Avances de Investigación

Etnicidad, género, ciudadanía y derechos

The impact of intimate partner violence on child development in Peru

Mariel Bedoya
Karen Espinoza
Alan Sanchez

32

Niños del Milenio
Información para el desarrollo

GRADE
Grupo de Análisis para el Desarrollo

The impact of intimate partner violence on child development in Peru

GRADE
Grupo de Análisis para el Desarrollo

Avances de Investigación 32

The impact of intimate partner violence on child development in Peru[1]

Mariel Bedoya (Barcelona GSE)
Karen Espinoza (Barcelona GSE)
Alan Sanchez (GRADE)[2]

1 Data from the Young Lives study is used. The Young Lives study is mainly funded by the UK Department for International Development (DFID). Sub-studies are funded by the Bernard van Leer Foundation, the Inter-American Development Bank (in Peru), the International Development Research Centre (in Ethiopia), and the Oak Foundation. Mariel Bedoya and Karen Espinoza would like to acknowledge funding from UNICEF.

2 Corresponding author. E-mail: *asanchez@grade.org.pe.*

GRADE´s research progress papers have the purpose of disseminating the preliminary results of research conducted by our researchers. In accordance with the objectives of the institution, their purpose is to perform rigorous academic research with a high degree of objectivity, to stimulate and enrich the debate, design and implementation of public policies. The opinions and recommendations expressed in these documents are those of their respective authors; they do not necessarily represent the opinions of their affiliated institutions. The authors declare to have no conflict of interest related to the current study's execution, its results, or their interpretation. The publication, but not the research on which it was based, is funded by the International Development Research Centre, Canada, through the Think Tank Initiative.

Lima, March 2018

GRADE, Group for the Analysis of Development
Av. Almirante Grau 915, Barranco, Lima, Peru
Phone: (51-1) 247-9988
Fax: (51-1) 247-1854
www.grade.org.pe

The work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International.

Research director: Santiago Cueto
Edition assistance: Diana Balcázar T.
Cover design: Elena González
Design of layout: Amaurí Valls M.

Index

ABSTRACT

Abstract: We used longitudinal data from a cohort of Peruvian children (n=1,720) tracked starting at the age of 1 year old to test the association between alcohol-induced physical IPV (intimate partner violence) against the mother during the child's first two years of life, and the child's cognitive, socio-emotional and schooling outcomes between the ages of 5 and 8. Multivariate regression techniques are used to estimate the relationship of interest, as they allow for controlling of child, household, and community characteristics. We find that early life exposure to IPV is negatively associated with cognitive outcomes (vocabulary and math test scores) for all children, and with self-efficacy for girls. We find no association with child's self-esteem and age of school enrollment indicators. The effects are larger among children whose mothers are better educated and live in urban areas. Results remain robust across different specifications and after isolating changes in relevant variables over time.

Keywords: Child development; domestic violence; intimate partner violence; early childhood.

INTRODUCTION

The early childhood period is characterized by the development of key domains, including sensory-motor, cognitive, and socio-emotional functions. Early exposure to biological risk factors such as malnutrition and other diseases is well known to have a negative impact on child development (Grantham-McGregor et al., 1997; Martorell, 1997; Alderman et al., 2006). The international literature also shows that early exposure to psychosocial risk factors, such as violent environments, is one of the aspects that prevent children from attaining their development potential (Walker et al., 2007 and 2011). While there is considerable international evidence about the impact of exposure to societal or community violence on child development, other forms of violence—in particular, violence against women—might also have an impact on child development, especially since such types are more prevalent.

Violence towards the spouse or partner is known as intimate partner violence (IPV). IPV against women is a widespread phenomenon. According to the World Health Organization (WHO), about 1 in 3 women worldwide have experienced either physical and/or sexual IPV or non-partner sexual violence in their lifetime (WHO, 2013). Moreover, the WHO conducted a 10-country study and found that the proportion of ever-partnered women who had ever experienced physical or sexual violence, or both, ranged from 13% to 61%, with most sites reporting between 23% and 49% (WHO, 2005).

IPV has relevant consequences not only on the victimized spouse or partner but on other household members (English et al., 2003; Carpenter and Stacks, 2009), particularly children (Davies, 2005; Jacobus, 2005; Kitzmann et al., 2003; Wolfe et al., 2003; and Sternberg et al., 2006). Both the quantity and the quality of the time devoted to the child by the mother (cognitive stimulation, caregiver sensitivity, and responsiveness to the child or caregiver affect), which are well known determinants of child development (Walker et al, 2007) are affected by experiences of IPV (Levendosky and Graham-Bermann, 2001; English et al., 2003; Levendosky et al., 2003; Holt et al., 2008). Part of this relationship is likely to be mediated by the impact of IPV on women´s psychological functioning, including depression, anxiety, post-traumatic stress disorder (PSTD), and self-esteem (Holtzworth-Munroe et al., 1997). Other parenting abilities might be affected as well. Moreover, witnessing IPV can also have direct effects on toddlers and children through PSTD (Scheeringa and Zeanah, 1995; Howell et al., 2016).

The impact of IPV on child outcomes has been widely studied in the context of developed countries (Davies, 2005; Jacobus, 2005; Kitzmann et al., 2003; Wolfe et al., 2003; and Stenberg et al., 2006). However, evidence from developing countries is still scarce. Furthermore, very few studies have used longitudinal data from large-scale surveys to look at the impact of early-life exposure to IPV at home on subsequent cognitive and socio-emotional development (to our knowledge, none for developing countries). In this study we test whether early life exposure to IPV has an impact on child development using data from the Young Lives Study, a longitudinal study on childhood poverty that follows children in 4 countries (in Ethiopia, India, Vietnam, and Peru). Peru provides a special opportunity to seek evidence related to this topic due to the fact that it was the only

country surveyed for Young Lives that included a module about violence in the first round.

Besides this, the prevalence of IPV in Peru is striking. In the WHO 10-country study the highest prevalence of IPV was observed in Peru provinces (WHO, 2005). According to the 2013 Peru Demographic and Health Survey, 71% of women suffered some type of violence (psychological, physical, or sexual) from their partners, and 36% reported physical violence. Among the women who suffered from physical violence, 55% declared that their partners were under the effects of alcohol or drugs when the event occurred. Although the Young Lives sample is not completely representative of Peru, the sample is informative of a large range of living conditions (Escobal and Flores, 2008).

In this study, we test whether early life exposure to IPV might have an impact on cognitive achievement, socio-emotional competencies, and school enrolment. We also test if the relationship varies with the gender of the child, with maternal education level, or with area of residence (urban or rural). We focus on mothers who have been victims of physical violence from their intimate partners while the partner was drunk, as self-reported by the mother when the child was 1 year old. To test the relationship of interest, multivariate regression methods were applied to trace the impact of IPV on cognitive achievement (vocabulary and math test scores) at the ages of 5 and 8, on socio-emotional competencies (self-esteem and self-efficacy) at the age of 8, and on indicators of age of school enrollment. The notion that cognitive achievement, self-esteem and self-efficacy are shaped by parental decisions and household characteristics—such as poverty status, nutritional investments and maternal depression—has been validated in the literature (see, respectively: Dercon and Krishnan, 2009; Dercon and Sanchez, 2013; Bennett et al., 2015). Evidence also

shows that cognitive achievement, self-esteem and self-efficacy have implications later in life in aspects such as risky behaviours and teenage pregnancy (Favara and Sanchez, 2017; Favara et al., 2016). Thus, the potential impact of IPV on these dimensions is highly relevant. In addition, the age of school enrolment is both strongly related to parental choices (Glewwe and Jacoby, 1995) and a very important schooling indicator for Peru (Cueto et al., 2012b).

The nature of the data collected by the Young Lives study allows for control of a wide array of potentially relevant co-factors of exposure to IPV in a developing country, including early-life household poverty, parents' education level, among other aspects. The clustered nature of the sample further allows for control of community characteristics that are fixed over time. In other words, the results that we will report are above and beyond the effect that poverty and other household and community characteristics might have on both the prevalence of early-life exposure to IPV and later child development.

LITERATURE REVIEW

Effects of a child's exposure to IPV have been widely studied in developed countries, and in the United States in particular. The literature has focused on evaluating the effects of exposure to IPV on internal behavioral outcomes (such as depression and anxiety), external behavioral outcomes (such as aggression and criminal behavior), and to a less extent PTSD, academic outcomes (i.e., achievement test scores), social-competence, and other psychosocial outcomes. Fowler and Chanmugam (2007) did a critical review of five meta/mega-analyses: Davies (2005), Sternberg et al. (2006), and Wolfe et al (2003), which focused exclusively on externalizing and internalizing behavior problems; Kitzmann et al. (2003) and Jacobus (2005), which also examined PTSD, social-competence, self-esteem, and academic outcomes. According to Fowler and Chanmugam, results indicated similar statistically significant small to medium effects on both internalizing and externalizing behavior problems—the outcomes most extensively studied—with (negative) effect sizes ranging from 0.29 to 0.48, and from 0.35 to 0.46 (respectively). Jacobus (2005) found a moderate effect size for PTSD, whereas Kitzmann et al. (2003) found a small (negative) effect on "other" psychosocial outcomes—including self-esteem—as well as a small to medium (negative) effect on academic achievement. In addition, Davies (2005) and Kitzmann et al. (2003) found a stronger negative effect on externalizing behavior for boys and on social-competence for girls (respectively). The other

studies did not detect the existence of differential effects for boys and girls.

More recently, Evans et al. (2008) constructed a meta-analysis that examined the relationship between childhood exposure to IPV and the child's internalizing, externalizing, and trauma symptoms; the review included 60 studies, also mainly for the United States. They found a moderate effect on externalizing and internalizing symptoms and a large effect in the relationship between exposure to IPV and childhood trauma symptoms. This study also suggested gender differences for the impact; the effect on externalizing symptoms was significantly stronger for boys than for girls.

In contrast, analogous literature for developing countries is quite scarce. We were only able to identify one study from Mexico that aimed to answer a similar question (Frias-Armenta and Gaxiola-Romero, 2008), but their results are hard to generalize due to a small sample size and the fact that the study was focused on children that had been separated from their families due to severe episodes of violence. Despite this, there are a few multi-country studies for the Americas that focused on the economic costs and causes of violence towards the mother and their relationships with child health outcomes (Buvinic et al., 1999, 2003; Flake and Forste, 2006; Heaton and Forste, 2008). Some of these studies highlighted the role of cohabitation and alcohol abuse by a partner as predictors of violence (Flake and Forste, 2006) and mentioned IPV as a predictive factor of poor child nutrition (Heaton and Forste, 2008). Specifically for the case of Peru, there are four studies that used data from the Demographic and Health Surveys (DHS) to look at the causes of physical violence towards the partner (Flake, 2005) and its impact on child health outcomes (Gage and Silvestre, 2010; Benavides and Leon, 2013).

DATA

We used data from the Young Lives Study (YLS) for Peru (http://www.younglives.org.uk/). The Young Lives study is principally funded by the UK Department for International Development (DFID). Sub-studies are funded by the Bernard van Leer Foundation, the Inter-American Development Bank (in Peru), the International Development Research Centre (in Ethiopia), and the Oak Foundation. YLS is an international longitudinal study of childhood poverty that follows 12,000 children in 4 countries over 15 years (in Ethiopia, India, Vietnam, and Peru). It follows two cohorts of children in each country: a younger cohort that was 1 year old in 2002, and an older cohort of children that was 8 years old in 2002. For the analysis, we used data from the younger cohort in Peru, originally conformed by 2,040 children. Although the sample is not nationally representative, it encompasses the social, ethnic, and geographical diversity of the country (Escobal and Flores, 2008).

The children originally chosen were selected using a two-stage procedure. In the first stage, 20 districts in the country were randomly chosen, excluding the 5% richest districts (of the 24 geo-political regions into which the country is divided, the 20 selected districts were spread over 14 regions). In the second stage, an area of the district was selected at random and enumerators looked for families that had at least one child aged between 6 and 18 months. 100 families with these characteristics were selected in each district. Details on the sampling design can

be found in Escobal and Flores (2009). In addition to Round 1 from 2002, the YLS has two follow-up rounds publicly available: Round 2 (2006) and Round 3 (2009). In Round 2, children of the younger cohort were 5 years old, and in Round 3 they were 8 years old. We used data from the three rounds.

One objective of the YLS is to retain as many children as possible; for this reason, all children and their families are tracked within the country (only children that leave the country are no longer tracked). Therefore, despite high rates of internal migration, overall attrition level during the three rounds is not a concern; in fact, it is low by international standards (4.4%).

Although the sample is pro-poor due to the exclusion of the 5% wealthiest districts, the data allows for characterizing families from a wide range of living standard conditions. Focusing on the panel sample, 35% of families were originally from the Coast, 50% from the Highlands, and 15% from the Amazonian Jungle. In terms of socioeconomic characteristics, 34% of children were born in rural areas; and 45% have a mother with a primary education or less, 39% with complete/incomplete secondary, and 16% with higher education. At Round 1, 35% did not have access to electricity, and only 44% of the sample had access to a flush toilet. In terms of child development, the vast majority of children in the sample were attending school by Round 3. However, 21% of children were stunted according to WHO standards. The distribution of the sample according to the mentioned characteristics is shown in Table 1.

The Peru Young Lives survey included a module about alcohol-induced physical partner violence against women, which was administered in Round 1. Figure 1 presents the questions used in this module. Questions were answered only by women that lived with a partner (n=1,743). The sequence of questions used filters to identify cases of

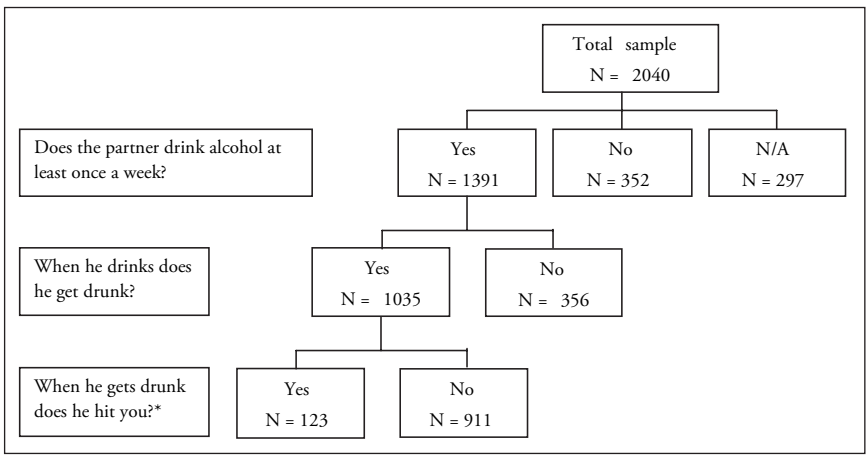
Table 1
Main Characteristics of Households in the Young Lives Sample

	Sample distribution
Area	
Urban	66%
Rural	34%
Climatic regions	
Coast	35%
Highlands	50%
Jungle	15%
Mother education level	
Less than primary	8%
Primary	37%
Secondary	39%
Higher education	16%
Wealth index*	
Poorest tercile	37%
Moderately poor tercile	48%
Least poor tercile	15%
Dwelling services	
Has electricity	65%
No electricity	35%
Toilet inside dwelling	44%
Public toilet	4%
None	52%
Piped water inside dwelling	77%
Piped water outside dwelling	6%
Another source	17%
Child development	
Stunting (Round 3)	21%
Child attending school (Round 3)	99%
Observations	**2.040**

* The index measures the wealth level of the household using an index scale between 0 and 1. The index is calculated as the simple average of three sub-indexes: access to services, consumer durables and housing quality. More information about this index can be found in Espinoza (2014).

violence: (1) first, the interviewer asked whether the partner drinks alcohol at least once a week (69% of women in the sample answered affirmatively); (2) then, if he gets drunk when he drinks (among women whose partners drink at least once a week, 74% get drunk); (3) finally, in the case of a "yes" response, if "he hits you when this happens" (among women whose partners get drunk, 12% hit them when they do). This sequence responds to evidence that suggests that frequent and excessive consumption of alcohol is correlated to and augments the probability of having episodes of IPV (Matos and Sulmont, 2009; Ribero and Sanchez, 2005; Díaz and Miranda, 2010).

Figure 1
Structure of domestic violence questionnaire in the YLS



The sequence of questions used filters to identify cases of violence: (1) first (…); (2) then, (…); (3) finally (…).

This sequence responds to evidence that suggests that frequent and excessive consumption of alcohol is correlated to and augments the probability of having episodes of IPV. It is important to note that almost all women that have a partner answered these questions (there is only 1 missing value in the question "When he gets drunk does he hit you?").

Based on this information, we constructed three binary variables: the first variable takes the value of 1 when the partner drank alcohol at least once a week and 0 otherwise, the second variable takes the value of 1 when the partner got drunk when he drank and 0 otherwise, and the third variable takes the value of 1 if the woman declared she was hit by her partner when he got drunk and 0 otherwise. From here on, we will use the variable "when partner gets drunk, he hits you" as our definition of IPV. According to this, nearly 6% of women reported having suffered IPV. Although it is not possible to construct an analogous definition using data from nationally representative samples, it is worth noting that 10% of women in the relevant age range (the average age of women in Round 1 of Young Lives was 26) reported having been kicked by their partner, and 16% reported having been punched during the previous 12 months, according to the Peru 2013 Demographic and Health Survey.

To measure child development, we constructed diverse indicators that measure cognitive achievement, socio-emotional competencies, and school enrollment in subsequent stages of childhood. These indicators used information from the children in Rounds 2 and 3. Cognitive achievement was measured using results from the Peabody Picture Vocabulary Test (PPVT), administered in Rounds 2 and 3. This test is designed to measure the acquisition of vocabulary. In each trial, the child is given a word that he/she must match with one of four figures. There are a total of 125 items (trials) in the Spanish version (PPVT-R). As an additional indicator of cognitive development, we used a Math Test with 29 items related to basic quantitative and number notions, administered to the younger cohort in Round 3. This test is commonly included in international evaluations of schooling (such as TIMSS, or the Trends in International Mathematics and Science Study). The first section of the test measures basic quantitative and

number notions, whereas the second section measures ability to perform basic mathematic operations with numbers. Both the PPVT and the Math Test were piloted prior to data collection. They were offered in Spanish and in Quechua, the main languages in Peru, and children were invited to answer in the language in which they felt more comfortable. We standardized both tests by age in years. For more information about the test and psychometric characteristics of the PPVT administered in Round 2, see Cueto et al. (2009); for Round 3, see Cueto, S., Leon, J. (2012).

To measure the socio-emotional status of the child, we constructed indicators of self-efficacy and self-esteem. Self-efficacy is related to a person's sense of control over his or her life, whereas self-esteem is related to a person's overall evaluation of his or her own worth. These competencies have been extensively studied in the field of psychology. Evidence from the Young Lives study suggests that the development of these competencies is strongly influenced by the context in which children grow up and by parental characteristics (Dercon and Krishnan, 2009; Dercon and Sanchez, 2012; Bennett et al, 2015). In the Young Lives data, proxies of self-efficacy and self-esteem are called the *agency* and *pride* scales, respectively. Both scales were piloted in each country prior to data collection. Each scale is measured based on respondents' degree of agreement or disagreement with a number of statements (see items in Table 2). The degree of agreement is measured on a 4-point Likert scale. Specifically, the child was asked to point to one of four faces ranging from a very sad face (*strong disagreement*) to a very happy face (*strong agreement*). The internal consistency of these scales and a discussion of cultural validity is shown in Dercon and Krishnan (2009). Although it is not possible to establish the cultural validity of these instruments based purely on quantitative data, all items included have a positive inter-item correlation (two items

Table 2
Description of input used to construct child development indicators

Indicator	Rounds	Question/definition
Educational achievement		
PPVT score standardized by age	2.3	Raw score on the Peabody Picture Vocabulary Test
Math score standardized by age	3	Raw score on the Mathematics Achievement Test
Psychosocial competencies		
Self-efficacy index [Agency scale]	3	If I try hard, I can improve my situation in life. I like to make plans for my future studies and work. If I study hard at school, I will be rewarded by a better job in the future.
Self-esteem index [Pride scale]	3	I am proud of my clothes. I am proud of my shoes or of having shoes. I am never embarrassed because I do not have the right books, pencils, or other equipment. I am proud that I have the correct uniform.
Enrollment		
Age for 1st grade	3	(=1) If the child was enrolled in 1st grade in the adequate age range*.
Age for grade	3	(=1) If the child is within the adequate age range for the grade in which he/she is enrolled**.

(*) According to Peruvian law, the adequate age range for starting primary school is from 5 years and 6 months until 6 years and 6 months.

(**) According to Peruvian law, the adequate age range for first grade is from 5 years and 6 months until 6 years and 6 months; for second grade from 6 years and 6 months until 7 years and 6 months; for third grade from 7 years and 6 months until 8 years and 6 months; for fourth grade from 8 years and 6 months until 9 years and 6 months; for fifth grade from 9 years and 6 months until 10 years and 6 months; and for sixth grade from 10 years and 6 months until 11 years and 6 months.

did not fulfill this requirement and thus were excluded). In order to construct indicators of self-efficacy and self-esteem, we used the principal components method for factor analysis (Howell, 2010; Cuadras, 2014). This method allowed us to capture most parts of the common variance of results obtained from each statement in order to build an index that reflected self-efficacy and self-esteem competencies, respectively.

We constructed two additional variables: (1) a variable that captured whether the child was in the adequate age range for his/her grade, and (2) a variable that indicated whether the child entered elementary school at the adequate age. We used variable (1) as an additional measure of cognitive development due to the fact that an older-than-adequate age range is likely to be related to a lower performance in elementary school; and we used variable (2) as an indicator of adequate parenting practices. Table 2 lists all indicators constructed to measure a child's development in each case, and the round of the YLS from which each variable was obtained.

METHOD

In order to measure the relationship between exposure to IPV and the selected indicators, we ran a series of multivariate regressions using the *Ordinary Least Squares* approach. The following regression model was considered:

$$y_{ij} = \beta_0 + \beta_1 vd_i + \beta_2 e_i + \beta_3 t_i + X_i\Gamma + Z_i\Upsilon + Z_j\Phi + \varepsilon_{ij} \qquad (1)$$

where y_{ij} is the outcome variable of child i from community j observed at ages 5 or 8 (Rounds 2 and 3); vd_i is a dummy variable that takes the value of 1 when the mother of the child reported being hit by her partner when he was drunk when the child was 1 year old (Round 1); e_i is a dummy variable that takes the value of 1 if the mother reported that the partner got drunk; and t_i is a dummy variable that takes the value of 1 if the mother reported that the partner drank alcohol. These variables represent the structure through which the question identifies IPV in the survey, thus their inclusion allowed us to isolate the effect of this type of violence from the drinking habits of the male partner. The coefficient of interest is β_1. In addition, *Xi* is a vector that controls for child characteristics (age in months, native language, and gender); *Zi* is a vector that controls for household characteristics (maternal education, wealth index, household size, number of siblings under 18 years old, birth order of child, mother's employment status, and presence of biological father); and *Zj* includes controls at the community level

(area of residence is urban/rural, climatic region is Coast, Highlands, or Amazon Jungle). Finally, ε_{ij} is the error term, which is assumed to be well-behaved. Except for age, all control variables for the child and household correspond to the household's self-report during the first visit (Round 1). We did this to avoid the inclusion of household characteristics that might have been affected by the presence of IPV. As an additional exercise, we included variations in relevant control variables to isolate the effect from changes over time in relevant co-variables and explore possible channels of persistence. The definition of area of residence and climate region is also related to the location of the household in Round 1.

The inclusion of vectors X_i and Z_j allowed us to control for household and community characteristics that might have been correlated with both prevalence of IPV and child development. For instance, IPV is more prevalent in poorer households (Benavides and Leon, 2013). It is also likely to be more prevalent in poor, isolated areas where government institutions have less capacity. At the same time, early-life poverty is an important predictive factor for child development, and poverty in Peru is widespread. Therefore, it was essential to control for poverty-related factors in the specification. This justifies the inclusion of both vectors as a way to address bias due to omitted variables.

While Z_j controls for certain community characteristics, it does not fully address the concern that Equation (1) might be capturing a spurious relationship between violence and child outcomes. In order to better take into account the role of community characteristics, we will also present results for the following model:

$$y_{ij} = \varphi_j + \beta_0 + \beta_1 vd_i + \beta_2 e_i + \beta_3 t_i + X_i\Gamma + Z_i\Upsilon + Z_j\Phi + \varepsilon_{ij} \qquad (2)$$

where φ_j is a community (cluster) fixed effect that controls for differences in cluster characteristics that are fixed over time. We present estimates using different specifications of the model and thus verify robustness of results. Specifically, we will present three models: (i) a baseline model which only controls for X_i, (ii) an alternative model which also controls for Z_i and Z_j, which corresponds to Equation (1); and, (iii) a final model which also controls for cluster fixed effects and that corresponds to Equation (2). The latter model is the preferred one. The coefficient of interest in all specifications is β_1, which measures the relationship between alcohol-induced physical partner violence and child outcomes.

RESULTS

Results are reported for a balanced sample of 1,720 children (280 observations were lost due to attrition between rounds, and missing values in PPVT or Math scores). Main results are reported in Table 3. Column (1) presents results for our benchmark model, which includes controls only for age and gender of the child. Column (2) presents results for Model II, which controls for additional household and child characteristics. Column (3) presents results for Model III, which is similar to Model II, but includes cluster fixed effects. All models include clustered standard errors.

According to Model I, there is a negative correlation between early-life exposure to IPV and indicators of cognitive achievement and socio-emotional competencies. Concretely, we found that exposure to IPV is associated with a reduction in PPVT scores at ages 5 and 8, in Math scores at age 8, and in self-esteem and self-efficacy at age 8. These associations are large in magnitude, and almost all are statistically significant at the 1% level (self-esteem is significant at the 10% level). No effect on age of school enrollment was found. As mentioned before, these associations can be partially explained by the likely correlation between poverty level and the occurrence of IPV. Indeed, when advancing from Model (I) to Models (II) and (III), most of the associations reduce in magnitude and some lose statistical significance. Focusing on the preferred specification (Model III), we found that early-life exposure to our IPV indicator is still associated

Table 3
Impacts of early life exposure to IPV**

	Model I	Model II	Model III
Cognitive outcomes			
PPVT, 4-5 years	-0.400***	-0.198**	-0.226**
	(0.101)	(0.090)	(0.086)
PPVT, 7-8 years	-0.355***	-0.100	-0.100
	(0.100)	(0.084)	(0.087)
Math, 7-8 years	-0.429***	-0.256***	-0.244**
	(0.100)	(0.092)	(0.097)
Socio-emotional outcomes			
Self-esteem, 7-8 years	-0.196*	-0.085	-0.059
	(0.105)	(0.104)	(0.075)
Self-efficacy, 7-8 years	-0.248**	-0.160	-0.153
	(0.103)	(0.105)	(0.111)
Enrollment			
Age for grade	0.008	-0.015	0.013
	(0.047)	(0.044)	(0.043)
Age for first grade	0.018	-0.004	0.019
	(0.040)	(0.042)	(0.046)
Observations(*)	1.720	1.720	1.720

Clustered standard errors reported in parentheses. ***p<0.01, **p<0.05, *p<0.1

(**) Models I, II and III correspond to 3 different estimations by Ordinary Least Squares. Model I controls for whether the mother reported that the partner drank alcohol, whether the mother reported that the partner got drunk, and for child´s age in month, gender and native language. Model II adds the following controls: mother's education level (high/low), household wealth index, household size, mother's employment status, presence of biological father, number of siblings under 18 years old, birth order of the child, area of residence (urban/rural) and climatic region (Coast, Highlands, or Amazon Jungle). Model III adds cluster fixed effects. Except for age in months, all control variables for the child and household correspond to the household's self-report during the first visit when the child aged 1 year (Round 1).

with a decrease in child cognitive outcomes. Specifically, exposure to IPV reduces PPVT scores at age 5 and Math scores at 8 by 0.23 and 0.24 standard deviations, respectively. Both associations are statistically significant at the 5% level. On the other hand, on average we were unable to detect a similar association with child socio-emotional outcomes. Results in full detail for Model (III) are reported in Appendix 1.

In Table 4 we report correlations for boys and girls using Model (III) in order to examine the possibility of differentiated impacts by gender. Column (III) shows that the association between early-life exposure to IPV and cognitive achievement is negative for males for PPVT scores at age 5 and for Math scores at age 8. At the same time, we observed statistically significant correlations of early-life exposure to IPV for girls for Math scores at age 8 and for the self-efficacy indicator at the same age (results are significant at the 10% level). The latter finding would indicate that exposure to IPV does affect girls' perception of their capability of improving their own situation in life. Although the results might suggest that the effects are heterogeneous by gender, results need to be taken with caution. In F-tests to test for differences in the coefficients of interest between boys and girls, we found that in no case are differences statistically significant. For this, we ran regressions testing interactions of variables with the gender of the child and performed F-tests to test for differences across the coefficient of interest. The null hypothesis was no differences in betas.

Heterogeneity by Maternal Education and Area of Residence

Descriptive statistics showed that prevalence of exposure to IPV varies according to the mother's educational level and area of residence in

Table 4
Impacts of early life exposure to IPV by gender

	Model III (All)	Model III (Girls)	Model III (Boys)	F-test
Cognitive outcomes				
PPVT, 5 years	-0.226**	-0.147	-0.321***	0.264
	(0.086)	(0.128)	(0.092)	
PPVT, 8 years	-0100	-0.090	-0.074	0.893
	(0.087)	(0.108)	(0.128)	
Math, 8 years	-0.244**	-0.166*	-0.306*	0.477
	(0.097)	(0.093)	(0.169)	
Socio-emotional outcomes				
Self-esteem, 8 years	-0.059	-0.147	0.038	0.483
	(0.075)	(0.114)	(0.192)	
Self-efficacy, 8 years	-0.153	-0.161*	-0.148	0.930
	(0.111)	(0.091)	(0.195)	
Enrollment				
Age for grade	0.013	0.003	0.018	0.145
	(0.043)	(0.058)	(0.050)	
Age for first grade	0.019	-0.042	0.077	0.836
	(0.046)	(0.052)	(0.065)	
Observations	1.721	854	866	

Clustered standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1.

Results in each column correspond to three different estimations by Ordinary Least Squares for the following samples: all children, only girls, and only boys. In all cases Model III is considered, which controls for the following variables: whether the mother reported that the partner drank alcohol, whether the mother reported that the partner got drunk; child´s age in month, gender and native language; mother's education level (high/low), household wealth index, household size, mother's employment status, presence of biological father, number of siblings under 18 years old, birth order of the child, area of residence (urban/rural) and climatic region (Coast, Highlands, or Amazon Jungle); and, cluster fixed effects. Except for age in months, all control variables for the child and household correspond to the household's self-report during the first visit when the child aged 1 year (Round 1).

the first round of data collection. In order to explore the possibility of heterogeneity of results according to maternal education and area of residence, we re-estimated Model (III) for four subsamples: (1) children whose mothers have secondary or higher education; (2) children whose mothers have primary or less than primary education; (3) children that live in urban households; and (4) children that live in rural households. Results are presented in Table 5.

Results in Table 5 show that, in the case of cognitive achievement, the coefficient of interest is larger (in absolute terms) for children that come from households where the mother has a high level of education and for households in urban areas. However, we did not observe any statistically significant effects in socio-emotional competencies. F-tests were performed to test the null hypothesis that the difference between the coefficients is zero. We found that for the case of cognitive outcomes, this hypothesis is rejected only in the comparison of urban and rural households. We observed that the null hypothesis is also rejected in the comparison of maternal education for the indicator of self-efficacy, despite lack of significance in the coefficient of interest. Put together, results suggest that the impact of exposure to IPV on cognitive outcomes is larger for urban families (typically better off in terms of living standards as compared to rural ones).

Controlling for Changes over Time

It is likely that some previous results can be explained by the impact that IPV in the household might have on other time-varying household characteristics. Notably, households where this type of violence occurs might eventually become broken homes. In addition, IPV could disrupt household economic activities. To account for these

Table 5
Impacts of early life exposure to IPV by education level and area of residence

	Model III (All) (1)	Low education level (2)	High education level (3)	F-test (4)	Rural (5)	Urban (6)	F-test (7)
Cognitive outcomes							
PPVT, 5 years	-0.226**	-0.133*	-0.363*	0.235	-0.111	-0.279**	0.365
	(0.086)	(0.068)	(0.177)		(0.118)	(0.123)	
PPVT, 8 years	-0.100	-0.001	-0.201**	0.325	0.178	-0.239***	0.037
	(0.087)	(0.150)	(0.094)		(0.162)	(0.080)	
Math, 8 years	-0.244**	-0.095	-0.387***	0.127	0.041	-0.390***	0.019
	(0.097)	(0.160)	(0.078)		(0.177)	(0.061)	
Socio-emotional outcomes							
Self-esteem, 8 years	-0.059	-0.065	-0.067	0.993	-0.024	-0.084	0.789
	(0.075)	(0.078)	(0.151)		(0.147)	(0.120)	
Self-efficacy, 8 years	-0.153	0.020	0.020	0.059	-0.090	-0.090	0.509
	(0.111)	(0.128)	(0.128)		(0.179)	(0.179)	
Enrollment							
Age for grade	0.013	0.043	-0.012	0.321	-0.005	0.026	0.870
	(0.043)	(0.058)	(0.086)		(0.072)	(0.054)	
Age for first grade	0.019	0.066	-0.032	0.621	0.011	0.025	0.720
	(0.046)	(0.061)	(0.076)		(0.081)	(0.049)	
Observations	1.720	747	973		558	1.162	

Clustered standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. Results in columns (1), (2), (3), (5) and (6) correspond to different estimations by Ordinary Least Squares for the following samples: all children, Low education Level (children whose mothers have primary or less than primary education), High education level (children whose mothers have secondary or higher education); children from rural areas (in Round 1), children from urban areas (in Round 1). In all cases Model III is considered, which controls for the following variables: whether the mother reported that the partner drank alcohol, whether the mother reported that the partner got drunk; child´s age in month, gender and native language; household wealth index, household size, mother's employment status, presence of biological father, number of siblings under 18 years old, birth order of the child and climatic region (Coast, Highlands, or Amazon Jungle); and, cluster fixed effects. Columns (2) and (3) control for area of residence (urban/rural) and columns (5) and (6) control for mother's education level (high/low); column (1) controls for both variables. Except for age in months, all control variables for the child and household correspond to the household's self-report during the first visit when the child aged 1 year (Round 1).

possibilities, we performed a variation of our preferred specification in which we also controlled for the following changes over time: (i) changes in wealth index, (ii) changes in household size, (iii) changes in the number of siblings, and (iv) changes in the presence of the biological father at home. Results are reported in Appendix 2. The coefficients obtained in this case are very similar. Inference remains the same for the full sample and for the boys sub-sample. On the other hand, the two results previously observed for girls (in Math scores at age 8, and in self-efficacy at age 8) are not statistically significant in this case (however, point estimates are very similar).

DISCUSSION

In relation to cognitive achievement, while it is striking that math results at age 8 are compromised by early exposure to IPV, the fact that the impact on vocabulary is diluted by age 8 suggests that the effect of IPV might not persist over time. The absence of an effect on age of school enrolment might be explained by the fact that school enrolment is close to universal in Peru. In relation to socio-emotional competencies, the existence of a negative association between IPV and self-efficacy for girls suggests that girls are more susceptible to experiences of IPV in this domain. This is consistent with evidence that finds larger effects for girls on internalizing behavior outcomes.

In addition, results suggest that the impact of exposure to IPV is larger for urban families. Urban households have much higher living standards compared to rural households in Peru. Within this context, the larger impact of IPV in urban areas might be associated with the fact that child outcomes are already very low in rural areas. In addition, IPV might have a lower impact in contexts where children already face deprivation in multiple dimensions.

There are different factors that might act as mediators of our results. It is known that when caregivers experience IPV, the quality of the interaction with the child might be affected and this, in turn, can compromise the development of cognitive and psychosocial dimensions. This is our main hypothesis. In addition, the occurrence of IPV could be triggering other changes within the household, including

change in family composition—the exit of the abusive father—and changes in the economic resources available to the family, which in turn affects the child. However, it is worth mentioning that even when we controlled for changes in wealth and family composition, the cognitive effects remained, and only the effect on self-efficacy for girls lost statistical significance. Although it is tempting to speculate from the latter that the initial association was mediated by the departure of the father, point estimates are very similar. For this reason, the hypothesis that the self-efficacy of girls is more susceptible to early exposure to IPV cannot be ruled out. An additional channel to consider is that the child might also be directly affected by witnessing IPV, even if exposure occurred very early in life. While this possibility cannot be ruled out, based on our data we cannot know if the child witnessed IPV.

Finally, it is worth to notice Peru was affected by a strong internal civil conflict between the 1980s and 1990s. However, evidence indicates that exposure to political violence did not have long-term effects on either emotional or physical domestic abuse, despite its long-lasting impacts on women's health (Grimard and Lazlo, 2014). This finding suggests that our results are not biased by long-term effects of the internal civil conflict that Peru endured.

Some limitations of our study include an implicit assumption that child exposure to IPV is a uniform experience, i.e., it is impossible to differentiate according to the degree of violence. Another limitation is our inability to isolate the effect of IPV from other types of violence that the husband might exercise towards the mother, and from direct violence towards the child. The latter means that our results could be overestimating the negative impact of IPV; however, they would still be linked to the creation of hostile environments for the development of children. At the same time, there could also be reverse causality in cases where the partner exerting physical violence towards the mother

does so precisely because of a child's developmental problems, blaming her for not rearing a perfect son/daughter. These limitations suggest the need to deepen knowledge about the consequences of children's cognitive, emotional, and behavioral responses to intimate partner violence in developing countries.

CONCLUSIONS

Our main objective was to analyze whether early-life exposure to IPV is associated with child development among a sample of Peruvian children. In particular, we focused on IPV as self-reported by her when the child was 1 year old. Using multivariate techniques, we found that early-life exposure to IPV is associated with a decrease in cognitive achievement, as measured by scores on a vocabulary test at age 5, and on a math test at age 8. Conversely, no effect on age of school enrollment nor on vocabulary at age 8 was observed. In relation to socio-emotional competencies, on average no association is found between IPV and self-efficacy and self-esteem. However, a negative association between IPV and self-efficacy is detected for girls, Results remain robust after controlling for a wide array of household characteristics, as well as for community characteristics that are fixed over time.

To the best of our knowledge, this is one of the first studies to analyze the effects of early-life exposure to IPV on cognitive achievement and socio-emotional competencies in a developing country. This is important in a context where the literature has concentrated on identifying effects of IPV on internalizing and externalizing behaviors, and mainly for developed countries. Our results also contribute to a growing literature on the determinants of cognitive and non-cognitive skills needed for the labor market over the life cycle (Cunha et al., 2006).

REFERENCES

Alderman, H.; Hoddinott, J. & Kinsey, B. (2006). Long-term consequences of early childhood malnutrition. *Oxford Economic Papers, 58*(3), 450-474.

Benavides, M. & León, J. (2013). *Una mirada a la violencia física contra los niños y las niñas en los hogares peruanos: magnitudes, factores asociados y transmisión de la violencia de madres a hijos e hijas*. Documentos de Investigación, 71. Lima: GRADE

Bennett, I.M.; Schott, W., Krutikova, S. & Behrman, J.R. (2015). Maternal mental health, and child growth and development, in four low-income and middle-income countries. *Journal of Epidemiology Community Health, 0,* 1-6.

Buvinic, M.; Morrison, A.R. & Shifter, M. (1999). Violence in the Americas: a framework for action. In A.R. Morrison & M.L. Biehl, *Too close to home: Domestic violence in the Americas* (pp. 3-34). Washington, DC: Inter-American Development Bank.

Buvinic, M.; Morrison, A. & Shifter, M. (2003). The violent Americas: risk factors, consequences, and policy implications of social and domestic violence. In H. Frühling, J.S. Tulchin, & H.A. Golding, *Crime and violence in Latin America: citizen security, democracy, and the state* (pp. 93-124). Washington, D.C.: Woodrow Wilson Center Press.

Carpenter, G. & Stacks, A. (2009). Developmental effects of exposure to Intimate Partner Violence in early childhood: a review of the literature. *Children and Youth Services Review, 31*(8), 831-839.

Cuadras, C. (2014). *Nuevos métodos de análisis multivariante*. Barcelona: CMC Ediciones.

Cueto, S.; Leon, J., Guerrero, G. & Muñoz, I. (2009). *Psychometric characteristics of cognitive development and achievement instruments in round 2 of Young Lives*. Lima: Young Lives.

Cueto, S. & Leon, J. (2012a). *Psychometric characteristics of cognitive development and achievement instruments in round 3 of Young Lives*. Technical Note, 25. Oxford: Young Lives.

Cueto, S.; Escobal, J., Penny, M. & Ames, P. (2012b). *Tracking disparities: who gets left behin? Initial findings from Peru Round 3 survey*. Oxford: Young Lives.

Cunha, F.; Heckman, J.J., Lochner, L., & Masterov, D. (2006). Interpreting the evidence on life cycle skills formation. In E. Hanushek, & F. Welch, *Handbook of the Economics of Education*. doi: 10.3386/w11331

Davies, C.A. (2005). Children exposed to domestic violence: a review and meta-analysis of the empirical research. *ETD collection for University of Nebraska - Lincoln.* AAI3180798. Retrieved from http://digitalcommons.unl.edu/dissertations/AAI3180798

Dercon, S. & Krishnan, P. (2009). Poverty and the psychosocial competencies of children: evidence from the Young Lives sample in four developing countries. *Children, Youth and Environments, 19* (2), 138–163.

Dercon, S. & Sánchez, A. (2013). Height in mid childhood and psychosocial competencies in late childhood: evidence from four developing countries. *Economics & Human Biology, 11*(4), 426-432. doi: http://dx.doi.org/10.1016/j.ehb.2013.04.001.

Díaz, R., & Miranda, J. (2010). Aproximación del costo económico y determinantes de la violencia doméstica en el Perú. *Economía y Sociedad, 75,* 56-62.

English, D.J.; Marshall, D.B. & Stewart, A.J. (2003). Effects of family violence on child behavior and health during early childhood. *Journal of Family Violence, 18*(1), 43-57.

Escobal, J. & Flores, E. (2008). *An assessment of the Young Lives sampling approach in Peru.* Technical Note, 3. Oxford: Young Lives. Retrieved from http://www.ninosdelmilenio.org/wp-content/uploads/2008/03/tn3.pdf

Espinoza, P. (2014). *Young Lives round 1 to 3 constructed files.* Technical Note, 30. Oxford: Young Lives. Retrieved from http://www.ninosdelmilenio.org/wp-content/uploads/2014/06/tn302.pdf

Evans, S.; Davies, C.A. & DiLillo, D. K. (2008). Exposure to domestic violence: a metaanalysis of child and adolescent outcomes. *Aggression and Violent Behavior: A Review Journal, 13*(2), 131-140.

Favara, M.; Lavado, P. & Sanchez, A. (2016). *Understanding teenage fertility, cohabitation and marriage: the case of Peru.* Discussion Paper, 10270). Retrieved from https://ssrn.com/abstract=2849755

Favara, M. & Sanchez, A. (2017). Psychosocial competencies and risky behaviours in Peru. *IZA Journal of Labor and Development* (Forthcoming).

Flake, D. F. (2005). Individual, family, and community risk markers for domestic violence in Peru. *Violence Against Women, 11*(3), 353-373.

Flake, D.F. & Forste, R. (2006). Fighting families: family characteristics associated with domestic violence in five Latin American countries. *Journal of Family Violence, 21*(1), 19-29.

Frias-Armenta, M. & Gaxiola-Romero, J.C. (2008). Consequences of direct and indirect family violence on children: Depression, anxiety, antisocial behaviour and academic performance. *Revista Mexicana de Psicología, 25,* 237-248.

Fowler, D.N. & Chanmugam, A. (2007). A critical review of quantitative analyses of children exposed to domestic violence: Lessons for practice and research. *Brief Treatment and Crisis Intervention, 7*(4), 322.

Garcia-Moreno, C.; Guedes, A. & Knerr, W. (2012). *Understanding and addressing violence against women: intimate partner violence.* Geneva: World Health Organization.

Gage, A. & Silvestre, E. (2010). Maternal violence, victimization and child physical punishment in Peru. *Child abuse and Neglect, 34*(7), 523-533.

Glewwe, P. & Jacoby, H.G. (1995). An economic analysis of delayed primary school enrollment in a low income country: the role of early childhood nutrition. *The Review of Economics and Statistics, 77*(1), 156-169.

Grantham-McGregor, S.M.; Walker, C., Chang, S. & Powell, C. (1997). Effects of early childhood supplementation with and without stimulation on later development in stunted Jamaican children. *American Journal of Clinical Nutrition, 66*(2), 247-253.

Graham-Bermann, S. & Levendosky, A. (1998). Traumatic stress symptoms in children of battered women. *Journal of Interpersonal Violence, 13*(1), 111-128.

Grimard, F. & Lazlo, S. (2014). Long-term effects of civil conflict on women's health outcomes in Peru. *World Development, 54,* 139-155.

Heaton, T.B. & Forste, R. (2008). Domestic violence, couple interaction and children's health in Latin America. *Journal of Family Violence, 23*(3), 183-193.

Holt, S.; Buckley, H. & Whelan, S. (2008). The impact of exposure to domestic violence on domestic violence on children and young people: a review of the literature. *Child Abuse and Neglect, 32*(8), 797-810.

Holtzworth-Munroe, A.; Smutzler, N. & Sandin, E. (1997). A brief review of the research on husband violence part II. *Aggression and Violent Behavior, 2*(2), 179-213.

Howell, D. (2010). *Statistical methods for psychology* (8th Edition). Belmont, CA: Thomson Wadsworth.

Howell, K.H.; Barnes, S.E., Miller, L.E. & Graham-Bermann, S.A. (2016). Developmental variations in the impact of intimate partner violence exposure during childhood. *Journal of Injury and Violence Research, 8*(1), 43-57.

Jacobus, L. (2005). The effects of exposure to domestic violence on child outcomes: a meta-analysis (Doctoral dissertation, Georgia State University, 2004). *Dissertation Abstracts International: The Sciences & Engineering, 65*(12-B), 6707.

Kitzmann, K.; Gaylord, N., Holt, A. & Kenny, E.D. (2003). Child witnesses to domestic violence: a meta-analytic review. *Journal of Consulting and Clinical Psychology, 71*(2), 339-352.

Levendosky, A.A. & Graham-Bermann, S.A. (2001). Parenting in battered women: the effects of domestic violence on women and their children. *Journal of Family Violence, 16*(2), 171-192.

Levendosky, A.A.; Huth-Bocks, A.C., Shapiro, D.L. & Semel, M.A. (2003). The impact of domestic violence on the maternal-child relationship and preschool-age children's functioning. *Journal of Family Psychology, 17*(3), 275-287.

Matos, S. & Sulmont, D. (2009). *Modelos multivariados para la violencia conyugal, sus consecuencias y la solicitud de ayuda.* Lima: INEI.

Martorell, R. (1997). Undernutrition during pregnancy and early childhood and its consequences for cognitive and behavioral development. In M.E. Young, *Early child development: investing in our children's future.* Amsterdam: Elsevier.

Ribero, R. & Sánchez, F. (2005). *Determinants, effects and costs of domestic violence.* CEDE Document, 2005-38. Retrieved from: https://core.ac.uk/download/pdf/6325265.pdf

Scheeringa, M.S. & Zeanah, C.H. (1995). Symptom expression and trauma variables in children under 48 months of age. *Infant Mental Health Journal, 16*(4), 259-270.

Sternberg, K.J.; Baradaran, L.P., Abbott, C.B., Lamb, M.E. & Guterman, E. (2006). Type of violence, age, and gender differences in the effects of family violence on children's behavior problems: a mega-analysis. *Developmental Review, 26*(1), 89-112.

Walker, S.; Wachs, T., Gardner, J., Lozoff, B., Wasserman, G., Pollitt, E. & Carter, J., (2007). Child development: risk factors for adverse outcomes in developing countries. *Lancet, 369*(9556), 145-57.

WHO (2005). *WHO multi-country study on women's health and domestic violence against women: summary report of initial results on prevalence, health outcomes and women's responses.* Geneva: World Health Organization.

WHO (2013). *Global and regional estimates of violence against women.* Geneva: World Health Organization.

Wolfe, D.; Crooks, C., Lee, V. McIntyre-Smith, A. & Jaffe, P. (2003). The effects of children's exposure to domestic violence: a meta-analysis and critique. *Clinical Child and Family Psychology Review, 6*(3), 171-87.

Appendix 1
Model III in full detail

Variables	Cognitive outcomes			Socio-emotional outcomes		Enrollment	
	PPVT (5 years)	PPVT (8 years)	Math (8 years)	Self-esteem (8 years)	Self-efficacy (8 years)	Age for grade	Age for first grade
Hits woman if drunk	-0.226**	-0.098	-0.244**	-0.059	-0.153	0.013	0.019
	(0.086)	(0.087)	(0.097)	(0.075)	(0.111)	(0.043)	(0.046)
Partner drinks alcohol	0.066	0.039	0.068	0.007	0.004	-0.016	-0.034
	(0.068)	(0.074)	(0.090)	(0.060)	(0.072)	(0.036)	(0.036)
Gets drunk	-0.083	-0.156***	-0.076	-0.032	-0.092	0.039	0.035
	(0.059)	(0.049)	(0.062)	(0.056)	(0.069)	(0.029)	(0.026)
Mother's level of education (Primary)	-0.404***	-0.351***	-0.293***	-0.163**	0.014	0.021	0.036
	(0.053)	(0.053)	(0.049)	(0.071)	(0.048)	(0.029)	(0.027)
Wealth index (Round 1)	-0.424***	-0.317***	-0.286***	-0.159***	-0.114*	-0.041*	-0.003
	(0.070)	(0.046)	(0.056)	(0.047)	(0.061)	(0.022)	(0.020)
Age of child in months	-0.018	0.036***	0.052***	0.002	0.010	-0.018***	-0.014***
	(0.011)	(0.006)	(0.007)	(0.007)	(0.006)	(0.003)	(0.003)
Rural	0.164**	0.283**	0.159	0.054	0.189	0.009	0.016
	(0.066)	(0.112)	(0.106)	(0.132)	(0.119)	(0.036)	(0.034)
Mountain	-0.188***	-0.141***	-0.187***	-0.236***	0.095***	-0.168***	-0.137***
	(0.028)	(0.023)	(0.014)	(0.023)	(0.027)	(0.009)	(0.007)
Rainforest	-0.148	0.079	0.290***	-0.273**	-0.019	-0.045	-0.024
	(0.095)	(0.068)	(0.069)	(0.105)	(0.095)	(0.034)	(0.031)

Variables	Cognitive outcomes			Socio-emotional outcomes		Enrollment	
	PPVT (5 years)	**PPVT (8 years)**	**Math (8 years)**	**Self-esteem (8 years)**	**Self-efficacy (8 years)**	**Age for grade**	**Age for first grade**
Male	0.020	0.052	0.113**	0.022	-0.060	0.033	0.025
	(0.037)	(0.036)	(0.045)	(0.050)	(0.038)	(0.024)	(0.019)
Household size	0.000	0.015	0.005	-0.015	-0.010	0.003	0.004
	(0.010)	(0.011)	(0.013)	(0.014)	(0.008)	(0.004)	(0.004)
Mother's employment (Round 1)	0.098*	0.067	0.106*	0.029	-0.008	0.079***	0.048
	(0.053)	(0.051)	(0.051)	(0.056)	(0.068)	(0.026)	(0.029)
Native language (Spanish)	-0.099	-0.485***	-0.379***	-0.323***	-0.104	0.000	0.000
	(0.083)	(0.087)	(0.112)	(0.106)	(0.109)	(0.048)	(0.025)
Number of siblings	-0.049**	-0.087***	-0.082***	-0.033	-0.019	-0.013	-0.011
	(0.018)	(0.020)	(0.016)	(0.031)	(0.024)	(0.013)	(0.011)
Birth order (middle)	0.288	-0.077	0.016	0.329	-0.297	-0.151	-0.067
	(0.182)	(0.312)	(0.298)	(0.215)	(0.373)	(0.198)	(0.131)
Birth order (youngest)	0.065*	0.039	-0.059	-0.049	-0.033	-0.041	-0.014
	(0.035)	(0.051)	(0.058)	(0.078)	(0.064)	(0.027)	(0.024)
Presence of biological father	0.080	0.237**	0.195**	0.082	0.107	0.083**	0.061
	(0.071)	(0.097)	(0.075)	(0.080)	(0.070)	(0.037)	(0.036)
Constant	1.309*	-3.563***	-5.031***	0.090	-0.831	2.407***	2.042***
	(0.748)	(0.589)	(0.736)	(0.629)	(0.673)	(0.311)	(0.296)
Observations	1.720	1.720	1.720	1.720	1.720	1.720	1.720

Clustered standard errors reported in parentheses. ***p<0.01, **p<0.05, *p<0.1

(**) Model III includes cluster fixed effects. Except for age in months, all control variables for the child and household correspond to the household's self-report during the first visit when the child aged 1 year (Round 1).

Appendix 2
Impacts of early life exposure to IPV, using the model that includes changes over time in relevant household characteristics

	Model III (All)	Model III (Girls)	Model III (Boys)
Cognitive outcomes			
PPVT, 5 years	-0.239***	-0.154	-0.281***
	(0.079)	(0.121)	(0.078)
PPVT, 8 years	-0.094	-0.069	-0.082
	(0.085)	(0.105)	(0.123)
Math, 8 years	-0.219**	-0.122	-0.306*
	(0.097)	(0.093)	(0.172)
Socio-emotional outcomes			
Self-esteem, 8 years	-0.061	-0.149	0.047
	(0.077)	(0.116)	(0.186)
Self-efficacy, 8 years	-0.150	-0.154	-0.144
	(0.113)	(0.091)	(0.198)
Enrollment			
Age for grade	0.016	0.004	0.026
	(0.042)	(0.056)	(0.052)
Age for first grade	0.018	-0.043	0.085
	(0.045)	(0.051)	(0.068)
Observations	1.721	854	866

Clustered standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1.

Results in each column correspond to 3 different estimations by Ordinary Least Squares for the following samples: all children, only girls, and only boys. In all cases Model III is considered, which controls for the following variables: whether the mother reported that the partner drank alcohol, whether the mother reported that the partner got drunk; child´s age in month, gender and native language; mother's education level (high/low), household wealth index, household size, mother's employment status, presence of biological father, number of siblings under 18 years old, birth order of the child, area of residence (urban/rural) and climatic region (Coast, Highlands, or Amazon Jungle); and, cluster fixed effects. Except for age in months, all control variables for the child and household correspond to the household's self-report during the first visit when the child aged 1 year (Round 1). In addition, the following variables are added to control for changes over time: changes in wealth index, changes in household size, changes in the number of siblings, and changes in the presence of the biological father at home.

The impact of intimate partner violence
on child development in Peru

se terminó de editar en el
mes de marzo del 2018.