Reviewer's report

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

Version: 2 Date: 21 July 2014

Reviewer: Michael Boivin

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1. Is the question posed by the authors well defined? The principal study questions for the analyses were well defined. The study itself was high impact and the study aims significant.

2. Are the methods appropriate and well described? Cognitive performance outcomes and child and household indicators across the three assessment points are reasonably chosen and described. Multi-country comparative assessment for this longitudinal design is a real strength for this study, as is the overall sample sizes and retention rates across assessment points. Multi-level linear model analysis plan and tables 3 and 4 were good. I would have preferred a little more detail on the factor analysis method presented in Table 2.

Major/Compulsory Consideration: 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.

3. Are the data sound? Consistency of descriptive, factor, and multi-level linear model findings results across the four country sites suggests a good level of correspondence validity for the assessment data. The integrity of the data collection and management plan is supported by the statistical significance levels across country sites for the principal study findings for factors best predicting cognitive outcomes.
4. Does the manuscript adhere to the relevant standards for reporting and data deposition? The standards of reporting and description of the data seems reasonable. I cannot speak to the issue of data deposition since I do not know the guidelines or requirements for the principal funding sources noted in the Acknowledgements portion (line 269).

5. Are the discussion and conclusions well balanced and adequately supported by the data? Yes it is in terms of the results as they presently stand. However, the interpretation of the findings should be tempered by the mediating role of child level of schooling (see above response to item 2).

6. Are limitations of the work clearly stated? The authors recognize the study limitations (lines 232 – 241) and the overall conclusions from the study findings are reasonable (lines 246 – 252).

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? The background information and literature review foundational to the present analysis are reasonable (lines 3 – 61). Key relevant prior publications are noted.

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

9. Is the writing acceptable? The quality and scientific style of writing for this manuscript is good and acceptable.

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.

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 deducing a separate figure to each country (although it’s nice to have then side-by-side for visual comparison).

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.
Declaration of competing interests:

No conflicting interests to declare.