Author’s response to reviews

Title: Intimate Partner Abuse Before and During Pregnancy as Risk Factors for Postpartum Mental Health Problems

Authors:

Sarah L Desmarais (sdesmarais@ncsu.edu)
Ashley Pritchard (aap2@sfu.ca)
Patricia A Janssen (patti.janssen@ubc.ca)

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Author’s response to reviews: see over
RE: Intimate Partner Abuse Before and During Pregnancy as Risk Factors for Postpartum Mental Health Problems (MS: 2968990411056122)

Dear Editors:

Thank you for your review and the feedback provided by the reviewers. We have revised the manuscript to address the reviewers’ comments. Revisions to the manuscript are highlighted in yellow to allow for easy identification of the changes. In the balance of this letter, we detail our response to each of the points raised by each of the reviewers.

Funding for this study was provided by the British Columbia Mental Health and Addictions Research Network, the Social Sciences and Humanities Research Council of Canada, and the Michael Smith Foundation for Health Research. The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies. Portions of this paper were presented at the 2010 American Psychological Association annual convention in San Diego, CA. Each author contributed significantly to the work and agrees to the submission. There are no conflicts of interest regarding this manuscript. All study procedures were approved by the relevant IRBs.

Thank you for your continued consideration of this manuscript for publication in BMC Pregnancy and Childbirth.

Sincerely,

Sarah L. Desmarais, Ph.D.
Assistant Professor, Department of Psychology
North Carolina State University
Reviewer 1

The data collection methods make the comparisons of IPA (measured by the Conflict Tactics Scale; CTS-2) before pregnancy and during pregnancy problematic for a number of reasons:
- Rather than collecting ‘before pregnancy’ data early on in the pregnancy, and then ‘during pregnancy’ data at the end of pregnancy, all data was collected post-partum in the one interview. It would be extremely difficult for participants to accurately recall and separate which events happened before and which during pregnancy using this method. Also, any discrepancy between time reference during pregnancy and time reference before pregnancy would influence results (this is not detailed in the methods section, so it’s not clear whether this was addressed). These issues limit the extent to which CTS responses for pre-pregnancy and during pregnancy can be meaningfully compared.
- CTS responses for before and during pregnancy are strongly correlated in this data set (with the exception of physical assault, although this relationship was still highly significant). This is to be expected for two reasons: Firstly, IPA during pregnancy has already been shown to be correlated with IPA before pregnancy; Secondly, participants completed data for both time-periods in the one sitting... this would increase correlation between data for the two data-periods. Hence the ‘before pregnancy’ data (actually collected after birth) isn’t really adding anything to the analysis, or to the paper as a whole. Unless there is a very strong rationale for including the retrospective ‘before pregnancy’ data, the paper would be much more parsimonious and sound without this added level of complexity.

We have retained the data on IPA before and during pregnancy for several reasons.

1. Despite the observed associations between IPA before and during pregnancy, there were interesting differences in the relationship between IPA before and during pregnancy and postpartum mental health.

2. As discussed in the introduction, few studies have compared the effects of IPA experienced before and during pregnancy on postpartum mental health outcomes in the same sample of women, a stronger design than comparing.

3. Analyses of IPA experienced at different times in women’s lives has regularly been conducted in the empirical literature based upon data collected from participants at one time point using the CTS2. For instance, one study examining the relationship between IPA before and during pregnancy with substance use, asked women who were approximately 6 to 7 months pregnant about whether the IPA occurred during the 12 months before they became pregnant and during the pregnancy.[1] Another study examined the effects of IPA before and during pregnancy with prenatal stress hormones, asking participants if they had experienced these events during adulthood, including both prior to and during the current pregnancy at one assessment time.[2] Other studies in the field have looked at women’s lifetime experiences of IPA and women’s mental health before and during pregnancy, again based upon data collected from participants at one time point.[3] Indeed, beyond the literature on IPA and mental health, there are dozens of examples of studies evaluating and comparing the impact of experiences occurring at different time points, even though data may have been collected at one time point. We acknowledge that a prospective, longitudinal design is optimal to address such research
questions; however, that is not always possible given study constraints, including but not limited to funding, participant availability and time frame.

4. We used a calendar-based interviewing approach that has been empirically shown to increase reliability and validity of the frequency and timing of retrospective, behavioral reports. Indeed, calendar-based interviews are the state-of-the-art in surveying and interviewing.[4-6] These methods require respondents to retrospectively report, using a calendar as a memory aid. Personally significant and easy-to-remember landmark dates, such as the birth of a child, are marked on the calendar to serve as temporal anchors. Our interview approach is now described in more detail in text (see p.12).

Revisions needed in response to these issues are as follows:
1) Either omit the ‘before pregnancy’ data/analyses OR if the ‘before pregnancy’ data/analyses are included:
   - 1.1) Give further information on the time-references used in the adapted version of the CTS. I.e., how long was the ‘before pregnancy’ period used in the adapted version? If different to the ‘during pregnancy’ period (e.g. 9 months vs 3 months), how were the two different time frames balanced out?

We now provide further information on the adapted version of the CTS2 (see p. 11). We no longer report comparisons between the prevalence of abuse before and during pregnancy; thus, there is no need to balance out the two different time periods.

   - 1.2) Provide a strong rationale for including the retrospective ‘before pregnancy’ data, backed up with prior literature in the background section, and related to a clear research question.

We have strengthened the rationale for including the retrospective ‘before pregnancy’ data (see pp. 6-7) and relate this information to explicit research questions (see pp. 7-8).

   - 1.3) Explain the choice of methods in collecting this data post-partum (e.g. as opposed to early on in the pregnancy when recall would be more accurate). Although this is probably a convenience issue, it still needs to be addressed and made explicit;

We provide further details regarding our data collection methods (see pp. 8, 12) and note our inability to conduct repeated interviews over time with participants as a limitation (see p. 20).

   - 1.4) Address associated methodological issues and limitations and also discuss these more explicitly in the limitations section of the discussion;

As noted above, issues associated with the research design are now discussed more explicitly in the limitations section.

   - 1.5) Make it clear throughout the paper that the ‘before pregnancy’ data was collected retrospectively post-partum (as some sentences make it sound as though the data was collected earlier on);
We have revised the language throughout the manuscript to more clearly indicate that the before pregnancy data was collected postpartum and at the same time as the during pregnancy data.

- 1.6) Include confidence intervals for the estimates in all tables/analyses (which is best practice anyhow), to capture any overlap that is likely to exist for results relating to these two retrospectively recalled time periods.

Confidence intervals are provided for the estimates in the tables, as appropriate.

**BACKGROUND:**

2) If retrospective ‘before pregnancy’ data is to be included in the analysis (not recommended due to the way data was collected - see comments below), background literature and rationale justifying this, and the method used, needs to be clearly discussed.

As detailed above, we have retained our before pregnancy data for several, but provide more detail on the methods used. We also have more clearly identified this retrospective approach throughout the paper and reference prior literature using similar strategies and approaches throughout. We also have strengthened our rationale for including the ‘before pregnancy’ data in relation to the limitations of prior research.

3) The research questions posed by the authors are not well defined. Clearer, more specific, research question/s and/or hypotheses need to be presented. This would then guide a more systematic and rigorous approach to analysis to address the research question/s.

We now provide clear research questions at the end of the introduction (see pp. 7-8).

**METHODS - POPULATION, MEASURES, AND PROCEDURES:**

4) Clarify the use of ‘semi-structured’ interviews – does this mean participants answered scale questions verbally as part of a larger interview schedule? Please state how participants responded to the scales (i.e. pencil and paper, computerised, or verbally, etc.).

Semi-structured refers to the fact that the interview included some standardized, closed-ended scales, but also some open-ended questions. As noted earlier, we have clarified the interview procedures in text.

5) The term “gold-standard” needs to be removed/revised in relation to the Conflict Tactics Scale Revised (CTS-2). The CTS and CTS-2 have received much criticism regarding their use in measuring IPA, therefore, although still used for a variety of reasons, cannot be referred to as the “gold-standard” for measuring IPA.

We have removed the term “gold-standard” from our description of the CTS-2.

6) Methods for classification of abuse type and severity on the CTS-2 need to be briefly outlined.

We followed the coding guidelines provided in the CTS-2 manual (see p. 11).
METHODS - STATISTICAL ANALYSES:
7) The paper seems to lack a strong rationale for the large number of somewhat overlapping analyses conducted. The statistical analyses are not adequately described, and in some instances do not seem appropriate. A much clearer and more systematic approach to the analyses is needed (guided by clearer research question/s).

Our statistical analyses are now directly tied to the research questions provided in the introduction and are more systematic in nature (see pp. 7-8, and 12-13).

8) The analyses should focus in on the multivariate General Linear Model (GLM) analyses – these seem the most appropriate and useful types of analysis to use for your research aim, however the step-by-step methods which should be used in GLM analyses have not been described either here or in the results section. See results (below) for full revisions in relation to statistical analyses.

We have revised our analyses to focus on the multivariate GLM analyses, describing in further detail our step-by-step methods (see pp. 12-13, 15-17).

RESULTS:
9) The results section would be greatly improved if a systematic multivariate analysis plan was followed, aimed at answering one or two clearly defined research questions.

As stated above, we now follow a systematic multivariate analysis plan addressing our research questions, which are now clearly defined in the introduction.

10) GLM analyses - revisions as follows:
As stated above, the GLM analyses were the most appropriate to use. However the results for these seem to be given low priority at the end of the results section, and are vaguely reported, with no associated tables, making it impossible to assess how the analyses were conducted.

- 10.1) Please include a clearer explanation of the type of GLM analyses used, steps undertaken and how these relate to the research question/s (this could be in the methods section).

As stated above, we now follow a systematic multivariate analysis plan addressing our research questions, which are now clearly defined in the introduction.

- 10.2) Please include tables including the results of the GLM analyses. I would suggest using the tables to report just one or two quality GLM regressions, with and without the control variables, and aimed at answering a more clearly defined research question. A good GLM / multiple regression table will also be able to include most of the other information needed (e.g. descriptive statistics... % / M and sd and bivariate correlations), reducing the number of other tables needed.

We have reduced the overall number of tables to 4, and now include tables describing the results of the GLM analyses (see Tables 3 and 4).
11) Analyses reported in Table 3 - revisions as follows:
- 11.1) I would suggest excluding the before and after pregnancy analyses. Comparing IPA before and during pregnancy, when data for both time-periods was actually collected during the one interview after pregnancy, is very problematic, for numerous reasons including those outlined earlier. In its current form, this table could also be quite difficult for readers to follow.

We have excluded the before and after pregnancy prevalence comparisons.

- 11.2) If the authors wish to include cross-tabulations of type and severity of IPA during pregnancy, this would be better just as a descriptive table or in text (i.e. without the Chi-square comparisons)

- 11.3) If a cross-tabulation table of type and severity is included, cut-off scores for minor and severe abuse need to be stated, as well as for each abuse type.

We now describe the prevalence of type and severity of IPA in text, without the Chi-square comparisons (see p. 14). Coding of minor and severe abuse is explained in the Methods section and is based upon which behaviors are endorsed, not based on cut-off scores.

12) Analyses reported in Table 4 - revisions as follows:
- 12.1) Again I would suggest excluding the before and after pregnancy analyses for the reasons outlined earlier.

We no longer included these analyses.

- 12.2) If this table was still to be included (i.e. without the 'before pregnancy' data), it needs to be made clear whether the variables included are binary (I assume the analysis has used Yes/No binary variables, however this is unclear)?

We have clarified the nature of all variables used in our analyses (e.g., dichotomous, categorical, continuous) in text as well as in our revised tables.

- 12.3) Descriptives for each of the variables (i.e. number of participants and percentages, assuming the variables are binary) would be useful at the start of each row.

We now provide descriptives for each of the variables in Tables 1 and 2.

- 12.4) Consider finding a way to combine the information contained in Tables 3 and 4 (i.e. just for during pregnancy), or placing the information in text.

As described earlier, we have completed revised our tables and present much of the information that was formally tabled (if still relevant to our analyses) in text.

13) Analyses reported in Tables 5 and 6 - revisions as follows:
- 13.1) *t*-tests are not a very appropriate type of analysis for the research question/s to be answered. The analyses presented here also seem to overlap with the GLM analyses described further on in the result section (with GLM being the more appropriate type of analysis). Tables 5 and 6 should be replaced with tables for the GLM analyses.

We have retained the bivariate analyses to identify relevant covariates and show differences in raw mean scores of postpartum mental health scales, but focus our discussion on the results of the GLM analyses. Given the relatively small sample size and, thus, potentially limited power for GLM analyses with all possible covariates, we believe these bivariate analyses are important piece of a step-wise analytic approach. Moreover, it is a widely-accepted approach in the field to first present bivariate followed by multivariate analyses to first establish raw or unadjusted differences between groups.[7-13]

- 13.2) *t*-tests cannot adjust for variables which could influence both IPA and mental health. Only analyses which can include these adjustments should be used (again why only the GLM analyses should be used).

See above. It is accepted practice to conduct *t*-tests (or other bivariate analyses, as appropriate) to establish differences between raw mean scores prior to adjusting for co-occurring outcomes or covariates.

- 13.3) In text it is stated that results were only reported as significant if $p<.01$ to reduce risk of Type I errors, however the table has still placed an asterisk beside *t*-values that only meet the $p<.05$ criteria. It would be much more justifiable just to use the multivariate GLM analyses.

Again, we have retained the bivariate analyses but the focus is on the multivariate analyses.

**DISCUSSION:**

14) Paragraph 3; Last line: This statement is problematic due to the issues with collecting ‘before pregnancy’ data after pregnancy, and so should be either removed or qualified.

This sentence has been deleted.

15) Paragraph 4; Second sentence: Again comparing these two reference periods is problematic given the data was collected at the one time-point, after pregnancy.

This paragraph is no longer included.
Reviewer 2

1. Abstract: Report prevalence of Clinical levels of postpartum mental health problems, not just those above normal. This makes for an easier comparison to other literature, as the vast majority of studies report on the prevalence of clinical symptoms.

We now report prevalence of postpartum mental health problems by symptom severity (i.e., normal, mild, moderate, severe, and extreme) in the Abstract as well as the Results manuscript (see pp. 2, 13-14).

2. Abstract, final sentence of the Conclusion – I wonder if this should be reversed – i.e. strategies designed to improve postpartum mental health should also aim to address intimate partner abuse?

We have revised this sentence to recognize that the relationship could be bidirectional in nature (see p. 3).

3. Please include some additional information about the study recruitment methods – i.e. what words were used to advertise the study? In particular, I’m interested in whether women were aware that the study was exploring intimate partner abuse.

The data presented herein were drawn from a larger study that was broader in scope than intimate partner abuse and postpartum mental health. As such, the recruitment materials only described a broad focus on factors that may affect health and well-being after pregnancy, without specific reference to intimate partner abuse or postpartum mental health. This is now clarified in the Abstract and Methods (see pp. 2, 8).

4. Page 9 – Please provide some additional information on the modification to the Conflict Tactics Scale Revised (CTS-2). What was the wording used for this modified version? Also, provide information on how you scored the scale – in particular what scores were used to determine the presence of abuse, and references to articles which confirm this scoring method.

This information is now provided in text (see pp. 11).

5. Page 9 – Your description of the CTS-2 does not include the 6 items on the Negotiation subscale.

We now include the 6 items on the Negotiation subscale in our description of the CTS2, but note that this scale was excluded from our analyses (see pp. 11).

6. Page 10 – You describe the study as open to women up to 3 months postpartum, but the range listed in the Sample Characteristics states rage as 0-5 months postpartum. Please clarify this.

Though women were recruited within 0-3 months postpartum, some interviews were completed after 3 months postpartum (N=12) due to scheduling difficulties. This is now clarified in a footnote (see p. 13).
7. Page 11 – You have used a score of > 8 to indicate clinical symptoms on the YBOCS but most studies use scores of 16-20. You need to either change your cut-off, or reference justification for using > 8 (which only indicates above normal levels rather than clinical levels.)

We now report symptoms by severity (i.e., subclinical, mild, moderate, severe and severe), using the cut-offs identified by the instrument authors. Details are provided in the Methods section (see p. 10).

8. Please report the cut-off scores used to indicate depression and anxiety and stress on the DASS.

Done (see p. 9).

9. Page 13 – you found no effects of psychological aggression during pregnancy on postpartum mental health – however, all mental health scores are higher for those who experienced psychological aggression and it would be good to draw attention to this – i.e. the trend appears present, but your numbers may not have been large enough to detect statistically significant difference.

We now indicate that even when differences were not statistically significant, they were in the same direction (see p. 15)

10. On page 15 you distinguish between ‘above normal’ and ‘clinical levels’ of mental health symptoms, but this should be more clearly distinguished in the results section as well.

As noted earlier, we now report prevalence of postpartum mental health problems by symptom severity (i.e., normal, mild, moderate, severe, and extreme) throughout the manuscript.

11. Page 15 - I think the very high prevalence of intimate partner abuse reported in the study requires more exploration in the discussion. This is much higher than most studies find. In particular, did the recruitment method mean that women who had experienced IPV were more likely to enroll in the study? If not, what other explanations might there be for this very high prevalence? How might the modification of the CTS-2 have effected prevalence? Provide some comparison to population-based studies using the CTS-2.

We now discuss in more detail the high prevalence of intimate partner abuse reported in the study, noting specifics of our methods that may have affected prevalence. We also describe findings in relation to prior studies using the CTS-2 (see p. 19).

12. Page 17 – Please add that you have a small sample size as a limitation – possibly not big enough to detect some differences.

Done (see p. 20).
Cited References