Reviewer’s report

Title: Social-emotional problems among Swedish three-year-olds: an Item Response Theory analysis of the Ages and Stages Questionnaires: Social-Emotional

Version: 1 Date: 21 Sep 2019

Reviewer: Roshanak Vameghi

Reviewer's report:

Review on article "Socio-emotional problems among Swedish three-year-olds: an Item Response Theory analysis"

Title:

1- You better change the title so that it reflects the fact that you are analyzing the ASQ:SE-1 based on the IRT model. For example: "Socio-emotional problems among Swedish three-year-olds: an Item Response Theory analysis of the Ages and Stages Questionnaire: Social-Emotional-1"

Keywords:

2- I suggest that you replace the keyword "mental health" with "social-emotional development" (because it is still too soon to utilize the term mental health or mental illness or likewise for children of this age; and the keyword "preschool children" with "toddler" (because when speaking of preschool children, one usually refers to children about 5-6 years old).

Introduction:

3- Line 69: please make the following correction: "....can aid early detection of children's behavioral delays/disorders in order to ....".

4- Line 72: please clarify which version of the ASQ:SE you are talking about.

5- Line 75: The age range that the newest version of the tool (ASQ:SE-2) covers is from 1 month-old to 6 years old. The older version of the tool that you are referring to has a narrower age range. Please correct this accordingly.

6- Line 76: These are not seven easily distinguishable and differentiable "domains" or dimensions. Also, "emotional" is a better word than "psychological" for this age group. So they are better referred to as "seven social and emotional/behavioral areas comprising
In addition, each age range comprises of different number of items (not 31 items for all age groups).

7- Lines 86-87: Unlike what is stated as the reason or objective for conducting the study in these lines, your results support the fact that except for Table 1, no other data provided in this manuscript "deepens our knowledge" regarding "young Swedish children's social and emotional functioning". So please correct the wordings such that it does not falsely imply this. Instead, the main focus of your study seems to be a psychometric analysis of the questionnaire, using the IRT model.

8- Line 88: please explain briefly the reason you chose to study this specific age group.

9- Line 88 & 89: please correct as follows: "...to report the normative values for the questionnaire at age 36 months for Swedish boys and girls;"

10- Lines 90 and 93: Please clarify what you mean by "high level of social-emotional problems" or "high social-emotional problems".

11- Line 91: it is unclear what you mean by ASQ:SE items differing between boys and girls? If you mean that the ASQ:SE scores may differ between the two sexes, please correct the sentence accordingly.

Methods:

12- Line 100: please explain briefly what percent of 3-year-olds in Vasterbotten region normally receive child health care services at the child health centers?

13- Line 104: Does this 80% response rate mean that 20% of 3 year-olds in the region did not attend child health care centers for receiving health services, or does it mean that their parents did not show consent in their child participating in the present study?

14- Line 109: Please specify the age range required for completing the 36-months ASQ:SE questionnaire?

15- Line 110: Please explain (or give examples of) what you mean by "incorrect filling out", since this seems to be different from "questions left unanswered".

16- Line 104-111: You have not given any explanation regarding the setting in which the questionnaire was completed by parents, and how much time they generally had for answering the questions?

17- Line 114: what do you mean by "1.5 version"?
In the section designated as "The instrument", please indicate for the information of your readers that in the ASQ:SE, higher points indicate higher levels of social-emotional problems.

Lines 147-149: In the ASQ:SE, sometimes the answer "always/often" to a question scores 10 points and for some other questions it scores 0 points. The same is true about the answer "seldom/never" which sometimes scores 10 and at other times it scores 0. So, what you have written in terms of the ASQ-SE scoring system is wrong. It needs to be corrected. But even more important is that you make sure that you have considered this in your data analysis and that you mention it clearly in these lines.

Line 162: please correct: "….latent trait (social-emotional problem).

Results:

Line 195: Please correct as follows: "Further, the ASQ:SE scores were higher for boys (…) than for girls (…..) across all quartiles. These results show that normative values for boys were nearer to the cut-off for social-emotional difficulties".

Line 281: Figure 3 needs more explanation in the text, especially in terms of 1- what the figure is demonstrating; and 2-what is exactly meant by "levels of the latent trait". In addition, the audience needs to know how data regarding "levels of the latent trait" was gathered in this study, which is better be explained in the Methods section.

Discussion:

Line 289: Please correct as follows: "The ASQ:SE scores were higher for boys (…) than for girls (…..) across all quartiles, which means that normative values for boys were nearer to the cut-off for social-emotional difficulties".

Lines 39-42 as well as lines 295-298: Since ASQ:SE does not itself categorize its items into different domains (although it admits that it covers seven different behavioral areas), it is not appropriate to categorize the social-emotional problems implicated in ASQ:SE items into such categories as "emotional problems", "internalizing problems", "social interaction difficulties", and "externalizing problems". So please correct in the Abstract as well as in the main text.

Lines 309-311: Can the fact that very few parents reported problems on the items that you have mentioned, be due to the fact that actually very few children demonstrated such difficulties? If so, please clarify. If not so, please clearly mention that very few parents, whose children showed difficulties in these areas, reported "concerns" regarding it.

Lines 308-315: Since according to the ASQ:SE guidelines, it is not the answer to each and every item that poses the possibility of social-emotional problems, but it's the
cumulative result of answers to all items in the questionnaire that puts forth such a likelihood, and since parental "concern" regarding each item only adds a 5 point score to the scoring achieved for the item and does not per se act as a determining factor in the diagnosis of possible social-emotional problems, what you have addressed in lines 308-315 and the way you have addressed it may falsely cause skepticism regarding the validity of the questionnaire, especially the "parental concern" issue. So, the word composition in these sentences must be carefully corrected to prevent such a false implication.

27- Lines 313 to 315: Better correct the sentence as follows: "Thus we suggest that these latter problems be considered as red flags at times when the complete ASQ:SE is inaccessible or has not been carried out, as is still the situation.....".

28- Line 321: You have quoted another study (reference number 10) in such a way that the reader may mistakenly take it as a proven fact. Please emphasize that "other authors have reported that .....". And please start the next sentence with this phrase: "One reason for such a discrepancy may be that at an early age....".

29- Lines 326-328: As said before, since ASQ:SE does not itself categorize its items into different domains, it is not appropriate to categorize the social-emotional problems implicated in ASQ:SE items, as you have done. Instead, you better just mention the items in which boys or girls were more likely to have problems.

30- Lines 317-340: It will be helpful to add in your discussion regarding the gender differences in the ASQ:SE scores, the fact that the developers of the tool have themselves admitted that girls usually score lower in ASQ:SE items than boys of the same age range (this is clearly stated in the ASQ:SE-2 User's Guide). They have even considered this fact in the instructions for referral: girls should be referred for more specialized assessment and even earlier therapeutic interventions, with scores lower than the cutoff point (i.e. the monitoring zone).

31- Lines 342-347: This paragraph is mainly a repetition of what was already said in the Methods and the Results sections and does not contribute to the discussion, and thus it's better to be omitted.

32- Lines 362-363: The sentence starting with the phrase "Future studies..." is not by any means reflecting either strengths or weaknesses of the study and seems to be irrelevant to this section. The same is true about lines 366-368. These lines better be omitted.

Conclusion:

33- Lines 47-48 & lines 371-372: Your conclusion (in the Abstract as well as in the main text) is not exactly reflecting the main results of the study. As said before, apart from Table 1, all other results reported in this manuscript reflect different psychometric
characteristics of the ASQ:SE based on the IRT model/method, and not "knowledge regarding Swedish children's social-emotional problems". Please correct accordingly.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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