

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Impact of preterm birth on parental separation: a French population based longitudinal study
AUTHORS	Nusinovici, Simon; OLLIAC, Bertrand; Flamant, Cyril; muller, jean-baptiste; Olivier, Marion; Bureau, Valérie; Gascouin, Geraldine; Basset, Hélène; Bouvard, Charlotte; Roze, JC; Hanf, Matthieu

VERSION 1 – REVIEW

REVIEWER	Alicia Spittle The University of Melbourne, Australia Murdoch Childrens Research Institute, Australia
REVIEW RETURNED	19-Jun-2017

GENERAL COMMENTS	<p>This paper is examining the effects of preterm birth on parental separation and the role of neurodevelopmental impairments in mediating the relationship in large population sample of 5,272 parents. I have a few minor comments for the authors consideration.</p> <p>Abstract</p> <ol style="list-style-type: none">1. Objective: For clarity it would be useful to define that neurodevelopmental impairment was assessed at 2 years and parental separation up to 7 years.2. Methods: It would be useful to define "parental separation" and how the child's neurodevelopment was assessed.3. Results: Need to be consistent with rates of parental separation. In the abstract states rates as 10% but in discussion (page 11) rates are 12.3%. <p>Introduction</p> <ol style="list-style-type: none">1. The first sentence mentions that parental separation can strongly affect a child's development, yet this paper is examining the reverse relationship - the effect of neurodevelopmental impairment on parental separation. It would be useful to discuss the bidirectional relationship.2. Please add the rates of parental separation in the general population to the introduction. Rates are reported to be 9.9% in discussion on page 11, the same as the rates in this study.3. For consistency, it would be useful to use preterm infant rather than preterm child. <p>Methods</p> <ol style="list-style-type: none">1. Did you account for twins in the regression models?2. Need to define very preterm birth and extremely preterm birth when referring to GA 28-31 and GA 24-27 weeks on page 8, as some readers may not be familiar.
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REVIEWER	Jenn Gonya The Research Institute at Nationwide Children's Hospital Columbus, Ohio USA
REVIEW RETURNED	14-Jul-2017

GENERAL COMMENTS	<p>This manuscript investigates associations among low gestational age, neurodevelopment at age 2, and parental separation. It is an interesting investigation and a needed piece in our understanding of the complex nature of the lifelong impacts of prematurity. This reviewer respectfully requests clarification in the following areas:</p> <p>Abstract</p> <p>Design</p> <ul style="list-style-type: none"> • The authors describe the design as prospective. However, it is not clear later in the manuscript if participants were specifically recruited and enrolled for this study or if participant data was procured as part of the consequence of being involved in the LIFT follow up program. If the latter is the case, please justify why it is still considered prospective. <p>Conclusion</p> <ul style="list-style-type: none"> • Please specify that the results of the study can be used to target at risk situations in follow-up settings as the neurodevelopmental impairment variable cannot be effectively predicted, for now, in the NICU setting. • Please specify that the findings could be used to help prevent marital status consequences, not the global consequences of neurodevelopmental disabilities on the family. <p>Strength and Limitations of the Study</p> <ul style="list-style-type: none"> • Please clarify how the choice of reference population would limit the ability to identify effects given the fact that it was the normative group and the study has such a large n? <p>Introduction</p> <ul style="list-style-type: none"> • Please expand the description of how parental separation can affect a child's development. Build your case for the reader why this is an important topic to study. • The variable that is being investigated is gestational age. The definition of VLBW is independent of gestational age. Please justify and clarify why there is a discussion of VLBW in the Introduction section. • Please justify why there is a discussion of parental psychological distress and depressive symptomatology when these are variables that were not investigated in the study. • Please clarify - "Preterm births are indeed associated with a high risk of neurodevelopmental disabilities that can also increase the risk of parental separation."
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I think what you are saying is that disabilities have been associated with an increase in parental separation and that preterm births are associated with the disabilities.

Therefore, there is an assumed logical association between preterm births and parental separation. Correct? Please consider rewording this to then lead into the sentence about where the gap in research is.

- Please consider deleting “appropriate methods.” Methods are selected based on research questions and investigation processes. Just because the methods are not appropriate to this specific investigation does not mean that they were not appropriate in other investigations.

Perinatal Data

- Perhaps this is beyond the scope of what the authors intend for this study, but why weren’t factors such as length of stay, acuity, parental visitation, etc. gathered from the medical record as well? Is it because of previous research from the LIFT network that identified these three key variables? Please clarify.

Statistical Analysis

- If the goal of the study was to identify target areas for future intervention, why weren’t specific effects of gestational age breakdowns performed? It seems that whole group statistics are mixed with individual group statistics. Please consider clarifying for the reader when whole group comparisons are being made vs. subgroups. An extremely preterm infant is markedly different from a 34-weeker.

Discussion

- In the discussion of limitations:
 1. The authors describe national statistics that show that 9.9% of marriages end in divorce 5 years later and that in this study 12.3% of marriages ended in separation. The authors use this information to illustrate that there was probably an absence of bias. However, it also raises the question that there isn’t much of a percentage differential from the study population to the overall population, which begs the question of the overall significance of the findings. Please clarify this discrepancy and discuss and justify why this is not in the first part of the Discussion section and is in the limitations section instead.
 2. An added limitation is that the study only looked at three main factors for parental separation (gestational age, birthweight, and socioeconomic status) and did not account for factors such as parental stress, parental age, number of children living in the household, addiction, etc., which are factors that have been identified in previous research studies. Please clarify to the reader how much

	of the variance is accounted for by the study's model and explain how additional factors must be studied.
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REVIEWER	Janet M. Bronstein UAB School of Public Health, U.S.A.
REVIEW RETURNED	18-Jul-2017

GENERAL COMMENTS	Nice paper, good data, interesting analysis, flow chart of the decomposition analysis is particularly nice. In English, the title as it reads is not that clear - perhaps it could read: "Impact of preterm birth on parental separation: a population based longitudinal study"
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VERSION 1 – AUTHOR RESPONSE

REVIEWER: 1

REVIEWER NAME

ALICIA SPITTLE

Thank you for your comments.

INSTITUTION AND COUNTRY

THE UNIVERSITY OF MELBOURNE, AUSTRALIA

MURDOCH CHILDRENS RESEARCH INSTITUTE, AUSTRALIA

PLEASE STATE ANY COMPETING INTERESTS OR STATE 'NONE DECLARED':

NONE DECLARED

PLEASE LEAVE YOUR COMMENTS FOR THE AUTHORS BELOW

THIS PAPER IS EXAMINING THE EFFECTS OF PRETERM BIRTH ON PARENTAL SEPARTATION AND THE ROLE OF NEURODEVELOPMENTAL IMPAIRMENTS IN MEDIATING THE RELATIONSHIP IN LARGE POPULATION SAMPLE OF 5,272 PARENTS. I HAVE A FEW MINOR COMMENTS FOR THE AUTHORS CONSIDERATION.

ABSTRACT

COMMENT: OBJECTIVE: FOR CLARITY IT WOULD BE USEFUL TO DEFINE THAT NEURODEVELOPMENTAL IMPAIRMENT WAS ASSESSED AT 2 YEARS AND PARENTAL SEPARATION UP TO 7 YEARS.

RESPONSE: The objective was modified accordingly: "The objective of this study was to investigate both the effects of low gestational age and child's neurodevelopmental outcome at two years of age on the risk of parental separation within seven years of giving birth."

COMMENT: METHODS: IT WOULD BE USEFUL TO DEFINE "PARENTAL SEPARATION" AND HOW THE CHILD'S NEURODEVELOPMENT WAS ASSESSED.

RESPONSE: Parental separation and child's neurodevelopmental were defined in the method section of the abstract as suggested:

- Participants: This study included 5,732 infants delivered at <35 weeks of gestation born between 2005 and 2013 who were enrolled in the population-based LIFT cohort and who had a neurodevelopmental evaluation at two years. This neurodevelopmental evaluation was based on a physical examination, a psychomotor evaluation and a parent-completed questionnaire
- Outcome measure: risk of parental separation (parents living together or parents living separately).

COMMENT: RESULTS: NEED TO BE CONSISTENT WITH RATES OF PARENTAL SEPARATION. IN THE ABSTRACT STATES RATES AS 10% BUT IN DISCUSSION (PAGE 11) RATES ARE 12.3%.

RESPONSE: The rate in the abstract refers to the parental separations that were included in the analysis. Indeed, separations occurring at the 3-month or 84-month visits were not included. To allow the comparison between our study and the national rate, we have calculated the overall separation rate in our population (including all the separations). Therefore, these 2 rates are different because they do not include the same number of parental separations.

INTRODUCTION

COMMENT 1. THE FIRST SENTENCE MENTIONS THAT PARENTAL SEPARATION CAN STRONGLY AFFECT A CHILD'S DEVELOPMENT, YET THIS PAPER IS EXAMINING THE REVERSE RELATIONSHIP - THE EFFECT OF NEURODEVELOPMENTAL IMPAIRMENT ON PARENTAL SEPARATION. IT WOULD BE USEFUL TO DISCUSS THE BIDIRECTIONAL RELATIONSHIP.

RESPONSE: The effects of parental separation on children mainly correspond to developmental impairments (cognitive, psychological...) occurring from childhood to adolescence (even until adulthood). In the present study, we investigate the effect of events occurring at or before two years. We have modified the first sentence to precise the main known effects and the periods during development or later during which parental separation have detrimental effects: "Understanding the impact of preterm birth on parental separation is critical as parental separation have negative consequences in childhood¹⁻³, notably on cognitive and psychological developments that can persist in the adolescence⁴ and adulthood^{5,6}".

Furthermore, we performed a sensitivity analysis that excluded infants for whom there was a doubt regarding the temporality between the neurodevelopmental outcome and the parental separation (similar results).

Finally, it is true that separated parents might have conflictual relationships previous to the infant's birth. These conflictual relationships could be associated with a higher risk of giving birth to a preterm birth. The consequence could therefore be an overestimation of the effect of a non-optimal neurodevelopment on the risk of parental separation. This point is discussed in the manuscript paragraph 3 in the discussion section.

COMMENT 2. PLEASE ADD THE RATES OF PARENTAL SEPARATION IN THE GENERAL POPULATION TO THE INTRODUCTION. RATES ARE REPORTED TO BE 9.9% IN DISCUSSION ON PAGE 11, THE SAME AS THE RATES IN THIS STUDY.

RESPONSE: The following sentence has been added in the first paragraph of the introduction: "In France, 9.9% of marriages entered into in the year 2000 ended in divorce within 5 years (National statistics from the INSEE)".

COMMENT 3. FOR CONSISTENCY, IT WOULD BE USEFUL TO USE PRETERM INFANT RATHER THAN PRETERM CHILD.

RESPONSE: Modified accordingly

METHODS

COMMENT 1. DID YOU ACCOUNT FOR TWINS IN THE REGRESSION MODELS?

RESPONSE: We did not account for twins in the survival model. In order to check the robustness of the results regarding the assumption of non-independence between twins, we performed a supplementary analysis by keeping only one infant from each twins' pair (n=3,654). The results are very similar: adjusted HR for optimality at 2 years = 1.39 [1.10, 1.74] versus 1.49 [1.23, 1.80] for the principal analyses with n=5,732. We have added this analysis in the manuscript (Supplementary Table 7) and the following sentence in the last paragraph of the material and method section regarding sensitivity analyses: "Finally, a last analysis was performed by keeping only one infant from each twins' pair to check the robustness of the results regarding the assumption of non-independence between twins".

COMMENT 2. NEED TO DEFINE VERY PRETERM BIRTH AND EXTREMELY PRETERM BIRTH WHEN REFERRING TO GA 28-31 AND GA 24-27 WEEKS ON PAGE 8, AS SOME READERS MAY NOT BE FAMILIAR.

RESPONSE: Added accordingly

REVIEWER: 2

REVIEWER NAME

JENN GONYA

Thank you for your comments.

INSTITUTION AND COUNTRY

THE RESEARCH INSTITUTE AT NATIONWIDE CHILDREN'S HOSPITAL

COLUMBUS, OHIO

USA

PLEASE STATE ANY COMPETING INTERESTS OR STATE 'NONE DECLARED':

NONE DECLARED

PLEASE LEAVE YOUR COMMENTS FOR THE AUTHORS BELOW

PLEASE SEE ATTACHED FILE.

BMJ OPEN REVIEW

7/13/2017

"RISK FACTORS FOR PARENTAL SEPARATION IN PRETERM CHILDREN: A POPULATION-BASED STUDY" THIS MANUSCRIPT INVESTIGATES ASSOCIATIONS AMONG LOW GESTATIONAL AGE, NEURODEVELOPMENT AT AGE 2, AND PARENTAL SEPARATION. IT IS AN INTERESTING INVESTIGATION AND A NEEDED PIECE IN OUR UNDERSTANDING OF THE COMPLEX NATURE OF THE LIFELONG IMPACTS OF PREMATUREITY. THIS REVIEWER RESPECTFULLY REQUESTS CLARIFICATION IN THE FOLLOWING AREAS:

ABSTRACT

DESIGN

THE AUTHORS DESCRIBE THE DESIGN AS PROSPECTIVE. HOWEVER, IT IS NOT CLEAR LATER IN THE MANUSCRIPT IF PARTICIPANTS WERE SPECIFICALLY RECRUITED AND ENROLLED FOR THIS STUDY OR IF PARTICIPANT DATA WAS PROCURED AS PART OF THE CONSEQUENCE OF BEING INVOLVED IN THE LIFT FOLLOW UP PROGRAM. IF THE LATTER IS THE CASE, PLEASE JUSTIFY WHY IT IS STILL CONSIDERED PROSPECTIVE.

The data used here were not collected for the purpose of this study. However, the data are longitudinal, which imply that they were prospectively collected. We have added this sentence at the

end of the 'Study population' paragraph in the materials and methods section to clarify this point: "Data used in this study were routinely collected (i.e. not collected for the purpose of the study)."

COMMENT: CONCLUSION

PLEASE SPECIFY THAT THE RESULTS OF THE STUDY CAN BE USED TO TARGET AT RISK SITUATIONS IN FOLLOW-UP SETTINGS AS THE NEURODEVELOPMENTAL IMPAIRMENT VARIABLE CANNOT BE EFFECTIVELY PREDICTED, FOR NOW, IN THE NICU SETTING. PLEASE SPECIFY THAT THE FINDINGS COULD BE USED TO HELP PREVENT MARITAL STATUS CONSEQUENCES, NOT THE GLOBAL CONSEQUENCES OF NEURODEVELOPMENTAL DISABILITIES ON THE FAMILY.

RESPONSE: We agree with these comments. We prefer delete the corresponding sentences in the abstract and the conclusion for more clarity.

COMMENT; STRENGTH AND LIMITATIONS OF THE STUDY

PLEASE CLARIFY HOW THE CHOICE OF REFERENCE POPULATION WOULD LIMIT THE ABILITY TO IDENTIFY EFFECTS GIVEN THE FACT THAT IT WAS THE NORMATIVE GROUP AND THE STUDY HAS SUCH A LARGE N?

RESPONSE: In this cohort, no information on term infants was collected. We use instead a group of infants born between 32 and 34 week. In absence of a 'real' reference group, we cannot exclude de facto that preterm birth could have an effect on the risk of parental separation. As you point out, because of the large sample size, we believe that, if existing, this effect would likely be small.

COMMENT:

INTRODUCTION

PLEASE EXPAND THE DESCRIPTION OF HOW PARENTAL SEPARATION CAN AFFECT A CHILD'S DEVELOPMENT. BUILD YOUR CASE FOR THE READER WHY THIS IS AN IMPORTANT TOPIC TO STUDY.

RESPONSE: The beginning of the introduction has been modified according to your comment: "Understanding the impact of preterm birth on parental separation is critical as parental separation have negative consequences in childhood¹⁻³, notably on cognitive and psychological developments that can persist in the adolescence⁴ and adulthood^{5,6}. . In France, 9.9% of marriages entered into in the year 2000 ended in divorce within 5 years (National statistics from the INSEE)."

COMMENT: THE VARIABLE THAT IS BEING INVESTIGATED IS GESTATIONAL AGE. THE DEFINITION OF VLBW IS INDEPENDENT OF GESTATIONAL AGE. PLEASE JUSTIFY AND CLARIFY WHY THERE IS A DISCUSSION OF VLBW IN THE INTRODUCTION SECTION.

RESPONSE: The majority of VLBW infants are preterm. In our data, the mean gestational age for VLBW infants is 29.6 weeks (SD=2.4; range=24-34.5). Among these infants, 78% have gestational ages between 24 and 31. Moreover, the idea in this paragraph is to discuss about the effects of early stressful events like preterm birth and VLBW on the parents relationship.

COMMENT: PLEASE JUSTIFY WHY THERE IS A DISCUSSION OF PARENTAL PSYCHOLOGICAL DISTRESS AND DEPRESSIVE SYMPTOMATOLOGY WHEN THESE ARE VARIABLES THAT WERE NOT INVESTIGATED IN THE STUDY.

RESPONSE: we discuss about the context of preterm birth and we report some interesting results that can help the readers to understand the overall context. Furthermore, these results are directly related to our hypothesis regarding the relationships between parents.

COMMENT: PLEASE CLARIFY - "PRETERM BIRTHS ARE INDEED ASSOCIATED WITH A HIGH RISK OF NEURODEVELOPMENTAL DISABILITIES THAT CAN ALSO INCREASE THE RISK OF PARENTAL SEPARATION." I THINK WHAT YOU ARE SAYING IS THAT DISABILITIES HAVE BEEN ASSOCIATED WITH AN INCREASE IN PARENTAL SEPARATION AND THAT PRETERM BIRTHS ARE ASSOCIATED WITH THE DISABILITIES. THEREFORE, THERE IS AN ASSUMED LOGICAL ASSOCIATION BETWEEN PRETERM BIRTHS AND PARENTAL SEPARATION. CORRECT? PLEASE CONSIDER REWORDING THIS TO THEN LEAD INTO THE SENTENCE ABOUT WHERE THE GAP IN RESEARCH IS.

RESPONSE: We agree with this comment. The idea was to say that the two associations have been investigated separately. Reformulation as follow: "On the one hand, preterm births are indeed associated with a high risk of neurodevelopmental disabilities^{21,22}. On the other hand, neurodevelopmental disabilities have been shown to be associated with an increased risk of parental separation^{23–30}. However, no longitudinal study has investigated the complex relationships between low gestational age, neurodevelopmental outcome, and parental separation."

COMMENT: PLEASE CONSIDER DELETING "APPROPRIATE METHODS." METHODS ARE SELECTED BASED ON RESEARCH QUESTIONS AND INVESTIGATION PROCESSES. JUST BECAUSE THE METHODS ARE NOT APPROPRIATE TO THIS SPECIFIC INVESTIGATION DOES NOT MEAN THAT THEY WERE NOT APPROPRIATE IN OTHER INVESTIGATIONS.

RESPONSE: Deleted accordingly

COMMENT; PERINATAL DATA

PERHAPS THIS IS BEYOND THE SCOPE OF WHAT THE AUTHORS INTEND FOR THIS STUDY, BUT WHY WEREN'T FACTORS SUCH AS LENGTH OF STAY, ACUITY, PARENTAL VISITATION, ETC. GATHERED FROM THE MEDICAL RECORD AS WELL? IS IT BECAUSE OF PREVIOUS RESEARCH FROM THE LIFT NETWORK THAT IDENTIFIED THESE THREE KEY VARIABLES? PLEASE CLARIFY.

RESPONSE: It would have been interesting to investigate these factors. However, they were not collected during examinations.

COMMENT; STATISTICAL ANALYSIS

IF THE GOAL OF THE STUDY WAS TO IDENTIFY TARGET AREAS FOR FUTURE INTERVENTION, WHY WEREN'T SPECIFIC EFFECTS OF GESTATIONAL AGE BREAKDOWNS PERFORMED? IT SEEMS THAT WHOLE GROUP STATISTICS ARE MIXED WITH INDIVIDUAL GROUP STATISTICS. PLEASE CONSIDER CLARIFYING FOR THE READER WHEN WHOLE GROUP COMPARISONS ARE BEING MADE VS. SUBGROUPS. AN EXTREMELY PRETERM INFANT IS MARKEDLY DIFFERENT FROM A 34-WEEKER.

RESPONSE: I am not sure if I understand correctly your question. The goal of the study was to investigate the associations between gestational age, neurodevelopmental outcome and the risk of parental separation. No subgroup analysis was considered. The gestational age was considered as a categorical variable in order to estimate the effects of very and extremely preterm birth on the risk of parental separation (directly or indirectly).

DISCUSSION

IN THE DISCUSSION OF LIMITATIONS:

COMMENT 1. THE AUTHORS DESCRIBE NATIONAL STATISTICS THAT SHOW THAT 9.9% OF MARRIAGES END IN DIVORCE 5 YEARS LATER AND THAT IN THIS STUDY 12.3% OF MARRIAGES ENDED IN SEPARATION. THE AUTHORS USE THIS INFORMATION TO ILLUSTRATE THAT THERE WAS PROBABLY AN ABSENCE OF BIAS. HOWEVER, IT ALSO RAISES THE QUESTION THAT THERE ISN'T MUCH OF A PERCENTAGE DIFFERENTIAL FROM THE STUDY POPULATION TO THE OVERALL POPULATION, WHICH BEGS THE QUESTION OF THE OVERALL SIGNIFICANCE OF THE FINDINGS. PLEASE CLARIFY THIS DISCREPANCY AND DISCUSS AND JUSTIFY WHY THIS IS NOT IN THE FIRST PART OF THE DISCUSSION SECTION AND IS IN THE LIMITATIONS SECTION INSTEAD.

RESPONSE: 12.3% is an average percentage in our population which comprises 80% of optimal children at two years. We found that non-optimality at two years was associated with an increased risk of parental separation while preterm birth was not. If we compare the percentage of parental separation in disabled and non-disabled children, we obtain 15.9% and 11.6% respectively. We believe that 15.9% compare to 9.9% is quite an important increase.

COMMENT 2. AN ADDED LIMITATION IS THAT THE STUDY ONLY LOOKED AT THREE MAIN FACTORS FOR PARENTAL SEPARATION (GESTATIONAL AGE, BIRTHWEIGHT, AND SOCIOECONOMIC STATUS) AND DID NOT ACCOUNT FOR FACTORS SUCH AS PARENTAL STRESS, PARENTAL AGE, NUMBER OF CHILDREN LIVING IN THE HOUSEHOLD, ADDICTION, ETC., WHICH ARE FACTORS THAT HAVE BEEN IDENTIFIED IN PREVIOUS RESEARCH STUDIES. PLEASE CLARIFY TO THE READER HOW MUCH OF THE VARIANCE IS ACCOUNTED FOR BY THE STUDY'S MODEL AND EXPLAIN HOW ADDITIONAL FACTORS MUST BE STUDIED.

RESPONSE: Some interesting variables were indeed not available. Another limitation was added in the corresponding paragraph: "Fifthly, some factors associated with parental separation were not available in this study and were thus not accounted for, such as the age of the parents or the number of children living in the household." We think that the separation is a process rather than merely an event. We also think that parental stress can be considered as a part of this process and therefore we might not want to adjust on it. Anyway, this information was not available.

Regarding the proportion of the variance explained by our model, we have calculated as suggested the AUC to estimate the prediction ability of the model based on the study of Chambless and Diao, 2005. The AUC is equal to 0.69, which is quite good for risk factor analysis. We have added this information at the end of the results section.

REVIEWER: 3

REVIEWER NAME

JANET M. BRONSTEIN

Thank you for your comments.

INSTITUTION AND COUNTRY

UAB SCHOOL OF PUBLIC HEALTH, U.S.A.

PLEASE STATE ANY COMPETING INTERESTS OR STATE 'NONE DECLARED':

NONE

PLEASE LEAVE YOUR COMMENTS FOR THE AUTHORS BELOW
NICE PAPER, GOOD DATA, INTERESTING ANALYSIS, FLOW CHART OF THE DECOMPOSITION
ANALYSIS IS PARTICULARLY NICE. IN ENGLISH, THE TITLE AS IT READS IS NOT THAT CLEAR
- PERHAPS IT COULD READ: "IMPACT OF PRETERM BIRTH ON PARENTAL SEPARATION: A
POPULATION BASED LONGITUDINAL STUDY"

Modified accordingly

VERSION 2 – REVIEW

REVIEWER	Alicia Spittle University of Melbourne
REVIEW RETURNED	18-Aug-2017

GENERAL COMMENTS	I have no additional comments
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REVIEWER	Jenn Gonya The Research Institute at Nationwide Children's Hospital Center for Perinatal Research USA
REVIEW RETURNED	23-Aug-2017

GENERAL COMMENTS	Manuscript more clearly written this time. Appreciate the effort by the authors to address concerns. Authors should check and correct minor grammatical errors.
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