Patterns of Intimate Partner Violence in Honduras and their association with Children's Early Development

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Abstract

Intimate Partner Violence (IPV) rarely takes place in isolation. Instead, patterns of co-occurrent and cumulative violence better describe the experience of women in developing countries. Using Latent Class Analysis and data from Honduras DHS/2011-12 we construct homogeneous groups or patterns that represent the heterogeneity of IPV in terms of type, severity and chronicity. Furthermore, while most studies provide evidence of the association between IPV patterns and the victim's mental health outcomes, this study analyzes their association with indicators of Early Childhood Development of children younger than five living in the household. Results indicate that in Honduras, five patterns of IPV can be identified: (1) 'no experience of IPV'; (2) 'violence from an ex-partner but not from current partner'; (3) 'emotional violence from current partner'; (4) 'co-occurrent physical, emotional and sexual violence from current partner'; and (5) 'violence from current partner but not in the last year'. The association between these IPV patterns and Early Childhood Development (defined as being developmentally on track in four domains) is assessed with multivariate logistic regressions and presented as adjusted Odds Ratios (aOR) using 'no experience of IPV' as reference category. Interestingly, children are significantly less likely to be developmentally on track if the mother is exposed to 'co-occurrent physical, sexual and emotional violence' (aOR=0.53 [0.34-0.81]) and if she is exposed to a pattern of 'emotional violence from a current partner' (aOR=0.66 [0.46-0.96]). Furthermore, when analyzing the Socioemotional domain of Early Childhood Development, results show that exposure to 'co-occurrent physical, sexual and emotional violence', 'emotional violence', and 'violence form an ex-partner' have similarly pervasive effects. These results have important policy implications for the design of culturally sensitive interventions to prevent and end all forms of violence against women.

1. Background

1.1. Intimate Partner Violence as lifetime patterns

Intimate Partner Violence (IPV) is widespread across countries and among all socioeconomic, religious, and cultural groups. Pooled data from different middle and low-income countries show that the prevalence of physical or sexual violence by a romantic partner in the last year is between 16% to 75%[1] worldwide, between 17% to 53%[2] in Latin American countries and 22.4% in Honduras.[3] Despite numerous studies describing the prevalence of individual types of IPV or any type of IPV within the last year, most literature fail to account for the co-occurrence and lifetime accumulation of different forms of violence by an Intimate Partner. Lifetime patterns of IPV can be defined based on different typologies and severities of violence (e.g., emotional IPV, sexual IPV, less severe physical IPV, more severe physical IPV); different chronicity of violence (e.g., last episode of violence more than a year ago vs. last episode within the last year); and by the recurrence of violence by different partners (e.g., violence from an ex-partner vs. a current partner).

Describing IPV as the occurrence of independent types of violence ignores the fact that episodes of IPV rarely take place in isolation.[4] For example, among a sample of IPV victims seeking care, only 2.6%, 7.7%, and 0% were exposed exclusively to physical, emotional, or sexually violence, respectively; [5] while 35.2% were exposed to all three types of violence.[5] Furthermore, IPV has been mostly defined in present/absent terms, which obscures the effects of the severity of the event and the potential cumulative nature of experiencing violence frequently and/or by more than one partner. Research shows that the number of IPV physical episodes a woman can experience in a year ranges from 0 to 17,[6] and the years in adult women's lives encompassed by IPV range from an average of 3.9 to 8.2.[7] Related to re-victimization by a different partner, a study shows that 23% of IPV victims have been victimized by previous partners as well.[5] Defining IPV as patterns, as opposed to present/absents terms, takes into account this co-occurrent and cumulative nature of IPV and can help us better understand the spectrum of violence women experience.

In Honduras, consistent anecdotical evidence describes how women are exposed to several types of violence in parallel.[8] Despite small studies suggesting the co-occurrent and cumulative nature of IPV in Honduras,[9] there are no studies to date reporting the prevalence and characteristics of this phenomenon at the national level.

1.2. The importance of Early Childhood Development

Early childhood is a critical stage for the cognitive, social, emotional and physical development of children. However, in low-income and middle-income countries, 250 million children younger than five are at risk of not achieving their developmental potential.[10] During this period, a children's brain organization is characterized by a high degree of plasticity; and a stimulating environment, adequate nutrition and healthy social interactions are the main requirements for an optimal brain development. Furthermore, over the past decades, it has become clear that even fairly innocuous-looking experiences can profoundly affect brain development. Specifically, non-nurturing parental-child relationships, peer relationships, and early stress[11,12] can initiate long-term developmental effects that persist into adulthood.

1.3. Intimate Partner Violence and Early Childhood Development

Children can be exposed to Intimate Partner Violence directly or indirectly. While direct exposure includes visually or audible witnessing a violence episode, and/or seeing physical effects in the victim or the home; children can also be indirectly exposed to IPV by the way in which violence affects their parent's health, levels of stress and trauma. Research on the health consequences of children's exposure to IPV highlights the risk for a wide range of psychological, emotional, behavioral, social, and academic problems for these children.[13] For example, infants who hear or see unresolved conflict between parents may show symptoms of Posttraumatic Stress Disorder (PTSD).[14]

Existing research indicates that as a group, children who witness violence in their homes have levels of emotional and behavioral problems similar to those who are themselves physically abused.[15] However, research on children who witness parental violence is less extensive than research on abused children. Available evidence about the association between parental IPV and children's early development has recognized differences between witnessing and not witnessing the episode, and between verbal vs. physical violence. However, there is no existing research about the association between children's early development and more complex patterns of co-occurrent and cumulative IPV; and as recognized by Kitzman et al. (2013), there is an important need to distinguish between different severities of violence.[13]

1.4. Purpose

Understanding complex patterns of IPV and their effect on children's early development is a public health priority in developed as well as developing countries. However, research has shown that children who live in the world's poorest countries are more likely to suffer from neglect. Over the past decade, Honduras has been declared one of the most unequal and violent countries in the world, with high levels of homicides and the presence of organized crime groups in most of the country's territory. Despite theoretical and empirical underpinnings for implementing Early Childhood Development interventions in contexts of high violence, there is no published literature to support this strategy.[16] In this context, the present paper fills an important gap in knowledge by defining data-driven patterns of co-occurrent and cumulative IPV in Honduras, and studying their association with outcomes of Early Childhood Development among children under the age of five.

2. Methods

2.1. Data and participants

The analysis is based on cross-sectional secondary data from the 2011-2012 Honduras Demographic Health Survey, conducted by the National Institute of Statistics (INE) from September 2011 to July 2012. The survey sample was drawn from all women of childbearing age (15 to 49 years) residing in private dwellings. A multistage cluster sample of census units as primary sampling units (based on Census 2001) was stratified by department (18 departments) and area of residence (i.e., urban and rural). From 24,414 eligible women, the survey obtained a final sample of 22,757 women with completed interviews (response rate of 93%). From the complete sample of women of reproductive age, two subsamples are used for this analysis: the first one is used for the definition of national-level patterns of IPV, and the second one to estimate the association of these patterns with a set of Early Childhood Development outcomes.

2.1.1. Patterns of IPV

From the total number of interviewed women, a sub group was selected for participation in the domestic violence module of the survey. An aleatory process was used to select one woman per household to participate in this module. In total, 12,494 women completed the domestic violence module.

2.1.2. Early Childhood Development

Only children between the age of three and four were eligible to provide information for the Early Childhood Development module. From the total number of each woman's eligible children, only one was randomly selected to participate in this module. Therefore, our sub-sample for the study of the association between patterns of IPV and Early Childhood Development are all women who participated in the domestic violence module and provided information about the early development of a child (2,256 women in total).

2.2. Measures

2.2.1 Patterns of IPV

To estimate the different patterns of IPV we use six indicators measured by the DHS 2011-2012 domestic violence module. The domestic violence module is based on a modified Conflict Tactics Scale (CTS).[17] Women who were ever-married or in a union were asked about the occurrence and frequency of different emotional, physical and sexual violent behaviors that their current (if the respondent was currently married or living together) or most recent partners (if divorced, separated, or widowed) may have ever perpetrated against them. Information about physical and sexual violence from a previous partner was also included in the questionnaire. Table 1 presents the description of the six indicators defined for this study.

Table 1 Description of the six categorical variables used to describe patterns of IPV

Category	**Indicator**	**Components**
Violence from a previous intimate partner *(Has your previous husband/partner ever…)*	1. Any physical (0=no, 1=yes)	Punched you, slapped you, kicked you, or did anything else to physically hurt you
	2. Any sexual (0=no, 1=yes)	Forced you to have sexual relations or perform sexual acts against your will
Violence from current/last intimate partner *(Has your latest husband/partner ever…)*	3. Any emotional/psychological (0=no, 1=yes but not in the last year, 2=yes in the last year)	Done or said something to humiliate her in front of other people
		Ever threatened her or someone close to her with harm.
	4. Any less severe physical (0=no, 1=yes but not in the last year, 2=yes in the last year)	Pushed, shook or threw something
		Slapped her
		Punched her with a fist or something harmful
		Arm twisted or hair pulled
	5. Any severe physical (0=no, 1=yes but not in the last year, 2=yes in the last year)	Kicked or dragged her
		Strangled or burned her
		Threatened with her with knife/gun or another weapon

		Attacked her with knife/gun or another weapon
	6. Any sexual (0=no, 1=yes but not in the last year, 2=yes in the last year)	Physically forced sex when not wanted
		Forced other sexual acts when not wanted

2.2.2. Early Childhood Development

The Early Childhood Development Index (ECDI), is a caregiver-reported index of ten yes/no/don't know questions about characteristics of children aged three to four. Factor analysis techniques and field tests were used to define the four domains of the index: literacy-numeracy, learning/cognition, physical development, and socioemotional development[18]. As described in Table 2, a child can be considered developmentally on track or not in each of the four domains. Finally, the ECDI final score is defined as the percentage of children who are developmentally on track in at least three of these four domains.[18] For the present analysis we consider five outcomes of interest, being developmentally on track in each domain as well as the final ECDI score.

Table 2 Early Childhood Development score items and definition

Domain	**Item**	**Definition of being developmentally on track**
Literacy-numeracy	Can your child identify or name at least ten letters of the alphabet?	They respond 'yes' to at least two of the items
	Can your child read at least four simple, popular words?	
	Does your child know the name and recognize the symbol of all numbers from 1 to 10?	
Learning/cognition	Does your child follow simple directions on how to do something correctly?	They respond 'yes' to any of the items
	When given something to do, is your child able to do it independently?	
Physical development	Is your child sometimes too sick to play? (reverse coded)	They respond 'yes' to any of the items
	Can your child pick up a small object with two fingers, like a stick or a rock from the ground?	
Socioemotional development	Does your child kick, bite, or hit other children or adults? (reverse coded)	They respond 'yes' to at least two of the items
	Does your child get easily distracted? (reverse coded)	
	Does your child get along well with other children?	

2.2.3. Covariates

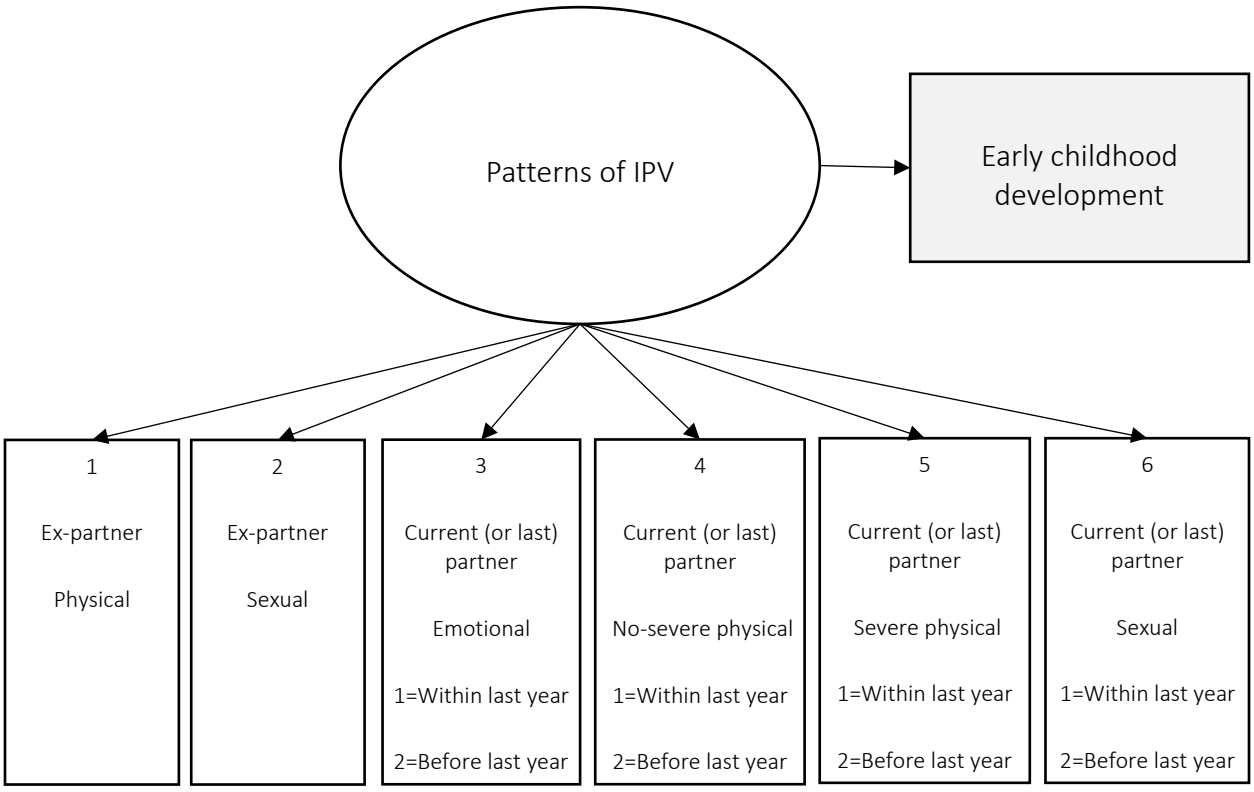
Based on theoretical soundness, we include eight covariates in the analysis: children's age and gender, area of residence, household wealth tertile, mother's education, mother's age and mother's average number of living children.

2.4. Statistical analysis

2.4.1 Patterns of IPV

Latent Class Analysis (LCA) is a person-centered model that divides women into mutually exclusive and exhaustive latent classes or groups[19] based on multiple dimensions of exposure to IPV (see Figure 1). LCA has been widely used in other fields to identify homogeneous groups, such as groups of women with similar symptoms of post-traumatic disorder, groups of people with similar eating disorders and groups of adolescents with similar sexual risk behaviors.

Figure 1 Latent Class Model



LCA model building was conducted in a stepwise fashion, beginning with two latent classes, three latent classes and so on until achieving the desired model fit. The model fit will was assed based on absolute fit criteria, relative fit of two or more competing models,[19] and interpretability of the number of classes. As a measure of absolute model fit, the G^2 likelihood-ratio chi-square statistics was used,[19-22] which measures the null hypothesis that the specified LCA model fits the data information criteria. On the other hand, relative fit was assessed based on information criteria. Information criteria included the Akaike information criterion (AIC),[19-24] the consistent AIC (CAIC), the Bayesian information Criterion (BIC),[19-26] and entropy.[20-26] Entropy was used to measure how well women were classified, as this is a zero to one scale for assessing the precision of assigning latent class membership with value of one indicating that individuals are perfectly classified into classes.[27] Finally, it was imperative to have a theoretical reason that explains the meaning and utility of the groups/classes formed;[28] therefore, interpretability of the results was also considered. The analysis was conducted using Stata 15 and the LCA plug in version 1.2[29] considering the clustered nature of the data.

2.4.2 Association between Patterns of IPV and Early childhood development

Multivariate logistic regressions were used to analyze the associations between patterns of IPV (one categorical variable representing mutually exclusive patterns) and Early Childhood Development indicators.

3. Results

3.1. Descriptive results

The full analytical sample consisted of 12,494 women of reproductive age that participated in the domestic violence module. Descriptive statistics depicted in Table 3 evidence that 61% of the sample came from urban settings. Women's mean age was 31, with 38.4% of women having no education or incomplete primary and with each woman having an average of 2.7 children. Related to women's exposure to IPV, it can be evidenced that the most common form of violence in the sample was emotional violence from a current partner (9.8%). The sub-sample containing information about children's Early Childhood Development indicators presented slightly different characteristics. A lower proportion of women came from urban areas (34%) and more women belonged to households with lower wealth tertile (39%). Similar patterns were observed for education, age and average number of children. Children represented in the Early Childhood

Development module were equally distributed between the ages of three and four and between males and females. At the national level 79.4% of children were considered developmentally on track.

Table 3 Descriptive statistics of the samples used in the analysis

		Full sample (Women with IPV information, n=12,494)		Sub-sample (Women with IPV and ECDI information, n=2,256)	
		%	Freq.	%	Freq.
Demographics	Area of residence				
	Urban	38.5	4,810	34	767
	Rural	61.5	7,684	66	1,489
	Household wealth tertile				
	Low	33.3	4,165	39.6	894
	Middle	33.3	4,165	31.2	704
	High	33.3	4,164	29.2	658
	Mother's age (mean, se)	31.34	8.62	29.68	6.57
	Mother's education				
	No education/incomplete primary	38.4	4,795	41.3	932
	Complete primary	31	3,869	31.9	719
	Incomplete secondary	16	2,005	14.5	328
	Complete secondary or higher	14.6	1,825	12.3	277
	Mother's average number of living children	2.7	12,494	3.0	2,256
Intimate partner violence	Violence by an ex-partner				
	Physical	7.6	950	--	--
	Sexual	4.5	558	--	--
	Emotional violence by current partner				
	Before the last year	9.8	1,229	--	--
	In the last year	20	2,495	--	--
	Physical violence by current partner				
	Before the last year	8.8	1,100	--	--
	In the last year	9.5	1,192	--	--
	Physical violence by current partner				
	Before the last year	3.6	449	--	--
	In the last year	3.3	418	--	--
	Sexual violence by current partner				
	Before the last year	2.9	358	--	--
	In the last year	3.2	405	--	--
Early Childhood Development	Age of eligible child				
	Three	--	--	51.2	1,156
	Four	--	--	48.8	1,100
	Sex of eligible child				
	Male	--	--	52.1	1,176
	Female	--	--	47.9	1,080
	ECDI index				
	Developmentally on track	--	--	79.4	1,791

Full sample: Women aged 15-49 who participated in the domestic violence module (n=12,494)
Sub-sample: Women with children aged 3-4 who participated in the domestic violence module and provided information to the ECDI module (n=2,256)

3.2. Patterns of IPV

Fit statistics for latent classes 2-6 are presented in Table 4. The lowest AIC was observed for the 6-class solution, while the lowest CAIC and BIC were observed for the 5-class solution. Given evidence that BIC has a better performance to identify the correct number of classes when compared to AIC and other likelihood ratio tests,[30] the 5-class solution was selected as the optimal balance between model fit and parsimony. Furthermore, high entropy is observed with the 5-class solution, suggesting highest precision of assignment as well. The entropy for the five-class model suggests that women were appropriately classified in their groups approximately 89% of the time.

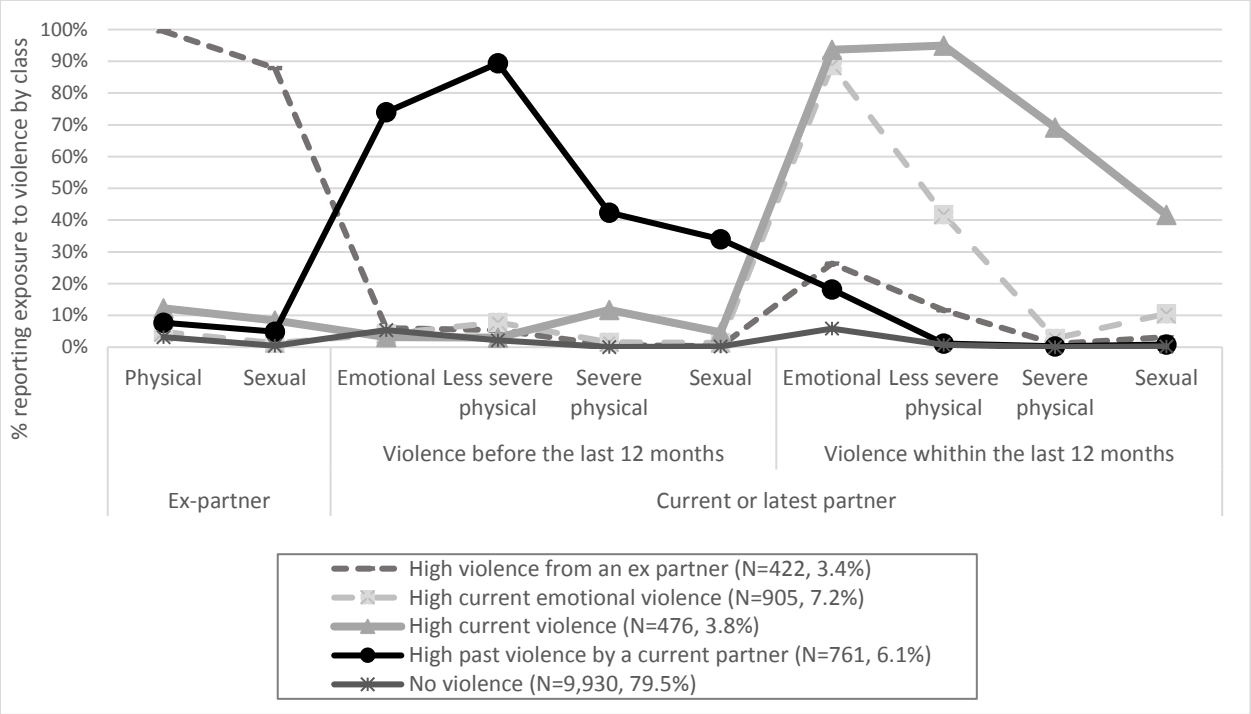
Table 4 LCA Fit Statistics (N=12,494)

Number of classes	AIC	CAIC	BIC	G2 (p-value)	Size of the smallest class (% n)	Entropy
2	4880.80	5057.90	5036.90	4838.80	20.7%	0.90
3	2726.91	2996.77	2964.77	2662.91	9.5%	0.92
4	875.50	1238.12	1195.12	789.50	4.2%	0.93
5	**710.36**	**1165.74**	**1111.74**	**602.36**	**4.5%**	**0.89**
6	634.43	1182.57	1117.57	504.43	4.5%	0.87

The five distinct classes were named based on the estimated probabilities of having experienced any of the nine categories of violence (Figure 2). The largest class identified (76% of women) was labeled as “No violence” and it is characterized by the absence of physical or sexual violence from a current or an ex-partner, however, between five and six percent of women in this category experienced some emotional violence. The second biggest group identified (10.5% of women) was labeled as “High current violence” and it is characterized by the experience of physical, emotional and some sexual violence within the last 12 months. The third group (9.3% of women) was labeled as “High past violence by a current partner” and it is characterized by physical, emotional and sexual violence from the current or last partner but that did not take place within the last 12 months. The smallest group (4.3% of women) was labeled as “High violence from an

ex-partner" and it is characterized by high levels of physical and sexual violence by an ex-partner, but significantly less physical violence and no sexual violence from the current partner.

Figure 2 Forms and frequencies of IPV by latent class



Note: Variable categories were organized by timing of the last episode of violence to better depict the differences between categories

3.3. Bivariate association between Patterns of IPV and Early Childhood Development

The results of the bivariate analysis evidences that mother's exposure to IPV significantly reduces the likelihood of a child to be developmentally on track. Most children from women with no violence (81%) were developmental in track. On the other hand, significantly lower proportions of children from mothers who experienced violence from an ex-partner (74.7%), mothers suffering high emotional violence from a current partner (74.2%), mothers suffering all types of violence from a current partner (68.8%), and mothers who experienced violence from the current partner before the last year but not currently (76.4%) were developmentally on track. Similar significant associations are observed for the Socioemotional domain of development, but no significant associations are observed for the cognition, literacy and physical domains.

Table 5 Bivariate associations, Honduras 2011-12

Mother's IPV profile	ECDI score	Domains of early childhood development			
		Socioemotional	Cognition	Literacy	Physical
No violence	81.0	85.0	95.9	9.5	96.7
High violence from an ex-partner	74.7	72.0	100.0	12.0	97.3
High current emotional violence	74.2	78.1	96.1	9.6	97.2
High current emotional, physical and sexual violence	68.8	73.2	95.6	10.5	93.9
High past violence by a current partner	76.4	83.0	96.2	8.5	94.3
Chi-square p-value	***0.005***	***0.000***	*0.511*	*0.941*	*0.349*

3.4. Multivariate association between Patterns of IPV and Early Childhood Development

Results from the multivariate models, confirm bivariate results and evidence that after controlling for children's age, sex, mother's age, area of residence, household wealth quintile, and mother's number of ever born children, patterns of violence are significantly associated with the Early Childhood Development of children. When analyzing the ECDI as outcome of interest, children of women currently suffering emotional violence only were 0.66 times less likely to be developmentally on track when compared to children of mother's who did not experience violence. Similarly, children from mothers currently suffering physical, sexual and emotional violence were 0.55 times less likely to be developmentally on track. When analyzing the socioemotional development of children, results show that children from mother's who experienced violence from an ex-partner are 0.44 times less likely to be on track in the socioemotional development domain. Similar patterns are observed for children from women currently suffering emotional violence (OR=0.62) and all forms of violence (OR=0.49). No significant associations were observed between patterns of IPV against the mother and children's cognition, physical and literacy domains of development.

Table 6 Multivariate results presented as Odss Ratios and 95% Confidence Intervals, Honduras 2011-12

	ECDI score		Domains of early childhood development							
			Socioemotional		Cognition		Literacy		Physical	
Age of eligible child (ref=three)										
Four	1.35***	(1.09 - 1.69)	1.17	(0.92 - 1.47)	1.60**	(0.72 - 1.84)	1.60**	(1.74 - 3.11)	1.16	(0.72 - 1.84)
Sex of eligible child (ref=male)										
Female	1.22*	(0.99 - 1.50)	1.26**	(1.00 - 1.59)	1.01	(0.60 - 1.47)	1.01	(0.84 - 1.52)	0.94	(0.60 - 1.47)
Mother's age	1.02	(0.99 - 1.04)	1.02	(0.99 - 1.04)	1.00	(0.95 - 1.06)	0.99	(0.96 - 1.03)	1.00	(0.95 - 1.06)
Mother's education (ref=no education/incomplete primary)										
Complete primary	1.01	(0.78 - 1.31)	0.87	(0.66 - 1.15)	1.88**	(0.54 - 1.70)	1.88**	(0.88 - 1.93)	0.96	(0.54 - 1.70)
Incomplete secondary	0.93	(0.66 - 1.33)	1.00	(0.68 - 1.46)	0.84	(0.35 - 1.59)	0.84	(1.01 - 2.64)	0.75	(0.35 - 1.59)
Complete secondary or higher	0.98	(0.63 - 1.53)	0.95	(0.59 - 1.51)	1.69	(0.54 - 5.96)	1.69	(1.08 - 2.94)	1.80	(0.54 - 5.96)
Mother's average number of living children	0.91**	(0.84 - 0.99)	0.91**	(0.84 - 0.99)	0.97	(0.80 - 1.13)	0.97	(0.79 - 1.05)	0.95	(0.80 - 1.13)
Area of residence (ref=urban)										
Rural	0.94	(0.69 - 1.28)	0.92	(0.67 - 1.28)	0.62	(0.68 - 2.02)	0.62	(0.58 - 1.24)	1.17	(0.68 - 2.02)
Household wealth tertile (ref=low)										
Middle	1.20	(0.94 - 1.54)	1.10	(0.82 - 1.46)	1.56	(0.82 - 2.37)	1.56	(1.30 - 3.04)	1.39	(0.82 - 2.37)
High	1.63**	(1.11 - 2.38)	1.36	(0.91 - 2.04)	1.80	(0.92 - 4.20)	1.80	(1.54 - 4.32)	1.97*	(0.92 - 4.20)
Mother's violence pattern (ref=no violence)										
High violence from an ex-partner	0.66	(0.38 - 1.14)	0.44***	(0.26 - 0.75)	--	--	1.21	(0.57 - 2.56)	1.31	(0.32 - 5.38)
High current emotional violence	0.66**	(0.46 - 0.96)	0.62**	(0.42 - 0.91)	1.02	(0.47 - 3.10)	1.02	(0.55 - 1.57)	1.21	(0.47 - 3.10)
High current emotional, physical and sexual violence	0.53***	(0.34 - 0.81)	0.49***	(0.31 - 0.78)	0.88	(0.23 - 1.24)	0.88	(0.58 - 2.06)	0.54	(0.23 - 1.24)
High past violence by a current partner	0.71	(0.44 - 1.17)	0.83	(0.49 - 1.40)	0.96	(0.23 - 1.35)	0.96	(0.37 - 1.53)	0.56	(0.23 - 1.35)
Observations	2,256		2,256		2,187		2,262		2,262	

*** p<0.01, ** p<0.05, * p<0.1

4. Discussion

These results have significant implications for the understanding of the pervasive long-term effects of concurrent forms of IPV violence as well as emotional IPV in the development of children and their socioemotional wellbeing. These results are consistent with previous research suggesting that chronic emotional abuse by an attachment figure can be the underlying foundation of childhood trauma.[31]

Results for the socioemotional domain highlights the consistent pervasive effects of emotional as well as concurrent forms of violence. Furthermore, children from mothers' who suffered violence form a previous partner also exhibited less likelihood of being developmentally on track in the socioemotional domain. This last result can be a hint of the long-term effects of marital violence in the lives of children.

The lack of significant results for the cognition, literacy and physical domains is consistent with previous literature[32] that excludes these domains given the presence of external factors that can better explain their interactions. First, the literacy-numeracy domain is more likely to reflect differences in access to early education rather than cognitive capacity.[32] On the other hand, the physical development domain is a better representation of the children's health status than their early development skills.[32]

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