Author’s response to reviews

Title: Latent class analysis of sexual health markers among men and women participating in a British probability sample survey

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Author’s response to reviews:

Editor, BMC Public Health
30 September 2019
Dear Marie-Victoire Cosson

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Latent class analysis of sexual health markers among men and women participating in a British probability sample survey

On behalf of all the authors, we thank you for the reviewer comments contained in your email of 17th September, and for the opportunity to revise our MS.

We are pleased that both reviewers recognised that our study is innovative and makes an important contribution towards understanding different population groups at risk of adverse sexual health. We have revised our MS to address all the points made by the reviewers in full (details shown below).

We have made an additional small change to the wording of one of our measures throughout the MS. In place of the measure termed “sexual well-being”, we have used the more precise description “low satisfaction/high distress with one’s sex life”. This change has been made
because a new, more comprehensive measure of overall sexual well-being is planned for a forthcoming Natsal survey (Natsal-4). We wish to avoid any potential confusion with the measure from the Natsal-3 survey used here.

Yours faithfully

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Response to reviewer comments

Reviewer reports:

Eli J. Coleman (Reviewer 1): I am very impressed with this study. Certainly the first attempt at a latent class analysis. It is well designed, well executed and written. I think this will be a useful addition to the literature.

Devon Hensel (Reviewer 2): This is an important paper - we need to understand how a holistic model of sexual health may actually vary in how components fit together. I have a number of comments below which could improve the accessibility of the manuscript to journal readership.

1. Please provide some text in the background as to how current knowledge about how sexual health components vary by gender, partnership status, socio-demographic, lifestyle and health factors, etc. There is some evidence of heterogeneity in these factors that will strengthen the background section.

Response: In the Background section (page 4, lines 71-75), we have inserted the following text: “For instance, a British national probability survey found that socio-economic disadvantage and substance use were correlates of sexual coercion, STIs, and unwanted pregnancy, but not low sexual function (2, 6, 9-11). The survey also found that depression was more strongly correlated with sexual coercion and function problems than with STI or unplanned pregnancy risk (2, 6, 10, 12).”

2. Latent class analysis provides a number of important advantages over traditional methods - the authors state this idea somewhat, but could emphasize other utilities more (e.g. does not assume apriori membership in "risk" categories) that are often common aspects of sexual health research.

Response: In the Background section (page 5-6, lines 103-110), we have expanded on the advantages of latent class analysis with the following text: “Compared with standard cluster analysis techniques such as k-means or hierarchical cluster analysis, latent class analysis has several advantages: these include a model-based approach classifying study respondents into the appropriate cluster on the basis of estimated membership probabilities, greater use of formal criteria to decide on the final model, and greater flexibility in accommodating variables
measured on different scales (29). Latent class analysis can help address methodological challenges such as high Type I error rates and low statistical power that commonly arise in traditional subgroup analyses, where each group has been defined a priori based on certain characteristics (30).”

3. Were there any Natsal measures available that were NOT used here? If so, what were these and why?

Response: The Discussion, page 18 (lines 406-409) has already explained some omissions from our analysis. We have added further text to this page (lines 409-413) to explain how our list of potential sexual health class correlates was selected, and to note that further Natsal data is available: “Our examination of sexual health class correlates focused on selected socio-demographic, lifestyle and health factors identified as important in previous analyses of individual outcomes (2, 6, 9, 10). This does not represent an exhaustive list of information contained in Natsal-3, and additional potential correlates such as partner history and sex education could be investigated in a further study.”

4. Can the authors provide a citation for a good "how to" example of LCA using MPlus for readers who are interested in using this method in their own work?

Response: This is now provided in Methods, page 9 lines 197-199: “(For an illustrative example of this technique, see https://stats.idre.ucla.edu/mplus/seminars/mplus-class-notes/lca/.)”