Author’s response to reviews

Title: Perceived neighborhood problems: Multilevel analysis with psychometric and econometric properties in a Southern adult Brazilian population

Authors:

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Version: 2 Date: 20 June 2013

Author’s response to reviews:

Cover Letter

Reviewer’s report

Title: Perceived neighborhood problems: multilevel analysis with econometric properties and socioeconomic associated factors in a Southern adult Brazilian population

Version: 1 Date: 30 April 2013

Reviewer: Alex Florindo

Reviewer’s report:

1. Is the question posed by the authors well defined?
I think the aim of the study is “to verify the psychometric and econometric properties of two scales about problems in neighborhood” and no “to verify the psychometric and econometric properties of perception of the problems in neighborhood”

Authors: Thank you for that observation. We have placed the word “scales” in the objective, and in this way, we think that the meaning was clarified (Pages 3, 7).

2. Are the methods appropriate and well described? The authors can be write with more details econometric statistics. The results of variance components (Table 3) not are describe and explain in this section. To explain the process about models (for example, what is the process input and maintenance variables? All the variables the first level were used in other levels?)

Authors: We have described econometric statistics as well as variance components in detail (page 11).

The analysis among scales and socioeconomic variables were performed to analyze convergent validate, and we had retained all the investigated variables in the model. The first-level variables (demographic) were first included, and persisted even in the last model. The sequence of entrance followed hierarchical model, indicating that distal-level variables were considered as previous
confounding outcomes. Lately, census tract level variables were included in the model. This information has been included in the paper (page 11).

3. Are the data sound?
   Yes.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Yes.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
   Yes.

6. Are limitations of the work clearly stated?
   Yes.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
   Yes.

8. Do the title and abstract accurately convey what has been found?
   Yes.

Authors: Thank you for reviewed all those aspects.

9. Is the writing acceptable?
   Yes, but is need a review.

Authors: We have made some modifications in the writing style; the whole paper has been revised by a professional English reviewer.

- Major Compulsory Revisions (The author must respond to these before a decision on publication can be reached. For example, additional necessary experiments or controls, statistical mistakes, errors in interpretation):
  a) No.

- Minor Essential Revisions (The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes):
  a) References 1 and 5 are the same.
  b) References 12 and 19 are the same.
  c) References 20 and 28 are the same.
  d) References 4 and 35 are the same
  e) Table 1: The variable “Number of years of educational attainment” has not stratification by gender.
Authors: Values have been included following Reviewer’s comment.

f) Table 4: At the end of the title, the better phrase is: “...by individual and census tract level variables”.
Authors: The title of the table has been changed.

g) How the response options to the scale items were transformed in number values? Each option is equivalent to the value (e.g., 0, 1, 2)?
Authors: The reviewer is right; they are equivalent to the values 0, 1, or 2. We have added that information in the Methods (page 9).

h) I suggest modify the aim and improving description about statistical analysis.
Authors: We added additional details about statistical analysis (page 11).

a) Page 13, second line: What is “the true neighborhood scores”?
Authors: The true score represents one of the two components of an observed test score, and refers to the portion of the score, which is replicable or reliable. [1] We have added that information in an objective way in the Methods (page 11).

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable
Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Reviewer's report
Title: Perceived neighborhood problems: multilevel analysis with ecometric properties and socioeconomic associated factors in a Southern adult Brazilian population
Version: 1 Date: 23 April 2013
Reviewer: Daniel J J Corsi
Reviewer's report:
This study examined the ecometric and psychometric properties of adults residents' perceptions of neighborhood problems AND the association of neighborhood problems with individual and census tract characteristics. I have several suggestions that may improve the quality of this manuscript. These are outlined below.
Major Revisions:
1. Scope of the paper: This appears to be a methods paper. The authors have described an objective to examine the ecometric and psychometric properties of
the instrument. However they have also assessed the relationship between individual and neighborhood level characteristics and the neighborhood problem scales described. I would be inclined to re-frame the second objective as an extension of the first objective where you are assessing the predictive validity of the instrument. Also this needs a theoretical discussion: for example why would you expect neighborhood problems to vary by the income level or other characteristics of neighborhoods?

Authors: Yes, the second objective is an extension of the first, because those analyses allowed evaluation of the convergent validity of the scales. We have added some information about convergent validity in the Methods (page 11). In addition, some information about the relation about the expected relation among individual socioeconomic characteristics and neighborhood problems scales has been presented in the paper’s Background (page 6).

1. I would like to see a conceptual framework in the introduction. What are the pathways where by the perceived neighborhood problems are likely to influence health. What advantages do the perception-based measures have over objective-based ones in the area of neighborhood problems? And how do your proposed scales capture these constructs? The differences in the objective and perception based methodologies you have described are well known and there are many studies which are using similar approaches to what you have described some of which are ongoing in low and middle income countries including Brazil. See for example: Corsi DJ et al. Environmental Profile of a Community's Health (EPOCH): an ecometric assessment of measures of the community environment based on individual perception. PLoS One. 2012;7(9):e44410. doi: 10.1371/journal.pone.0044410

AND


Finally, what particular health outcomes do you anticipate will be associated with such perceptions?

Authors: Good points. This information has been added in the Background (page 5–6)

Thank you for suggesting those papers. They have been included in the manuscript in the Discussion about reliability (page 15).

We have added information about the outcomes expected to be related to neighborhood perceived problems (page 6).

Methods:

2. Give further details about the EpiFloripa study. What are its objectives and measures? How long will the study continue for? Why were only adults 20-59 included?

Authors: We have added information about EpiFloripa study in the Methods.
EpiFloripa Study was a survey about health and life conditions of the adult population of Florianopolis. The study was conducted by supervisors of the University, involving other departments of the University and also other Institutions. The study baseline was conducted in 2009, and since 2011, the first wave started (page 7).

The age range of EpiFloripa study was defined considering people under 20 years of age as adolescents (following Word Health Organization recommendation) and those with more than 60 years of age as elderly people. These limits allowed evaluating health outcomes in a more homogeneous way, with children, adolescents, and elderly being biologically and socially different from adults.

3. It is not clear that you have used the principal factor analysis in order to group the 16 items into 2 scales (this comes out in the results).

Again you need to tie this back to the conceptual framework. Did the items group onto the scales in the expected manner? Was the set of questions (adapted from a UK study) appropriate for the Brazilian context?

Authors: Information about principal factor analysis has been clarified in the Methods, and we have begun the sentence with that information (page 10).

In the second paragraph of Discussion (page 14), we have provided information about the way in which scales were grouped, similar to other studies. The scale properties were good, and the previous process of adaptation (translation by a professional, and discussion with epidemiologists in study group) was useful for making it more appropriate for the Brazilian context.

4. Ecometric properties: The reliability is a function of the item inconsistency, the between-individual differentials in agreement, and the between-neighborhood variation. Therefore this measure will also increase as the number of individuals within neighborhoods increase and the number of scale items increases.

Authors: We have added association between reliability and the number of items in scale in the assigned paragraph (page 10).

5. The authors should provide more details on how they estimated the multilevel models (ML, RML, Bayesian ...?). For example, it looks like you used Bayesian however the reference (page 9) to “Bayes estimates” is rather cryptic. Please also describe the use of weights in the ML models. Why was this necessary? Did the results change versus the non weighted estimates?

Authors: Thank you for noting the correct spelling of Bayesian, which was corrected in the paper (page 11).

The weights were necessary in our analysis in way to correct the unequal probability to participate the data gathering of residents from different census tract (page 11–12).

6. There needs to be further description of the second objective which is currently missing from the methods section. As noted previously, it would be interesting to
frame this objective in the sense of ‘predictive’ validity of your measures. Therefore you should state your then analytical approach to answer your hypothesis here (e.g. that the low income neighborhoods would have more problems).

Also how did you decide which neighborhood-level characteristic to use? Where other measures available, for example % in poverty, % of different racial/ethnic groups?

Authors: We decided to work with the head of the family income to allow comparison with previous studies [4], and generate a more parsimonious model. Previous analyses were performed with other census tract level measures: education attainment, percentage of neighborhood residents under 5 years of age, and percentage of neighborhood residents of 65 years of age. However, at the expense of a parsimonious model and strong correlation among some of those socioeconomic measures, we chose to keep only the head of the family income at census tract level.

8. Explain how you developed the single composite neighborhood level scores to be used in these models. Did this come from the multilevel analysis or some other aggregation procedure?

Authors: Those neighborhood level scores were derived from the three-level multilevel analysis with Bayesian procedures. For analysis, we used the crude scores that came from sum of points obtained from individual responses to the questionnaire items, coded as none (0), some (1), and a lot of problems (2 points) (page 9).

7. Results: I would re-organize into the reliability and instrument properties component and then the predictive validity.

Authors: We included comment about convergent validity (page 16).

8. The scales looked somewhat correlated. Did you fit any models including both scales on the right hand side? How did this change the results?

Authors: Analyses were additionally performed with the sum of scales, and are shown in Tables 2, 3, and 4 in columns called “all problems.” To make it clearer, we have added the expression “sum of... (both scales)” to column “all problems.”

9. The reliability and ICC statistics in this study seem very robust. This leads me to believe that you have more than adequate number of respondents and questionnaire items. Have you tried to examine the sensitivity of your findings by eliminating certain questionnaire items - for example those with low factor loadings? If you could demonstrate similarly high reliability with fewer items this would be important in future studies to reduce respondent burden.

Authors: Good point. We tried previously to take off some items of scales, such as the last item; however, to keep it comparable with other similar studies [4], we retained all variables in the analysis. The results were very similar when we performed that step.

10. Discussion: I would like to see some discussion of how these findings will be
used in the EpiFloripa study?

Authors: Those scales have been applied in EpiFloripa study against health outcomes. Currently, we are in the process of finishing a paper about perceived neighborhood scales in association with self-rated health. The results showed that even after adjustment for all investigated variables, association among scales and self-rated health remained significant (page 18).

11. Table 5 is not clear. Did you fit 3 separate models for each of the scales? If so then you have not displayed the coefficients for all models. For example how did the coefficients for sex, age, length of residence time change when adding socioeconomic characteristics? and how did these change again when adding the neighborhood characteristic?

Authors: We fitted three models for each scale following the method of considering causal paths. After including the first-group variables in the model (demographic), the coefficients were written in the table, the subsequent models (socioeconomic) were added to the previous demographic variables, its values (adjusted for demographic variables) were written out in the table, and the last model with census tract level variable was adjusted for the two previous models. In a way to keep the table cleaner, the data have been presented in this way. The complete model shown appeared interesting if confounding factors were the main aim of those analyses (page 12).

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

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests

References


