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Neighborhood Crime Undermines Parenting: Violence in the Vicinity of Households as a Predictor of Aggressive Discipline

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Neighborhood Crime Undermines Parenting: Violence in the Vicinity of Households as a Predictor of Aggressive Discipline[Ψ]

By Jorge Cuartas[*]

Abstract

Child discipline is a central component of parent-child interactions. Evidence suggests corporal discipline impairs children's development and compromises their future chances, especially since it is more frequently used against at-risk children. Using geocoded data, this study analyzes the relation between crimes in the vicinity of households in four major urban municipalities of Colombia and a particularly violent corporal discipline practice: hitting children with objects. Results indicate that exposure to violent crimes, such as homicides and personal injuries, predicts a higher probability of hitting children with objects, even after controlling for a set of individual, family and neighborhood characteristics. These findings suggest households' walls are permeable, and outside threats may interfere with families' dynamics and well-being. Future directions and implications are discussed.

Key words: Parenting, Child Discipline, Child Maltreatment, Urban Crime, Colombia.

Resumen

La disciplina a los niños es un componente central de las interacciones entre padres y niños. La evidencia sugiere que la disciplina corporal perjudica el desarrollo de los niños y compromete sus posibilidades futuras, especialmente porque es usada más frecuentemente hacia niños en contextos de vulnerabilidad. Utilizando información georreferenciada, este estudio analiza la relación entre la ocurrencia de crímenes en las cercanías de los hogares de cuadro ciudades en Colombia con una práctica de disciplina física especialmente violenta: golpear a los niños con objetos. Los resultados indican que la exposición a crímenes violentos, tales como homicidios y lesiones personales, predicen una probabilidad más elevada de golpear a los niños con objetos, incluso tras controlar por una serie de características individuales, de la familia y del barrio. Estos resultados sugieren que las paredes de los hogares son permeables, y amenazas externas pueden interferir en las dinámicas y bienestar de las familias. Se discuten direcciones a futuro e implicaciones.

Palabras clave: Cuidado Parental, Disciplina a los Niños, Maltrato Infantil, Crímen Urbano, Colombia.

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Content

1. Introduction

Children's contexts play a critical role in their well-being and developmental trajectories. Households, one of the most influential contexts for children's successful development (Walker et al., 2007), are usually thought of as safe places where children are protected from a myriad of threats. However, recent evidence suggests households' walls are permeable and outside threats, such as neighborhood poverty, violence and crime, may interfere with children's development (Leventhal & Brooks-Gunn, 2000; McCoy, Connors, Morris, Yoshikawa, & Friedman-Krauss, 2015), cognitive performance (Cristancho, Harker, & Molano, 2016; McCoy, Raver, & Sharkey, 2015; Sharkey, 2010), and emotional processing and regulation (McCoy, Roy, & Raver, 2016).

Inside households' walls children can also suffer from maltreatment, abuse and neglect. Evidence suggests physical and psychological violence at home, inflicted by main caregivers, is the most prevalent form of violence against children throughout the world (Pinheiro, 2006; Unicef, 2014). In developing countries on average seven of ten children in Sub-Saharan Africa, Middle East and North Africa, and more than half in Latin America are subject to some kind of violent discipline at home (Unicef, 2014). These findings are worrisome; several longitudinal studies and meta-analyses of almost three decades of research have shown physical violence is associated with detrimental outcomes throughout the lifespan: impaired cognitive and socio-emotional development, higher risk for mental problems and substance abuse, more aggressive, delinquent and antisocial behavior, and academic failure are often cited as consequences of such abuse (Fergusson, 2013; Gershoff, 2002; Gershoff & Grogan-Kaylor, 2016; Maguire-Jack, Gromoske, & Berger, 2012). Some findings also reveal low Socioeconomic Status (SES) parents are more prone to use corporal punishment and other harsh parental discipline methods than higher SES parents (Ryan, Kalil, Ziol-Guest, & Padilla, 2016), thus affecting at-risk children's prospects and social mobility chances.

Considering this body of work, the aim of this study is to examine how households' exposure to crime and violence is related to parental physically aggressive discipline in the main urban municipalities of Colombia, a conflict-torn developing country. Particularly, I analyze the association between objective police reports of crime in households' vicinity (within 100 meters, 500 meters and in the neighborhood) and parental usage of an especially harsh discipline method:

hitting children younger than five with objects. According to the Colombian Family Welfare Institute (ICBF for its acronym in Spanish), it is still common in Colombia to use cables, belts, whips, wooden spoons and sticks to hit children when misbehaving. Moreover, according to Colombia's 2015 Demographic and Health Survey (DHS), 34% of mothers disciplined children hitting them with objects, a percentage that although inferior to 2010 levels (40%) is still very high.

The exposure to an environmental stressor like community crime and violence has the potential to affect parental discipline methods through two main channels. First, biomedical and psychological research have shown that direct exposure to environmental stressors triggers physiological and psychological processes that directs individuals' attention towards the source of stress, and unchain fast and automatic, though prone to error, behavioral responses to cope with potential threats (Davies, Sturge-Apple, Cicchetti, & Cummings, 2007; McEwen & Sapolsky, 1995). Past research have shown mothers living in crime-ridden communities indeed display an array of distress symptoms and mental health problems (Franco, Pottick & Huang, 2010; Linares et al., 2001; White, Roosa, Weaver & Nair, 2009). Parents experiencing high levels of distress may be less sensitive and self-controlled in their responses to children, and child misbehavior may be especially difficult for them to handle (Lynch & Cicchetti, 2002), hence, increasing the likelihood they rely on physical methods to correct children behavior. Second, neighborhood crime and violence may alter communities' social norms, support and justification for particular violent behaviors, definitions of discipline and maltreatment, and eventually may induce violent behaviors inside households, such as harsher punishment methods (Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Sampson, Morenoff, & Gannon-Rowley, 2002).

Studies have found links between neighborhood stressors, particularly poverty and crime, and child maltreatment. A meta-analysis by Coulton et al. (2007) including 25 studies shows child maltreatment reported cases in United States are far more common in disadvantaged and disorganized neighborhoods. Nonetheless, this meta-analysis points out two limitations of this literature: first, most studies use official reports of child maltreatment, not direct measures of parenting behaviors. Second, the majority of studies aggregate cases of maltreatment and neighborhood characteristics at the neighborhood level, ignoring variance in exposure to violence between families, as well as households' differences that may well explain child maltreatment.

Even though some evidence points that there are significant between-neighborhood variation in parental warmth (Tendulkar, Buka, Dunn, Subramanian, & Koenen, 2010), studies using variance decomposition have found that differences in punish strategies between families are greater than between neighborhoods (Molnar, Buka, Brennan, Holton, & Earls, 2003), which motivates analyses that consider variation at a lower level.

Recently, a group of studies have done important contributions using household level data that permits considering exposure to crime at the community level as well as variation between families. For instance, Zhang and Anderson (2010) found a relation between mothers' self-reported experiences of witnessing or being victims of different forms of community violence and psychologically aggressive parenting towards children younger than 18, even after controlling for a set of individual variables that may affect parenting. In addition, Chen and Lee (2017) found links between self-reported exposure to crime and psychological aggression towards children and adolescents in the United States. Winstok and Straus (2011) found similar results for a national sample of parents and children younger than 18 in Israel, considering as a predictor of interest subjective perceptions about community insecurity. Other study, by Molnar et al. (2003), found links between neighborhood police reports of homicides and corporal punishment using a multilevel approach. These findings relate closely with results by Lynch and Cicchetti (2002), which indicate children who perceive their communities as more insecure also perceive the relationship with their mothers and their mothers' behaviors in a negative way.

Although these studies have made important contributions to understanding the way negative contexts affect parenting, several limitations must be noted. To begin with, previous studies have used two main approaches to measure exposure to violence within the community: subjective reports on witnessing or being victim of community violence, and objective police reports at the neighborhood level. Both approaches are prone to certain biases. First, as discussed by McCoy (2013), certain variables that influence subjective reports of exposure to violence or perceptions of insecurity (e.g., depression and anxiety) may simultaneously affect parental practices and discipline methods (i.e., individual reports may be endogenous). In addition, for most studies it is unclear whether reports of witnessing or suffering from a crime refer to events in the vicinity of respondents' households or, for example, in the other extreme of their neighborhood, thus measuring not exposure to violent environments nearby households but direct victimization.

Second, the use of reports at the neighborhood level may be problematic in an unequal neighborhood that has safe areas in one extreme and a crime hotspot at the other. Using this approach, households living at each extreme of the neighborhood would be considered exposed to the same level of criminality and violence (neighborhood aggregate levels), thus misreporting real exposure levels.

A second limitation relates to the measures used for child maltreatment. As noted by Coulton et al. (2007), most preceding studies have used official reports of child maltreatment, however, these reports do not necessarily correlate with self-reported and observed measures of maltreatment behaviors, but with differences in social norms and monitoring practices between communities. Furthermore, most studies face biases for not controlling for important confounding variables in their analyses. For instance, to the best of my knowledge no study on the association between parental discipline and community violence has controlled for the way children's caregivers were disciplined by their own parents, an important predictor of discipline strategies (Kaufman & Zigler, 1987; Lansford et al., 2007; Straus & Moynihan, 2001). Other studies (e.g., Zhang & Anderson, 2010) have not included measures of domestic violence, which are also important predictors (see Hunter, Jain, Sadowski & Sanhueza, 2000), whereas others (e.g., Chen & Lee, 2017) have carefully controlled for individual variables but not for neighborhood characteristics that may affect parental practices as well (see Klein, 2011).

Two last limitations must be mentioned. First, most studies focused in children aged older than five, although some evidence points that corporal punishment is more frequently used when children are younger (Straus & Stewart, 1999). More important, focusing on early childhood is fundamental to prevent future maltreatment: once certain parenting behaviors have been established they remain relatively stable across time (Dallaire & Weinraub, 2005). Second, most of related studies have been conducted in the United States and other upper-middle income countries, and there is a need to know whether results are consistent in other contexts, such as developing countries with higher poverty levels, civil conflict and terrorism (see McCoy, 2013). A recent study has made initial contributions to this subject using data for Colombia (Cuartas, Harker & Moya, 2016), finding links between homicides rates at the municipality level and child lack of cognitive stimulation. Nevertheless, a more precise measure of exposure to violence is needed to have a clearer understanding of this phenomenon in international contexts.

To attend to the gaps in the reviewed literature, I used a novel database that combines spatial information of objective geocoded police reports of crime and the DHS in Colombia, a country that although recently signed a peace agreement, have suffered the consequences of more than 50 years of civil conflict. Even though the deceleration of Colombia's conflict has been accompanied by a decrease in kidnapping, terrorist attacks, and forced displacement, there has been an increase in urban criminality, such as personal injuries, burglary and small-scale drug trafficking (Mejia, Ortega & Ortiz, 2015), which effects on urban residents' human development are not entirely known.

The database used for this study allowed me to identify more precise exposure to violence, particularly in a small vicinity around households (i.e., within 100 or 500 meters), besides allowing me to consider exposure at the neighborhood level. For this study, I also used self-reported measures of parental discipline methods towards children younger than five. Specifically, the data allowed me to characterize mothers who hit their children with objects, a practice that is not illegal nor socially condemned in Colombia. Finally, I controlled throughout analyses for important confounding variables such as mothers' parents discipline methods and measures of domestic violence, among other child, family and household characteristics, as well as neighborhood level variables such as SES and availability of resources such as schools, parks and police stations. In doing so, this study offers important insights on the links between urban crime and children inside-household-walls exposure to maltreatment, an indirect consequence of neighborhood instability that has the potential to compromise children's successful development.

2. Method

2.1. Sample and geocoding

I combined spatial data from three sources. First, I used Colombia's 2010 DHS, a household survey that provides data for socioeconomic and demographic characteristics, as well as detailed information for women aged 12 to 49, their partner or husband, and their children younger than five. Within each municipality, the DHS randomly selected clusters (i.e., primary sampling units), which included less than 10 households in the same block of the same neighborhood (Ojeda, Ordóñez & Ochoa, 2011). These clusters were geocoded using GPS receivers, with measures accurate to less than 15 meters (Burgert, Zachary & Colston, 2013). For the purpose of this study, I used information for Colombia's four major urban municipalities: Bogotá ($N = 601$),

Colombia's capital located in the center of the country; Medellin ($N = 152$), located at the Andes Mountains and once considered the most violent city in the world (Maclean, 2015); Cali ($N = 289$), in the Pacific Region; and Barranquilla ($N = 167$), near the Atlantic Ocean. These municipalities were selected, mainly, because they have the best system of directions, reducing potential biases when geocoding the data.

The second source of information is a database gathered by the National Police Department, which reports the precise latitude and longitude of violent, property and non-index crimes, such as homicides, personal injuries, burglary and drug-related offenses, committed during 2010 in Colombia. I geocoded the information for the municipalities aforementioned using ArcGIS software (ESRI, 2011). The third database, compiled by Procálculo Prosis SA, contains the geographic location of schools, hospitals, churches, parks and police stations in Colombia, along with basic socioeconomic characteristics of neighborhoods in urban municipalities.

Once I merged the data, 1,228 households composed the sample. Nonetheless, the analytical sample contained 1,209 households in 480 clusters of 392 neighborhoods for which there were no missing data in the key study variables. On average, there were 3.78 households per cluster and 1.44 clusters per neighborhood in the final sample. As Table 1 shows, sampled women were 28.66 years old on average (range=16-49), had 10.27 years of education (range=0-18) and were mothers of children aged 2.25 on average (range=0-4), mostly boys (52%).

Table 1. Sample descriptive statistics

	Mean	SD	Min	Max
Discipline methods				
How mother punish				
Spanking	0.50	0.50	0	1
By verbal reprimand	0.87	0.34	0	1
Hitting with objects	0.31	0.46	0	1
How mother's partner punish				
Spanking	0.30	0.46	0	1
By verbal reprimand	0.84	0.37	0	1
Hitting with objects	0.23	0.42	0	1
Number of homicides				
In a radius of 100 meters	0.28	1.05	0	13
In a radius of 500 meters	5.39	6.44	0	38
In the neighborhood	4.63	6.36	0	32
Child/Family characteristics				
Child gender (=1 if boy)	0.52	0.49	0	1
Child age	2.25	1.32	0	4
Child was premature	0.12	0.32	0	1
Mother age	28.66	6.64	16	49
Maternal years of education	10.27	3.48	0	18
Mother age at first birth	21.05	4.96	13	42
Partner currently working	0.56	0.49	0	1
Household members	5.13	2.14	2	17
Years living in current household	20.26	11.57	0	47
Household wealth index	73,816	41,962	-214,042	137,415
Mother exposure to violence				
Mother was disciplined by spanked	0.29	0.45	0	1
Mother was disciplined by hit with objects	0.74	0.44	0	1
Mother has been victim of sexual violence	0.08	0.28	0	1
Children has been sexually approach by neighbors	0.04	0.19	0	1
Partner hostility index (α=0.77)	2.21	2.47	0	9
Has been physically hurt by partner	0.02	0.12	0	1
Neighborhood characteristics				
% of stratum 1 (poorest)	11.46	28.19	0	100
% of stratum 2 (poorer)	31.34	39.87	0	100
Number of				
Schools	1.89	2.53	0	15
Hospitals	0.15	0.65	0	6
Churches	0.73	1.31	0	11
Parks	0.64	1.32	0	10
Police Stations	0.16	0.46	0	3
Distance in kilometers to the nearest				
School	0.37	0.31	0.03	2.35
Hospital	1.71	1.06	0.01	5.80
Church	0.62	0.48	0.01	2.69
Park	0.90	0.79	0.02	4.31
Police Station	1.10	0.77	0.07	5.43
Observations	1209			

2.2. Measures

Child discipline

DHS' respondents reported who punished their children and how children were punished. For the analytical sample, 100% of respondents (N=1,209), and 47.6% of their partners (N=574), punished their children. Fifty percent of children punished by their mother were spanked, 87% received verbal reprimand, and 31% were hit with objects, whereas 30% of children punished by their mother's partner were spanked, 84% received verbal reprimand, and 23% were hit with objects.

In this study, I focused on hitting with objects as discipline method for two reasons. First, according to 2010 DHS, hitting with objects is the most prevalent violent punishment method that occurred in sampled households and in general in Colombia (Ojeda et al., 2011). Second, the information provided in the survey is not enough to establish if other discipline methods, such as verbal reprimand, correspond to pedagogical dialoguing to teach children self-control and acceptable behavior, or violent shouting and insulting.

Exposure to crimes

As shown in Figure 1, I counted the number of crimes that occurred within a radius of 500 meters around each cluster in 2010. I focused mainly on homicides since it is the most notorious type of offense, hence a major source of stress to nearby inhabitants and the crime least prone to be sub-reported. In addition, since sampled neighborhoods on average had an area of 1 kilometer, a radius of 500 meters emulates the violence within a neighborhood, but centered at each cluster. This specification, previously used in related research in Colombia (e.g., Cristancho et al., 2016), prevents me from imputing the same exposure to crimes to a household living in one safe extreme of a neighborhood from another living in the opposite extreme in a crime hotspot. On average, each sampled household was exposed to 5.39 homicides using this specification (range=0-38). To check the sensitivity of the results, I also counted the number of homicides within a smaller radius of 100 meters and the total homicides that happened within each neighborhood, which in Colombia is the smallest administrative defined municipality unit with distinguishable geographic boundaries (Lopez-Gil, 2014). Each household was also exposed, on average, to 16.89 cases of personal injuries (range=0-88), 23.05 cases of burglary (range=0-272), and 23.03 drug-related crimes (range=0-376) in a radius of 500 meters.

Child, family and neighborhood covariates

Child and family covariates were draw from the DHS survey, including child gender, age, indicator variables for children who were premature and who assisted to growth and development programs, mother's age, years of education, age at first birth, indicators for currently pregnant, currently breastfeeding, and for partner currently working, the number of people living in the household, and the years they have been living in the current household. The database also includes a household wealth index (constructed using principal component analysis) that captures information about ownership of assets, materials used for housing construction, types of water access, and sanitation facilities (Ojeda et al., 2011). Taking into account household wealth remains important as the evidence suggest lower SES parents use corporal punishment, particularly violent discipline methods such as hitting with objects, more often than higher SES parents, particularly in developing countries and Latin America (CAF, 2016; Ryan et al., 2016; Unicef, 2014).

Figure 1. Analytical approach for geocoded data
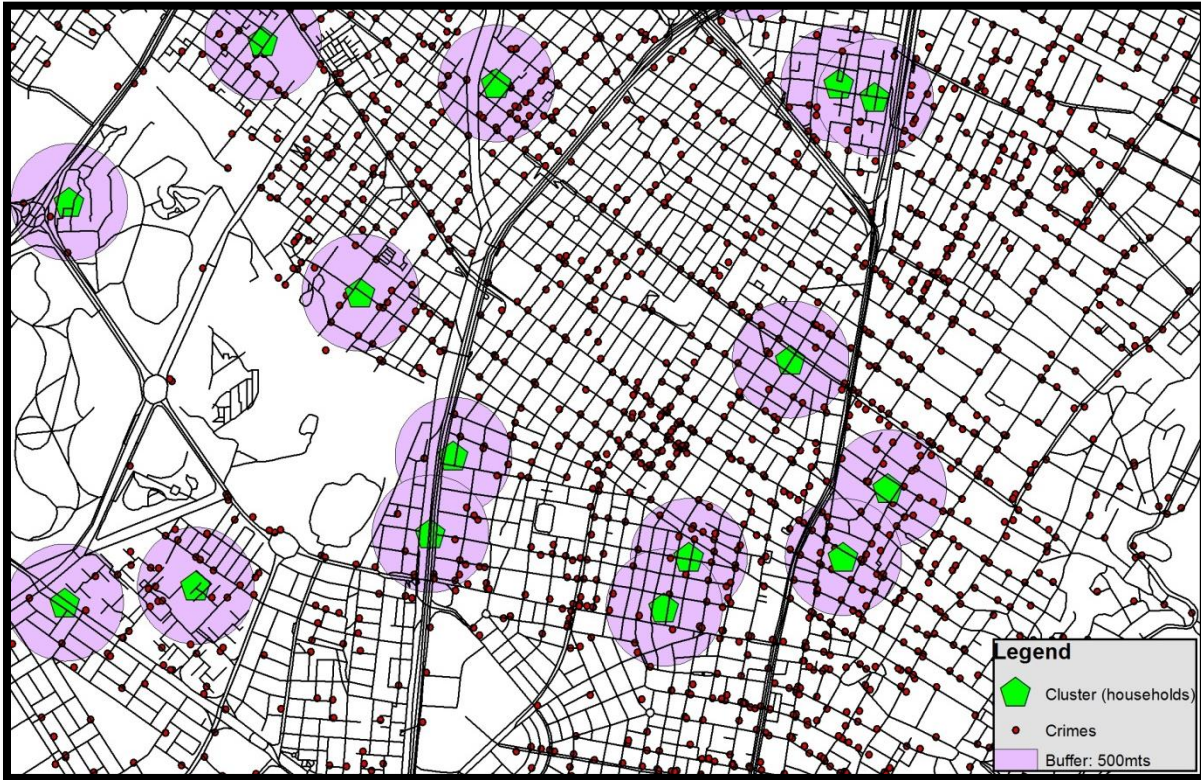
Note. This map represents a particular sector of Bogotá as an example

The database also included information about respondents' exposure to domestic violence and victimization in the neighborhood. First of all, I computed an index for partner hostility that includes nine items: partner is jealous if talking with other men, accuses her of unfaithfulness, tries to limit her contact with family, insists on knowing where she is, doesn't trust her with money, uses expressions like "you are good for nothing" or "never do anything well", threats with abandoning her or go with another woman, threats with taking away children, and threats with withdrawing economic support. Cronbach's alpha for this scale is 0.77. In addition, the survey asked women whether their partner has ever physically hurt them, whether they have been forced by other than their husband to perform sexual acts, and if their children have been sexually approach by friends or neighbors. These variables are included throughout the analyses since the evidence suggest exposure to domestic violence or direct victimization in the household or neighborhood relates to the use of corporal discipline methods and aggressive parenting practices (Chen & Lee, 2017; Hunter et al., 2000).

Moreover, unlike previous studies, DHS offers rich information regarding how children's mothers were disciplined by their own parents. Ignoring this information can lead to biases: related literature shows individuals maltreated by their parents are more likely to become maltreating parents themselves (Kaufman & Zigler, 1987; Lansford et al., 2007; Straus & Moynihan, 2001). Particularly, it was possible to identify whether mothers were punished by their own parents by spanks (29%), or by being hit with objects (74%).

Furthermore, a meta-analysis by Coulton et al. (2007) shows the ecology of neighborhoods, including socioeconomic characteristics and the availability of infrastructure and resources, are linked to child discipline strategies. Mainly, residents in impoverished and disorganized neighborhoods with low supply of physical resources (such as educational resources) tend to experience greater parenting stress (Guterman, Lee, Taylor & Rathouz, 2010) and are more prone to use corporal and aggressive punishment methods (Coulton et al., 2007; Klein, 2011).

To control for potential confounding variables in the analyses, I also include neighborhood characteristics in the database. First, I calculated the area percentage in all neighborhoods that is categorized in each Colombian socioeconomic stratum. Colombia's Government uses a socioeconomic stratification to charge for fees and taxes, and to focalize public spending, where the highest stratum is six (the richest areas) and the lowest is one (poorest areas). Given that last Colombia's census was in 2005, and no other database allows me to characterize poverty at the neighborhood level, although not perfect, this measure resembles socioeconomic conditions for each neighborhood. Second, I count the number of schools, hospitals, churches, parks, police stations, sport centers and universities within each neighborhood, along with the linear distance in kilometers to the nearest resource from each DHS cluster, in order to characterize the geographic availability and accessibility to resources for each household.

2.3. Data analysis

Analyses were conducted in Stata 13 software (StataCorp, 2013). Firstly, I estimated Pearson correlation coefficients between discipline methods and key study variables. Secondly, I estimated regression models using as dependent variables whether mother or mother's partner punished children hitting them with objects, and as main predictor a standardized measure of the number of homicides that occurred within 500 meters around each cluster. I began by estimating bivariate

regression models, then, gradually, I included child, family, household and neighborhood covariates. In doing so, I examined the robustness of estimated coefficients to different specifications. I assessed all models using clustered-robust standard errors to account for the nesting of households in neighborhoods and improve the accuracy of the estimations (Cameron & Miller, 2015).

Finally, I performed additional sensitivity analyses. First, to check for potential specification-driven results, I estimated regression models using as main predictor a standardized measure of homicides occurred within a 100 meters radius and within the neighborhood. Second, to check whether violence nearby households effectively relates specifically to more violent discipline methods, I estimated models using as dependent variables whether mothers use apparently less violent discipline strategies such as verbal reprimanding and spanking. Third, I examined whether other types of crimes (violent, such as personal injuries, property, such as burglary, and non-index, such as drug related crimes) predict more harsh parental discipline methods. Although less noticeable and shocking than violent crimes, property and non-index offenses can have direct impacts on the communities' norms and their residents' values and behaviors (Sampson et al., 2002).

3. Results

Table 2 presents correlations between key study variables. According to these preliminary results, there is a moderately strong correlation between the discipline methods used by mothers and their partners. The number of homicides in different specifications (100 and 500 meters, and at neighborhood level) are positively correlated with mothers' and their partners' likelihood of hitting with objects to punish children. Also, lower household wealth and neighborhood strata are correlated with a higher prevalence of hitting with objects for punishing children.

Table 2. Correlations between discipline methods and study variables

	1	2	3	4	5	6
Discipline methods						
How mother punish						
1. Spanking	1.00					
2. Verbal reprimand	0.11***	1.00				
3. Hitting with objects	-0.11***	0.02	1.00			
How mother's partner punish						
4. Spanking	0.44***	0.03	0.08*	1.00		
5. Verbal reprimand	0.07*	0.70***	0.00	-0.01	1.00	
6. Hitting with objects	-0.02	-0.05	0.53***	0.10**	0.04	1.00
Number of homicides						
In a radius of 100 meters	-0.02	-0.08***	0.10***	-0.04	-0.11***	0.17***
In a radius of 500 meters	-0.10***	-0.06*	0.16***	-0.06	-0.02	0.21***
In the neighborhood	0.00	0.00	0.09***	0.03	-0.04	0.07*
Child/Family characteristics						
Child gender (=1 if boy)	0.02	0.04	0.01	0.13***	0.02	0.07
Child age	0.02	-0.02	0.07**	0.04	-0.05	0.14***
Child was premature	-0.04	0.02	-0.01	-0.06	0.00	0.03
Mother age	-0.05*	0.00	0.12***	0.03	0.00	0.06
Maternal education (years)	0.03	-0.02	-0.18**	0.01	-0.02	-0.19**
Mother age at first birth	0.04	-0.01	-0.09***	0.05	-0.01	-0.10**
Partner currently working	-0.04	0.02	0.02	0.03	0.00	0.04
Household members	-0.01	0.02	0.06**	-0.02	0.04	-0.01
Years living in current household	-0.03	0.01	-0.02	-0.00	0.02	-0.03
Household wealth index	-0.04	-0.04	-0.17***	-0.06	-0.09**	-0.06
Mother exposure to violence						
Mother was disciplined by spanked	0.25***	0.15***	0.09***	0.18***	0.12***	0.07*
Mother was disciplined by hitting with objects	0.09***	-0.01	0.22***	0.07*	-0.03	0.11***
Mother has been victim of sexual violence	-0.01	-0.04	0.05*	-0.05	0.04	0.04
Children has been sexually approach	0.02	0.06	0.06**	0.09**	0.04	0.07*
Partner hostility index	0.04	0.08**	0.11***	0.10**	0.17***	0.15***
Has been physically hurt by partner	0.05	0.01	0.03	0.03	0.01	0.01
Neighborhood characteristics						
% of stratum 1 (poorest)	0.03	0.07**	0.06*	0.02	-0.01	0.05
% of stratum 2 (poorer)	-0.03	-0.05	0.06	0.04	-0.03	0.07
Number of						
Schools	0.06**	0.00	-0.04	0.04	-0.05	0.00
Hospitals	-0.01	-0.01	-0.06**	-0.06	-0.08	-0.03
Churches	-0.01	-0.07***	-0.09***	-0.03	-0.07*	-0.05
Parks	0.06*	-0.07**	-0.11***	-0.03	-0.04	-0.04
Police Stations	0.01	0.03	-0.04	0.00	0.08**	0.00
Observations	1209					

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3 summarizes results for different specifications of regression models using as outcome a binary variable that equals one if mother hit with objects as punishment method, and has as main predictor a standardized measure of the homicides that occurred within a radius of 500 meters. It is the only table where coefficients for all covariates are reported. Model 1 presents the bivariate association between homicides and the likelihood of hitting children with objects; Model 2 includes child, mother, and household covariates; Model 3 considers how mothers were disciplined by their own parents; Model 4 control for domestic violence and victimization; and Models 5 and 6 include neighborhood characteristics such as SES, as well as the number of resources per neighborhood and the distance to the nearest resource, respectively.

Table 3. Association between homicides in a radius of 500 meters and the probability of mother hitting with objects as discipline method

	(1)	(2)	(3)	(4)	(5)	(6)
Homicides - 500 meters (standardized)	**0.072***	**0.057***	**0.055***	**0.056***	**0.052****	**0.053***
	(0.020)	**(0.020)**	**(0.019)**	**(0.019)**	**(0.020)**	**(0.020)**
Child gender (=1 if male)		-0.000	-0.007	-0.007	-0.005	-0.012
		(0.026)	(0.024)	(0.024)	(0.024)	(0.024)
Child age		-0.002	0.000	-0.001	0.001	0.001
		(0.010)	(0.009)	(0.009)	(0.009)	(0.009)
Child was premature		-0.024	-0.018	-0.022	-0.024	-0.017
		(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
Assisted to development program		-0.010	-0.016	-0.016	-0.018	-0.017
		(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Mother age		0.019***	0.019***	0.019***	0.019***	0.018***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Mother educ. years		-0.010*	-0.009*	-0.008	-0.007	-0.009
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Mother age at first birth		-0.013***	-0.015***	-0.014***	-0.014***	-0.013***
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Mother currently pregnant		-0.013	-0.009	-0.004	-0.002	-0.017
		(0.091)	(0.083)	(0.081)	(0.080)	(0.082)
Mother currently breastfeeding		-0.111***	-0.109***	-0.113***	-0.106***	-0.103***
		(0.034)	(0.033)	(0.033)	(0.033)	(0.034)
Partner currently working		0.019	0.020	0.016	0.016	0.020
		(0.030)	(0.029)	(0.029)	(0.030)	(0.029)
Hh. wealth quintile 2		-0.188	-0.184	-0.190	-0.181	-0.197
		(0.144)	(0.145)	(0.146)	(0.147)	(0.149)
Hh. wealth quintile 3		-0.231*	-0.220	-0.229*	-0.220	-0.219
		(0.135)	(0.138)	(0.138)	(0.141)	(0.143)
Hh. wealth quintile 4		-0.287**	-0.266**	-0.267**	-0.261*	-0.256*
		(0.130)	(0.133)	(0.133)	(0.135)	(0.138)
Hh. wealth quintile 5		-0.323**	-0.310**	-0.314**	-0.308**	-0.297**
		(0.135)	(0.138)	(0.138)	(0.140)	(0.142)
Hh. members		0.013*	0.014**	0.014**	0.015**	0.014**
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Years living in current hh.		-0.002	-0.002	-0.002	-0.002	-0.002
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Mother was disciplined by spanked			0.087**	0.082**	0.087**	0.093**
			(0.035)	(0.035)	(0.036)	(0.036)
Mother was disciplined by verbal reprimand			0.044	0.039	0.025	0.024
			(0.041)	(0.042)	(0.041)	(0.041)

17

	(1)	(2)	(3)	(4)	(5)	(6)
Mother was disciplined by hitting with objects			0.194***	0.187***	0.183***	0.186***
			(0.030)	(0.029)	(0.029)	(0.029)
Mother has been victim of sexual violence				-0.017	-0.022	-0.017
				(0.056)	(0.056)	(0.055)
Index of partner hostility				0.008	0.009	0.008
				(0.006)	(0.006)	(0.006)
Partner has hurt mother				0.069	0.078	0.079
				(0.116)	(0.119)	(0.118)
Children has been sexually approach				0.088	0.095	0.081
				(0.075)	(0.078)	(0.075)
% of stratum 1 in neighborhood					0.000	-0.000
					(0.001)	(0.001)
% of stratum 2 in neighborhood					0.000	-0.000
					(0.001)	(0.001)
% of strata 3 in neighborhood					0.000	-0.000
					(0.001)	(0.001)
Number of sport centers in neighborhood					0.008	
					(0.013)	
Number of school in neighborhood					-0.005	
					(0.009)	
Number of hospitals in neighborhood					0.000	
					(0.022)	
Number of churches in neighborhood					-0.017	
					(0.011)	
Number of parks in neighborhood					-0.009	
					(0.012)	
Number of police stations in neighborhood					-0.004	
					(0.024)	
Number of universities in neighborhood					0.025*	
					(0.015)	
Distance to the nearest sport center (km)						0.013
						(0.015)
Distance to the nearest school (km)						-0.023
						(0.062)
Distance to the nearest hospital (km)						0.021
						(0.019)
Distance to the nearest church (km)						0.060
						(0.040)
Distance to the nearest park (km)						-0.005
						(0.032)
Distance to the nearest police station (km)						0.005
						(0.024)
Distance to the nearest university (km)						-0.019
						(0.014)
Constant	0.307***	0.439***	0.206	0.190	0.179	0.142
	(0.016)	(0.160)	(0.167)	(0.170)	(0.187)	(0.192)
Observations	1,209	1,209	1,209	1,209	1,209	1,209
R-squared	0.025	0.113	0.161	0.164	0.171	0.173

Note: Clustered standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Before analyzing the association between homicides and corporal punishment using objects, there are interesting associations that can be noted. First, as reported in previous literature (Ryan et al., 2016), there is a socioeconomic gradient in the use of harsh parental discipline: on average, the likelihood that mothers hit their children with objects is 30 percentage points lower for the richest households (fifth wealth quintile) compared with the poorest ($\rho < .05$). Second, as discussed in

earlier studies (Kaufman & Zigler, 1987; Lansford et al., 2007; Straus & Moynihan, 2001), mothers that were hit with objects by their parents are, on average, more than 18 percentage points more likely to punish their children in the same manner even after controlling for other child, household and neighborhood characteristics ($\rho < .01$). Finally, there are not statistically significant differences by child gender, which is consistent with previous findings (see Unicef, 2014).

These results indicate that homicides nearby households (500 meters around) are significantly predictive of hitting with objects for punishing children younger than 5. The baseline model (without including control variables) indicates 1 SD increase in the number of homicides is related to an increase of 7.2 percentage points in the probability of hitting children with objects ($SE = 0.020$; $\rho < .01$). This relation is robust to the inclusion of control variables and to different model specifications (Table 3, Columns 2 - 6). For models that include all covariates (5 and 6), 1 SD increase in nearby homicides relates to an increase of 5.2 percentage points in the likelihood of hitting children with objects ($SE = 0.020$; $\rho < .05$). The estimated effect amounts to an increase of 16.8% compared to base levels in the probability that a mother hit her children with objects (31%).

Table 4 summarizes results using as outcome a binary variable that shows whether mother's partner also hit children with objects. Model 1 presents the baseline model (without including covariates). Model 2 includes child, mother and household characteristics; Model 3 include neighborhood characteristics (strata and number of resources); and model 4 uses a different specification for neighborhood characteristics (distance to the nearest resource). The results indicate homicides have also a statistically significant association with mothers' partner probability of using objects to hit children. When controlling for all covariates, an increase of 1 SD in the number of homicides predicts a probability between 9.1 and 9.5 percentage points higher of mothers' partners hitting children with objects ($SE = 0.023$; $\rho < .01$). The estimated effect amounts to an increase of approximately 40% compared with base probability (23%).

Table 4. Association between homicides in a radius of 500 meters and the probability of mother's partner hitting with objects as discipline method

|	(1)	(2)	(3)	(4)
Homicides - 500 meters (standardized)	0.092***	0.080***	0.091***	0.095***
	(0.019)	(0.021)	(0.023)	(0.023)
Child characteristics	No	Yes	Yes	Yes
Mother characteristics	No	Yes	Yes	Yes
Household characteristics	No	Yes	Yes	Yes
Neighborhood characteristics	No	No	Yes	Yes
Observations	590	590	590	590
R-squared	0.042	0.128	0.174	0.179

Note. Clustered standard errors in parentheses. Estimations including same control variables as in Table 3.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

3.1. Sensitivity analyses

Although a radius of 500 meters attempts to emulate the violence within a neighborhood centered at each cluster, results can be driven by this seemingly arbitrary specification. To test the robustness of the coefficients, Figure 2 presents results for the same specification used in Model 5 of Table 3, but considering homicides that occurred in a radius of 100 meters within clusters and in each neighborhood. Results show the coefficient if robust to different specifications, with an estimated effect that lays between 4 and 5 percentage points for each additional *SD* in the number of local homicides.

One relevant question that may arise is whether the effect of homicides in the probability of hitting with objects is explained by a "substitution effect", that is to say if parents change apparently less violent discipline methods such as spanking and verbal reprimanding (although the data do not allow me to identify the degree of violence used when spanking and verbal reprimanding) for harsher ones such as hitting with objects. Figure 2 presents the effect of local homicides (within 100 meters, 500 meters or the neighborhood) on these discipline methods. The results show homicides do not correlate with these, except in a 500 meters Model where 1 *SD* increase in the number of homicides relates to a probability 6 percentage points lower for spanking, however, the result is not robust to other specifications.
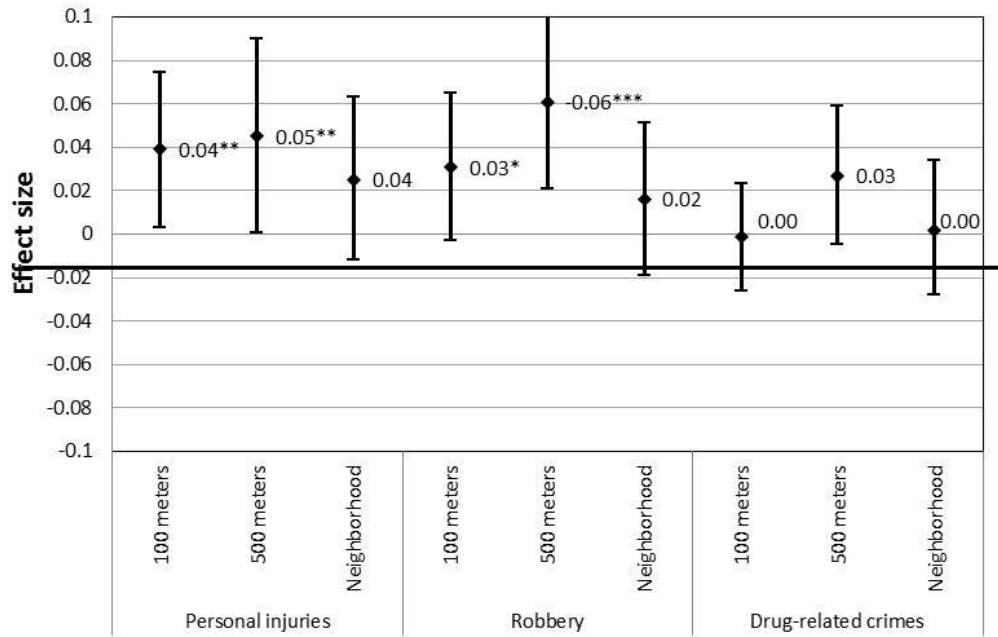
Figure 2. Homicides and child discipline methods
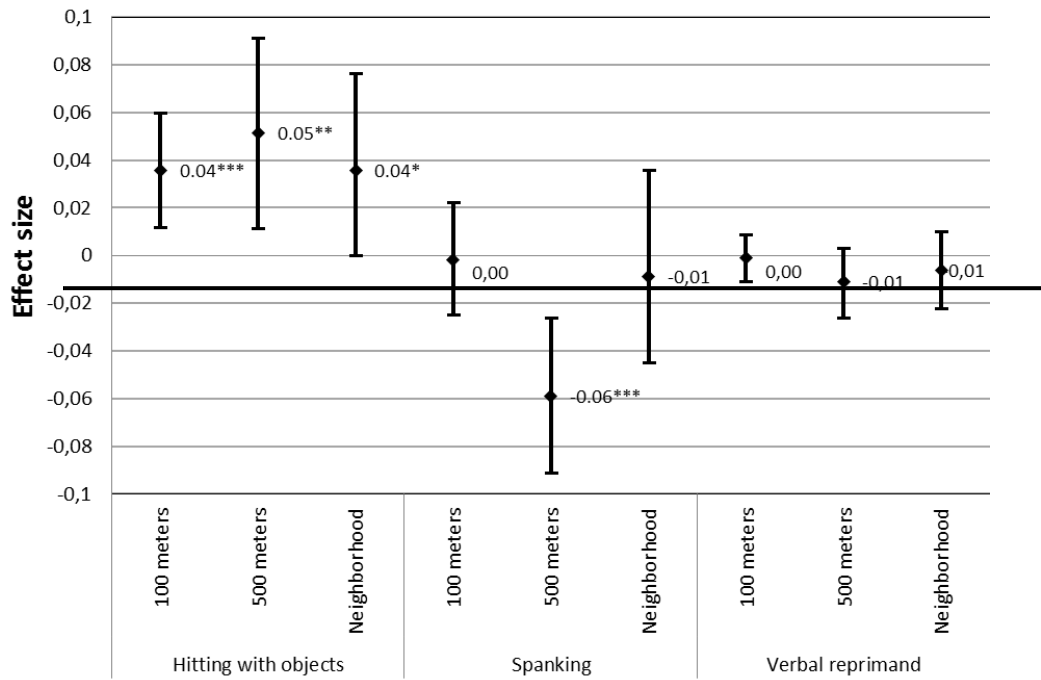
Note. Association between homicides and child discipline methods used by mothers within a radius of 100 meters, 500 meters or the neighborhood cluster. Coefficient values are shown. Estimations including same control variables as in Table 3. Clustered standard errors *** $p<0.01$, ** $p<0.05$, * $p<0.1$

One last question worth exploring is whether other violent crimes, such as personal injuries, and less threating offenses such as burglary and drug-related crimes also relate to more violent physical punishment. Figure 3 shows that results are relatively consistent when examining personal injuries ($b = 0.04$; $\rho < .05$) and when considering burglary in a 500 meters specification ($b = 0.06$; $\rho < .01$), but neither holds true at the neighborhood specification, nor for drug-related crimes. As such, it appears that violent crimes (homicides and personal injuries) are relevant predictors of child maltreatment, but less threatening and stressful crimes are not, partially supporting a stress-related explanation.

Figure 3. Crimes and child discipline methods

Note. Association between personal injuries, robbery, drug-related crimes, and child discipline methods used by mothers within a radius of 100 meters, 500 meters or the neighborhood cluster. Coefficient values are shown. Estimations including the same control variables as in Table 3. Clustered standard errors. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

4. Discussion

Parental discipline represents a major component of socio-emotional interactions between parents and their children (Ryan et al., 2016). Positive discipline methods include guidance on how to handle emotions and regulate behaviors, while guaranteeing children's rights, self-esteem, and physical and psychological integrity (Unicef, 2014). Nonetheless, the use of violent discipline is common throughout the world (Pinheiro, 2006; Unicef, 2014), and even though usually not intended to damage children, has long-lasting adverse consequences that compromise their successful development and well-being (Gershoff & Grogan-Kaylor, 2016).

The aim of this study was to assess the association between crimes and violence in the vicinity of households and harsh parental discipline against children younger than five in urban areas of Colombia. Results suggest violence does relate to child maltreatment, measured as punishing children hitting them with objects. Specifically, the results indicate an increase in 1 *SD* in the number of homicides within 500 meters of households is linked with probabilities 5.2 and 9.1 percentage points higher in the likelihood that mothers and their partners, respectively, hit their children with objects to punish them. These results are robust to the inclusion of several child, family and neighborhood characteristics that have been related with child maltreatment in other

studies. Moreover, the findings are robust to different specifications, using a more "proximal" measure of exposure to violence (100 meters around households), and an apparently less arbitrary one, at the neighborhood level, which is a stablished administrative unit whose boundaries are well known to local inhabitants (Lopez-Gil, 2014).

These results support previous research showing strong links between neighborhood instability and child maltreatment (Coulton et al., 2007), particularly those focused on the role of community crime and violence (e.g., Chen & Lee, 2017; Molnar et al., 2003; Winstok & Straus, 2011; Zhang & Anderson, 2010). Collectively, this study supplements preceding results that suggest household boundaries are permeable, and community violence and instability trespass their walls affecting children's development and well-being (e.g., Leventhal & Brooks-Gunn, 2000; McCoy et al., 2016). The results also answer, to some extent, questions about the way caregivers respond to violent environments (see the discussion of McCoy, et al., 2015), showing a somehow gloomy perspective on how the same adversities that have the potential to directly compromise children development, may also affect them indirectly through undermining the practices of their major source of protection: their parents and caregivers.

Sensitivity analyses indicate that another type of violent crime, namely personal injuries, also seems to relate to the use of corporal discipline against children younger than five. Nevertheless, this is not true for property crimes and non-index offenses. These findings can be explained theoretically to some extent by a stress-related mechanism, which state that visible and threating crimes, such as homicides and personal injuries, trigger physiological and psychological consequences that directs individuals' attention towards the stressor, and unchain automatic responses in order to deal with potential dangers (McEwen & Sapolsky, 1995). Given this, exposure to violent crimes may compromise caregivers' cognitive resources to manage children when misbehaving, resulting in the use of methods that may be effective to alter children conduct in the short term, but are costly for children's development in the long run.

Both community violence and maltreatment events inside households can have pervasive consequences for children. The exposure to prolonged, elevated and unpredictable stress (i.e., toxic stress) in early childhood can overload the stress response systems, undermining children's stress response regulation to cope with the effects of stressors (National Scientific Council on the

Developing Child, 2014). Moreover, toxic stress may interfere with the development of brain architecture, compromising children's physical, cognitive and socio-emotional development, as well as their long term health and life chances (Shonkoff & Garner, 2011). Even though evidence suggests supportive relationships with caregivers, who are able to create safe environments to protect children, buffer these negative effects (Garner, 2013), the findings of the present and previous studies suggest vulnerable children, living in impoverished, disorganized and violent environments, are also prone to be exposed to maltreatment, abuse, and neglect inside their households.

4.1. Limitations and future directions

Although this study does important contributions, it has several limitations that must be noted. First, using police reports, though important in order to characterize households' environments, limits the conclusions that can be made about the effects of direct or indirect exposure to violence and crimes. In particular, it is not possible to identify whether nearby inhabitants effectively witnessed, heard about, or were direct victims of reported crimes, thus the findings of these study may be an underestimate of the ways a salient exposure to violence may affect parental practices (McCoy et al., 2015). These concerns are tackled to a certain degree analyzing the exposure to crimes in small vicinity (100 meters around), assuming that it is more plausible that a person will find out a crime that happened in an adjacent block than one in the other extreme of the neighborhood. Nevertheless, future research should consider objective measures and subjective experiences of violence shocks, which could provide important insights on the effects of chronic and acute exposure to violence.

Second, even though in Colombia it is not entirely socially or legally condemned to hit children, it is not possible to assure the self-reported measure of child discipline is totally accurate, especially for certain communities where it is undesirable to show violent acts. Future studies could benefit by including self-reported measures, official maltreatment reports and home observation in order to reduce potential measurement biases.

Third, the cross-sectional design limits my capacity to make causal conclusions about the findings, a common problem throughout neighborhood effects literature (Coulton et al., 2007; Sampson et al., 2002). This study attempted to control for several confounding variables both at the family and

neighborhood level, however, unobserved heterogeneity may also relate to child discipline methods as well as to community violence, confounding the two effects. Longitudinal, experimental, or quasi-experimental approaches are needed to better understand the causality of this study's findings. One promising alternative is the use of natural experiments that change neighborhood dynamics, composition and levels of violence. Colombia may well offer a potential quasi-experimental framework in its post-conflict situation, where the return of internal displaced persons to their original lands from urban municipalities, as well as combatant demobilization (it is projected that 17,000 guerrillas will demobilize, some of whom will arrive to large urban municipalities), are expected to impact certain communities in urban areas (*El Tiempo*, 2015).

Fourth, the results suggest more visible and threatening crimes, such as homicides and personal injuries, are important predictors of harsh discipline, whereas burglary and drug-trafficking are unrelated. Theoretically, these findings can be explained using a stress-related hypothesis, yet without precise data on families' subjective experiences it was impossible to empirically test this statement. Future research may combine objective police reports, self-reported exposure to violence and stress, qualitative research (mainly to understand dynamics within communities), and novel approaches to measure stress produced by community violence and its consequences in cognitive functioning, such as neuroimaging or physiological measures of stress (e.g., salivary cortisol levels). Combining approaches, it would be possible to better understand the mechanisms through which community violence trespasses households' boundaries and interferes with families' dynamics.

Fifth, the sample was not representative for at-risk households, such as those living in extreme poverty, internally displaced persons, or those living in crime hotspots; hence, I was not able to make inference about these populations. Moreover, sampled municipalities are on average richer than smaller municipalities in Colombia, and less exposed to terrorism and other threats in the middle of civil conflict. Subsequent studies could explore a similar research question on municipalities with a higher prevalence of extreme poverty and more directly affected by civil conflict in order to understand the validity of these results for more at-risk populations.

Sixth, this study offers partial answers to concerns about the way caregivers respond to violent environments. Together with previous findings, it appears that community violence have a

"multiplier" negative effect on children well-being: one direct on their development, and one indirect through negatively altering parental practices. Future studies need to continue exploring this questions analyzing other child-parent interactions. For instance, it may be relevant to analyze how caregivers' stimulation (i.e., play and learning activities) is affected by chronic and acute exposure to violence and crimes.

Finally, there is a need to examine a more holistic measure of exposure to violence, not only in the vicinity of households, but also in other environments that predict children well-being (Cuartas & Rey-Guerra, 2017) such schools, parks, and streets children and their caregivers use on a daily basis. A better understanding on the consequences of exposure to violence and crime in different contexts may be an important input for the design of public policies focused on promoting resilience, particularly in more at-risk children.

4.2. Implications

Corporal discipline is associated with an array of detrimental outcomes for children, including internalizing and externalizing symptomatology, and impairments in cognitive and socio-emotional development (Gershoff & Grogan-Kaylor, 2016). Yet, corporal punishment inside households is prohibited in less than 10% of the countries in the world, a list where Colombia is not included (Cuddy & Reeves, 2014; Unicef, 2014). My findings suggest community violence is linked with the use of an especially harsh discipline method in Colombia: hitting children with objects. Recently, Colombians have been increasingly feeling insecure in their neighborhoods (García Sánchez, Montalvo & Seligson, 2015), and official statistics show urban criminality has increased (Mejia et al., 2015), something that makes it imperative to examine the potential consequences of direct exposure to violence and perceptions of insecurity, along with potential interventions to promote resilience in children and their caregivers.

Ecological interventions that make neighborhoods more supportive for families are a promising approach. For instance, using spatial information about the location of preschool and nursery centers within Los Angeles County, California, Klein (2011) found neighborhoods with higher availability of early childhood care centers had, even after controlling for other neighborhood characteristics, lower rates of early child maltreatment reports. Social programs also offer an interesting alternative. Lopez-Avila (2016) found *Hogares Comunitarios de Bienestar* (HCB), a

Colombian social program aimed at promoting the development of vulnerable children younger than five, providing child care options to parents, reduced the likelihood beneficiaries use corporal punishment in 0.37 *SD* and increased the use of more pedagogic discipline. Some evidence suggest HCB's beneficiaries received detailed information about more effective and positive discipline alternatives among other educational content for parents, which may explain the estimated effects. Similar results have been found with alike programs in other countries of Latin America and the Caribbean (Schady, 2006).

On the other hand, there are promising opportunities to protect caregivers from the negative effects of community violence and direct victimization. One of the most widely evaluated alternatives is cognitive behavioral therapy, which have had positive effects fostering positive coping strategies to deal with stressful environments or events (Voisin & Berringer, 2015). Another option worth exploring are mindfulness interventions, which have the potential to reduce stress and influence other psychological well-being indicators (Grossman, Niemann, Schmidt & Walach, 2004). Finally, widespread social programs, such as conditional cash transfers, could include features specifically aimed at informing caregivers on positive practices: some evidence suggest these features may be effective in changing beliefs and preferences, thus affecting behaviors (García, Harker & Cuartas, 2016).

4.3. Conclusions

Child developmental trajectories depend largely on environments, experiences, and interactions with main caregivers and other adults. Discipline represents a fundamental part of interactions between parents and children, and exposure to physically or psychologically harsh discipline can impair children development and compromise their future chances. This study offers novel insights on the way adverse environments affect children's caregivers, increasing the likelihood they rely on harsh discipline methods. Future research may explore other outside-households risk and protective factors in order to design appropriate interventions that foster resilience and well-being among at-risk children and their caregivers.

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