Author's response to reviews

Title: Family structure and breakfast consumption of 11-15 year old boys and girls in Scotland, 1994-2010: a repeated cross-sectional study

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Version: 2 Date: 31 January 2012

Author's response to reviews: see over
Editor's Comment:

"I have now received three reports on your manuscript which have outlined a number of important major and minor revisions that are needed before we can consider the paper for publication. I would like you invite you to resubmit a revised version of your manuscript that addresses the reviewers' comments. In particular, all reviewers queried your binary approach to defining breakfast consumption."

As the outcome variable prior to 2002 was a (ordinal) categorical variable with 4 categories, I was given the choice of four possible ways of modelling the data: 1. Using the 7/less than 7 days a week cut-off as presented, 2. Using 4 or more/less than 4 days a week, 3. Using at least one day/zero days a week, or 4. Using multinomial modelling for 4 categories to effectively carry out all three previous options simultaneously. The model did not converge using this last method, possibly due to the complexity of including interaction terms and levels. In any case, this is difficult to present and harder still to summarise. Instead I present findings for the alternative 2 cut-offs-- see table at the end of this document.

Reviewer's report

Title: Family structure and breakfast consumption of 11-15 year old boys and girls in Scotland, 1994-2010: a repeated cross-sectional study

Version: 1 Date: 2 December 2011

Reviewer: Bisakha Sen

Reviewer's report:
The paper explores the association between family structure and breakfast consumption of adolescents in Scotland, using HBSC data from 1994-2010. This is a high quality dataset, and the authors provide a nice literature review of past literature. They are also upfront about limitations of the data, particularly since survey questions changed between one survey to another.

I see two major limitations in the paper which should be addressed before it can be recommended for publication. I also have one major recommendation that may benefit readers.

Major Limitations & Recommendations
1) The authors need to better emphasize their primary contributions -- the way I see it, these contributions include looking at family structures that go beyond "two parent
family versus not", as well as exploring how the relationship between family structure and breakfast has changed over time. The statistical analyses should be reconfigured to better emphasize one of the main contributions of this work -- namely, how the relationship between family structure and breakfast has changed over time.

The aims of the study have been re-worded to read: “…the primary contributions of this study are to (1) describe the changes in breakfast consumption of adolescents in Scotland over a 16-year period, from 1994 to 2010, across 5 study points, (2) examine family structure inequalities in breakfast consumption, going beyond ‘two parent families versus not’, and (3) explore how the relationship between family structure and breakfast consumption has changed over time.”

2) I fail to understand why the authors take the rich information on frequency of breakfast consumption over the week, and reduce it down to the simplistic logistic ‘have breakfast every day versus not’......I do not find this to be appropriate. Why treat children who never have breakfast and those who have breakfast 6 days a week (though not 7) exactly in the same way ? The loss of variation in the outcome variable from this approach weakens the statistical model. The logistic model also suffers from additional problems of interpretation of coefficient estimates (especially where interactions are concerned), and is simply not appropriate for this type of analysis. I strongly advise the authors to keep the full variation of frequency of breakfast consumption that is available in their data, and consider methods like OLS ....which offers greater flexibility, and greater ease of interpretation of the ‘trends’ over time. It would probably be easier to address my first comment ....placing greater emphasis in the ‘over-time’ changes in association between family structure and breakfast -- using an OLS model.

As the outcome variable (y, breakfast consumption) was a categorical, albeit ordinal, variable with 4 categories prior to 2002, there is no way to model eg how children who ate breakfast 6 days per week performed. I assume the reviewer is suggesting that we assign an approximation of the number of days breakfast is eaten to the 1994 and 1998 data (eg 4-6 days a week might be summarised by 5, of course this then adds to the assumptions made) to carry out OLS. OLS or Linear regression, however, is not an option for the current dataset as the data prior to 2002 is categorical with only 4 categories and the interval between the 4 categories (approximated to 0, 2, 5 and 7) is not consistent, and the errors of the model violate the necessary homoskedasticity and normality assumptions of OLS regression, resulting in invalid standard errors (see eg JS Long, 1997, pp 38-40). Although I agree that using logistic regression loses information, I see only 4 options for modelling the data: 1. Using the 7/less than 7 days a week cut-off and logistic regression as presented, 2. Using 4 or more/less than 4 days a week as a cut-off, 3. Using at least one day/zero days a week, or 4. Using ordered multinomial modelling for 4 categories, which is effectively equivalent to carrying out all three of the above simultaneously.
The ordered multinomial model would not converge possibly due to the complexity of the model. In any case the findings of this model would be difficult to present and harder still to summarise. Having already carried out the first option, I attach a table with the existing final model, along with the results using the second and third cut-off options-- see table at the end of this document.

I have added the following to the end of Statistical Analysis in the Methods section: “Identical logistic regressions were also carried out for two alternative breakfast consumption outcomes with cut-offs: breakfast eaten on 4 or more/less than 4 days per week, and at least one day/no days per week.”

Also to the limitations and recommendations section: “There are some limitations in the definition of breakfast consumption. The change in question format between 1998 and 2002 may have affected the trend in proportions presented over time. However this was adjusted for in the regression analysis. Ideally, raw frequency of breakfast consumption would have been modelled. Alternatively, it may have been preferential to limit the study to weekday breakfast consumption, as this has been the focus in recent publications [16]. Using a binary outcome, daily breakfast consumption versus breakfast consumption on a fewer number of days, groups together those who ate breakfast on 5 or 6 days a week with those who never ate breakfast at all. However, the categorical format of the survey question in 1994 and 1998 meant that modelling of raw (or weekday only) data could not be carried out. The data were however re-modelled for outcome variables breakfast on 4 or more/less than 4 days per week and at least once a week/never (tables are available from the authors on request), and although the odds changed a little, the results and conclusions remained the same; for all three outcomes the final model showed significantly poorer results over time for those from single father and single mother families relative to those living with both parents.”

3) Recommendation: The authors use models both with ‘fixed effects’ and ‘random effects’. These terms mean very different things in the different disciplines that contribute to public health (I personally am familiar with how they are defined by health economists). It would be beneficial to interdisciplinary readers if the authors clearly laid out what ‘fixed effects’ and ‘random effects’ mean in their models (they can continue to use them even after switching to OLS), how the two models differ, and how the interpretation of coefficients may change when one is used versus the other.

The fixed and random effects relate to two different components of a multilevel model. We did not include a random slope in any of the models, so in this case the fixed and random effects merely describe the parameter coefficients (fixed effects) and model variance (random effects).

The following has been added the Data Analysis in the Methods section: “Fixed and random parameter estimates for models were tabulated, where fixed estimates were defined as the average effect across the entire population of Education Authorities,
schools and individuals, while the random estimates described how these varied at each level."

Other (minor) suggestion:
1) Are there no information on other family characteristics like income, parental education or employment? Being able to control for even some of these in the model would help alleviate the concern that family structure is purely a proxy for SES, and may make the results more interesting.

Family affluence (FAS), collected by the survey, was not included in the current analysis for three reasons. Firstly, it was felt that the analysis was complex enough in itself. Family structure may be a proxy for many factors, raised in the discussion, SES being only one. To adjust for SES could heighten or diminish the effect of family structure (or have no effect) and as both mediate the other (ie there is no certain direction of association between the two), interpretation of results might become quite complex. The second reason is that the FAS has changed over time with the addition of computers in 2002, and while it still possible to split the distribution into low, medium and high tertiles, these become less precise with fewer items. Thus adjustment for an arguably inconsistent measure, particularly applicable to the 1994 data, serves only to muddy the waters further. A last reason for not including SES here is that we have now analysed and submitted a ‘next stage’ of analysis where not only SES but all contextual variables collected by the study related to family members, relationships and the home environment are studied.

2) It was not clear to me whether the data allowed identification of where the adolescent had breakfast -- at home or at school or elsewhere. If that information was available, it would be useful to at least include it in the descriptive statistics, to see whether there were differences by family structure and over time in where the teens ate breakfast.

This is an interesting comment and very relevant as school initiatives have changed over time. No information was collected on where breakfast was eaten. The relevance of school initiatives is therefore highlighted in the Discussion and recommendations for future research have been added to the limitations paragraph: "It is also recommended that future research investigates the impact of school level initiatives such as breakfast clubs on adolescent breakfast consumption and family structure inequalities in breakfast consumption."

**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
Reviewer's report

Title: Family structure and breakfast consumption of 11-15 year old boys and girls in Scotland, 1994-2010: a repeated cross-sectional study

Version: 1 Date: 5 December 2011

Reviewer: Natalie Pearson

Reviewer's report:
This is an interesting article examining breakfast consumption and the context of the family structure over time. I have some comments below:
1. The introduction is quite thorough but is missing some references in places. Page 4, second paragraph of introduction, second sentence needs a reference. Also page 5, top paragraph third sentence.

The sentence referred to by the reviewer on page 4 has been changed and now reads: “Breakfast consumption may, in particular, be patterned by family structure, given that it is the meal most likely to be skipped and that irregular meal patterns are related to lifestyle factors [14].”


Refs have been inserted on page 5.

2. Methods needs to be clearer. Can you clarify that the data is not matched across time points. The study is a repeated cross-sectional (as opposed to longitudinal) study. If by matched you mean are the children the same children, then no, the study samples 11, 13 and 15 year olds at each time point (ie a repeated cross-sectional, rather than a longitudinal study).

3. Breakfast consumption measure needs more explanation. Did you sum weekend and week day breakfast after the 2002 measure?
Yes. The following has been added under Outcome Variable: “These responses were summed to give a total range of breakfast consumed on 0-7 days per week.”

4. Also, why was breakfast coded as daily / less than daily? This would imply that those who ate breakfast on 6 days a week were breakfast skippers? It would be useful to see the responses to all categories in the paper. This decision to categorise breakfast consumers and as daily and skippers as less than daily is not consistent with the literature. Please provide a rational for this decision.
As the outcome variable prior to 2002 was a (ordinal) categorical variable with 4 categories, I was given the choice of four possible ways of modelling the data: 1. Using the 7/less than 7 days a week cut-off as presented, 2. Using 4 or more/less than 4 days a week, 3. Using at least one day/zero days a week, or 4. Using multinomial modelling for 4 categories to effectively carry out all three previous options simultaneously. This model would not converge, due to the complexity of the model: interaction terms and 3 levels. In any case, the findings of such a model are difficult to present and harder still to summarise. Instead I have attached the findings for the alternative 2 cut-off-- see table at the end of this document.

I have added the following to the end of Statistical Analysis in the Methods section: “Identical logistic regressions were also carried out for two alternative breakfast consumption outcomes with cut-offs: breakfast eaten on 4 or more/less than 4 days per week, and at least one day/no days per week.”

Also to the limitations and recommendations section: “There are some limitations in the definition of breakfast consumption. The change in question format between 1998 and 2002 may have affected the trend in proportions presented over time. However this was adjusted for in the regression analysis. Ideally, raw frequency of breakfast consumption would have been modelled. Alternatively, it may have been preferential to limit the study to weekday breakfast consumption as this has been the focus in recent publications [16]. Using a binary outcome, daily breakfast consumption versus breakfast consumption on a fewer number of days, groups together those who ate breakfast on 5 or 6 days a week with those who never ate breakfast at all. However, the categorical format of the survey question in 1994 and 1998 meant that modelling of raw (or weekday only) data could not be carried out. The data were however re-modelled for outcome variables breakfast on 4 or more/less than 4 days per week and at least once a week/never (tables are available from the authors on request), and although the odds changed a little, the results and conclusions remained the same; for all three outcomes the final model showed significantly poorer results over time for those from single father and single mother families relative to those living with both parents.”

5. Results: the results section is quite messy and difficult to follow. It should have some structure e.g. breakfast at time 1, breakfast across time, family structure at time 1, family structure across time, family structure and breakfast at time 1 etc. A number of headings have now been inserted in the results section to make it easier to follow, eg “Daily breakfast consumption”, “Changes in daily breakfast consumption, 1994-2010”, “Family structure”, etc.

Reordering has resulted in Figure 1 and Figure 2’s order being reversed.

6. Results paragraph 1. Sentence stating that across all five points, 71% reported living with both parents.... is unclear because the sentence that follows says 61% lived with both parents in 2010. Consider restructuring the results to make it easier to follow.

The headings will hopefully clarify this now. The phrase ‘across all time points” has been changed to read “On average, across all time points”.
7. Results paragraph 2, second sentence ‘when split by family structure.... what year are you referring to here? This question can also be asked for the third paragraph when you are talking about odds. Please restructure and provide small headings to break the results up.

The phrase “on average across this period” has been added. This is not referring to a year but to the period as a whole. Re the third para, the model (model 1) adjusts for family structure with no interaction, this then again refers to the period as whole, as if you have taken the dataset and not considered the year, the equivalent to an average across time. This is not an uncommon way of presenting repeated cross-sectional (non-time series/longitudinal) results of this type. Headings have been added which will hopefully clarify any misunderstandings.

8. Results, third paragraph you speculate that the change in question format could have cause people to answer differently. Could it be that the change in question was more accurate because you ask for both weekday and weekend day? It could be that prior to 2002 you weren’t getting an accurate response. It would be interesting to see the responses to the categories for the both measures. I'm not sure if responses would be more or less accurate- can we more accurately remember/respond 4-6 days a week or exactly 5 times a week? They might be more precise but in fact less accurate. They also might not. In any case, we have adjusted for the change in question format to be on the safe side, making the results as robust as possible under the circumstances.

9. Last paragraph of results, second sentence is incomplete. I think the sentence is complete?? Changes (increases) of one group were 0.98/0.97, ie less, those of another with each additional year.

10. Discussion is too long and a lot of speculations are offered. I suggest that you pick out the most significant findings from this study and discuss these with reference to the literature. The Discussion has been re-worked and headings added to break the text down and make it easier to follow. The end of the first paragraph relating to delinquency, and the third, 7th, 8th and final paragraph have now been cut (with a reduction of 284 words) while the paragraph about the known benefits of family routines has been moved to the Introduction.

11. Discussion. Paragraph on page 14. Which study are you referring to when you say that the relationship between breakfast and ses was not consistent? The sentence now reads: “However, Pearson et al’s systematic review showed that the relationship between breakfast consumption and SES was not consistent [16].”

12. Missing references throughout discussion: fifth sentence in paragraph on page 14. The sentences that follow expand on this and present several references to papers that show the many ways that parenting styles differ by family structure.

Sixth sentence of second paragraph on page 13.
This sentence has been re-worded and a ref has been included.

13. Page 15, middle paragraph last sentence is a huge speculation given that your measure has changed over time, consider softening your language which is very assuming.
   The effect of the change in measure (whatever that may be) has been adjusted for in the regression analysis as described in the methods section and footnoted under the table of results. I therefore think we can draw the conclusions presented with some certainty.

14. First sentence on last paragraph on page 15 you say that increase in breakfast could be due to a combination of factors but in the last sentence of the previous paragraph you say that it is PRIMARILY due to increase in prevalence among those living with both parents.
   The last para have been re-worded for clarification to read: “On closer investigation it was found that the increase in breakfast consumption only occurred among those aged under 14.5 years, and more steeply among girls, perhaps due to a combination of factors.”

15. Did you assess SES in this study?
   No we did not. We felt there was rather a lot covered in the current analysis and we have now analysed and submitted a ‘next stage’ of analysis where not only SES but all contextual variables collected by the study related to family members, relationships and the home environment are studied.

16. Limitations are far too short, you don’t mention the change in measures and the possible impact this could have had.
   A section has however now been added to the limitations which reads: “There are some limitations in the definition of breakfast consumption. The change in question format between 1998 and 2002 may have affected the trend in proportions presented over time. However this was adjusted for in the regression analysis. Ideally, raw frequency of breakfast consumption would have been modelled. Alternatively, it may have been preferential to limit the study to weekday breakfast consumption as this has been the focus in recent publications [16]. Using a binary outcome, daily breakfast consumption versus breakfast consumption on a fewer number of days, groups together those who ate breakfast on 5 or 6 days a week with those who never ate breakfast at all. However, the categorical format of the survey question in 1994 and 1998 meant that modelling of raw (or weekday only) data could not be carried out. The data were however re-modelled for outcome variables breakfast on 4 or more/less than 4 days per week and at least once a week/never (tables are available from the authors on request), and although the odds changed a little, the results and conclusions remained the same; for all three outcomes the final model showed significantly poorer results over time for those from single father and single mother families relative to those living with both parents.”

**Level of interest:** An article whose findings are important to those with closely related research interests
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
Reviewer's report

Title: Family structure and breakfast consumption of 11-15 year old boys and girls in Scotland, 1994-2010: a repeated cross-sectional study

Version: 1 Date: 2 December 2011

Reviewer: Barbara Fiese

Reviewer's report:
1. In the introduction, the authors state that breakfast is a family mealt eaten around the table with the whole family together. I am not sure this is really accurate. Are there published reports documenting this?

This sentence has been omitted and instead reads: "Breakfast consumption may, in particular, be patterned by family structure, given that it is the meal most likely to be skipped and that irregular meal patterns are related to lifestyle factors [9]."


2. Please provide more detail about what constitutes a "Breakfast Club." I am concerned that national programs that serve breakfast at schools may affect your results. How can this be addressed in your analyses or at least addressed in the limitation section.

The following sentence has been added to the Intro, para 5 where breakfast clubs are first mentioned: many schools now have breakfast clubs, before-school provision serving food to children who arrive early [22]. This concept originated in the US as a way of providing nutritional breakfasts to children from poorer areas, and has since been adopted in the UK, organised in accordance to individual schools' facilities and resources [23].

There is some mention of how this may impact on the results at the end of the Discussion section. The following sentence has now also been added to the Limitations section: “It is also recommended that future research investigates the impact of school level initiatives such as breakfast clubs on adolescent breakfast consumption and family structure inequalities in breakfast consumption.”

We are currently using school-level data to investigate the effect of school level initiatives on child breakfast consumption and other eating behaviours.

3. I have some concerns about the binary approach to the data analysis. Were the authors able to examine the range of times that youth reported eating breakfast? For example, the mealtime literature for dinnertime indicates that 3 or more times per
week provides positive health benefits. The way in which the variables are constructed the authors are equating once a week with 5 or more times per week.

As the outcome variable prior to 2002 was a (ordinal) categorical variable with 4 categories, I was given the choice of four possible ways of modelling the data: 1. Using the 7/less than 7 days a week cut-off as presented, 2. Using 4 or more/less than 4 days a week, 3. Using at least one day/zero days a week, or 4. Using multinomial modelling for 4 categories to effectively carry out all three previous options simultaneously. This model would not converge, possibly due to the interaction terms. In any case, the findings of such a model are difficult to present and harder still to summarise. Instead I have attached the findings for the alternative 2 cut-offs- see table at the end of this document.

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4. Are the authors assuming that the youth actually ate with their parents? This is not really clear from the question.
No, we cannot know this from the current questions. This is why the issue of breakfast clubs is raised in the introduction, discussion and also now in the limitations.

5. I think the discussion goes way beyond the findings. I would stick much closer to the findings and not discuss such factors as juvenile delinquency, etc.
We agree that the discussion goes beyond the findings, however as it is not family structure in itself, but some related factors, that are likely to cause a reduced breakfast consumption frequency we feel some interpretation must be made in order to give some meaning to the findings and hopefully to direct future research. We therefore now explicitly begin paragraph 3 with the following: “Explaining family structure inequalities is beyond the scope of this paper, however it is worth
considering why breakfast consumption may be more easily achieved in some family
types than others.”

We have also re-worked and cut the Discussion and added headings to break the
text down and make it easier to follow. The end of the first paragraph relating to
delinquency, and the third, 7th, 8th and final paragraph have now been cut (with a
reduction of 284 words) while the paragraph about the known benefits of family
routines has been moved to the Introduction.

6. I am not sure about the accuracy of the time spent in food preparation. The USDA
has published reports that indicate time spent preparing food is closer to 40 minutes.
The figures we quote are specific to Scotland (these figures come from our national
food policy) and are likely to have a direct bearing on the kind of food which is
purchased, prepared and eaten, for example, higher amounts of convenience food.
To put this in the correct context, ‘in Scotland’ has been added to this sentence.

**Level of interest:** An article whose findings are important to those with closely
related research interests

**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
Table 2 Multilevel logistic model for daily breakfast consumption outcomes, MCMC estimates

(Monte Carlo standard error)

(NB the random part of the model, DIC etc, are not too relevant here but I thought I’d add them for completeness)

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Daily brkfst (Model 4)</th>
<th>Brkfst 4+ days/week</th>
<th>Brkfst 1+ days/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cons</td>
<td>0.49 (0.06)</td>
<td>1.00 (0.06)</td>
<td>2.03 (0.08)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.10 (0.02)</td>
<td>-0.11 (0.02)</td>
<td>-0.16 (0.02)</td>
</tr>
<tr>
<td>Age squared</td>
<td>0.04 (0.01)</td>
<td>0.05 (0.01)</td>
<td>0.02 (0.01)</td>
</tr>
<tr>
<td>Sex (ref: Male) Female</td>
<td>-0.71 (0.05)</td>
<td>-0.86 (0.05)</td>
<td>-0.99 (0.07)</td>
</tr>
<tr>
<td>Family structure (ref: Both parents)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Single mother</td>
<td>-0.14 (0.07)</td>
<td>-0.21 (0.07)</td>
<td>-0.09 (0.09)</td>
</tr>
<tr>
<td>Single father</td>
<td>-0.13 (0.18)</td>
<td>-0.03 (0.19)</td>
<td>-0.20 (0.23)</td>
</tr>
<tr>
<td>Step family</td>
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<td>-0.22 (0.10)</td>
<td>-0.18 (0.13)</td>
</tr>
<tr>
<td>Other</td>
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<td>-0.39 (0.32)</td>
<td>-0.15 (0.40)</td>
</tr>
<tr>
<td>Year\textsubscript{cont}</td>
<td>0.02 (0.01)</td>
<td>0.03 (0.01)</td>
<td>0.004 (0.01)</td>
</tr>
<tr>
<td>Age*Year\textsubscript{cont}</td>
<td>-0.01 (0.001)</td>
<td>-0.01 (0.002)</td>
<td>-0.01 (0.00)</td>
</tr>
<tr>
<td>Sex<em>Year\textsubscript{cont} (ref: Male</em>Year\textsubscript{cont})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female*Year\textsubscript{cont}</td>
<td>0.02 (0.005)</td>
<td>0.02 (0.01)</td>
<td>0.04 (0.01)</td>
</tr>
<tr>
<td>Family structure * Year\textsubscript{cont}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single mother*Year\textsubscript{cont}</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
interaction (ref: Both parents*Year\textsubscript{cont})

mother*Year\textsubscript{cont}

Single -0.03 (0.02) -0.04 (0.02) -0.04 (0.02)

father*Year\textsubscript{cont}

Step -0.004 (0.01) -0.003 (0.01) -0.01 (0.01)

family*Year\textsubscript{cont}

Other*Year\textsubscript{cont} -0.02 (0.02) 0.005 (0.03) -0.05 (0.03)

Random effects

Level 1 (child) variance\textsuperscript{8}

1 1 1

Level 2 (school) variance

0.042 (0.010) 0.051 (0.012) 0.052 (0.022)

Level 3 (region)

0.026 (0.009) 0.043 (0.014) 0.022 (0.013)

\[D\textsuperscript{h} \]

34776.9 28786.16 14416.7

\[P_{D}\textsuperscript{i} \]

219.9 212.0 118.5

\[DIC\textsuperscript{i} \]

34996.8 28998.1 14535.2

\textsuperscript{8}via Markov chain Monte Carlo (MCMC); estimates are based on a chain of length of 50,000 following a burn-in of 5,000

\textsuperscript{9}Model 4 adjusts for age, age\textsuperscript{2}, sex, grade, family structure, year as a continuous variable, year marker for years following 2002, interaction terms between year and age and year and sex, and an interaction term between year and family structure. Interaction between family structure and year marker for years following 2002 is not significant.
Year\textsubscript{cont} refers to continuous Year variable, ranging between 1 (1994) and 17 (2010).

Variance at the child level is constrained to 1.

$D$ is the expectation of the deviance and is a measure of how well the model fits the data.

$P_D$ is the effective number of parameters.

DIC is the Deviance Information Criterion; the larger this is, the worse the model fit.