Author's response to reviews

Title: Do open youth unemployment and youth programs leave the same mental health scars? - Evidence from a Swedish 27-year cohort study

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Version: 3  Date: 9 October 2015

Author's response to reviews: see over
Dear editor,

We would like to thank you and the reviewers for the considerable amount of work you have put into this paper. This work has indeed helped to improve the article tremendously both in structure and detail. We have now finished revising the article and feel that we do have taken the reviewer’s very clear comments into account. Our replies to the reviewer comments are listed below along with the reviewer queries.

Sincerely

Mattias Strandh

Referee 1
Reviewer’s report
Title: Do open youth unemployment and youth programs leave the same mental health scars? - Evidence from a Swedish 27-year cohort study
Version: 2 Date: 28 July 2015
Reviewer: Isabel Aguilar
Reviewer’s report:
Major Compulsory Revision
This paper tackles a current trending topic, the influence of youth unemployment on mental health, from a new perspective. That is, how the inclusion of youth people in labour programs can minimize the negative impact of unemployment.

1. Instead of its interest, some methodological aspects should be reviewed, in order to ensure the validity of the results. Specially, the aspects related to youth labour programs long-term effects (at the age of 43) present some difficulties. Potential confounders have been included in the analysis, like education at ages 18-21, IMHS at 16, somatic health problems at 16 or parental social class. These factors could influence mental health at the age of 21, but its utility at the age of 43 is quite unlikely. Other potential confounders closer at time should be considered, as recent diseases, employment status or socioeconomic position. Authors should explain how this problem has been addressed, and if necessary, add new confounders to 43 years old analyses.

• The referee is quite right that adult socioeconomic position is of great interest for the long term relationship between open unemployment/Programs and mental health, this might actually be one of the pathways for the results found. Previous studies present two possible explanations for the differences. Youth programs, firstly, could help to maintain participants’ mental health during unemployment by mitigating some of the destructive psychological aspects of being unemployed. This would in turn would leave less of a scar on mental health to be found in adulthood. Secondly, the programs may affect the life courses of the participants in the labor market and in general by helping them to develop capabilities necessary for success. This means a better socioeconomic trajectory leading to positions in life related to better mental health than would be the case of open unemployment, and reduces risks for further labour market events (such as later unemployment) related to poorer mental health. Both of these possible mechanisms are now discussed more thoroughly in the discussion section.

We have here chosen to limit ourselves to using pre exposure variables as controls as the post exposure controls theoretically could be the very mechanism that creates differing effects (and if
included could result in over controlling). The issue of which mechanism actually produces the result lies outside of the scope of this paper, although it is theoretically extremely interesting and merits further study. Our ambition is to write a new paper using structural equation modeling where exposure to different forms of unemployment is connected with mental health, later unemployment, education, social relations, and working conditions over time. Our hope is to be able to submit this article at a later date as this article represents an important foundation for the further analysis of the mechanisms involved.

We have in order to clarify this in the current paper tried to expand the theoretical discussion relating to the mechanisms and the possible role of later statuses in the discussion as well as pointing out the need for further research delineating the effect accordingly.

2. Also, an important improvement is required in the discussion. This section looks unfinished: study results are not compared with existing bibliography and there is not a critical comment of the results.
   • Thank you for this comment, you are quite right. The paper has now been restructured in order to accommodate this where parts of the background that clearly is related to the discussion now is integrated into the discussion and the results are discussed critically in relation to earlier findings. This has resulted in a major improvement.

Minor Essential Revisions
3. Abstract, line 38: the acronym of Internalized Mental Health Symptoms (IMHS) should be presented.
   • Thank you, it is now included.

4. Background section is, in general terms, too long and a little bit messy. I suggest to shorten this section and to focus it in the topic of the paper (the protective effect of youth labour programs on mental health).
   • Thank you, this is a good point. The background section has now been shortened and streamlined. This has meant that parts that obviously fit better in the discussion have been included in the discussion section. The result has been a major improvement of the paper.

5. Background, line 68-70: this sentence should be rewritten in order to make it understandable.
   • In line with the very relevant query 4 above, the background section has now been shortened and streamlined. This has meant that this content has been rewritten to be clearer and included in the discussion section where it fits much better.

6. Background, line 98-100 and 105-109: these ideas are more suitable for the discussion section.
• In line with the very relevant query 4 above, the background section has now been shortened and streamlined. This has meant that this content has been rewritten to be clearer and included in the discussion section where it fits much better.

7. Methods section: probably it is quite obvious for the authors, but a clear definition of what they consider “open unemployment” should be included in the text.
• This is a good point. Open unemployment is in line with the traditional definition of open unemployment in the labour market literature and administrative definitions, defined as an individual actively seeking work while not being in employment, education or training. This has now been included in the text.

8. Methods, line 143: it is not clear what is considered as “no exposure”. No exposure to youth unemployment?
• This is a good point and it has now been clarified in the text.

9. Methods, line 145: table 2 should be presented after table 1 (please, change table number).
• This text refers the interested reader to information that exist in table 2 of the appendix, (not in the main text) which hopefully is clearer now.

10. Methods, line 146: “Youth unemployment was relatively common in Sweden”. I think this should be changed to “in our sample”. Also, it would be nice to add the national data to compare it. Finally, table 1 looks more suitable to be presented in the results.
• This is quite right. It has been corrected and the table has now been moved to the results section.

11. Methods, line 169-170: this idea should be commented in the discussion section.
• Good point. This is now commented on in the expanded discussion section in relation to strengths and weaknesses.

12. Methods, confounders section: authors should address the aspects previously commented on the major compulsory revision.
• We have now in line with our answer to query 1 expanded on the need for further research investigating the mechanisms for mental health scarring of unemployment in the expanded discussion section.

13. Methods: Statistical software used should be included.
• The reviewer is quite right. All statistical analysis was performed using SPSS v.22.0 (IBM Corp., Armonk, NY, USA), this has now been included in the text.
14. Discussion: as previously indicated on the major section, this section should be rewritten. Some specific suggestions are:

a. The comparison with other studies should be included.
   - This is a very good point and the discussion section has been rewritten accordingly. The result has been a major improvement of the paper.

b. Although, as the authors indicate in line 260, an exhaustive explanation may be beyond the objective of this study, the critical review of the results obtained and its possible explanations should be included.
   - The reviewer is quite right and in line with this the discussion section has been rewritten accordingly. There is now a more substantial discussion of the possible mechanisms involved.

c. Limitations section: line 274: in which way have these aspects influenced the results?
   - We have now made this clearer in the strength and weaknesses section as well as added more information on the strengths.

15. Table 1: I suggest adding n values for “open unemployment for >6months” and “participation in youth programs for >6 months”. Also, points should replace commas and the meaning of SD (standard deviation) should be included as footnote.
   - Good points. We have now included n values for these categories, replaced commas with points and included information that SD represents standard deviation has been included.

16. Table 2 and table 3: both tables could be joined in one single table, in order to make comparisons easier. The meaning of OR and 95%CI should be included as footnotes. It would be interested to add as a footnote which variables are included in each model, in order to understand the table independently of the text. Finally, it should be stated clearly which is the reference category (“no ref.” looks not clear enough).
   - The meaning of OR and 95% CI have now been included as footnotes together with which covariates are added in model 4 (Gender, long-term somatic health problems at 16, truancy at 16, parental social class at 16, parental employment at 16, living with both parents at 16, paternal health problems at 16).
   - Given the number of models in the tables it was difficult to combine them in a way that presented them horizontally side by side without removing important steps. We tried instead to combine them by placing them vertically next to each other but found that this did not add to the readability and the ability to compare them (in fact we found it more difficult as compared with what is currently the case).

17. Table 2 appendix: I think this table is interesting enough to be provided as a
main table. The same indications made for tables 2 and 3 should be applied.

- This is a very good idea and we have now done so.

**Reviewer 2**

**Reviewer’s report**

**Title:** Do open youth unemployment and youth programs leave the same mental health scars? - Evidence from a Swedish 27-year cohort study  
**Version:** 2  
**Date:** 3 August 2015  
**Reviewer:** Bridianne O’Dea  

**Reviewer’s report:**

Thank you for inviting me to review this paper. This is an important area of research, given the growing issues with employment and mental health worldwide.

**Minor Essential Revisions:**

**Introduction:**

1. Throughout the paper, I was a little confused about the terminology used. In some instances, “youth programs” vs. “open unemployment” were used, and then in others “two forms of unemployment” was used instead. I advise the authors to provide a clearer definition of terms in the introduction. Instead of “youth programs”, terms such as “supported unemployment” vs. “unsupported unemployment” might be easier to digest/understand. I would suggest consulting the unemployment/vocational training literature more broadly for the best terminology to be used here. This will help to clarify the essence of the paper.

- Thank you for pointing this out. ALMP:s directed towards youths are commonly called “youth programs” in the literature on labour market policy. We have now made that clear when it first appears in the text and kept the terminology consistent throughout (“youth programs” vs. “open unemployment”). This makes the terminology much clearer.

2. In the second paragraph, you refer to a “correlation” between unemployment and mental health. I advise authors to make comment on the strength and direction of this association, so that comparisons in the discussion can be made.

- Thank you. It is quite right that it is very important to point out the direction of the relationship found. This has now been noted in the text. When it comes to the strength of the found long term relationships there are substantial differences in measures and methodology making comparisons less fruitful outside of the found relationships. There is currently ongoing work together with international colleagues in order to produce both a review and an attempt at a meta-analysis based on the available studies that would have been useful for such comparison.

3. The first sentence of the third paragraph needs to be rephrased, and the introduction could benefit from some paragraphs (last two) being restructured.

- Thank you, this is a good point which reviewer 1 also pointed out. The background section has now been shortened and streamlined. This has substantially improved the readability of the paper and allowed important discussions and points which fit better in the discussion section to be placed where they fit better. This has had the added
benefit of substantially strengthening the discussion section in line with the reviewer comments relating to the discussion section.

4. Overall, the introduction has a number of good points but the paper could be enhanced by a shorter, more concise overview of the background literature in this area and some rationale for the collection of confounders.
   - Thank you, this is as noted in relation to point 3 a relevant and important point. Good point. The background section has now been shortened and streamlined which has substantially improved not only the introduction section but also the discussion section.
   - It is of course also a good point to introduce the confounders as well as the rationale for them. This has now been introduced in the text here as well as, in line with comment 9 below, in the methods section.

Methods:
5. The methods section needs extensive revision. Firstly, no results should be presented here. I advise authors to move all tables and related results into the Results section.
   - Thank you, you are of course quite right. In line with this comment, as well as the comments made by reviewer 1, this has been done.

6. One outcome measure is stated as “exposure to youth unemployment”. Please revise this to better match the terms you decide upon using. For example: “Type of unemployment” or “Nature of unemployment”. Given the lack of research in this area, I am wondering why exposure (in weeks) is not kept as a continuous variable? Please provide evidence for why 5 months was chosen, as opposed to 3 months, for example. Is there any evidence for 5 months of exposure being particularly problematic? I feel that the answer given “…in order to ensure a large enough group only exposed to open unemployment” is manipulation of the data without good reason.
   - Thank you for these comments, they are important for improving the clarity of the text and study. We have now in line with query number 1 clarified this as exposure to two variables, open youth unemployment and participation in youth programs. The main reason for not keeping the continuous variables was, in line with your query below, to avoid counting frictional unemployment exposure. Frictional exposure relates to the labour market economics term frictional unemployment. Many individuals will be registering short unemployment periods when simply switching jobs. As this would not represent real involuntary unemployment exposure one would like to make sure that this group is removed from the exposed group. We have now tried to clarify this in the text.
   - A second reason for using this kind of cut off to limit the analysis to substantial exposure also allows for the kind of sensitivity test of the findings done in table 4 (previously table 2 of the appendix) where exposure to only open unemployment,
only youth programs as well as both youth programs and open unemployment could be compared.

- The cutoff point chosen and used in the main paper is six months, the reason for this cut off as a measure of substantial unemployment exposure is that it corresponds with the Swedish administrative definition of long term unemployment. This has now been clarified in the text. The five month cut off is used in a sensitivity test relating to the combination of exposure. The reason here was practical as we needed enough individuals in each group in order to perform it. Based on a comment by referee 1 this table is now also presented in the main text and we have tried to make this clearer.

- We could use the continuous variables for the analyses instead (if the reviewers required us to do so, but for the above reasons we do prefer to use the cut off points that we currently use).

7. Please provide more meaning for the Mental Health outcome measure. It is a very unfamiliar scale and validation for the exact scale should be included (rather than validations of the scales the items were taken from). Furthermore, can you indicate what the scores “mean”…i.e. if almost all of the sample have mental health scores below 1, then is this the right sample to be investigating mental health problems?? This is a potential limitation that was not mentioned in the limitations sections.

- The reviewer is quite right that the available mental health measure is a weakness of the study. Follow-up studies utilizing repeated surveys have the inherent ‘weakness’ of having to stick to the original questions which, in the long run, tend to become more or less outdated. The Northern Swedish Cohort study was established in 1981, which means that the questionnaire represents the understanding that prevailed in the 1970s. Since then, a lot of new conceptualizations and instruments for assessment of mental health have been introduced. The score constructed for the present study, anyway, seems to capture the essence of current definition of internalizing mental health problems. It has also been used in a large number of recent publications including in BMC public health (which of course is a poor argument…), see for instance:

- The reviewer is quite right in requesting more meaning for the mental health measure. We have now made clear both in the introduction and in the methods section that the study has a focus on depressive, anxiety, and panic related symptoms and that is conceptualized through using the widely used overarching term ‘Internalized Mental Health Symptoms’ (IMHS). We have also expanded the section on the construction of the index in order to provide more meaning to it.
In relation to the distribution of the scores, it is not so that almost all of the sample have mental health scores below 1 (as an example a table for IMHS is included below). 0 is indeed the most common value, but it is distributed according to what could be expected from an additive index of mental health problems (i.e that no symptoms is most common, followed by one symptom and so on) and fit the ordinal level analysis technique well. This has now been expanded on in the methods section.

<table>
<thead>
<tr>
<th>IMHS age 43</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>481</td>
<td>48.1</td>
<td>48.4</td>
<td>48.4</td>
</tr>
<tr>
<td>1,00</td>
<td>198</td>
<td>19.8</td>
<td>19.9</td>
<td>68.4</td>
</tr>
<tr>
<td>2,00</td>
<td>152</td>
<td>15.2</td>
<td>15.3</td>
<td>83.7</td>
</tr>
<tr>
<td>3,00</td>
<td>22</td>
<td>2.2</td>
<td>2.2</td>
<td>85.9</td>
</tr>
<tr>
<td>4,00</td>
<td>24</td>
<td>2.4</td>
<td>2.4</td>
<td>88.3</td>
</tr>
<tr>
<td>5,00</td>
<td>13</td>
<td>1.3</td>
<td>1.3</td>
<td>89.6</td>
</tr>
<tr>
<td>6,00</td>
<td>4</td>
<td>.4</td>
<td>.4</td>
<td>90.0</td>
</tr>
<tr>
<td>7,00</td>
<td>47</td>
<td>4.7</td>
<td>4.7</td>
<td>94.8</td>
</tr>
<tr>
<td>8,00</td>
<td>52</td>
<td>5.2</td>
<td>5.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>993</td>
<td>99.2</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>System</td>
<td>8</td>
<td>.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1001</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

8. Please provide better clarification on the terms “blue collar”/“white collar” – does this mean whether or not parents attended university (i.e. parental education), the current occupation of parents (labourer vs. professional) or the income status of parents?

- Good point. The terms "blue collar" and "white collar" are occupational classifications that distinguish workers who perform manual labor from workers who perform professional jobs. This has now been clarified in the text.

9. Why was paternal health included but not maternal?

- This is a good question where some clarification is necessary. The confounders were chosen among those available on the basis of them having either a relationship with either with the probability of exposure to open unemployment and youth programs and/or IMHS. In this case paternal health had a relationship with mental health while maternal health did not. We have now clarified the basis of the selection of confounders in the text.

Results

10. Is it possible to provide the OR and CI for the confounders in the Tables? It would be interesting to see the results of these variables in addition to the employment variable.

- The OR and CI for the confounders could be included in the tables if the reviewer requires it. They were excluded from the current tables for two reasons, firstly in order
to save space, secondly because almost all of them are insignificant when the baseline IMHS is included (which it is already from model 1, and this result is a good indication of the validity of the baseline), which would make the table larger without providing much additional information. At age 21 only gender and having parents living together are significant when controlling for baseline mental health, at age 43 only gender.

- As reviewer 1 has suggested also including table 2 from the appendix in the main section of the paper, we also would prefer to keep the size of the tables down.

11. For predicting long term impact (mental health at 43): The value of the modelling might be improved if your first step includes mental health at 21 rather than mental health at 16, as this would control for the short term impact of the employment exposure.

- We have here tested using mental health at age 18 instead, which does not appear to affect results. The reason for not choosing mental health at age 21 as a baseline is that this is post exposure, and as such probably is affected by exposure.

12. I am still unclear about those people who had both open unemployment and youth program. You do state that “many who were exposed to open unemployment” were not exposed to youth programs, but I am wondering how to interpret the risk for those who were exposed to both. It seems that open unemployment is more detrimental, but what is the exact OR? You may think about excluding these participants if it is a small number and focus exclusively on those in open vs. youth programs.

- This is a good idea, and we do try to test the implications of it in table 4 (formerly table 2 of the appendix). They do not seem to be problematic for the analysis, but if we do want to keep the administrative cut off for long term unemployment we end up with a little bit too few exposed to only open unemployment to make the analyses comfortable.

Discussion

13. I believe the discussion answers the question posed, however, it would be good to see some comparisons with other studies in this area. Also, the model of mental health at 43 years only predicted 9% of the variance in mental health. This is not overwhelming and states that there is a lot of other factors influencing mental health. The model of mental health at 21 years only predicted 15%, which again, is not a significant portion. You need to consider the implications of these low C-S values in your discussion.

- It is a very good point that there is a need for comparisons with other studies in this area. I line with the restructuring suggested by both referees it has now also been possible to do so which has substantially improved the text. The reviewer is further quite right that the relatively low predictive power of the models should be commented on. This has now been done in the discussion section.

14. The authors should be commended on the quality of the data in terms of attrition. This appears to be an excellent data source for which these sorts of
questions can be asked.
   • This is a very good point and we have now expanded on the strengths of the data for this type of analysis in the strength and weaknesses section.

Discretionary Revisions
Methods:
15. I understand the primary aim of the paper is to examine the differences in impact according to type of unemployment program, rather than length of time specifically, but this may be something worth manipulating as well. Or, if policy guidelines make recommendations about how long someone should stay in supported employment programs, then include this. Or alternatively, if there is evidence stating periods of unemployment > 1 month is negative to mental health, then use this.
   • These are very interesting propositions with great policy relevance. Although this lies outside the scope of the current paper this is something we will try to work on in the future.

16. If the results were not changed given different in analyses techniques (i.e. binary logistic or linear regression), please just include your final choice in analyses. Also, it may be worth considering using these other techniques given that they are widely used and accepted. However, this is only a thought and entirely up to the analysis team.
   • The other analysis techniques were applied in order to provide sensitivity tests and the final choice of approach (ordinal regression) was based on what was theoretically optimal for the ordinal level dependent variable. It was thus related to the limitations created by the dependent variable.

17. You might like to consider using this program http://www.dagitty.net/ to map the causal modelling of your variables to determine which variables you need to control for in the model and which variables are not necessary.
   • I would like to thank the reviewer for the tips. The program appear very useful for the design as well as the way to think about analytical approaches.

18. Is it possible for you to include national rates of unemployment (as a ratio) at the times of data collection for inclusion in the modelling??
   • Given the research question and the focus on events relating to the early period it is not really possible to include in the modelling in a way which would add needed information. We have however included information on the national level of unemployment for adults as a background to the unemployment variable used in the article.

Results
19. Do you think the modelling would be improved if at step 1: (or model 1) all confounders, alongside baseline mental health were included, and then step 2 (model 2) included the addition of “unemployment type” variable.
This could have been interesting, but as baseline IMHS removes almost all other confounder effects it would change very little in the current analyses.