Reviewer's report

Title: Student-teacher relationship trajectories and mental health problems in young children.

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Reviewer: Tina Kretschmer

Reviewer's report:

The manuscript describes the derivation of latent growth classes of teacher-student relationship quality and links with mental health outcomes, covering two years and the important transition into formal schooling. The research question is important and original, the manuscript is well-written and complex analyses are presented in a straightforward and easily understandable manner. I agree that that the associations found here can provide important information for practitioners but there are some points that could be improved or clarified. I list them below, following the order of the manuscript.

Introduction

The authors describe how stable high and stable low teacher-student relationship quality can decrease or increase the risk for mental health problems. I'm wondering if there are no assumptions to make about the groups that represent “pathways of change” - i.e., declining or improving pathways - why would one chose a mixture model approach if these or associations with them are not expected a priori? Put differently, I think the authors need to describe more precisely:

1) why they expect different trajectory groups (some information is given but in my opinion this is not theoretically founded or embedded enough)
2) how they will look like (again, some information given based on prior studies but I think this can be emphasized more)
3) how each will be predictive of mental health symptoms

to make a better case for the use of mixture models here. *Major Compulsory Revision

In addition, given the criticism such models have received, a stronger point needs to be made as to why developmental trajectories would be better predictor of mental health than prediction models that use snapshots and control for stability. *Major Compulsory Revision

Moreover, the authors justify their study by saying that all prior studies were conducted in the US and it is not clear whether the same will be true for Australia. I would appreciate a little more detail as to what kind of differences one would expect between both countries. Alternatively, this cultural approach may not be necessary if the authors strengthen the other points made on bottom of page 5 and top of page 6 in which they describe how their study goes beyond...
prior work with regard to detail and reporter. *Minor Essential Revision

Finally, I think that the authors need to be more upfront about the fact that assessments do not refer to the same teacher across the course of the study. Especially in light of what is said regarding stable conflicts with [many?] teachers versus episodic difficulties with a single teacher, this methodological strategy may be importantly affecting the results. It is not mentioned in discussion and limitations but I strongly believe that it may have affected the results. *Major Compulsory Revision

On a minor note, the authors sometimes refer to “positive trajectories”- this is a vague term and it is unclear what is meant by it. To improve understanding I think it’s better to be more precise. *Minor Essential Revision

Method and Results

I’m confused about the number of participants. At the beginning of the Participants section the authors state that 700 children participated whereas that number is down to 601 children in the next paragraph and up again to 642 for teacher-reports. Which one is correct? It would be helpful to know how many were eligible (i.e., attending one of the schools in the district and being of target age) and how many participated. *Major Compulsory Revision

Moreover, it may be helpful to include more detail on formal schooling legislation in Australia. For instance, if the younger children at baseline were only 3 and the first follow-up took place 12 months later, does that mean that some children in Australia start formal schooling at age 4? *Minor Essential Revision

Given that analyses using the SDQ subscales are reported, their reliability should be noted as well. *Major Compulsory Revision

How many children are in a classroom? Averages and ranges would be interesting information to judge the ability of teachers to form meaningful relationships with everyone. *Minor Essential Revision

Why did the authors not use full information maximum likelihood estimation or imputed data but replied on (biased) complete cases? *Major Compulsory Revision

Is there a reason the authors did not examine the Lo-Mendell-Rubin likelihood ratio test? What determined the cut-off at 5% of sample? Given that this criterion alone determined the rejection of a three-class model, some justification is needed. For instance, are there studies or formal recommendations suggesting this cut-off? *Major Compulsory Revision

Were analyses on associations between trajectory and mental health adjusted for classification error? Although probability of correct classification is high in this study (.89 and .98), modal class assignment without adjusting for classification error has been shown to yield biased standard errors (e.g., Jeroen Vermunt has worked on this topic). *Major Compulsory Revision

Discussion

The authors suggest that fostering high-quality teacher-student relationships at the transition to formal schooling is important but looking at the figures suggests
that the disadvantaged group already starts of at much lower levels. So wouldn’t interventions have to start much earlier than that already? Moreover, could the authors speculate about potential risk factors for negative teacher-student relationships as these would need to be tackled if one was to improve teacher-student relationships. *Minor Essential Revision

**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