Author's response to reviews

Title: Loneliness and health risk behaviours among Russian and U.S. adolescents: a cross-sectional study

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Version: 2 Date: 18 March 2014

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

I am writing to you to resubmit the manuscript entitled “Loneliness and health risk behaviours among Russian and U.S. adolescents: a cross-sectional study” by Andrew Stickley and co-authors to *BMC Public Health*.

Following its initial review we were asked to make changes to the manuscript in response to the reviewers’ comments. Details of the changes we have made to the manuscript and our response to the reviewers’ comments are outlined below.

Thank you for considering this manuscript for publication.

Yours sincerely,

Andrew Stickley.
Reviewer's report - 1
Title: Loneliness and health risk behaviours among Russian and U.S. adolescents: a cross-sectional study
Version: 1 Date: 7 November 2013
Reviewer: Audhild Løhre
Reviewer's report:

Minor Essential Revisions
Page 7
‘The last time you had sexual intercourse, had you been drinking alcohol or using drugs?’
Answer options were ‘I’ve never had sexual intercourse’, ‘Yes’, and ‘No’. The analysis was restricted to those who had previously engaged in sex.
Comment: The sentence in the middle does not give sense.

Response
It is possible that some students would have engaged in sexual activity without having had full sexual intercourse. Therefore the question was worded in the way it was to restrict the answers to those students who had engaged in full sexual intercourse. Also, by asking this question it was possible to cross-check this answer with an earlier question in the survey which enquired about whether the students had ever had sexual intercourse.

Page 5
Can you please describe more precisely whether there was a random selection also from classes in Russia, and if so, how this corresponds to completing the survey in classrooms during a normal school day.

Response
Once a class was selected all of the children were invited to participate in the survey. This meant that it was possible to conduct the survey during normal school hours. This has now been mentioned in the text.

Page 4
This study will extend research on the effects of loneliness by firstly, focusing on its relation with adolescent health risk behaviours (i.e. sexual and violent behaviour) xxx little researched to date.
Comment: xxx – is something missing here e.g. ”being” or “that is”?

Response
We have now amended the text so that it flows more easily:
“This study will extend research on the effects of loneliness by firstly, focusing on its relation with adolescent health risk behaviours (i.e. sexual and violent behaviour) that have been little researched to date.”

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:
I declare that I have no competing interests.
Reviewer's report - 2
Title: Loneliness and health risk behaviours among Russian and U.S. adolescents: a cross-sectional study
Version: 1 Date: 28 January 2014
Reviewer: Paula Nunes
Reviewer's report:

Title: Loneliness and health risk behaviours among Russian and U.S. adolescents: a cross-sectional study

Overview:
This paper aims to fill the gap in the literature on the relationship between loneliness and adolescent health risk behaviour. The title of the paper suggests that a secondary aim was to compare the findings between Russian and U.S adolescents. If so, then there is a need to further describe the differences between the two countries being compared. There is evidence that the authors attempted to be consistent in their methodology as applied at the two sites (Russia and US) however, there are some concerns about the write up of the analysis and discussion that need to be addressed.

Specific comments: The question posed was well defined.

Major compulsory revisions
1. Methods: This section could be made clearer by addressing the following:
   a. When was the study period?
   b. How was the survey instrument administered? - teacher, trained research assistant, self-administered?
   c. How were issues of confidentiality addressed?
   d. Consider placing the measures in an appendix rather than including in the body of the paper. What was the validity and reliability of the scales used in these populations?
   e. In the section on Statistical Analysis there is some confusion In the line ‘In Model 3,…’ please clarify if the depressive symptoms variable was added to those variable used in Model 2, and whether the loneliness variable was removed or retained.? According to the response to this question the results and discussion would have to be adjusted.

Response
a. Both surveys were undertaken in spring. This has now been added to the text.
   b. The surveys were distributed by a teacher and then completed in the class by the students themselves in the presence of the teacher. This has now been mentioned in the text.
   c. All the surveys were anonymous – no information was collected about students’ identity. A sentence about this has now been added to the text.
   d. We thank the reviewer for the suggestion but we have decided to keep the questions in the main body of the text as we felt that it helped with the reading flow and interpretation of the results that followed immediately afterwards. There was only one scale measure used in this study – the depressive symptoms scale. Cronbach’s alpha was 0.79 for the Russian students and 0.88 for the US students. This has now been mentioned in the text.
   e. Model 3 only differed from Model 2 in terms of the addition of the depressive symptoms variable (meaning that the loneliness variable was retained in the model). This has now been made clearer in the text.
2. Results (see above)

Response
No specific response required.

3. Discussions: The paper would benefit from discussing the results in more depth, for example, concerning violence: - Are there any suggestions as to why the findings differed from expected? Why the similarity to findings from Bangkok? How do the adolescents from Russia and US compare? How are the findings of depressive symptoms and loneliness inter-related?

Response
Thank you for this suggestion. We have now provided a further reason for why the results for violence differed from those seen in some previous studies. However, given the few studies that have appeared on this topic, we are not sure whether it is correct to say that our findings ‘differed from what was expected’. We have now also extended the discussion on adolescent pregnancy and loneliness by trying to provide reasons why a relationship between pregnancy and loneliness might have been observed in Russian females. We have also extended the discussion on the relationship between loneliness and substance use. We have not commented at length on the relationship between loneliness, depression and health risk behaviours, as in this study depression was used as a control variable and the focus was not on how (or why) it mediated the relationship between loneliness and health risk behaviours. We believe that this is an important research topic in its own right and should be the focus of a separate study in the future.

4. Limitations: The authors describe “children’s self-report “as a potential limitation, please elaborate if the limitation is the use of a self-reporting scale or because of the age of the participants or both? Also I would remove the word “children.”

Response
Thank you for this comment. We meant that there might have been both cognitive and situational factors that threatened the validity of adolescent’s self-reports of health risk behaviours [1]. Although several studies have suggested that the reliability of these reports is good [2,3] we have now presented an example in the text of how culture might have affected reporting behaviour in Russia. In addition, we have now removed the word ‘children’ and replaced it with ‘adolescent’.


Minor essential revisions:
The authors can be trusted to make these. Ensure consistency in documentation for example

a. in study population (last line of last paragraph), either response rate or refusal rate,
b. in results (2nd paragraph) confidence intervals missing for respective odds ratios.

**Response**
a. *We have now changed the text so that refusal rates are presented for both Russian and U.S. students.*
b. *We have now added the missing confidence intervals to the text.*

Level of interest: This article is important to those with similar research interests and adds to the data of health risk behaviour in adolescents.

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

Quality of written English: Needs some language corrections before being published

**Response**
*The first author is a native English speaker. However, we have now gone through the text with a second author to check for grammatical errors.*

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:
Declaration of competing interests: I declare that I have no competing interests

*We would like to thank the reviewer for the thoughtful comments which we believe have helped us to improve the quality of this work.*
Reviewer's report - 3
Title: Loneliness and health risk behaviours among Russian and U.S. adolescents: a cross-sectional study
Version: 1 Date: 5 February 2014
Reviewer: Bryndis Bjork Asgeirsdottir

Reviewer's report:
The aim of this study was to investigate the link between loneliness and health risk behaviours, including substance use, sexual risk behaviour and violence among U.S. and Russian adolescent boys and girls. The questions posed by the authors are quite well defined (see comments below on the lack of hypothesis). The study uses a cross-sectional design within a school setting. The methods of the study are appropriate, quite well described and the data seem to be sound. However, there are some important aspects of the methodology, measures and statistical analysis that need better clarification (for detail see comments below).

Overall the writing is very good. The introduction gives a brief overview of the literature (see comments below on how the introduction could be improved by going into some more detail and putting the study in a more theoretical context). The discussion and conclusions are well balanced and main limitations are discussed. This is a study of public health interest.

Major Compulsory Revisions

Introduction

1. The theoretical underpinning of the study could be strengthened.

Response
Thank you for this suggestion. Although there is an extensive literature on the relation between different forms of psychological distress and adolescent health risk behaviours, to date there has been little research on the relation between loneliness and adolescent health risk behaviour and little attempt to theorize on these relations. The aim of this study was to provide evidence upon which theory could be built, so in the introduction we have chosen to present those past explanations that have been advanced to explain the relation between loneliness and adolescent health risk behaviours without attempting to synthesize them in a larger theoretical standpoint.

2. It seems from the literature that the link between loneliness and substance use has been established. Did these studies control for depression or other emotional problems? Furthermore, are there no studies on the link between loneliness and sexual health outcome or aggression/violence? None are cited in the introduction (at least not specified as such) but in the discussion chapter there are studies cited linking loneliness to aggression and weapon carrying. Those studies could be discussed more clearly in the introduction and preferably other studies/theories giving a reason to study these particular health risk behaviours.

Response
We thank the reviewer for this comment. We have now added some text to the Introduction where the relationship between loneliness and the health risk behaviours which are the focus of this study is discussed at greater length while citing additional...
studies that were not included in the original version of the manuscript. Those few studies that have focused specifically on the relationship between loneliness and adolescent health risk behaviour did not control for depression or other emotional problems. This has now been mentioned in the Methods section where we discuss the depression variable.

3. How are the gender differences and country differences which have been observed (as mentioned in the introduction)? What would these results say about hypothesis for this study?

Response
Following the reviewer’s suggestion, we have now given examples of how there are variations in different forms of substance use between adolescents in different countries and between male and female adolescents within countries. As the analyses were stratified by sex and country and there has been no previous study on this phenomenon in Russia, we did not advance specific hypotheses in relation to these factors.

4. No hypothesis are put forward. Why is that? It would improve the introduction and sharpen the focus of the study if the introduction would lead to hypothesis.

Response
We thank the reviewer for this suggestion. We have now added 2 hypotheses to the end of the introduction in an attempt to sharpen the focus of the study.

Method

5. In the method it is stated that “data were collected from a representative sample”. How is the sample representative? Please explain in more detail.

Response
The data were collected from 10% of all children who were in the public school system in the required age range in each of the Arkhangelsk’s 4 city districts. This information has now been added to the text.

6. Only measures of loneliness and depression are cited. From where are the other measures? There is no information on validity or reliability of the measures used in the study.

Response
All the measures used in the study were from the Social and Health Assessment (SAHA) survey questionnaire. This has now been mentioned in the text. Most of the measures in the questionnaire have been used with similar populations in previous studies. In the present study, the single question measures used are very close to (and in some cases identical with) those that have been used over a number of years in the Youth Risk Behavior Survey (YRBS) in the United States to provide information on the prevalence of these behaviours in that setting. Previous research on the data from that survey shows that there is a high degree of test-retest reliability. For example, in terms of similar YRBS items used in the current study the Kappas were: carried a weapon ≥ 1 day in the past 30 days = 65%; smoked cigarettes ≥ day during the past 30 days = 81.9;
drank alcohol ≥ 1 day during the past 30 days = 70.9%; had 5 or more drinks in a row ≥ 1 day during the past 30 days = 67.6%; ever used marijuana = 89.8%; ever had sexual intercourse = 90.5%. All of these have ‘substantial’ reliability (kappas ≥ 61%), while the item, ever been pregnant or gotten someone pregnant = 51.9% was said to have a ‘moderate’ degree of reliability (Kappa ≥ 41%) [1]. There was also a high degree of reliability for the only scale item we used in the current study – the depression variable, where Cronbach’s alpha was 0.79 for the Russian students and 0.88 for the US students. This information concerning the depression scale has now been mentioned in the text.


7. Why was the depression scale used with a cut of score? Is it not a screening instrument? Are the results the same if you use the depression scale as a dimension in models 3?

Response
Thank you for your valuable comments. Although the CES-D itself does not have a predetermined cut-off point to define depression [1], several cut-off points have been used to define depression in a large number of studies. Thus, we did not include this variable in the regression as a continuous variable as we considered a score above a certain value to be meaningful in distinguishing cases and non-cases of depression. The cut point of the highest 20% that we employed is arbitrary but several previous studies on Russian adolescents have suggested that the prevalence of depression is comparatively high [2] and may be around that figure [3] which may be manifest in the exceptionally high levels of late-adolescent suicide the country is presently experiencing [4]. We have also used this same cut-off point in a previous publication using the same dataset when examining the effects of school-based victimization on mental health [5]. The a priori decision to use a cut-off point was further confirmed by additional analyses as a linear change in log odds per unit increase in the depression scale was not observed for most of the outcomes, rendering a poor model fit. Therefore, from a statistical point of view as well, we judged that a categorical variable was more suitable for this analysis.

8. Why are these control variables selected? Reasons for this selection with citations to studies are needed.

**Response**

We have now added some text to the methods section where we explain the reason for choosing these control variables and provide references to support this choice.

9. How were the missing values of parental education handled in the logistic regression? Was it handled as the third category in a ranking order, i.e. low, high, missing?

**Response**

Yes, that is the way in which the parental education variable was included in the model. We have now included a sentence in the text that explains how this variable was included in the model in detail.

10. How many missing cases were there for the main variables under study? They seem to have been close to 900, which is one third of the sample. Please explain and justify with some missing data analysis how these large missing numbers did not bias the analysis.

**Response**

Thank you for pointing this out. We restricted the analysis to those aged 13-15 years for comparability between the two countries. Although the original survey consisted of a total of 5523 students, restricting the age to 13-15 years alone led to a decrease to 4045 which corresponds to about 27% of the original sample and we believe that the reviewer is referring to this decrease in sample size. We have now included more information in the text to clarify the point that it was the restriction in age that led to the large decrease in sample size rather than the existence of missing values. We also added a sentence in the limitations section to caution the readers to take into account the potential bias introduced due to missing values when interpreting the results.

Essential Minor Revisions

Results

11. In second sentence and third there is no significant testing presented along with the interpretation of differences between groups (i.e. differences between US and Russia in background variables and gender differences).

**Response**

Thank you for pointing this out. We already had two tables with a large number of statistical results which are reported in the text so we did not provide p-values for table 1 as we did not want to present an excessive amount of statistical information. However, we recognize that it is important to test the main variable in the models so we have now compared the loneliness prevalence and present p-values for the comparative tests in the Results section.
Discussion

12. The second sentence in the discussion needs better clarification.

Response
Thank you for highlighting this. We have now expanded this sentence in an attempt to clarify it.

13. In paragraph three, line two needs more clarification. As mentioned above this literature also seems to be important for the introduction.

Response
Thank you for this suggestion. As mentioned above the introduction has been expanded to describe this literature. We have also now added some further discussion and an additional reference to this section in an attempt to better explain the non-association between loneliness and violent behaviour.

14. Potential problems with missing data should be added to the limitation chapter.

Response
We have now mentioned about missing data as one of the study’s possible limitations.

Discretionary Revisions

Abstract

15. In the abstract results for different kinds of substance use might be described more specifically. Also it would seem important to inform about that the other health risk behaviours were not sig. associated with loneliness (except for pregnancy among Russian)

Response
Thank you for this suggestion. We have now modified the abstract so that it contains more precise details of the relations between loneliness and the different health risk behaviours among Russian and U.S adolescents.

16. In conclusion, it is stated that loneliness is associated with adolescent health risk behaviours among boys and girls in both Russia and US. This could be stated more clearly as health risk behaviours of substance use (this also relates to the conclusion chapter in the Discussion).

Response
We have now stated that loneliness is mainly associated with substance use among boys and girls in Russia and the United States.

Discussion

17. The second sentence in the discussion needs better clarification.

Response
We have now attempted to clarify the text cited by the reviewer.
18. In the discussion on differences between U.S. and Russia, why should there be differences between these cultures? Also, with regards to the result of lonely girls in Russia being more likely to having been pregnant, what can explain these results?

Response
There might be cultural differences that relate to health risk behaviours. For example, in the Soviet period female smoking and drinking was socially disapproved behaviour which has only began to change in the post-Soviet period although it might still affect the reporting of these behaviours in terms of what is deemed ‘culturally acceptable’. We have not tried to discuss culture too much in this paper as it is a nebulous concept whose effects on behaviour are difficult to determine and/or quantify. We have added some text to the discussion where we have now tried to explain why loneliness might be linked to having been pregnant in Russia.

20. Studies have indicated that depression and anger co-occur to a great extent and that if taken both into account; anger is a stronger predictor of externalizing risky behaviours including substance use than internalizing problems of depressed mood (Asgeirsdottir, Sigfusdottir, Gudjonsson & Sigurdsson, 2011; Pardini, Lochman, & Wells, 2004; Swaim, Oetting, Edwards, & Beauvais, 1989). Based on these findings it would be of importance to investigate if loneliness was a predictor of these behaviours after controlling for both anger and depression.

Response
Thank you for this suggestion. Unfortunately, there was no variable that measures anger in this dataset so it was not possible to do this.

21. In the limitations, the authors mention that the results cannot be generalized countrywide, is it therefore not questionable to refer to U.S. adolescents and Russian adolescents through the whole paper?

Response
We agree that it would have been better if we had countrywide data. However, we do not know whether the results from these data would be mirrored across the countries or not. Given this, we have now changed the sentence in the text to ‘might not be representative’ countrywide, as without further research on a larger scale it is impossible to know how representative the observed relations are.


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

Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:
'I declare that I have no competing interests'

We would like to thank the reviewer for the valuable comments that have been provided which we think have helped to improve the manuscript.