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Harsh parenting during early childhood and child development

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ABSTRACT

We study the relationship between harsh parenting strategies, including psychological and physical aggressions that do not constitute abuse, on early childhood cognitive and socio-emotional development. We estimate a value-added model that controls for a rich set of child, mother, and family characteristics, from a nationally representative sample of Chilean children aged 52–83 months. We find harsh parenting is significantly associated with lower verbal skills (Peabody Picture Vocabulary Test) of a magnitude of 0.06 standard deviations, and with increased behavioral problems (Child Behavior Check List), by 0.11 standard deviations, including internalization, externalization, and sleep problems. We also find that the more systematic (persistent) harsh parenting is, the stronger the association; the association is similar for boys and girls; reaches its peak at about 5 years of age; and it is stronger for children with less educated mothers.

1. Introduction

Most children in the world are exposed to violence, either physical or psychological, and in many cases to both. Of particular concern for their development and well-being is the fact that the majority of the violence they experience originates in their own family environment, typically exercised by parents or other family members. Using comparable data for 63 countries or areas, UNICEF (2014a) reports that on average about four in five children between ages 2 and 14 are subject to some form of violent discipline in their homes. Although in recent years there seems to be some decline in mother's endorsement of physical discipline in the U.S. (Ryan et al., 2016), and several countries have prohibited all corporal punishment of children even within the household, the use of some forms of violence is still highly prevalent in most countries in the world—regardless of their income or development level. Furthermore, parental use of violence is legal in more

than seventy five percent of countries in the world (Global Initiative, 2017).

Violence towards children can take several forms. For instance, physical violence can be severe, putting the physical integrity of the child at risk—also referred as child abuse or maltreatment—or it can take the form of lack of care, referred to as neglect.[1] Parental disciplinary practices can also reach lower levels of severity, including physical or corporal punishment that do not endanger the child's physical integrity.[2] It can also include verbal or psychological aggressions, which can take the form of threats,

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[1] There is a large literature in psychology, social work, and other related fields, which analyzes the effects of child abuse/maltreatment or neglect, finding associations with a wide range of psychosocial, behavioral and cognitive outcomes (Cicchetti and Barnett, 1991; Margolin, 2000; Waldinger et al., 2001; Hildyard and Wolfe, 2002; Walker et al., 2011). Among others child abuse has been found to have deleterious effects on brain development (De Bellis et al., 2002; Teicher et al., 2003), educational achievement and attainment (Leiter and Johnsen, 1997; Romano et al., 2015) and can negatively affect the ability to acquire or demonstrate skills (Delaney-Black et al., 2002).

[2] For instance Gershoff and Groga-Kaylor (2016) define physical punishment as "noninjurious, openhanded hitting with the intention of modifying child behavior". Within this category belongs spanking, usually defined as mild open-handed strike to the buttocks or extremities (Ferguson, 2013).

shouts, or insults. In this paper, we study the effect of harsh parenting (HP), i.e., parental strategies that incorporate these lesser forms of violence and aggressions towards children, on early childhood cognitive and socio-emotional development.

Overall, there is a broad consensus on the negative effects of severe forms of child abuse/neglect towards children, yet there is an ongoing debate on the effects of the lesser forms of violence. For instance, studies have analyzed the association between physical punishment and children's outcomes, with some common findings, which include increased child compliance following corporal punishment, and increasing negative effects with age and with frequency of punishment (Larzelere, 2000; Gershoff, 2002; Benjet and Kazdin, 2003; Larzelere and Kuhn, 2005; Ferguson, 2013; Gershoff and Grogan-Kaylor, 2016).

In economics, child abuse has received relatively little attention.[3] Using US state-level panel data, Paxon and Waldfogel (1999, 2002) show that states with more absent fathers and working mothers have higher rates of child maltreatment. In terms of its effects, Currie and Tekin (2012) find that maltreated children are more likely to engage in crime, and Currie and Widom (2010) find that children that were subject to child abuse and/or neglect have lower education, employment, earnings, and assets in their adulthood. Pieterse (2015) finds that childhood maltreatment is associated with lower numeracy test scores and higher dropout among children in one city in South Africa.

Even less attention has been devoted to understanding how parenting styles can affect child development (MacMillan and Mikton, 2017), although it is already known that household investments and structure during early childhood play a significant role in the development of cognitive and socio-emotional skills (Cunha and Heckman, 2007; Doyle et al., 2009; Chan and Fung, 2018), and that early skill formation has a significant impact on later outcomes, including schooling, wages, occupation, and productivity, among others (Heckman et al., 2006; Hanushek and Woessmann, 2008; Cunha et al., 2006; Cunha and Heckman, 2008, 2009; Gertler et al., 2014; Almond et al., 2017). Additionally, the formation of child cognitive skills has been shown to be associated with socioeconomic characteristics of their household, child's health, and their parental cognitive development (Paxon and Schady, 2007; Schady, 2011; Schady et al., 2015; Contreras and González, 2015; Contreras et al., 2014; Galasso et al., 2017). However, less is known about how parenting strategies are related to child development (Pinquart, 2017; MacKenzie et al., 2014; Coneus et al., 2012). One exception is Paxon and Shady (2007), whom in the context of analyzing children's cognitive development in Ecuador find that parenting quality—including harsh parenting—is negatively correlated with cognitive development.

In this context, our study seeks to contribute to the literature on the association between harsh forms of parenting—not reaching the level of abuse or maltreatment—and early childhood cognitive and socio-emotional development. We use data from a nationwide survey on early infancy with a sample of children aged 4–7 years-old (specifically 52–83 months). Cognitive development is measured using the Spanish version of the Peabody Picture Vocabulary Test (PPVT) and socio-emotional development is assessed using the Child Behavioral Checklist (CBCL). We are able to expand the existing literature because we have longitudinal data that follows children over a two year period, which allows us to

estimate the association of harsh parenting with child development within a value-added framework.

A second contribution is that we provide estimates of the association using two different measures of harsh parenting, one that is self-reported by the child's mother, and another that uses a direct observational measure of harsh parenting.[4] In addition to asking care takers about their use of several forms of parenting that can be classified as harsh parenting (shouting, criticizing or hitting the child), the survey collected information on observations provided by surveyors/test enumerators. They filled out the Home Observation for Measurement of the Environment (HOME) questionnaire, reporting several measures of maternal attitudes towards the child during the visit, including verbal and/or physical aggressions. We use these two measures—one self-reported and one observed—to capture the potential effects of parental aggressions on development. The self-reported measure would capture the effect of a more structural or permanent parental strategy, and the observed measure would capture the contemporaneous or immediate association between exposure to harsh parenting and the child's test performance.

Our results show that exposure to harsh parenting—i.e., being exposed to verbal aggressions or milder forms of physical violence, or both—is significantly associated with lower development of verbal skills (our cognitive outcome), and with a larger number of behavioral problems (our socio-emotional outcome). Results are similar for both measures of harsh parenting, and in some cases, we find a stronger association between child's outcome and concurrent aggressions, i.e. for the observed measure of harsh parenting. Exposure to harsh parenting is also associated with an increasing likelihood that the child falls into a category of low verbal skills development and in a clinical range of behavioral problems. Furthermore, harsh parenting affects different types of behaviors, including the three broadband behavior scales into which CBCL behaviors are grouped: internalization, externalization, and sleep problems.

We also analyze systematic exposure to harsh parenting over time, and find that it affects child development: the more persistent harsh parenting is, the worse children fare in both dimensions of child development. Finally, we study heterogeneous effects along child's sex, age, and maternal education level. We find a similar association for both boys and girls; that the association is strongest when children are 5 years old; and that harsh parenting is associated with diminished verbal skills only for children with less educated mothers, but it is negatively associated with socio-emotional development irrespective of mother's education level. Overall, our findings reveal that less severe, but more common forms of violence are associated with lower levels of development during early childhood.

The remainder of the article is organized as follows: Section 2 describes the methodology; Section 3 describes the data and variables; Section 4 presents the results; and Section 5 summarizes and provides a discussion on the implications of our study.

2. Empirical methodology

To estimate the association of harsh parenting and children's cognitive and socio-emotional outcomes, we estimate a model of the contemporaneous effect of harsh parenting, controlling for past levels of the outcomes variables and (predetermined) characteristics of the child, pregnancy, mother and household.

In this model, the inclusion of past test scores allows us to control for baseline development levels due to initial conditions,

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[3] More attention has been devoted to intimate partner violence. See among others: McElroy and Homey, 1981; Tauchen et al., 1991; Tauchen and Witte, 1995; Farmer and Tiefenthaler, 1996; Bloch and Vijayendra, 2002; Pollak, 2004; DeRiviere, 2008; Card and Dahl, 2011; Anderberg and Rainer, 2013; Bobonis et al., 2013; Hidrobo and Fernald, 2013; Anderberg et al., 2016; Hsu, 2017; Cools and Kotsadam, 2017; Kim et al., 2017; and McCarthy, 2019.

[4] Paxon and Shady (2007) also use observational measures of parenting strategies.

which include the effect of past exposure to harsh parenting and the effects of unobserved mother and child characteristics. It also allows us to estimate the association between child development and individual and family-level characteristics that are time-invariant, such as personality traits of the mother, among others. However, as these estimates use the cross-sectional variation between children, we cannot interpret them as causal estimates of the effect of harsh parenting. The model for each outcome can be represented as follows:

$$y_{i,\,t} = \beta_0 + Y'_{i,t-1}\beta_1 + \beta_2 HP_{i,t} + C'_{i,t-1}\beta_3 + P'_{i,t-1}\beta_4 + M'_{i,t-1}\beta_5 + H'_{i,t-1}\beta_6 + \varepsilon_{i,t} \tag{1}$$

where $y_{i,\,t}$ is a contemporaneous measure of cognitive or socio-emotional development. Our measures of child development are results from the Peabody Picture Vocabulary Test (PPVT) for cognition, and from the Child Behavior Checklist (CBCL) for socio-emotional development. $Y_{i,t-1}$ is a vector that includes past levels of both outcome variables. $HP_{i,t}$ is our variable of interest that measures harsh parenting in period t, and $C_{i,t-1}$, $P_{i,t-1}$, $M_{i,t-1}$ and $H_{i,t-1}$ are vectors of predetermined child, pregnancy, mother and household characteristics, respectively. Child controls in $C_{i,t-1}$ include age of the child, child's sex, height-for-age z-score, height and weight at birth, whether he or she was premature, and a dummy variable that takes value 1 if the child is indigenous. Pregnancy variables ($P_{i,t-1}$) include information on mother and child's health during pregnancy and delivery: whether the fetus was diagnosed with health problems, the number of medical problems that occurred during delivery of the child, whether it was a preterm delivery, whether the mother was diagnosed with mental problems during pregnancy, whether the mother was diagnosed with postpartum depression, and whether she smoked, consumed alcohol or drugs while pregnant.

Mothers' characteristics ($M_{i,t-1}$) includes her years of schooling, total number of children, whether she has a husband/partner, whether she is head of the household, and her age (and age squared). It also includes controls for mother's cognitive ability, measured by the Wechsler Adults Intelligence Scale (WAIS), and her personality traits as measured by the Big Five personality test (BFI). WAIS is separated into numerical and vocabulary skills and the BFI is separated into five personality traits: agreeableness, extraversion, conscientiousness, neuroticism, and openness to experience. We also control for a parenting style index that captures three dimensions: whether the mother does not speak, does not praise, and/or does not caress the child during the interview using information from the HOME questionnaire.

Finally, household characteristics ($H_{i,t-1}$) include whether the household is urban or rural and its income per capita in the first round of the survey. We also incorporate a series of regional dummies to control for systematic differences across the fifteen administrative regions of the country.

3. Data

Our data comes from two rounds of the Early Childhood Longitudinal Survey (ELPI for its Spanish acronym) carried out in 2010 and 2012 in Chile.[5] ELPI is a longitudinal survey designed to be nationally representative of the population of children. We use data from the 2010 round that included children aged between 6

and 58 months, and we follow them in the 2012 round when they were aged 36–83 months.

Each year, the survey was carried out in two phases. On a first visit to each household, a sociodemographic survey was taken, which collected information on socio-economic characteristics of the household, its demographic composition, parental employment status, health of the child, medical conditions of the mother and child during pregnancy, among others. On a second visit, several developmental tests were applied to the child and her main caretaker—who was overwhelmingly the mother.[6] The tests assessed cognitive, socioemotional and physical development of the child, as well as the cognitive and socioemotional state of the mother.

3.1. Children's cognitive and socio-emotional tests

We focus on two widely-known instruments to measure early child development: the Spanish version of the Peabody Picture Vocabulary Test (PPVT) and the Child Behavior Checklist (CBCL) for pre-school children. The PPVT measures auditory vocabulary and has been widely used in several international studies as a measure of cognitive development (Contreras and Gonzalez, 2015; Coddington et al., 2014; Paxon and Schady, 2007); it is an important predictor of future cognitive outcomes (Case and Paxson, 2008; Cunha and Heckman, 2007). The test consists of showing children a slide with four images and asking them out loud which image corresponds to a given object or action. The child receives a score of 1 if the answer is correct and 0 if incorrect; the test continues until 6 wrong answers are given consecutively. Raw scores are then converted to standardized test scores; the testing agency also reports categories of performance based on the standardized scores.[7]

The CBCL assesses behavior of the child as reported by the parents or guardians, and can be used to identify problematic areas in child development (Achenbach and Rescorla, 2000). In our context, parents were asked to assess whether and how intensely their child engages in a list of problematic behaviors using a Likert scale (0=Not true/never, 1=Sometimes, 2=Often or Very Often); a higher score means greater socioemotional difficulties.[8] Raw scores were converted to standardized scores, and the testing agency also reported performance categories.[9]

The data reports a total score based on answers for all behavior problems; additionally, categories of behaviors can be grouped into seven clinical syndromes according to the Diagnostic and Statistical Manual of the American Psychiatric Association, DSM-5.[10] Furthermore, syndromes are grouped into three broad-band behavior scales into which CBCL behaviors are grouped: internalization, externalization, and sleep problems. The internalization scale includes problems related with the child herself and incorporates four of the seven syndromes: emotional reactivity, anxiety/depression, somatic complaints, and autism. The externalization scale includes problems that involve conflicts between the child and others, and expectations

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[5] The Spanish name of the survey is Encuesta Longitudinal de Primera Infancia (ELPI). For more information on the sampling framework see Observatorio Social, Ministerio de Desarrollo Social, Chile (2019)(http://observatorio.ministeriodesarrollosocial.gob.cl/elpi.php).

[6] The percentage of main caregivers who are the biological mother was 99.1 and 98.4 in the 2010 and 2012 rounds, respectively.

[7] Test scores were standardized at mean 100 and standard deviation of 15. The performance classification for PPVT results was as follows (test score range in parentheses): extremely low (55 – 70), moderately low (71 – 85), below average (86 – 95), average (96 – 103), above average (104 - 115), moderately high (116 – 130), and extremely high (131 – 145).

[8] Online Appendix 1 includes the full list of questions asked to parents/guardians in 2012.

[9] Test scores were standardized at mean 60 and standard deviation of 10. The categories for the CBCL were as follows (test score range in parentheses): normal (< 60), at risk (60–63), and clinical range (>63).

[10] The syndromes include: emotional reactivity, anxiety/depression, somatic complaints, withdrawn, sleep problems, attention problems, and aggressive behavior.

Table 1
Descriptive statistics (2010 and 2012).

Variables:	2010		2012[a]	
	Mean	S.D.	Mean	S.D.
PPVT (T-score)	104.3	15.3	106.2	18.8
Low PPVT (fraction)	0.08	0.27	0.13	0.34
CBCL (T-score)	60.0	9.9	55.0	11.6
Clinical Range CBCL (fraction)	0.36	0.48	0.24	0.42
Child Characteristics				
Male	0.50	0.50		
Indigenous descent	0.11	0.32		
Age (months)	41.0	6.89	66.9	6.95
Height-for-age (z-score)	0.021	1.036	0.125	1.029
Pregnancy Characteristics				
Fetus had prob. during pregnancy	0.12	0.33		
Num. Prob. During Delivery	0.32	0.61		
Preterm birth	0.02	0.14		
Height at birth (cm.)	49.8	2.04		
Weight at birth (grams)	3,412	485		
Mother had mental health problem during Pregnancy	0.10	0.30		
Mothers' Post-Partum Depression	0.10	0.31		
Num. Prob. During Pregnancy	3.29	4.91		
Smoked during pregnancy	0.09	0.29		
Alcohol during pregnancy	0.07	0.25		
Drugs during pregnancy	0.01	0.09		
Mother Characteristics				
Years of Schooling	11.4	3.0	11.5	3.0
Number of Children	2.00	1.00	2.11	0.99
Has a partner	0.72	0.45	0.72	0.45
Head of Household	0.13	0.33	0.19	0.39
Age (years)	30.3	7.05	32.4	7.03
Numeric WAIS	6.91	2.73		
Vocabulary WAIS	8.18	3.53		
BFI agreeableness	3.83	0.59		
BFI exteriorization	3.48	0.74		
BFI responsibility	4.00	0.57		
BFI neuroticism	3.06	0.81		
BFI openness to experience	3.78	0.64		
Parenting Style Index (0–3)	0.57	0.84	0.84	0.97
Household Characteristics				
Urban	0.88	0.32	0.88	0.32
Income per capita 2010 (CL$ 000)	466.6	838	518.9	482
Number of observations	4073			

Notes: Authors' calculations using 2010 and 2012 ELPI surveys.

[a] Time invariant variables are only reported in 2010.

about the child. It groups two syndromes: attention problems and aggressive behavior. The sleep problems syndrome stands alone.

Descriptive statistics of the outcome variables are reported in Table 1. Our final sample includes 4073 children aged 52–83 months in 2012 (who were aged between 30 and 58 months in 2010). We also analyzed developmental categories reported for both PPVT and CBCL variables, which indicate whether the child is at risk in terms of her development; distributions of developmental categories are reported in Online Appendix 2.

In our sample, a child has *low* achievement level on the PPVT if results are classified in the extremely low and moderately low categories: 8 and 13 percent of the sample belonged to these lower-achievement categories in 2010 and 2012, respectively. For the CBCL, we analyze whether children are in a *clinical* range, with 36 and 24 percent of children classified in this category in 2010 and 2012, respectively.

3.2. Measures of harsh parenting

Most of the literature on harsh parenting relies on self-reports by parents of their disciplining behaviors. Although measures of observed parental behaviors are less frequent, some surveys that involve home visits ask the surveyors to observe and record parents' behaviors towards their children during the survey visit, from which it is possible to construct measures of observed harsh parenting. Both measures are subject to different types of measurement error. If

parents perceive harsh parenting as socially unacceptable, self-reported measures are likely to underreport their true incidence; likewise, observed harsh parenting can underreport its true incidence if parents alter their behavior because of the presence of the surveyor/test enumerator (assuming it is socially unacceptable), or because the home visit occurs during a relatively short period of time.[11] Since our data allows us to construct both types of harsh parenting measures, we conduct our analysis with both measures because we cannot ascertain which error is smaller, and because they allow us to assess whether our results are robust to both measures of harsh parenting. Furthermore, we analyze both measures because it is likely that the effect of self-reported harsh parenting reflects the effect of more systematic or permanent parental strategy, whereas the effect of observed parental aggressions reflect an immediate response by the child to the parents' behavior during the day of the developmental test.

Our *self-reported* measures—available only in the 2012 wave—were obtained from questions answered by mothers regarding how often they scold, shout at, threaten, or hit the child if she/he misbehaves. From their response we construct a dichotomous variable that is equal to 1 if a mother answered almost always or

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[11] It is also possible that observed harsh parenting over-reports its true incidence if parents threaten or spank their child to elicit good behavior in the presence of the surveyor. We thank an anonymous referee for pointing out these possible biases.

Table 2
Descriptive statistics of harsh parenting: mean and standard deviation by age group (2010 and 2012).

	2010	2012	2012		
Children's age (months):	30–50	52–83	52–59	60–71	72–83
Self-reported					
Some (verbal or physical)		0.444	0.444	0.450	0.433
		(0.50)	(0.50)	(0.50)	(0.50)
Only Verbal		0.410	0.405	0.420	0.395
		(0.49)	(0.49)	(0.49)	(0.49)
Only Physical		0.004	0.001	0.004	0.007
		(0.07)	(0.04)	(0.07)	(0.08)
Both (verbal and physical)		0.029	0.038	0.025	0.031
		(0.17)	(0.19)	(0.16)	(0.17)
Observed					
Some (verbal or physical)	0.189	0.227	0.260	0.227	0.207
	(0.39)	(0.42)	(0.44)	(0.42)	(0.41)
Only Verbal	0.077	0.090	0.113	0.097	0.066
	(0.27)	(0.29)	(0.32)	(0.30)	(0.25)
Only Physical	0.004	0.017	0.020	0.017	0.016
	(0.06)	(0.13)	(0.14)	(0.13)	(0.13)
Both (verbal and physical)	0.108	0.120	0.127	0.114	0.125
	(0.31)	(0.32)	(0.33)	(0.32)	(0.33)
Number of observations	4073		1,219	2,100	754

Notes: Authors' calculations using 2010 and 2012 ELPI surveys. Includes children aged 52–83 months. Standard deviations are reported in parenthesis.

always to any of these actions[12],[13] we also classify parents' behaviors as "Verbal/psychological" if mothers regularly scold, shout or threaten children, and as "Physical" if mothers regularly hit their child. We report descriptive statistics of the incidence of harsh parenting in Table 2. The self-reported measures indicate that 44.4 percent children were subject to at least some form of harsh parenting in 2012 (i.e., either verbal or physical), and that most harsh parenting—41.0 percent of a total of 44.4 percent—is verbal, with 3 percent of mothers using verbal and physical punishment to discipline their children. Interestingly, we find no significant differences in self-reported harsh parenting by children's age groups.

Our measures of *observed* harsh parenting come from the Home Observation for Measurement of the Environment (HOME) questionnaire, available for both rounds of the ELPI survey.[14] HOME questions are answered by the test enumerator—a psychologist—who was present during the second visit to households, and they include questions that describe the behavior of the main caregiver towards the child during the visit, such as if the mother shouts, reproaches, criticizes, annuls, or hits the child.[15],[16] From responses in the HOME questionnaire, we construct dichotomous variables

that take the value of 1 if it is reported that the mother engaged in different types of aggressive behaviors during the visit.[17] Table 2 also reports the incidence of observed harsh parenting; we find that 19 percent of children in our sample were exposed to some form of harsh parenting during the test administration in 2010, and about 23 percent in 2012. Contrary to what parents self-report, many children received both forms of harsh parenting (verbal and physical) during the interview. In terms of the profile of exposure by age we find that overall exposure decreases with age and it is mostly due to a decrease in the exposure to verbal aggressions.

Our measures of harsh parenting show that a significant fraction of children are exposed to harsh forms of parenting in Chile, and in addition, it is worrisome to notice that for the observed variable, all types of harsh parenting increased between 2010 and 2012. These results are consistent with reports of domestic violence toward children in Chile, which find little or no decrease in some forms of violence as children age, particularly mild physical violence (UNICEF, 2014b). At the same time, the incidence reported in ELPI is lower than others previously reported in Chile for similar measures. For instance, internationally comparable data from the World Studies of Abuse in the Family Environment project (WorldSAFE), which reports retrospective data, indicates that in Chile 84 percent of mothers report yelling or screaming at the child in the last 6 months, and 51 percent report spanking children in the buttocks with their hands (Runyan et al., 2002). These figures are larger than both our measures of harsh parenting for each round of ELPI.

Fig. 1 plots average PPVT and CBCL scores (and confidence intervals) by child's age and whether they were exposed to some form of harsh parenting—self-reported and observed harsh parenting in the top and bottom panels, respectively. Self-reported harsh parenting does not appear to be associated with cognitive ability, but it is correlated with greater behavioral problems. Children who were subject to harsh parenting during the survey visit obtained lower scores on the PPVT and were more prone to behavior and socioemotional problems.

If harsh parenting is underreported by our measures, our estimates are likely biased towards zero (assuming that harsh parenting has a negative correlation with child development), because the group of children that are reported as not being subject to it includes children that are in fact subject to harsh parenting. In this scenario, the observed development outcomes of the no-harsh parenting group would be lower and our estimates of its potential effect would be biased downward. In our data, this is the most likely case, as some of the children for whom no harsh parenting is registered in both the self-reported and observed measures are likely to actually be exposed to aggressive or harsh parenting in their home. To further analyze the extent of measurement error in our variables, we instrument self-reported harsh parenting with observed harsh parenting; we discuss the results and its implications in the Results section.

Taking advantage of the fact that we have data for two different years (2010 and 2012) for the observed measure of harsh parenting, we also constructed variables that measure exposure to aggressions over time, i.e., variables that indicate whether the child was subject to some form of harsh parenting during both survey's rounds, only in one round, or in none. Table 3 shows that 5 percent of children suffered some type of harsh parenting in both years and 31 percent of children were victims of some type of aggressive parenting in at least one of the two years. We will use this variable to study whether persistence of harsh parenting is associated with child development.

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[12] Appendix 1 reports the specific questions used to construct both the self-reported and observed measures.

[13] We also created two additional variables, one where harsh parenting is defined as answering sometimes, almost always or always, and the other where it is defined as only answering always. However, these more extreme definitions of harsh parenting substantially reduce the variability of the measure, therefore we prefer the one defined using the almost always or always categories.

[14] HOME is designed to assess children's environment. There are two versions of the questionnaire: one for children aged zero to 3 years old, and one for preschoolers. The first version includes 45 questions assessing six domains: responsivity; acceptance; organization; learning materials; involvement; and variety in daily stimulation. The preschool version includes 55 items grouped into eight domains: learning materials; language stimulation; physical environment; responsivity of parent to child; academic stimulation; modeling; variety in daily stimulation and enrichment; and acceptance. ELPI applied an adaptation of the HOME questionnaire from Caldwell and Bradley (1984), and in 2010 included 25 questions from the responsivity, acceptance, learning materials and involvement domains. In 2012, it included 18 questions from the responsivity, acceptance, learning materials, and involvement domains.

[15] Children were present at the time of the second visit to the household, as several tests were applied to them during this time. Out of the 15,175 children selected in the 2010 sample, 14,161 were assessed in 2010 (93.3%) and 11,692 in 2012 (77%).

[16] Appendix 1 reports the specific HOME questions included in the survey.

[17] Our estimates do not control for characteristics of the test administrator because they were not available.
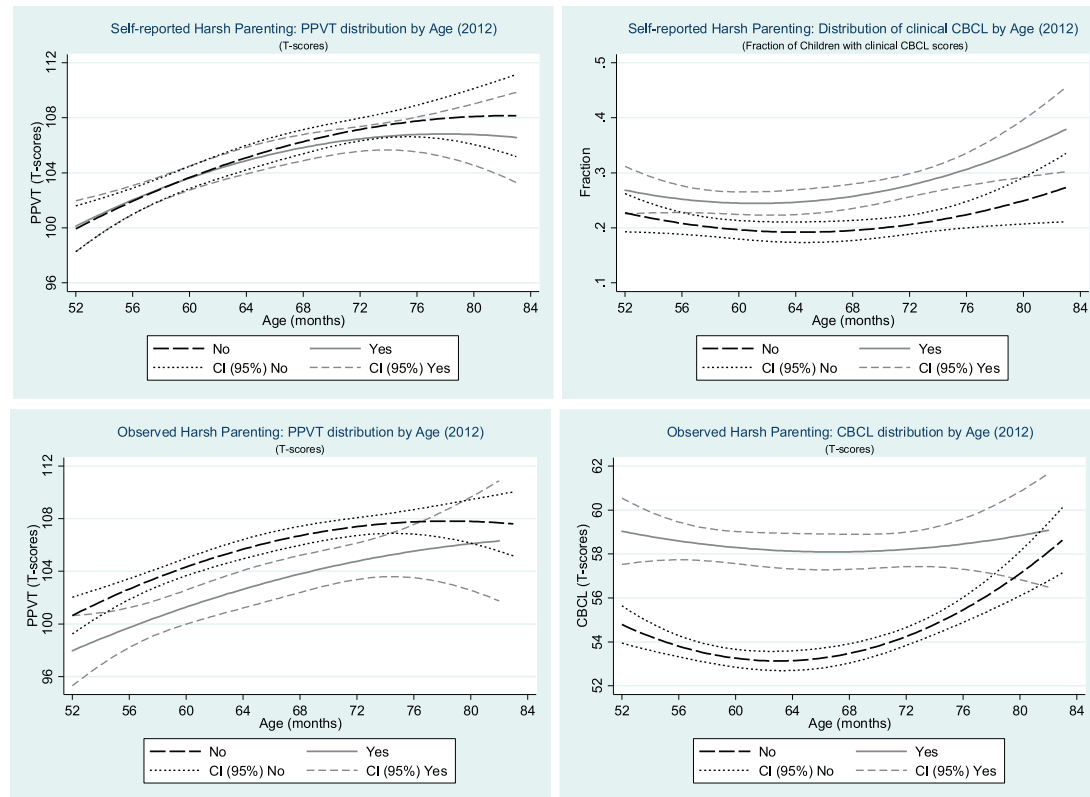
Fig. 1. PPVT and CBCL scores by Harsh Parenting type and age (2012).
Notes: Authors' calculations using 2012 ELPI surveys. Includes children aged 52–83 months in 2012.

Table 3
Persistence of observed harsh parenting by type (percentages).

Type of Harsh Parenting:	None	Once	Both
Some (verbal or physical)	63.7	31.0	5.3
Only Verbal	65.1	30.2	4.7
Only Physical	76.6	21.9	1.5
Both (verbal and physical)	78.5	20.2	1.3

Notes: Authors' calculations using 2010 and 2012 ELPI surveys. The number of observations is 4073 children aged 52–83 months in 2012.

3.3. Mother's cognitive and socioemotional development and other control variables

In our estimates, we also control for cognitive and socioemotional development of the mother, as it has been shown that they significantly affect their children's development (Contreras and Gonzalez, 2015). Thus, as control variables we include results for the Wechsler Adults Intelligence Scale (WAIS) and the Big Five Inventory (BFI) tests applied to mothers. We include both WAIS test results available—one that measures mothers' digit span and another measuring her vocabulary—which provide measures of mothers' cognitive ability. In turn, the BFI assesses personality traits separated in five different categories: extraversion, agreeableness, responsibility, neuroticism, and openness to experience (John and Srivastava, 1999). A Parenting Style Index is also constructed by analyzing three questions of the HOME questionnaire that characterize the relationship between the mother and the child during the visit. The questions include whether the mother does not speak, praise, and/or caress her child; thus our variable takes values between 0 and 3, with higher values indicating more uninvolved or detached parenting styles (Jones et al., 2014). Descriptive statistics for variables that describe the child, pregnancy, mother, and household (detailed in Section 2) are reported in Table 1.

4. Results

We measured the effects of harsh parenting on children's cognitive and socio-emotional development in 2012 controlling for each child's initial development in 2010, by estimating Eq. (1) for both developmental areas—cognitive and socio-emotional—with both measures of harsh parenting. For each developmental area, we included test scores and a discrete variable that indicates whether children have low cognitive development (for PPVT scores) or clinical behavior problems (for CBCL scores) as dependent variables. We analyze the latter measures to have a sense of the importance of the effect, i.e., whether exposure to harsh parenting increases the likelihood of at-risk categories of development. Results are reported in Table 4.

Exposure to harsh parenting is significantly associated with lower PPVT test scores: self-reported and observed harsh parenting reduce PPVT scores by 1.1 and 1.8 points, which are equivalent to 0.06 and 0.9 standard deviations, respectively (columns 1 and 2). Furthermore, children exposed to harsh parenting during the survey visit were 3.6 percentage points—or 28 percent—more likely to have "Low" performance in the PPVT test.[18],[19]

In terms of socio-emotional development, harsh parenting is significantly associated with increases in children's behavioral

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[18] In PPVT, higher values are associated with higher cognitive development. Since the CBCL measures problem behaviors, higher values mean worse socio-emotional development. For the binary outcome we report results of a linear probability model, although we also estimated probit regressions that yielded similar results. Results of the probit estimates are available upon request.

[19] Effects of the test scores are obtained dividing the point estimates by the standard deviation of the dependent variable. For categorical outcomes, the effects are obtained dividing point estimates by the average of the dependent variable.

Table 4
Effects of harsh parenting (HP) on cognitive and socio-emotional outcomes (2012).

Variables/Statistics:	Cognitive Outcome: PPVT				Socio-emotional Outcome: CBCL			
	Test-scores		Low PPVT Category		Test-scores		Clinical CBCL Category	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Self-reported HP	−1.060**		0.00892		1.247***		0.0425***	
	(0.536)		(0.0105)		(0.333)		(0.0128)	
Observed HP		−1.786***		0.0364***		3.177***		0.0749***
		(0.664)		(0.0135)		(0.385)		(0.0161)
PPVT 2010	0.401***	0.399***			−0.0164	−0.0135		
	(0.0196)	(0.0196)			(0.0116)	(0.0116)		
PPVT 2010 Low Category			0.184***	0.183***			0.00987	0.00783
			(0.0262)	(0.0261)			(0.0263)	(0.0263)
CBCL 2010	−0.148***	−0.149***			0.390***	0.390***		
	(0.0308)	(0.0308)			(0.0192)	(0.0191)		
CBCL 2010 Clinical Risk			0.0135	0.0132			0.232***	0.232***
			(0.0121)	(0.0121)			(0.0156)	(0.0156)
Male	−2.234***	−2.196***	0.0333***	0.0324***	0.660**	0.588*	0.0365***	0.0349***
	(0.530)	(0.530)	(0.0102)	(0.0102)	(0.327)	(0.325)	(0.0125)	(0.0125)
Mother's Mental Prob. in Pregnancy	−0.237	−0.200	0.0167	0.0157	−0.0820	−0.159	0.0107	0.00915
	(0.926)	(0.928)	(0.0183)	(0.0184)	(0.609)	(0.608)	(0.0239)	(0.0239)
Num. Prob. During Pregnancy	0.0856	0.0826	−0.00166*	−0.00164	0.101***	0.104***	0.00301**	0.00314**
	(0.0532)	(0.0532)	(0.00100)	(0.00100)	(0.0347)	(0.0346)	(0.00133)	(0.00133)
Alcohol during pregnancy	1.586	1.491	−0.0287	−0.0274	0.400	0.535	−0.0179	−0.0141
	(0.967)	(0.967)	(0.0190)	(0.0189)	(0.666)	(0.659)	(0.0246)	(0.0245)
Mother's education	0.576***	0.564***	−0.00794***	−0.00770***	−0.385***	−0.366***	−0.0145***	−0.0140***
	(0.114)	(0.114)	(0.00219)	(0.00220)	(0.0671)	(0.0667)	(0.00255)	(0.00255)
Number of Children	−1.023***	−0.993***	0.00728	0.00662	−0.139	−0.193	0.00707	0.00570
	(0.322)	(0.322)	(0.00672)	(0.00668)	(0.195)	(0.194)	(0.00759)	(0.00758)
Mother has a partner	−0.412	−0.393	−0.00449	−0.00469	−1.441***	−1.467***	−0.0394**	−0.0401**
	(0.667)	(0.667)	(0.0134)	(0.0134)	(0.405)	(0.401)	(0.0162)	(0.0162)
Mother is Head of Household	−2.246***	−2.201**	0.0355**	0.0348**	−0.875*	−0.944*	−0.0260	−0.0279
	(0.854)	(0.855)	(0.0176)	(0.0176)	(0.498)	(0.497)	(0.0191)	(0.0190)
Mothers' WAIS Numeric	−0.0698	−0.0840	−0.00128	−0.00106	−0.0232	−0.00250	−0.000414	0.000209
	(0.111)	(0.111)	(0.00202)	(0.00202)	(0.0674)	(0.0671)	(0.00255)	(0.00255)
Mothers' WAIS Vocabulary	0.326***	0.334***	−0.00586***	−0.00598***	−0.120**	−0.133**	−0.00207	−0.00236
	(0.0922)	(0.0923)	(0.00183)	(0.00184)	(0.0553)	(0.0550)	(0.00213)	(0.00211)
Mothers' BFI Agreeableness	−0.0933	−0.0495	−0.00136	−0.00192	−0.440	−0.500	0.00238	0.000552
	(0.503)	(0.504)	(0.00990)	(0.00989)	(0.310)	(0.306)	(0.0123)	(0.0122)
Mothers' BFI Extraversion	0.799**	0.763**	−0.00657	−0.00625	−0.208	−0.166	−0.0155*	−0.0140
	(0.383)	(0.382)	(0.00750)	(0.00751)	(0.240)	(0.239)	(0.00924)	(0.00921)
Mothers' BFI Conscientiousness	−0.188	−0.0688	0.000358	−0.00148	−0.467	−0.649**	−0.0288**	−0.0338***
	(0.516)	(0.515)	(0.0101)	(0.0101)	(0.318)	(0.317)	(0.0122)	(0.0121)
Mothers' BFI Neuroticism	0.289	0.304	0.00191	0.00114	0.675***	0.627***	0.0457***	0.0451***
	(0.397)	(0.396)	(0.00725)	(0.00721)	(0.240)	(0.238)	(0.00896)	(0.00894)
Mothers' BFI Openness to experience	0.344	0.349	−0.00159	−0.00144	0.711**	0.715**	0.0246**	0.0245**
	(0.452)	(0.452)	(0.00898)	(0.00897)	(0.292)	(0.290)	(0.0109)	(0.0109)
Parenting Style Index	−1.276***	−1.202***	0.0161***	0.0146***	1.332***	1.204***	0.0326***	0.0295***
	(0.269)	(0.269)	(0.00559)	(0.00557)	(0.175)	(0.174)	(0.00673)	(0.00673)
Observations	4073	4073	4073	4073	4073	4073	4073	4073
R-squared	0.244	0.245	0.09	0.092	0.236	0.246	0.168	0.171
Mean Dep. Variable	106.2	106.2	0.129	0.129	55.04	55.04	0.235	0.235
Mean HP	0.44	0.23	0.44	0.23	0.44	0.23	0.44	0.23

Source: estimates using ELPI survey data from 2010 and 2012. Includes children aged 52–83 months. Other control variables measured in 2010 that are not reported here include child's age in 2010 (months), child is of indigenous descent, z-score height for age, fetus had problems during pregnancy, number of problems during delivery, premature, height at birth, weight at birth, mothers' post-partum depression, smoked during pregnancy, drugs during pregnancy, mothers' age, mothers' age squared, urban household, household income per capita 2010, and a series of categorical variables for region of residency. Robust standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1.

problems for both self-reported and observed aggressive parenting, and for test scores as well as the likelihood of falling into a clinical category. Point estimates indicate that harsh parenting increases CBCL scores by 0.11 and 0.27 standard deviations for self-reported and observed harsh parenting, respectively; and by 18 and 33 percent for the likelihood of clinical behavioral problems for self-reported and observed harsh parenting, respectively.

At the same time, results show that other control variables are associated to cognitive and socio-emotional development in the expected relations. Initial levels of cognitive and socio-emotional development (child's PPVT and CBCL test scores in 2010) indicate that children with higher initial cognitive development obtain better cognitive results in 2012, and children with more initial behavioral problems tend to have more problems two years later.

These results point towards significant persistence of early child development levels, highlighting the importance of early interventions to reduce inequality across children.

Among other results, girls have better scores in the language test (PPVT) and present lower levels of behavior problems (CBCL) relative to boys, and mother's years of schooling is significantly associated with both areas of development. It is interesting to point out that mother's cognitive abilities and personality traits are significantly associated with children's outcomes. Her verbal skills (WAIS vocabulary) are significantly associated with both types of child development (not her numeracy skills), and we find a significant association between mother's extraversion and child's cognitive development, which suggest that mother's communication skills are relevant. In turn, higher levels of neuroticism of the

Table 5
Persistence of observed harsh parenting (HP) on cognitive and socio-emotional outcomes (2012).

Variables/Statistics:	Cognitive Outcome: PPVT		Socio-emotional Outcome: CBCL	
	Test-scores (1)	Low PPVT Category (2)	Test-scores (3)	Clinical CBCL Category (4)
Some HP in both surveys	−2.903**	0.0412	2.762***	0.108***
	(1.326)	(0.0262)	(0.723)	(0.0303)
Some HP in one survey	−0.632	0.0209*	1.532***	0.0365**
	(0.576)	(0.0114)	(0.358)	(0.0142)
Observations	4073	4073	4073	4073
R-squared	0.244	0.091	0.238	0.169
Mean Dep. Variable	106.2	0.129	55.04	0.235
Fraction HP: Two times	0.0530	0.0530	0.0530	0.0530
Fraction HP: One time	0.310	0.310	0.310	0.310
F-test Equality (p-value)	0.0939	0.452	0.0968	0.0232

Source: estimates using ELPI survey data from 2010 and 2012. Includes children aged 52–83 months. Other control variables measured in 2010 that are not reported here include PPVT and CBCL scores, child's sex, child's age (months), z-score height for age, child is of indigenous descent, fetus had problems during pregnancy, number of problems during delivery, premature, height at birth, weight at birth, mother's mental problems during pregnancy, num. prob. during pregnancy, smoked during pregnancy, alcohol during pregnancy, drugs during pregnancy, mother's education, number of children, mother has a partner, mother is head of household, mothers' age, mothers' age squared, mothers' WAIS numeric, mothers' WAIS vocabulary, mothers' BFI agreeableness, mothers' BFI extraversion, mothers' BFI conscientiousness, mothers' BFI neuroticism, mothers' BFI openness to experience, parenting style index care in 2012 (0–3), urban household, household perc capita income and a series of categorical variables for region of residency. Robust standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1.

mother are associated with children having more behavioral problems, which highlights the importance of maternal mental health in child development.[20]

A possible concern with these estimates is the extent to which unobservables could be biasing them. To analyze this possibility we estimate Oster bounds (Oster, 2019) for each of the estimations reported in Table 4. These bounds allow us to evaluate the possible degree of omitted variable bias under the assumption that the selection on the observed controls is proportional to the selection on the unobserved controls. Following Oster (2019), and using a maximum r-squared that is 30 percent higher than the one obtained in our fully-controlled estimates, we estimate that all the calculated Oster bounds are within the confidence interval of our estimated coefficients and that all the identified sets defined by the Oster bounds exclude the zero, both of which indicate that our variables are robust to the inclusion of omitted variables (estimations are summarized and reported in Appendix 2).[21]

4.1. Persistence of harsh parenting and child development

Next, we take advantage of the two rounds of the survey to investigate if persistence of observed harsh parenting over time is relevant. We construct two categorical variables indicating whether the child was exposed to some aggression during the interview in both years or whether he or she was exposed only once (the comparison group is children that were not exposed to harsh parenting in either rounds). Results reported in Table 5 indicate that persistent exposure to harsh parenting harms child development in both cognitive and socio-emotional outcomes. Children that were exposed to some form of aggression in at least one year (around 30 percent of children) have a higher probability of falling into a low-level developmental category and more behavioral problems than children that were not exposed.

Furthermore, children exposed to harsh parenting in both rounds (around 5 percent of children) have even lower developmental levels both in terms of language development and behavioral problems, and the negative effects are observed in both their test scores and problem categories. These results reveal that exposure to systematic aggressive parent strategies over time is detrimental to child development, and highlights the importance of efforts conducive to reducing violence towards children as early as possible.

4.2. Harsh parenting and types of aggression

An additional question that we can explore with our data is whether verbal and physical aggressions have different effects on child development. To answer this question, we estimate Eq. (1) separating the type of parental aggression to which children are exposed into only verbal, and physical and verbal violence.[22] Results are reported in Table 6 and they show that for language development, once we separate harsh parenting by type, it is verbal aggressions that are correlated with lower test scores (columns 1, 2 and 4). We also find that both types of violence increase children's behavior problems (columns 5 through 8). Point estimates suggest that verbal aggressions might have larger negative effects, but a test for equality in these points estimates (reported at the bottom of the table) cannot reject the null that they are statistically the same from all but one estimate (column 6). Thus, our data suggests that harsh parenting reduces child development, and that both forms of harsh parenting have similar effects.

4.3. Harsh parenting and socio-emotional development

As described previously, the CBCL measures behaviors related to seven syndromes that can be classified into three broad categories of problems: internalization, externalization, and sleep problems. We explore the effect of aggressive parenting on each of these categories and report our results in Table 7 and find that it

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[20] Regressions are estimated including the full set of control variables described in Section 2. For brevity we report a subset of variables; however, a table with the full set of control variables is available in Online Appendix 2.

[21] Another concern is measurement error in our harsh parenting variables, which would result in attenuation bias in our estimates. We addressed this issue by instrumenting self-reported harsh parenting with observed harsh parenting. Our IV results confirm the negative association between harsh parenting and children's development, and they also suggest that measurement error is present. In this context, our OLS estimates can be interpreted as a lower bound of the true effect of harsh parenting on children's outcomes. IV estimates are available upon request.

[22] Theoretically, three categories exist: only verbal, only physical, and both forms of aggression. However, only a very small fraction (between 0.4 and 1.7 percent) of children are subject to only physical aggressions, since 87 percent of children exposed to physical aggressions are also subject to verbal ones. For this reason, we pooled the last two types (only physical and both) into one category.

Table 6
Effects of harsh parenting (HP) on cognitive and socio-emotional outcomes by type of aggression (2012).

| | Cognitive Outcome: PPVT | | | | Socio-emotional Outcome: CBCL | | | |
| | Test-scores | | Low PPVT Category | | Test-scores | | Clinical CBCL Category | |
Variables/Statistics:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Self-reported HP								
Only Verbal	−1.066*		0.00954		1.204***		0.0400***	
	(0.550)		(0.0107)		(0.338)		(0.0130)	
Physical and Verbal[a]	−0.993		0.00105		1.808*		0.0748*	
	(1.352)		(0.0285)		(1.004)		(0.0390)	
Observed HP								
Only Verbal		−3.049***		0.0549***		4.569***		0.101***
		(0.965)		(0.0208)		(0.521)		(0.0244)
Physical and Verbal[a]		−0.937		0.0240		2.241***		0.0571***
		(0.830)		(0.0163)		(0.489)		(0.0198)
Observations	4073	4073	4073	4073	4073	4073	4073	4073
R-squared	0.244	0.245	0.090	0.092	0.236	0.248	0.168	0.171
Mean Dep. Variable	106.2	106.2	0.129	0.129	55.04	55.04	0.235	0.235
Mean Verbal HP	0.41	0.0904	0.41	0.0904	0.41	0.0904	0.41	0.0904
Mean Both HP	0.0339	0.137	0.0339	0.137	0.0339	0.137	0.0339	0.137
F-test Equality (p-value)	0.958	0.079	0.767	0.218	0.549	0.000	0.377	0.137

[a] Includes children with only physical aggressions and children with both verbal and physical.Source: estimates using ELPI survey data from 2010 and 2012. Includes children aged 52–83 months. Other control variables measured in 2010 that are not reported here include PPVT and CBCL scores, child's sex, child's age (months), z-score height for age, child is of indigenous descent, fetus had problems during pregnancy, number of problems during delivery, premature, height at birth, weight at birth, mother's mental problems during pregnancy, num. prob. during pregnancy, smoked during pregnancy, alcohol during pregnancy, drugs during pregnancy, mother's education, number of children, mother has a partner, mother is head of household, mothers' age, mothers' age squared, mothers' WAIS numeric, mothers' WAIS vocabulary, mothers' BFI agreeableness, mothers' BFI extraversion, mothers' BFI conscientiousness, mothers' BFI neuroticism, mothers' BFI openness to experience, parenting style index care in 2012 (0–3), urban household, household perc capita income and a series of categorical variables for region of residency. Robust standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1.

has a negative association with all three syndromes, with particularly strong effects on internalization and externalization problems. The main conclusion from these results is that harsh parenting can hinder development of a wide range of behaviors in children, and that its consequences are not confined to one specific area of development.

4.4. Heterogeneous effects of harsh parenting

We also study whether the effects of harsh parenting vary according to the child's sex, age, and maternal education. Results by child's sex are reported in Table 8. Interestingly, the levels of exposure to harsh parenting (both self-reported and observed) are not largely different between boys and girls (see bottom row in each panel). For instance, 43.5 percent of girls are exposed to some (self-reported) harsh parenting compared with 45.3 for boys. In general, results from the estimations show no significant differences in the association of harsh parenting and child development by sex, except for the case of the effect of (self-reported) harsh parenting and PPVT (columns 1), and for the likelihood of falling into clinical CBCL category (column 8), where the negative association is concentrated among boys. Therefore, our main conclusion from this exercise is that harsh parenting is associated with lower levels of development for both girls and boys in similar magnitudes, and that there might be stronger effects on boys for some outcomes.

One possible avenue of further research related to potential differentiated effects would be to assess the intensity of aggressions, as it could be possible that boys might be exposed to harsher parenting strategies than girls, for instance, they could be exposed to stronger shouts or spanked harder, which is not registered in our data.

As the speed at which children develop changes over time, we are also interested in studying whether the effect of harsh parenting varies depending on the age of the child. We classified children into three groups according to their age in 2012: 4-year olds (52–59 months in our sample), 5-year olds (60–71 months)

Table 7
Effects of harsh parenting (HP) on socio-emotional outcomes by CBCL categories (2012).

| | Test-scores | | Clinical CBCL Category | |
Variables/Statistics:	(1)	(2)	(3)	(4)
CBCL: Internalization				
Self-reported HP	0.877***		0.0293**	
	(0.335)		(0.0137)	
Observed HP		2.818***		0.0610***
		(0.386)		(0.0169)
Observations	4073	4073	4073	4073
R-squared	0.176	0.185	0.131	0.134
Mean Dep. Variable	56.17	56.17	0.283	0.283
Mean HP	0.444	0.227	0.444	0.227
CBCL: Externalization				
Self-reported HP	1.459***		0.0501***	
	(0.333)		(0.0119)	
Observed HP		3.395***		0.0942***
		(0.389)		(0.0154)
Observations	4073	4073	4073	4073
R-squared	0.221	0.232	0.137	0.143
Mean Dep. Variable	53.46	53.46	0.182	0.182
Mean HP	0.444	0.227	0.444	0.227
CBCL: Sleep Problems				
Self-reported HP	0.992*		0.00668	
	(0.513)		(0.00649)	
Observed HP		1.530**		0.00670
		(0.623)		(0.00878)
Observations	2,854	2,854	2,854	2,854
R-squared	0.099	0.100	0.040	0.040
Mean Dep. Variable	65.17	65.17	0.0326	0.0326
Mean HP	0.448	0.236	0.448	0.236

Source: estimates using ELPI survey data from 2010 and 2012. Includes children aged 52–83 months. For sleep problems estimates include children aged 52–71 months. Other control variables measured in 2010 that are not reported here include child's age in 2010 (months), child is of indigenous descent, z-score height for age, fetus had problems during pregnancy, number of problems during delivery, premature, height at birth, weight at birth, mothers' post-partum depression, smoked during pregnancy, drugs during pregnancy, mothers' age, mothers' age squared, urban household, household income per capita 2010, and a series of categorical variables for region of residency. Robust standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 8
Effects of harsh parenting (HP) on cognitive and socio-emotional outcomes by sex of the child (2012).

Variable/Statistics:	Cognitive Outcome: PPVT				Socio-emotional Outcome: CBCL			
	Test-scores		Low PPVT Category		Test-scores		Clinical CBCL Category	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Girls:								
Self-reported HP	−0.583		0.00948		1.130**		0.0360**	
	(0.752)		(0.0141)		(0.476)		(0.0182)	
Observed HP		−1.940**		0.0430**		2.148***		0.0149
		(0.971)		(0.0192)		(0.568)		(0.0230)
Observations	2,023	2,026	2,023	2,026	2,030	2,033	2,030	2,033
R-squared	0.266	0.267	0.105	0.108	0.255	0.258	0.163	0.162
Mean Dep. Variable	107.6	107.6	0.109	0.110	54.44	54.44	0.212	0.212
Mean HP	0.435	0.211	0.435	0.211	0.435	0.211	0.435	0.211
Boys:								
Self-reported HP	−1.665**		0.0110		1.367***		0.0498***	
	(0.773)		(0.0155)		(0.471)		(0.0183)	
Observed HP		−1.586*		0.0321*		4.226***		0.134***
		(0.919)		(0.0190)		(0.525)		(0.0225)
Observations	2,060	2,063	2,060	2,063	2,064	2,067	2,064	2,067
R-squared	0.230	0.230	0.090	0.092	0.235	0.254	0.182	0.195
Mean Dep. Variable	104.7	104.7	0.148	0.148	55.69	55.69	0.261	0.260
Mean HP	0.453	0.243	0.453	0.243	0.452	0.243	0.452	0.243

Source: estimates using ELPI survey data from 2010 and 2012. Includes children aged 52–83 months. Other control variables measured in 2010 that are not reported here include PPVT and CBCL scores, child's age (months), z-score height for age, child is of indigenous descent, fetus had problems during pregnancy, number of problems during delivery, premature, height at birth, weight at birth, mother's mental problems during pregnancy, num. prob. during pregnancy, smoked during pregnancy, alcohol during pregnancy, drugs during pregnancy, mother's education, number of children, mother has a partner, mother is head of household, mothers' age, mothers' age squared, mothers' WAIS numeric, mothers' WAIS vocabulary, mothers' BFI agreeableness, mothers' BFI extraversion, mothers' BFI conscientiousness, mothers' BFI neuroticism, mothers' BFI openness to experience, parenting style index care in 2012 (0–3), urban household, household perc capita income and a series of categorical variables for region of residency. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 9
Effects of harsh parenting (HP) on cognitive and socio-emotional outcomes by age of the child (2012).

Variable/Statistics:	Cognitive Outcome: PPVT				Socio-emotional Outcome: CBCL			
	Test-scores		Low PPVT Category		Test-scores		Clinical CBCL Category	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Child's Age in Months: 52-59								
Self-reported HP	0.531		−0.00364		1.067		0.0132	
	(1.378)		(0.0292)		(0.746)		(0.0294)	
Observed HP		−1.053		0.0278		2.699***		0.0682*
		(1.583)		(0.0329)		(0.869)		(0.0353)
Observations	756	757	756	757	761	762	761	762
R-squared	0.238	0.236	0.116	0.118	0.268	0.276	0.249	0.254
Mean Dep. Variable	103.2	103.2	0.187	0.188	55.58	55.57	0.235	0.235
Mean HP	0.444	0.262	0.444	0.262	0.445	0.262	0.445	0.262
Child's Age in Months: 60-71								
Self-reported HP	−1.811**		0.0116		0.993**		0.0255	
	(0.754)		(0.0145)		(0.468)		(0.0171)	
Observed HP		−3.587***		0.0479**		3.644***		0.0994***
		(0.922)		(0.0190)		(0.535)		(0.0223)
Observations	2,110	2,113	2,110	2,113	2,064	2,067	2,064	2,067
R-squared	0.238	0.242	0.099	0.102	0.272	0.285	0.168	0.176
Mean Dep. Variable	53.97	53.98	0.211	0.211	55.69	55.69	0.261	0.260
Mean HP	0.449	0.226	0.449	0.226	0.452	0.243	0.452	0.243
Child's Age in Months: 72-83								
Self-reported HP	−0.719		0.00573		1.781***		0.0809***	
	(0.922)		(0.0170)		(0.605)		(0.0254)	
Observed HP		1.037		0.0261		2.488***		0.0310
		(1.190)		(0.0220)		(0.740)		(0.0318)
Observations	1,222	1,224	1,222	1,224	1,223	1,225	1,223	1,225
R-squared	0.306	0.307	0.123	0.125	0.227	0.229	0.206	0.199
Mean Dep. Variable	108.6	108.6	0.0949	0.0948	56.66	56.66	0.282	0.282
Mean HP	0.435	0.206	0.435	0.206	0.433	0.207	0.433	0.207

Source: estimates using ELPI survey data from 2010 and 2012. Includes children aged 52–83 months. Other control variables measured in 2010 that are not reported here include PPVT and CBCL scores, child's sex, child's age (months), z-score height for age, child is of indigenous descent, fetus had problems during pregnancy, number of problems during delivery, premature, height at birth, weight at birth, mother's mental problems during pregnancy, num. prob. during pregnancy, smoked during pregnancy, alcohol during pregnancy, drugs during pregnancy, mother's education, number of children, mother has a partner, mother is head of household, mothers' age, mothers' age squared, mothers' WAIS numeric, mothers' WAIS vocabulary, mothers' BFI agreeableness, mothers' BFI extraversion, mothers' BFI conscientiousness, mothers' BFI neuroticism, mothers' BFI openness to experience, parenting style index care in 2012 (0–3), urban household, household perc capita income and a series of categorical variables for region of residency. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 10
Effects of harsh parenting (HP) on cognitive and socio-emotional outcomes by mother's education (2012).

Variable/Statistics:	Cognitive Outcome: PPVT				Socio-emotional Outcome: CBCL			
	Test-scores		Low PPVT Category		Test-scores		Clinical CBCL Category	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mothers' Education: less than or equal to 12 years								
Self-reported HP	−1.292**		0.0120		1.228***		0.0393***	
	(0.603)		(0.0124)		(0.384)		(0.0152)	
Observed HP		−1.802**		0.0421***		3.492***		0.0846***
		(0.749)		(0.0156)		(0.429)		(0.0186)
Observations	3,190	3,196	3,190	3,196	3,197	3,203	3,197	3,203
R-squared	0.231	0.232	0.100	0.102	0.205	0.206	0.078	0.079
Mean Dep. Variable	104.3	104.3	0.145	0.145	55.92	55.92	0.267	0.266
Mean HP	0.453	0.236	0.453	0.236	0.452	0.236	0.452	0.236
Mothers' Education: more than 12 years								
Self-reported HP	−0.663		0.0131		1.194*		0.0522**	
	(1.197)		(0.0189)		(0.683)		(0.0227)	
Observed HP		−1.917		0.0274		1.825**		0.0549*
		(1.461)		(0.0243)		(0.854)		(0.0303)
Observations	893	893	893	893	897	897	897	897
R-squared	0.218	0.231	0.154	0.158	0.296	0.297	0.210	0.208
Mean Dep. Variable	112.8	112.8	0.0717	0.0717	52.04	52.04	0.129	0.129
Mean HP	0.413	0.196	0.413	0.196	0.414	0.196	0.414	0.196

Source: estimates using ELPI survey data from 2010 and 2012. Includes children aged 52–83 months. Other control variables measured in 2010 that are not reported here include PPVT and CBCL scores, child's sex, child's age (months), z-score height for age, child is of indigenous descent, fetus had problems during pregnancy, number of problems during delivery, premature, height at birth, weight at birth, mother's mental problems during pregnancy, num. prob. during pregnancy, smoked during pregnancy, alcohol during pregnancy, drugs during pregnancy, mother's education, number of children, mother is head of household, mothers' age, mothers' age squared, mothers' WAIS numeric, mothers' WAIS vocabulary, mothers' BFI agreeableness, mothers' BFI extraversion, mothers' BFI conscientiousness, mothers' BFI neuroticism, mothers' BFI openness to experience, parenting style index care in 2012 (0–3), urban household, household perc capita income and a series of categorical variables for region of residency. Robust standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1.

and 6-year olds (72–83 months). It is noteworthy that exposure to (self-reported) harsh parenting does not significantly vary with age across these three groups, as reported by the mean of harsh parenting at the bottom of each panel in Table 9. Observed aggression decreases with age, particularly with 6-year olds. In terms of the estimates for cognitive development, results indicate that the association is stronger for the group of 5-year old children, with no significant association for the other two groups. For behavioral problems, we observe statistically significant associations for all three age groups.

Finally, we study whether the effects of violence vary depending on the level of education of the mother (i.e., her education in 2010). We use mother's education as proxy for permanent income of the household, because current income levels could be affected by child behavior or cognitive development.[23] We generate two categories of education: mothers with 12 years of completed education or less, and mothers with more than 12 years (i.e. more than high school). We observe that there is slightly less harsh parenting in the group of relatively more educated mothers, but a large fraction of children in both groups have parents that use aggressive parenting strategies (Table 10). Our results reveal that the association between harsh parenting and cognitive development is driven by children with less educated mothers. For behavioral problems, we find that the association is present for both groups and for both measures of harsh parenting. These results suggests that access to a better economic environment may ameliorate the negative effects of harsh parenting for cognitive development but not for socio-emotional development.

5. Conclusions

There is ample consensus on the harmful effects of severe forms of child abuse and neglect on children's outcomes. However, the consensus diminishes when lesser forms of violence towards children are analyzed, including verbal violence or corporal punishment, (MacMillan and Mikton, 2017).[24] In this paper, we contribute to this limited literature in economics by providing estimates of the association between harsh parenting and cognitive and socio-emotional development in early childhood.

First, by taking advantage of a rich, nation-wide longitudinal data set of children, we estimate a value-added model that allows us to describe the association between harsh parenting and child development. In this model, we are able to control for previous child development levels and past individual and family characteristics. We are also able to estimate the effects of both self-reported and observed harsh parenting. To our knowledge, no other study in economics has used this methodology in the context of non-harmful violence towards children; therefore, we provide results that advance our previous understanding of the consequences of aggressive parental styles for child development.

Second, we study the effects of harsh parenting on two different types of outcomes: cognitive and socio-emotional development, using PPTV for cognitive development and the CBCL for socio-

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[23] Income measures might be correlated with child development, as for instance mothers could choose not to participate in the labor market if they observe behavioral problems or a lagging cognitive development in their children.

[24] One of the main reasons for the lack of agreement is that most studies cannot infer causal a relationship between exposure to milder forms of violence and children's outcomes. First, studies do not use experimental data because of obvious ethical objections to the use of randomized control studies when looking at the effects of violence. Additionally, most studies are composed of small samples. Although there are no randomized control studies on the effects of violence, there is a growing literature that analyzes the effect of intervention programs to prevent or reduce the incidence of child maltreatment, including programs designed as randomized controlled trials. For recent reviews on the literature analyzing the effectiveness of intervention programs see, among others, Euser et al (2015); Chen and Chan (2016) and Vlahovicova et al. (2017).

emotional development. Third, we study whether different types of violence toward children—verbal and/or physical—have different effects on development. We also take advantage of the longitudinal data to study whether systematic exposure to aggressive parenting over time affects child development.

Our estimates indicate that exposure to harsh parenting is associated with lower language development (our cognitive outcome) and more behavioral problems in children. At the same time, harsh parenting significantly increases the probability that children fall into categories deemed as risky or in clinical ranges in their behavior. Interestingly, our estimates suggest that there is no difference in the effects of verbal and physical aggressions, but what matters is exposure to either of them.

In addition, we study heterogeneous effects on different groups of children finding that the association between harsh parenting and child development holds for both girls and boys. In terms of heterogeneity in children's age we find that the negative association between parental aggression and language development is stronger for 5-year old children, but it exists for the whole range of ages in our sample (4 to 6-year old children) for the behavioral problems. Finally, we find that children from lower-income households—proxied by lower mother's education—have stronger negative associations for language development, than children from higher-income families. However, for behavioral problems, the negative association is similar in both groups. Interestingly, our data suggests that the heterogeneity is not driven by differences in the prevalence of harsh parenting across groups, but rather from probable differences in how exposure to aggressions affects different children and the coping mechanisms in these different groups.

According to our results, the size of the associations are relevant and informative at least in three dimensions. First, the estimates indicate the associations of harsh parenting and child development are much larger for socio-emotional development (CBCL) than for vocabulary development (PPVT). Second, when comparing the effects of harsh parenting on verbal skills and socio-emotional development, the estimated parameters are large relative to other socio-economic characteristic of the household, such as maternal education or maternal cognitive development. For instance, the effects of an additional year of education on cognitive and socio-emotional development are about 0.04 and 0.02 standard deviations, respectively. The effects of maternal vocabulary development are 0.02 and 0.01 standard deviations, respectively. These results compare with the effect of harsh parenting, which for vocabulary development ranges from 0.06 to 0.09 standard deviations, and for socio-emotional development ranges from 0.11 to 0.27 standard deviations.

Third, the estimates on harsh parenting could be also compared with the effects of some policies that are aimed at improving child development at different age stages, for instance, the effect of different educational policies implemented in Chile. According to Gallegos (2013), increasing competition in the educational market through rising access to private voucher schools is associated with 0.1 increases in the standard deviation in test scores. On the other hand, Bellei (2009) examines the effects related to an extension of the school day. The author reports an increase in educational achievement between 0.05 and 0.12 standard deviation due to this policy. Finally, Valenzuela et al. (2013) show that a policy that increases the voucher for socio-economically vulnerable students is associated with an increase in education achievement between 0.04 and 0.07 standard deviations. Thus, our reported estimates on the association of harsh parenting and child development are found to be large in comparison with evidence related to the impact of different educational policies implemented in Chile that have been previously reported in literature.

As expected, given the inherent difficulties in measuring exposure to harsh parenting, our estimates have limitations. Our measures of harsh parenting do not fully capture the intensity of aggressions suffered by children. Although we are separating verbal from physical aggression, our measures do not allow us to account for the degrees to which both verbal and physical violence can be exerted. In addition, we are not fully capturing how systematic or repetitive parental aggression is, although again, we attempt to capture this dimension (at least partially) by using two separate observations over time in our analysis of persistence. These limitations are also present when we estimate heterogeneous effects, as, for instance, we have no information regarding how harshness or frequency varies between boys and girls (although our measures indicate no significant differences in the incidence of harsh parenting between these two groups).

All these limitations reveal the need for further research in this area. Generating better measures of parental quality, including more detailed information on exposure, intensity and persistence of aggressions suffered by children, as well as a better characterization of parenting styles, including disciplining strategies, would provide answers to the unanswered questions in this area of research. The evidence in this paper reveals that parental quality matters. Aggression towards children does not need to reach levels of abuse in order to harm children's early childhood development, and therefore highlights the need for educational programs and interventions to train parents, especially among lower-income, lower educated families.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.ehb.2019.100831.

References

Achenbach, T.M., Rescorla, L.A., 2000. Manual for the ASEBA Preschool Forms & Profiles. University of Vermont, Research Center for Children, Youth, & Families, Burlington, VT.

Anderberg, D., Rainer, H., 2013. Economic abuse: a theory of intrahousehold sabotage. J. Public Econ. 97, 282–295.

Anderberg, D., Rainer, H., Wadsworth, J., Wilson, T., 2016. Unemployment and domestic violence: theory and evidence. Econ. J. 126 (597), 1947–1979.

Almond, D., Currie, J., Duque, V., 2017. Childhood Circumstances and Adult Outcomes: Act II. NBER Working Paper No. 23017, January. doi:http://dx.doi.org/10.3386/w23017.

Bellei, C., 2009. Does lengthening the school day increase students' academic achievement? Results from a natural experiment in Chile. Econ. Educ. Rev. 28 (5), 629–640.

Benjet, C., Kazdin, A.E., 2003. Spanking children: the controversies, findings, and new directions. Clin. Psychol. Rev. 23, 197–224.

Bloch, F., Vijayendra, R., 2002. Terror as a bargaining instrument: a case study of dowry violence in Rural India. Am. Econ. Rev. 92 (4), 1029–1043.

Bobonis, G., González-Brenes, M., Castro, R., 2013. Public transfers and domestic violence: the roles of private information and spousal control. Am. Econ. J. Econ. Policy 5 (1), 179–205.

Caldwell, B., Bradley, R., 1984. Home Observation for Measurement of the Environment (HOME) - Revised Edition. University of Arkansas, Little Rock.

Card, D., Dahl, G., 2011. Family violence and football: the effect of unexpected emotional cues on violent behavior. Q. J. Econ. 126, 103–143.

Case, A., Paxson, C., 2008. Stature and status: height, ability, and labor market outcomes. J. Polit. Econ. 116 (3), 499–532.

Chan, K.H., Fung, K.W.T., 2018. The effect of social fathers on the cognitive skills of out-of-wedlock children in the U. S. Econ. Human Biol. 28, 146–159. doi:http://dx.doi.org/10.1016/j.ehb.2017.09.007.

Chen, M., Chan, K.L., 2016. Effects of parenting programs on child maltreatment prevention: a meta-analysis. Trauma Violence Abuse 17 (1), 88–104. doi:http://dx.doi.org/10.1177/1524838014566718.

Cicchetti, D., Barnett, D., 1991. Attachment organization in maltreated preschoolers. Dev. Psychopathol. 3 (4), 397–411. doi:http://dx.doi.org/10.1017/S0954579400007598.

Coddington, C.H., Rashmita Mistry, S., Alison Bailey, L., 2014. Socioeconomic status and receptive vocabulary development: Replication of the parental investment model with Chilean preschoolers and their families. Early Childhood Research Quarterly 0885–2006. doi:http://dx.doi.org/10.1016/j.ecresq.2014.06.004.

Contreras, D., González, S., 2015. Determinants of early child development in Chile: health, cognitive and demographic factors. Int. J. Educ. Dev. 40, 217–230. doi:http://dx.doi.org/10.1016/j.ijedudev.2014.06.010.

Coneus, K., Laucht, M., Reuß, K., 2012. The role of parental investments for cognitive and noncognitive skill formationßEvidence for the first 11 years of life, Economics &. Econ. Human Biol. 10 (2), 189–209. doi:http://dx.doi.org/10.1016/j.ehb.2011.01.003.

Cools, S., Kotsadam, A., 2017. Resources and intimate partner violence in Sub-Saharan Africa. World Dev..

Cunha, F., Heckman, J., 2007. The technology of skill formation. Am. Econ. Rev. 97 (2), 31–47.

Cunha, F., Heckman, J., 2008. Formulating, identifying and estimating the technology of cognitive and noncognitive skill formation. J. Hum. Resour. 43 (4), 738–782.

Cunha, F., Heckman, J., 2009. The economics and psychology of inequality and human development. J. Eur. Econ. Assoc. 7 (2–3), 320–364.

Cunha, F., Heckman, J.J., Lochner, L.J., Masterov, D.V., 2006. Interpreting the evidence on life cycle skill formation. In: Hanushek, E.A., Welch, F. (Eds.), Handbook of the Economics of Education, , pp. 697–812 chap. 12, North-Holland, Amsterdam.

Currie, J., Tekin, E., 2012. Understanding the cycle childhood maltreatment and future. J. Hum. Resour. 47 (2), 509–549. doi:http://dx.doi.org/10.3368/jhr.47.2.509.

Currie, J., Widom, C.S., 2010. Long-term consequences of child abuse and neglect on adult economic well-being. Child Maltreat. 15 (2), 111–120. doi:http://dx.doi.org/10.1177/1077559509355316.

De Bellis, M., Keshavan, M., Shifflett, H., Iyengar, S., Beers, S., Hall, J., Moritz, G., 2002. Brain structures in pediatric maltreatment-related posttraumatic stress disorder: a sociodemographically matched study. Biol. Psychiatry 52, 1066–1078.

Delaney-Black, Virginia, Covington, Chandice, Ondersma, Steven J., et al., 2002. Violence exposure, trauma, and IQ and/or reading deficits among urban children. Arch. Pediatr. Adolesc. Med. 156 (3), 280–285. doi:http://dx.doi.org/10.1001/archpedi.156.3.280 2002.

DeRiviere, L., 2008. Do economists need to rethink their approaches to modeling intimate partner violence? J. Econ. Issues 42 (3), 583–606.

Doyle, O., Harmon, C.P., Heckman, J.J., Tremblay, R.E., 2009. Investing in early human development: Timing and economic efficiency. Econ. Human Biol. 7 (1), 1–6. doi:http://dx.doi.org/10.1016/j.ehb.2009.01.002.

Euser, S., Alink, L., Stoltenborgh, M., Bakermans-Kranenburg, M.J., van IJzendoorn, M.H., 2015. A gloomy picture: a meta-analysis of randomized controlled trials reveals disappointing effectiveness of programs aiming at preventing child maltreatment. BMC Public Health 15 (1), 1068. doi:http://dx.doi.org/10.1186/s12889-015-2387-9.

Farmer, A., Tiefenthaler, J., 1996. Domestic violence: the value of services as signals. Am. Econ. Rev. 86 (2), 274–279 Papers and Proceedings of the Hundredth and Eighth Annual Meeting of the American Economic Association San Francisco, CA.

Ferguson, Christopher J., 2013. Spanking, corporal punishment and negative long-term outcomes: a meta-analytic review of longitudinal studies. Clin. Psychol. Rev. 33 (1), 196–208.

Galasso, E., Weber, A., Fernald, L., 2017. Dynamics of child development: analysis of a longitudinal cohort in a very low income country. World Bank Econ. Rev. doi:http://dx.doi.org/10.1093/wber/lhw065.

Gallegos, F., 2013. When does inter-school competition matter? Evidence from the Chilean "Voucher" system. B.E. J. Econ. Anal. Policy (Adv.) 13 (2), 525–562. doi:http://dx.doi.org/10.1515/bejeap-2012-0032.

Gershoff, Elizabeth, 2002. Corporal punishment by parents and associated child behaviors and experiences: a meta-analytic and theoretical review. Psychol. Bull. 128 (4), 539–579. doi:http://dx.doi.org/10.1037/0033-2909.128.4.539.

Gershoff, Elizabeth T., Grogan-Kaylor, Andrew, 2016. Spanking and child outcomes: Old controversies and new meta-analyses. J. Fam. Psychol. 30 (4), 453–469. doi:http://dx.doi.org/10.1037/fam0000191.

Gertler, P., Heckman, J., Pinto, R., Zanolini, A., Vermeersch, C., Walker, S., Chang, S., Grantham-Mcgregor, S., 2014. Labor market returns to an early childhood stimulation intervention in Jamaica. Science 344 (6187), 998–1001. doi:http://dx.doi.org/10.1126/science.1251178.

Global Initiative, 2017. Welcome to the Global Initiative to End All Corporal Punishment (n.d.), Retrieved April 14th, 2017 from. . http://www.endcorporalpunishment.org/.

Hanushek, E., Woessmann, L., 2008. The role of cognitive skills in economic development. J. Econ. Lit. 46 (3), 607–668. doi:http://dx.doi.org/10.1257/jel.46.3.607.

Heckman, J., Stixrud, J., Urzua, S., 2006. The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. J. Labor Econ. 24 (3), 411–482. doi:http://dx.doi.org/10.1086/504455.

Hidrobo, M., Fernald, L., 2013. Cash transfers and domestic violence. J. Health Econ. 32 (1), 304–319.

Hildyard, K., Wolfe, D.A., 2002. Child neglect: developmental issues and outcomes. Child Abuse Negl. 26, 679–695.

Hsu, L., 2017. The timing of welfare payments and intimate partner violence. Econ. Inq. 55 (2), 1017–1031. doi:http://dx.doi.org/10.1111/ecin.12413.

John, O., Srivastava, S., 1999. The Big Five trait taxonomy: history, measurement, and theoretical perspectives. In: Pervin, L., John, O. (Eds.), Handbooks of Personality: Theory and Research. Guilford Press, New York, pp. 102–138.

Jones Harden, B., Denmark, N., Holmes, A., Duchene, M., 2014. Detached parenting and toddler problem behavior in early head start families. Infant Ment. Health J. 35, 529–543. doi:http://dx.doi.org/10.1002/imhj.21476.

Kim, I., Byeon, J., Lee, D., 2017. Violent crime and female victimization: evidence from metropolitan regions in South Korea. Appl. Econ. 1 (16) .

Larzelere, Robert E., 2000. Child outcomes of nonabusive and customary physical punishment by parents: an updated literature review. Clin. Child Fam. Psychol. Rev. 3 (4) .

Larzelere, Robert E., Kuhn, Brett R., 2005. Comparing child outcomes of physical punishment and alternative disciplinary tactics: a meta-analysis. Clin. Child Fam. Psychol. Rev. 8 (1) doi:http://dx.doi.org/10.1007/s10567-005-2340-z.

Leiter, Jeffrey, Johnsen, Matthew C., 1997. Child maltreatment and school performance declines: an event-history analysis. Am. Educ. Res. J. 34 (3), 563–589. doi:http://dx.doi.org/10.3102/00028312034003563.

MacKenzie, M., Nicklas, E., Brooks-Gunn, J., Waldfogel, J., 2014. Repeated exposure to high-frequency spanking and child externalizing behavior across the first decade: a moderating role for cumulative risk. Child Abuse Negl. 38 (12), 1895–1901.

MacMillan, H., Mikton, C., 2017. Moving research beyond the spanking debate. Child Abuse Negl. 71 (September), 5–8. doi:http://dx.doi.org/10.1016/j.chiabu.2017.02.012.

Margolin, G., Gordis, Elana B., 2000. The effects of family and community violence on children. Annu. Rev. Psychol. 51, 445–479.

McCarthy, A.S., 2019. Intimate partner violence and family planning decisions: experimental evidence from rural Tanzania. World Dev. 114, 156–174. doi:http://dx.doi.org/10.1016/j.worlddev.2018.09.027.

McElroy, M., Homey, M., 1981. Nash-bargained household decisions: toward a generalization of the theory of demand. Int. Econ. Rev. 22 (2), 333–349.

Ministerio de Desarrollo Social, Chile, 2019. Observatorio Social URL:. http://observatorio.ministeriodesarrollosocial.gob.cl/elpi.php.

Oster, E., 2019. Unobservable selection and coefficient stability: theory and evidence. J. Bus. Econ. Stat. 37 (2), 187–204. doi:http://dx.doi.org/10.1080/07350015.2016.1227711.

Paxon, C., Schady, N., 2007. Cognitive development among young children in Ecuador the roles of wealth, health, and parenting. J. Hum. Resour. 42 (1), 49–84. doi:http://dx.doi.org/10.3368/jhr.XLII.1.49.

Paxon, C., Waldfogel, J., 1999. Parental resources and child abuse and neglect. Am. Econ. Rev. 89 (2), 239–244. doi:http://dx.doi.org/10.1257/aer.89.2.239.

Paxon, C., Waldfogel, J., 2002. Work, welfare, and child maltreatment. J. Labor Econ. 20 (3), 435–474.

Pieterse, D., 2015. Childhood maltreatment and educational outcomes: evidence from South Africa. Health Econ. 24 (7), 876–894. doi:http://dx.doi.org/10.1002/hec.3065.

Pinquart, Martin, 2017. Associations of parenting dimensions and styles with externalizing problems of children and adolescents: an updated meta-analysis. Dev. Psychol. 53 (5), 873–932. doi:http://dx.doi.org/10.1037/dev0000295.

Pollak, R., 2004. An intergenerational model of domestic violence. J. Popul. Econ. 17, 311–329. doi:http://dx.doi.org/10.1007/s00148-003-0177-7.

Romano, Elisa, Babchishin, Lyzon, Marquis, Robyn, Frechette, Sabrina, 2015. Childhood maltreatment and educational outcomes. Trauma Violence Abuse 16 (4), 418–437. doi:http://dx.doi.org/10.1177/1524838014537908.

Runyan, D., Wattam, C., Ikeda, R., Hassan, F., Ramiro, L., 2002. Child abuse and neglect by parents and other caregivers. In: Krug, E.G., Dahlberg, L.L., Mercy, J.A., Zwi, A.B., Lozano, R. (Eds.), World Report on Violence and Health. World Health Organization, Geneva.

Ryan, R.M., Kalil, A., Ziol-Guest, K.M., Padilla, C., 2016. Socioeconomic gaps in parents' discipline strategies from 1988 to 2011. Pediatrics 138 (6) .

Schady, N., 2011. Parental education, vocabulary, and cognitive development in early childhood: longitudinal evidence from Ecuador. Am. J. Public Health 101 (12), 2299–2307.

Schady, N., Behrman, J., Araujo, M.C., Azuero, R., Bernal, R., Bravo, D., Lopez-Boo, F., Macours, K., Marshall, D., Paxson, C., Vakis, R.J., 2015. Wealth gradients in early childhood cognitive development in five latin american countries. J. Hum. Resour. 50 (2), 446–463. doi:http://dx.doi.org/10.3368/jhr.50.2.446.

Tauchen, H., Witte, A., 1995. The dynamics of domestic violence. Am. Econ. Rev. 85 (2), 414–418 Papers and Proceedings of the Hundredth and Seventh Annual Meeting of the American Economic Association Washington, DC.

Tauchen, H., Witte, A., Long, S., 1991. Domestic violence: a nonrandom affair. Int. Econ. Rev. 32, 491–511.

Teicher, M., Andersen, S., Polcari, A., Anderson, C., Navalta, C., Kim, D., 2003. The neurobiological consequences of early stress and childhood maltreatment. Neurosci. Biobehav. Rev. 27, 33–44.

United Nations Children's Fund, 2014a. Hidden in Plain Sight: a Statistical Analysis of Violence Against Children. UNICEF, New York.

United Nations Children's Fund, 2014b. 4to Estudio de Maltrato Infantil en Chile: Analisis Comparativo 1994-2000-2006-2012. UNICEF, Santiago de Chile.

Valenzuela, J., Villarroel, G., Villalobos, C., 2013. Ley de Subvención Escolar Preferencial (SEP): algunos resultados preliminares de su implementación [Preferential School Subsidy Law (SEP): some preliminary results of its implementation]. Revista Pensamiento Educativo 50 (2), 113–131.

Vlahovicova, K., Melendez-Torres, G.J., Leijten, P., Knerr, W., Gardner, F., 2017. Parenting programs for the prevention of child physical abuse recurrence: a systematic review and meta-analysis. Clin. Child Fam. Psychol. Rev. 20 (3), 351–365. doi:http://dx.doi.org/10.1007/s10567-017-0232-7.

Waldinger, R.J., Toth, S.L., Gerber, A., 2001. Maltreatment and internal representations of relationships: core relationship themes in the narratives of abused and neglected preschoolers. Soc. Dev. 10 (1), 41–58.

Walker, S.P., et al., 2011. Inequality in early childhood: risk and protective factors for early child development. Lancet 378 (9799), 1325–1338.