Author’s response to reviews

Title: The home food environment and associations with dietary intake among adolescents presenting for a lifestyle modification intervention

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Author’s response to reviews:

Thank you for these helpful comments that will improve the manuscript. See our point-by-point response to each comment below. We have made corresponding changes to the manuscript text in red font.

Reviewer reports:

Pamela Koch (Reviewer 1):

This study attempts to explain how the home environment, parent style and parent modeling are related fat intake and fruit and vegetable intake.

Overall comment: Please explain why you focused on total fat consumption since now dietary guidance in the United States and other places in the world is moving away from being concerned with total fat and now more concerned with overall calorie level, saturated fat as well as added sugar.

- Our study was conducted in Canada and was influenced by the dietary guidelines that were in place at the time of this study. At present, and at the time of data collection for this study, Canada does not have a limit for consumption of saturated fat. While Canada encourages a small intake of unsaturated fat per day for health, the Canadian dietary recommendations do not provide specific recommendations on the total amount of saturated fat. As a result, our
home food environment measure did not distinguish between types of fat and as a result we processed our child dietary behaviours the same way. While we are aware of this distinction, we did examine whether our results would change whether we examined saturated fat instead of total fat and our findings remained the same. We have included a comment in our results section to indicate that the results were similar whether we examined total fat versus saturated fat (See lines 256-257). Finally, our dietary processing database did not allow us to examine only added sugar. We have thus included this a comment about this in our limitation section (See lines 329-332)

Also from lines 140-143 curious why you use percentage energy from instead of total energy from these items (a subject who has a lot of all of these will not have a high percentage energy from any of them).

- Total energy isn’t necessarily a problem as the energy needs may be different among adolescents (ie. those who are highly active, etc.) and so expressing intake as a percentage of energy allows us to identify individuals whose diet is unbalanced (excess of fat or snacking in comparison to the whole diet). For this paper, we were interested in this imbalance, versus total energy from fat or snacking, for example.

Also in table 1 what is reported is done a bit differently than how it is listed (e.g., on table for sugar sweetened beverages what is reported is yes/no and in text #3 is percentage of energy from SSB. Please clarify.

- The SSB beverage item was dichotomized because it was highly left skewed. This was explained in the analysis section, however, there may be confusion since the variable is first described as servings of SSB in the measures section. We have moved all the details related to how this variable was treated to the measures section to eliminate any confusion. See lines 140-146.

Also for on table 1, is the range the range of the responses or the full range of what was possible, please clarify and if not the full range possible than please put this

- We reported the range of observable data in our sample. We have now included the range for scale items as part of column 1 (as suggested below).

Line 97: Is SES an independent variable or something you controlled for? It does not appear in your models and is a covariate in Table 3.
- SES variables (education and income) were included in our models as covariates. Although not conceptually part of our main model, we wanted to present the estimates for these paths to the reader in Table 3 as they add some validity to the model (relationships in the expected direction). In addition, since these variables can help to explain and interpret the main findings, (the home environment and adolescent dietary intake) we felt it was worthwhile to present and interpret these results for the reader. We have clarified in a footnote to Figure 2 that the model shown highlights only the association between the parenting variables and child dietary behaviours. Also noted is that these effects were corrected for covariates and to refer to Table 3 for the full solution.

Lines 145-178 for all of you independent variables please put the range of the scale and also in table 1, please either add in the first column.

- The scale range is now included in column 1 for the home food environment items.

Do you think your data is strong enough for your conclusion that the home environment only has a limited influence or do you think that the ways you measured intake and the home environment may just not of captured how the home environment influences intake?

- Thank you for this point – we have edited the abstract conclusion (please see lines 55-56) to better align with our manuscript’s conclusion, which also considers limitations to the measurement of the home environment.

Margaret Allman-Farinelli (Reviewer 2):

The current rate of obesity in Canadian children makes it a very important topic to try and understand the influences on what they eat. The paper is well written and demonstrates a good grasp of the relevant literature. Secondary analysis of original data can be problematic because you do not necessarily control the data collection. I have a few queries.

Do you actually have a sufficient sample size to conduct SEM and has this influenced your findings in a negative manner. If so please describe in the limitations section.

- Adequate sample sizes for a SEM analysis is extremely difficult to estimate as found in a recent Monte Carlo study (Wolf et al 2013), mainly since sample size requirements depend on the magnitude of the associations, amount of missing data, and complexity of the model. Based on Wolf et al (2013), a sample of 170 would be able to detect a medium effect size
(specifically .91 power in detecting a medium effect size for a direct path and .83 power in detecting a medium effect size for an indirect path). While there are many factors that can affect these results and the fact that Wolf’s study simulated a different model than what was tested in the current study, lack of power to detect an associations can always be a limitation. We have thus expanded our limitation section to address this issue by adding the following text (please see lines 314-18): “While it remains difficult to determine how many subjects should be included in a SEM analysis to yield enough power, our study was likely powered to detect moderate effects based on the findings from simulation studies. Thus it would be useful to replicate these analyses in a larger sample to test the stability of these associations and determine whether smaller effects were missed.”

Wolf 2013: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4334479/

There is a number of surveys used to collect the data and I wondered if the validity and reliability have specifically been tested in obese children and their parents and if any systematic bias with body weight exists that might impact on your findings. If so please include in discussion.

- We have included in the limitations section that the surveys were not specifically validated in obese children and their parents and that this along with social desirability bias of these measures may have influenced results towards a null finding (See lines 324-326).

I was interested that frozen dinners was included as part of an unhealthy food environment. In my country many of these have a low fat and low energy content and would be superior to common take-out foods.

- To clarify, our variable did not include low fat frozen dinners. Our survey item first asked if frozen dinners were available in the home, and if so, they were asked if they were a low fat variety. Therefore, we were able to exclude any low fat frozen dinners from our measure of an unhealthy food environment. See lines 168-169 and lines 176-177.

It seems your main finding is that educated women of higher income have better health practices and buy healthier foods for their family environment. As children will eat what is available when they are hungry, better foods in the fridge and pantry will enable healthy choices. Of interest, despite this they have obese children and perhaps you might suggest looking for explanations outside this i.e. school and food consumption with peers when eating out. I believe this should be included in the conclusions

- We have included this point on lines 341-343 of the conclusion.