Author’s response to reviews

Title: Factors associated with cognitive achievement in late childhood and adolescence: the Young Lives cohort study of children in Ethiopia, India, Peru and Vietnam

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BMC Pediatrics
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RE: MS 1119590610129355

Dear Dr Yoon Phaik Ooi:

We are pleased to submit our revised manuscript “Factors associated with cognition in late childhood and adolescence: the Young Lives cohort study of children in Ethiopia, India, Peru, and Vietnam” (Manuscript ID: 1119590610129355) to BMC Pediatrics for further consideration. We have carefully reviewed all comments of our manuscript and have responded to each comment. We feel the revised manuscript is now improved and we thank the reviewers for their suggestions. Please note below the modifications we have made. We have also highlighted substantive changes in yellow in the attached manuscript.

Sincerely,

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Reviewer 1

Comment: The introduction section needs to be further strengthened to include more elaborate review on the relationship between parents' schooling, wealth index, and child nutritional status, and cognition.

Response: While we have made a few modest changes to the introduction, we feel it already reviews the main findings in the literature on the topics of interest. We have tried to balance detail with brevity. Still, if there are key articles that we are missing, we would be happy to add them to the manuscript based on the recommendation of the reviewer.

Comment: The contributions of the study are explained. However, the goals of the study were not clearly presented. Also, in the abstract, it is stated that "This study examines the relationship between socioeconomic and growth factors....". In the introduction, the term "nutritional status" was used and subsequently, the term "height" was used. The authors need to be consistent with the terms used in order to avoid confusion.

Response: We have changed nutritional status and height to child growth in all relevant places in the text.

Comment: The authors need to define and elaborate the Study Indicators:

a. Child Nutritional Status was defined as Height. There is no mention on how height is defined as nutritional status. And there was no mention of Height in the introduction and how it relates to the present study. Please include a short description on height as an indictor of nutritional status for the benefit of readers who may not be familiar with this definition.

b. Child and Household Indicators: How was the wealth index composite derived?

Response: While height-for-age (HAZ) is often used interchangeably with nutritional status, there are some that would argue it is misleading to do so. We agree with the reviewer that we have been too vague in this regard. As a result, we have chosen to use the term child growth as it more accurately reflects the essence of HAZ, which is a measure of growth that reflects not only nutrition, but also morbidity and genetics.

We have also provided additional detail about the wealth index as well as a reference where the reader can find even further detail.

Comment: Ethics: Did children/adolescents provide assent/consent?

Response: Yes. We have changed the text to indicate consent was provided.
Comment: Study procedures: Please include a paragraph on the study procedures. Which language was used in each country?

Response: We have now added an additional paragraph on study procedures and language.

Comment: Statistical analysis: This section relates to the research question and hypotheses. Therefore, it needs to be rewritten accordingly.

Response: We have now added further clarification to this section to better align our research question with our statistical methods.

Comment: In view of the changes in the Introduction and Methods sections, the results and discussion sections need to be revised accordingly.

Response: We have made relevant changes to the manuscript to keep wording and themes consistent throughout.

Reviewer 2

Comment: I would have preferred a little more detail on the factor analysis method presented in Table 2.

Response: We have gone back and reviewed our description of the factor analysis contained in the manuscript and in the tables and are unsure what else the reviewer would have us add. We would be happy to include further detail if the reviewer would identify what is lacking.

Comment: The one significant suggestion to the analysis plan I would add is to include level of schooling of the child (or even whether enrolled in school) at each assessment point as a predictive factor (Tables 2 – 4) to be considered for the principal “cognitive” outcomes described in Table 1. This is because the outcomes in Table 1 are not general cognitive ability measures, so much as measures which reflect foundational academic skills and performance. The principal outcomes based on the tests in Table 1 can very much be influenced by educational level for the child.

Therefore, the most significant factors predicting these performance outcomes in Tables 3 and 4 (e.g., maternal education, paternal education, nutritional resources/Height for age, household size, and wealth, urban/rural) and in Figure 1 may be largely mediated through access for the child to education and better quality education (private schools or preschools) educational achievement (because of parental values and emphasis on education) for the child. The true impact of the predictive factors emphasized in this manuscript (those in Figure 1) can be better understood once the child’s own education level is factored into the multi-level linear model analyses.
My recommendation would be *Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached), in which the factor of the child's educational level is considered in the multi-level linear analyses (Tables 3 – 5 and Figure 1). If the authors prefer not to include this factor in the regression model, it would be good to know why and have this rationale included as a study limitation/explanation in the discussion portion of the paper.

Response: We agree that this is in an important point to consider. Hence, we have gone back and have now estimated models that include grade in school as a time varying covariate. We found that coefficients for grade in school were positive and statistically significant in Ethiopia and Peru, positive but not statistically significant in India, and negative in Vietnam. When grade is included, the coefficient for wealth is somewhat larger in Vietnam (.058 compared to .048) and Ethiopia (.046 compared to .039), and somewhat smaller in Peru (.059 compared to .074) and India (.041 compared to .048). Coefficients for the other key variables of interest—parental education and nutritional status—were similar in models with and without grade. Because our models with and without the inclusion of grade were similar, we continue to only report estimates from models without grade included. We have noted this in our results. We have also noted that while our estimates demonstrated that schooling does mediate the relationship between parental schooling, WI, child growth, and cognitive achievement, our results do show that a large share of the observed associations operate over and above child schooling. Additionally, we observe that these achievement tests are developed to gauge cognitive development and not school performance, although they may also reflect school performance, and thus we did not expect school performance to be a major mediating factor (see Cueto & Leon paper cited in manuscript). These last two points are now discussed with our other study limitations.

Comment: However, the interpretation of the findings should be tempered by the mediating role of child level of schooling (see above response to item 2).

Response: We have now acknowledged this among the other limitations of our study.

Comment: I might prefer a title emphasizing more “academic” (math, literacy, verbal knowledge) as opposed to broader “cognitive” competencies, given the nature of the principal outcome measures (Table 1).

Response: We have changed the table to directly identify the academic measures.

Comment: Figure 1 should be of higher resolution and quality. This may involve magnifying the size of the figures to provide for better resolution, or else dedicating a separate figure to each country (although it’s nice to have then side-by-side for visual comparison).

Response: The figure has been saved in a new format to preserve resolution lost in the previous format.