Reviewer’s report

Title: Developmental Trajectories of Physical Activity and Television Viewing in Adolescence among Girls: National Growth and Health Cohort Study

Version: 2 Date: 18 May 2015

Reviewer: Hannah Brooke

Reviewer’s report:

The authors have adequately addressed the majority of the issues I previously raised with clear and extensive justification and amendments. The revised manuscript has been considerably improved. I have raised some additional points for consideration below.

Major Compulsory Revisions

1) Discussion: In their response to my previous comments the authors state that they have conducted an additional study with objectively measured physical activity. They indicate that this additional study, in part, supports the findings of the current study. As the additional study has been accepted for publication in JAMA Pediatrics it would seem to be appropriate to include this additional paper in the discussion of the current study. It would be beneficial to explain how current results fit with the additional paper and how it fits with/is different from the paper by Janz et al, currently discussed extensively, which also used a group based trajectory approach in the IBDS cohort.

Minor Essential Revisions

2) Background, paragraph 1: Since the authors now refer to the international debate I suggest removing ‘federal’ from the sentence as this is specific to the US. Perhaps: “There is an ongoing international debate regarding the inclusion of sedentary behavior recommendations in physical activity (PA) guidelines.”

3) Background, paragraph 4: It is still unclear what is meant by the risk factor of the PA trajectories in the sentence stating the aims of the study. The authors do not mention risk factor analysis until the end of the methods section so it would be helpful if this were more explicit. Perhaps the authors could break the sentence into three e.g.

“In this study, we first aimed to demonstrate group-based trajectory analysis for identifying distinct developmental PA and TV viewing trajectories. Secondly, we aimed to present an example of risk factor analysis by examining the difference in the distribution of race by PA trajectories. Thirdly, we aimed to examine the interrelationship between PA and TV viewing patterns simultaneously among adolescent girls.”

4) Methods, measurements: In their response to my previous comment that “the correlation between the accelerometer data and HAQ is very low (rs = 0.09)” the authors draw on an additional paper to suggest that:
“Longitudinal trends of activity levels were parallel among the three methods—
HAQ, activity diary, and accelerometry—which strengthen the assumption that the
HAQ data is valid to examine longitudinal patterns over time. Therefore, while
HAQ may be inadequate to examine absolute PA levels, is adequate to examine
longitudinal trajectory patterns of PA levels.”

To me this seems better justification and more informative for the reader than
that currently included in the manuscript. I therefore suggest it is included in the
manuscript.

5) Results, paragraph 1: P-value rather than P

6) Results, paragraph 1: annual income of <$10,000
rather than <annual income of $10,000. This sentence is would also be clear to
me if the text and the values were in the same order. Currently, in the text those
excluded are mentioned first and compared to those included, but the values for
those included are first, followed by those excluded.

7) Discussion, paragraph 2: It is adequate to use the abbreviation MVPA as
moderate- to vigorous-intensity PA as it has been written out in previously.

8) Figures use red and green which may be difficult to differentiate for colour
blind readers - please consider a different choice of colours.

Discretionary Revisions

9) Methods, statistical analysis: In the aims (in the background) and in the results
the order of analyses is presented as 1) trajectory analysis, 2) risk factor analysis
3) interrelationship between PA and TV. To help the flow of the paper I suggest
also following this order in the statistical analysis section of the methods.

10) The authors state that when they re-ran the analysis using weekly activity
frequency (rather than MET-hrs/wk) the trajectory patterns were homogenous.
Does this imply that the predominant driver behind the decreasing trajectories
was participation in activities of lower intensity later in adolescence or did
frequency declining for all? This would be a rather interesting finding to report. I
appreciate that space restrictions prohibit the inclusion of interesting results but it
would be great if it could be included as supplementary information along with
the separate analyses of the distinct physical activity contexts!

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the
statistics.

Declaration of competing interests:

I declare that I have no competing interests