**Author’s response to reviews**

**Title:** Do trajectories of economic, work- and health-related disadvantages explain child welfare clients’ increased mortality risk? A prospective cohort study

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**Version:** 1  **Date:** 12 Mar 2019

**Author’s response to reviews:**

Dear Editor,

We are grateful for the opportunity to revise our manuscript. We have addressed the concerns raised by the Reviewers and believe that the manuscript has improved in quality. Please see our point-by-point response below.

Reviewer 1: This study targets on an important social issue. I have a few main comments and would like the authors to clarify.

Response: We wish to thank the Reviewer for raising these important issues.

Firstly, regression analyses estimate the correlation between dependent and independent variables. When showing the results of statistically significant difference between reference group and those who were not investigates or placed, have you considered the possibility that this result may be due to some other confounding factors? Given that you are using data from a certain cohort, is it possible that some underlying cohort effect may also lead to similar findings? It would be nice for the authors to discuss this.

Response: We agree that it is important to consider possibly confounding factors and this is why we introduce the alternative comparison group – ‘Investigated but not placed’ – in the study. We argue (Introduction section, p.5, lines 126-129, and Discussion section, p.10, lines 274-279) that this is one way of addressing the fact that placement in OHC may not be the cause of premature mortality but, rather, the circumstances leading up to the placement (reflecting so-called confounding by indication).

Secondly, have you considered using marital status (family structure) as one of the variables for life disadvantage? For instance, those who had experience of OHC may have higher risk of having shorter marriage/partnership or living alone than those without the experience.
Response: We agree with the reviewer that marital status could potentially be an important factor. There is, however, quite little variation in marital status across adulthood. Individuals seldom transition in or out of marriage more than once or twice (if transitioning at all). Because of this lack of variability over time, marital status is not optimal to include as part of the trajectories of disadvantage. We do, however, mention family disruption in adulthood as one aspect that future studies should look into as to further explain the association between OHC experience and mortality risks (Discussion section, p.10, line 270).

Reviewer 2: Article Do trajectories of economic, work- and health-related disadvantages explain child welfare clients' increased mortality risk? A prospective cohort study, is a well-designed, analyzed and written paper, that offers new important insights into the potential causal mechanisms behind the increased mortality among persons with out of home care experience. I recommend publishing the paper with few minor editions.

Response: We wish to thank the Reviewer for pointing out these concerns and offering suggestions on how to improve the manuscript.

The paper has 3 study populations: OHC, no OHC and investigation into need to OHC. If possible, it would be a good idea to have a table that describes the characteristics of these groups, in particular family background (parental education, poverty, mental health) and individual characteristics prior to transitions (mental health, school performance) and age of placement for those placed. The authors argue that OHC population and investigated group are very similar in background, so it would be nice, if possible to see some basic descriptives on this.

Response: In the manuscript, we put forward the idea that the children who were ‘Investigated but not placed’ are likely to be more similar to children in the ‘Placed’ group when it comes to family background. Therefore, we argue, they may constitute a more suitable comparison group than children who were ‘Neither investigated nor placed’. In other words, while we do not state that the OHC population and the investigated group are very similar, we agree that it is a good idea to describe the family-related characteristics of the groups. We have added therefore a table relating to differences between them (see Table A in the Appendix, p.19). We also refer to this table in the Methods section (p.6, lines 145-149). With regard to individual characteristics prior to transitions, this is not possible to capture in our data: first of all, there is only information about e.g. behavioural problems and school performance at age 13 (and at a couple of additional time points after that) and, secondly, the information about placements/investigation is combined into three time periods (ages 0-6, 7-12, and 13-19) in the data. Concerning age of placement for those placed, we have added some information about this in the Methods section (see p.5-6, lines 140-143) where report on the distribution of first placement across the three time periods.

The authors could describe in more detail why they chose this mortality follow-up as compared to the other paper they compare their findings with.
Response: We agree that this is important and have motivated this further in the Methods section (see p.6, lines 151-153 and lines 162-164).

In the discussion section the authors go on quite long about the question of ethnicity and OHC. This could be shortened. It is obvious that in order to study questions of mortality, one has to use data from 1950s or so, and the authors have nicely described the differences in the OHC population of that time and today.

Response: We agree and have shortened this section in the Discussion section (see p.11-12, lines 290-308).

The authors mention very shortly that if they had more information about the transition period they might be able to explain larger part of the increased mortality. The main weakness here is the lack of register information about outpatient treatment, which would be important when studying mental health. The authors could state this a bit more clearly. This is one of the main weaknesses of the data.

Response: We agree that this is an important limitation. This weakness has now been highlighted in the Discussion section (see p. 10, lines 257-261).