also show that sedentary behaviors (namely screen time) of children are correlated with their parents both during childhood and adulthood. Although these findings are mostly confirmatory to what others have previously reported, the fact that both cohorts are well-described and the inclusion of adiposity measures as well as lifestyle behaviors in the same report are strengths.

Despite these strengths, there are several factors mostly related to the analytical approach that could strengthen the manuscript as a whole. The authors present mostly correlational analysis (some of which are adjusted for demographic characteristics) and I believe that it would be of interest to know which of the parental measures (as a child or adult) more strongly influence off-spring adiposity. For example, the authors could

1. run multiple linear regression analyses that include parental measures as independent variables in the same model with the off-spring variable of interest as the dependent variable.

2. These could be a series of models that build upon each other with a final, parsimonious model that explains the largest amount of the total variance in the measure of interest. These models would help explain whether childhood parental measures are more predictive of offspring adiposity than adult measures.
3. Moreover, the authors could include regional adiposity (visceral and subcutaneous) along with DEXA measures in the same model as predictors of off-spring visceral fat. Given that the authors use heritability estimates throughout their discussion, these models can help define whether parent measures as children act as surrogate markers of a genetic influence in their off-spring.

**Response:** As suggested by the reviewer, we developed regression models to include parental adiposity measures as independent variables that explained the largest amount of the total variance in the offspring adiposity measure (dependent variable). Including both the parent BMI as children and adult was more predictive of offspring BMI than either child or adult BMI alone.

Minor Essential Revisions:
1. Table 4 does not seem to add value beyond the data that are already presented. It is not clear why BMI status as a % would have mean and standard error values and why each column does not add up to 100. Why not present as you did in Figure 1? If presented side-by-side, readers could appreciate whether adult or child adiposity is a better discriminator of off-spring weight status.

**Response:** We appreciate your idea and created another figure (2) showing the proportion of % of lean and overweight/obese offspring by parent BMI status. Table 4 was omitted.

2. Suggest reviewing tables for consistency in presentation for spacing (space between +) and number of significant figures.

**Response:** Thank you; the spacing and number of decimal places have been revised in the tables.

3. More information is needed on how family membership was accounted for in the regression analysis. Given the larger number of off-spring than parents, there must be sibships in the analysis that may be contributing to the correlations. What happens when only single dyads (parent-child) are examined?

**Response:** We reanalyzed the data and found similar correlations between 1 offspring and parent. For example the correlation between dyads (1 offspring and their parent) for BMI was r=0.47; while the correlation including all offspring with the parents was r=0.49; both p-values <0.001. For subcutaneous fat (SAT) the correlation for dyads was r=0.42; for all r=0.43; both p<0.001.

4. Although possibly beyond the scope of the study in terms of samples size, the authors could comment on whether maternal or paternal influence is stronger in determining child adiposity and whether sex is concordance may influence the observed results. This could be included in the discussion.

**Response:** You are correct: the sample size is too small to examine the maternal and paternal influence on adiposity.