Peer Review Report

Review Report on Adversity in infancy and childhood cognitive development: evidence from four developing countries
Original Article, Int J Public Health

EVALUATION

Q 1   Please summarize the main findings of the study.

The study explores the relationship between adverse experiences during early childhood and cognitive development at ages 5 and 8. The paper uses data from four countries included in the Young Lives longitudinal study (Ethiopia, Peru, India and Vietnam). The categorical measure of adverse experiences is based on a wide range of questions, from child's health to natural and environmental shocks; cognitive development is measured with the Peabody Picture Vocabulary Test (PPTV). The authors find a negative association between exposure to adverse experiences at age 1 and cognitive development years later, based on linear regression analyses (OLS).

Q 2   Please highlight the limitations and strengths.

Strengths: The research question is highly relevant in the realm of public policy. Good evidence on the long term effects of adverse conditions during early childhood is needed to support early public health interventions. In addition, Young Lives are high-quality and publicly available data from developing countries.

Limitations: The statistical method (linear regression models on observational data) is not the best approach to claim causal evidence. Given the data, the authors should hold back claims of causal identification (i.e., lines 311 and 312,"Therefore, this association can be interpreted as a causal relationship").

Q 3   Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

Major comment

The authors created an aggregate measure of adverse experiences at age 1 using eight questions (Table 1). To claim causal inference from a linear regression model, the idiosyncratic error term should not be correlated with the aggregate measure of adverse experience (AEI and miu in Equation 1). However, many adverse experiences could be determined by unobservable factors not included in the regression model, thus creating such correlation.

Consider two possible categories of adverse experiences at age 1, which depend on how much households can control the occurrence of the negative events. I will refer to these categories as "Exogenous shocks" and "Endogenous events". A natural disaster is a good example of an exogenous shock, as households do not decide the timing or the intensity of a natural disaster; parental separation could be consider an endogenous event, as parents do control such decision.

I suggest creating two separate aggregate measures of adverse experiences: "Exogenous adverse shocks" and "Endogenous adverse events". Based on Table 1, I would classify all eight questions in the following way:

– "Exogenous adverse shocks": child has serious injury, decrease in food availability, death of livestock, loss of source of income, crop failure, natural disaster, theft of crops, theft of livestock, victim of any crime, severe illness of family member, death in the family, family displacement / migration.

– "Endogenous adverse events": child weight for age, parental separation or divorce, household member imprisoned, caregiver's relationship to the child, unplanned birth.

All the regression analyses (Tables 3, 4 and 5) and descriptive statistics (Table 2) could be replicated for each of the two categories separately. The statistical results based on the "Exogenous adverse shocks" aggregate measure would be the most credible.

I suggest reading and citing Rosales-Rueda (2018), which is a good example of causal evidence on the impact of early life shocks on cognitive development, based on a purely exogenous adverse shock (extreme rainfall).

** Rosales-Rueda, M. (2018). The impact of early life shocks on human capital formation: Evidence from El Niño floods in Ecuador. Journal of health economics, 62, 13–44.

Minor comments

(a) The main regression equation is explained in section 2.3., analysis (Equation 1). There is a small discrepancy between the equation and the following paragraph. The outcome variable in the equation includes subscripts i, j, s and c (individual, household, cluster of villages and country). The dependent variable in the text only includes and explains subscripts i, j and s. Note also that the subscripts of the idiosyncratic error terms do not match. Please reconcile Equation 1 with the text.

(b) The following sentence is not sufficiently clear (pp. 3 – 4, lines 91 – 94): "Compared to adult outcomes, however, the policy-relevance of early–and mid–childhood outcomes are higher because the effects of early life experiences on adult outcomes manifest through the early-and-mid-childhood years and adult outcomes take many years to appear, thus being less amenable to policy interventions". Please rewrite this sentence.

(c) As explained by the authors, the patters of adverse experiences are not the same across countries (Table 2). Very few observations in Peru (1.6%) and Vietnam (3.0%) experienced extremely high adverse early life conditions (AE-1 score equal to or above 4). Thus, all regressions should include country fixed effects. According to the explanation of Equation 1 (section 2.3., analysis), indeed all models include country fixed effects. Please report and interpret the country fixed effects in Tables 3 and 4 to better understand the patterns across countries.

(d) All tables should include a detailed explanatory note with sources, variable codes and brief explanations that would allow the replication of the main results by future researchers.

PLEASE COMMENT

Q 4 **Is the title appropriate, concise, attractive?**

I suggest eliminating the words "prospective cohorts in" from the title.

Q 5 **Are the keywords appropriate?**

The five keywords are appropriate. If possible, I suggest including "Peabody Picture Vocabulary Test" and "Young Live Study" as keywords.

Q 6 **Is the English language of sufficient quality?**

Yes, the paper is well written. The paragraphs which are harder to read are located in section 3 (Results), right before the markers for Table 3 and Table 4 ("Table 3 shows…" and "Table 4 presents…"). I suggest all information regarding the 95% confidence intervals to be included as footnotes and not in the main text.

Q 7 **Is the quality of the figures and tables satisfactory?**

Yes.

Q 8 **Does the reference list cover the relevant literature adequately and in an unbiased manner?)**

The reference list is adequate and unbiased. However, I suggest two additional references. The two closest previous studies are López Boo (2016) and Zamand & Hyder (2016). These studies are also based on the Young Lives data and explore similar research questions. I suggest the authors to contrast their results with the previous findings from López Boo (2016) and Zamand & Hyder (2016) in the discussion (section 4).

** López Boo, F. (2016). Socio-economic status and early childhood cognitive skills: A mediation analysis using the Young Lives panel. International Journal of Behavioral Development, 40(6), 500-508.

** Zamand, M., & Hyder, A. (2016). Impact of climatic shocks on child human capital: evidence from young lives data. Environmental hazards, 15(3), 246-268.

In addition, Dawes (2020) is also relevant in the discussion regarding the Peabody Picture Vocabulary Test (PPTV) and the Young Live study (section 2.2., variables).

** Dawes, A. (2020). Measuring the Development of Cognitive Skills Across Time and Context: Reflections from Young Lives. Young Lives.

QUALITY ASSESSMENT

Q 9	Originality	■ ■ ■ □ □
Q 10	Rigor	■ ■ ■ ■ □
Q 11	Significance to the field	■ ■ ■ ■ ■
Q 12	Interest to a general audience	■ ■ ■ ■ □
Q 13	Quality of the writing	■ ■ ■ ■ □
Q 14	Overall scientific quality of the study	■ ■ ■ ■ □

REVISION LEVEL

Q 15 **Please make a recommendation based on your comments:**

Major revisions.