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20 December 2018

Online at <https://mpra.ub.uni-muenchen.de/90909/>

MPRA Paper No. 90909, posted 28 December 2018 02:35 UTC

“Bad Apple” Peer Effects in Elementary Classrooms:
the Case of Corporal Punishment in the Home[†]

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Abstract

This paper provides the first empirical evidence on the existence of negative spillover effects from children exposed to corporal punishment in the home. We find that interactions with peers who suffer from physical punishment significantly depress achievement in both math and language among Vietnamese fifth graders. These adverse impacts are transmitted through the reduction of academic expectation and the increased incidence of physical bullies at school in the presence of more corporal-punishment-inflicted peers. Our results offer meaningful implications for both education and social policies.

JEL codes: I20, I21, J18

Keywords: Corporal Punishment, Violent Disciplinary Practices, Student Achievement, Peer Effects, Family

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1 Introduction

Corporal punishment by parents is primordial violence because it is the child's first experience with violence (Straus et al. 2013). Physical punishment on children, as shown in previous studies, is a factor that hinders child development (Becker 1964; Patterson 1982; Gershoff 2002). For example, physical punishment in the household can lead to declined social competence as well as failing academic achievement (Straus et al. 1997; Straus and Paschal 2009; Simons and Wurtele 2010; Straus et al. 2013). However, parental use of corporal punishment on children remains a prevalent practice in developing countries (Monyooe 1996; Oburu and Palmeru 2003; Alyahri and Goodman 2008; Rimal and Pokharel 2013).

This paper contributes to the literature by providing the first empirical evidence on the impacts of corporal punishment in the home on the academic achievement of the classmates of victim children through peer interactions. This paper also sheds light on the mechanisms driving these negative externalities. The closest works to our paper are the studies on the spillover effects of domestic violence (between spouses or partners).¹ Specifically, children from families ridden with domestic violence tend to disrupt the learning of their classmates (Carrell and Hoekstra 2010; Carrell and Hoekstra 2012). These works extensively study the impacts of domestic violence which refer to the exertion of violence by one spouse or intimate partner on the other partner, where the child is the witness of violence. Our paper, on the other hand, particularly investigates the spillover effects of corporal punishment, a violent disciplinary practice in the family which targets the children themselves. We examine how the victim children hamper the achievement of their classmates.

Our study integrates two strands of literature. The first strand emphasizes the impacts of physical punishment in the home on child development. For instance, parental adoption of corporal punishment could lead to increased aggressive behaviors (Straus et al. 1997;

¹ Domestic violence is also associated with cognitive and behavioral problems among children (Huth-Bocks et al. 2001)

Simons and Wurtele 2010), and cognitive problems (Cherian 1994; Straus and Paschal 2009) among children, along with the erosion of the parents-child relationship (Hirschi 1969; Parke 1977; Van Houten 1983). Early exposure to violent disciplinary practices is also predictive of adult abuse of own child and spouse (Fry 1993; Holden et al. 1997; Swinford et al. 2000) as well as adult criminality (Glueck and Glueck 1950; McCord 1979; Straus 2013; Straus et al. 2013). The second line of research concentrates on the existence of peer effects on educational outcomes following peer interactions. For example, peer ability exert non-negligible influences on student achievement (Hanushek et al. 2003; Lavy et al. 2011; Lavy et al. 2012; Burke and Sass 2013; Antecol et al. 2016). Peer gender composition can have positive impacts on both cognitive and non-cognitive outcomes among students (Lavy and Schlosser 2011; Lu and Anderson 2015; Eren 2017).

Drawing on a sample where fifth-grade students are randomly allocated to classrooms, we find that interactions with peers who are subject to corporal punishment in the home depress achievement in both math and language. Our results indicate that one standard deviation increase in the Peers' Violence Index is associated with a decrease of 0.14 and 0.15 standard deviations in math and language test scores respectively. We do not detect any nonlinearity along the lines of student ability in the effects of peers' exposure to physical punishment in their family. We also find that these adverse consequences are transmitted through the decrease in student academic expectation and the increase in the incidence of physical bullies at school.

This paper underlines the adverse spillover effects of corporal punishment on children at home. Despite their both private and social costs, violent disciplinary practices remain common in developing countries (UNICEF 2010). A 2010 report by the UNICEF shows that three out of four children suffer from violent disciplinary actions by their caregivers on a regular basis. Only 24 countries adopt legislation which prohibit physical punishment in the home, leaving so many children unprotected (Zolotor and Puzia 2010). The findings of this paper provide

support for the passage and implementation of such laws. Our results also justify more attention as well as resources toward the reduction of physical punishment on children. From an educational perspective, comprehending the extended consequences of violent disciplinary practices toward young children is important in devising educational policies that involve changes in the composition of students across classrooms/schools.

The organization of the paper is as follows. Section 2 describes the data. Section 3 presents the empirical methodology. Results are provided in Section 4. We explore mechanisms and discuss our findings in Section 5. Section 6 concludes our paper.

2 Data

We obtain data from the “Young Lives: School Survey, Vietnam, 2011-2012”, a sample of fifth-grade students in five selected provinces of Vietnam.² This is one part of the Young Lives study on childhood poverty of children in Ethiopia, India, Peru and Vietnam conducted by the University of Oxford - Department of International Development.³ In the study, students completed a background questionnaire and were tested in mathematics and language (Vietnamese) at both the beginning and the end of the school year. The data also provide information on teachers’ demographic and qualification characteristics. We are able to observe students and their teachers at the classroom level.

Although random assignment of students into classrooms is not a rule in the Vietnamese elementary education system, some schools do actually allocate students that way. In our dataset, we are able to identify classrooms with randomly assigned students. This information is acquired from the teacher questionnaires.⁴ Because students tend to self-select into classrooms and peer groups that are similar to them (Hoxby 2000), we need to rely on the

² These provinces include Ben Tre, Da Nang, Hung Yen, Lao Cai, and Phu Yen

³ Due to the inconsistency in the cross-country questionnaires, we are unable to conduct the same analysis in other countries.

⁴ Based on teachers’ response, student allocation is based on ability in math, general ability, locations of residence or students are just randomly assigned into classrooms.

sample of classrooms with randomly assigned students to credibly estimate the negative spillover effects of corporal punishment in the home. There are 130 classrooms where the allocation of students is random. It is worth noting that parents can choose to which school to send their children, but they have no control over the classroom assignment. In this paper, our identification strategy is to exploit the random assignment of students into classrooms within a school. In sum, our sample consists of 2,506 students in 130 classrooms from a total of 60 primary schools.

Table 1 presents the descriptive statistics of both control and dependent variables. Panel A provides the mean and standard deviation of various student characteristics. Corporal punishment is measured by the frequency of the student being beaten by parents. In the student questionnaire, the response range includes 1-never, 2-sometimes, and 3-always. We construct the z-score of the violence index by standardizing the response across all students. By construction, (student's) Own Violence Index has a mean close to zero and standard deviation close to unity. Baseline academic performance measures are students standardized test scores in language and math at the *beginning* of the school year. Average baseline language and math achievement score are 0.07 and 0.06 of a standard deviation, respectively. The proportion of grade repeaters is around four percent.⁵ Student demographic characteristics include gender, minority status, and parental education.⁶ Besides, at the beginning of the school year, students are asked about the level of support they receive from family, how they evaluate their own academic ability, and their level of motivation at school. The response range is 1-very high, 2-high, 3-medium, 4-low, 5-very low. The mean values of these scores are all close to 2.5 (Table 1, Panel A).

Teacher's observable characteristics are given in Panel B of Table 1. While female teachers take up 74%, approximately 47% of the teachers obtain at least a four-year university degree or earn some qualifications at a university. The fraction of teachers with "Excellent Teacher"

⁵ In the questionnaire, students are asked if they ever repeat any grade.

⁶ Mother/Father education is an indicator denoting at least college degree.

Award at the province level is 18%. The average teacher experience is roughly 18 years. Summary statistics for classroom characteristics including the fraction of female students, class size, class-level baseline achievement in language and math are provided in the lower end of Panel B. Moving to Panel C of Table 1, (endline) language and math test score taken at the end of the school year both take the mean values of 0.04 standard deviations. To capture the extent to which a student's peers are exposed to corporal punishment in the home, we take the mean of the violence index of students in his/her classroom, excluding the student himself/herself, and finally re-standardizing this average. This measure of peers exposure to corporal punishment has zero mean and unit standard deviation. We refer to this newly constructed measure as Peers' Violence Index hereafter.

Since our explanatory variable of interest is the Peers' Violence Index at the classroom level within a school, we want to make sure there is enough variation of this index across classrooms in each school. First, we plot the raw distribution of the Peers' Violence Index in Figure 1. Second, in Figure 2, we plot the distribution of the residualized classroom level Violence Index, which is obtained by regressing the Peers' Violence Index on school fixed effects. From Figure 1 and Figure 2, there seems to be large enough variation in our measure of peers' exposure to physical punishment in the home. In a final exercise, we examine the variance decomposition in the Peers' Violence Index. As shown in Panel D of Table 1, within-school variation exists in the data, and this random variation accounts for roughly half of the total variation in our measure peers' exposure to physical punishment in their family.

To verify the random assignment of students to peers with various levels of exposure to corporal punishment in the home, we conduct a balance test between peers' exposure to physical punishment and various students' baseline characteristics (observed at the beginning of the school year). Specifically, Peers' Violence Index is regressed on student's own violence index, baseline achievement scores, retention status, attitude scores (level of support at home, perceived own ability, level of motivation at school), and various demographic characteristics

such as gender, ethnicity, and parental education, conditioning on school fixed effects. As shown in Table 2, P-value from an F-test indicates we fail to reject the null hypothesis that the coefficients on these variables are jointly equivalent to zero. Moreover, almost all of these coefficients are statistically indistinguishable from zero. Taken together, these results indicate that randomization ensures that student characteristics and peers' exposure to corporal punishment in the home are uncorrelated.

3 Empirical Methodology

The two methodological difficulties that haunt most studies on peer effects are the reflection problem (Manski 1993) and the self-selection problem (Hoxby 2000). The reflection problem involves separating the effect that peers have on the student from the effect the student has on his or her classmates. Our solution is to employ the presence of a family problem - the use of corporal punishment on children - as an exogenous measure of peer quality. This is because a student's classmates cannot cause violence in his/her family. The self-selection problem refers to the situation when students self-select into classrooms and peer groups that are similar to them. Our solution is to draw from a sample where students are randomly allocated to classrooms.

We first examine the impacts of peers' exposure to corporal punishment in the home on student achievement in a linear-in-means model. Specifically, students' end-of-school-year test scores in math and language are regressed on the average Violence Index of other students in the classroom, student's own Violence Index, along with a student's own baseline math/language test scores, student and teacher characteristics, and school effects in the following value-added specification:

$$TS_{ics}^{end} = \beta_0 + \beta_1 PVI_{-i,cs} + \beta_2 TS_{ics}^{base} + SC'_{ics} \beta_3 + TC'_{cs} \beta_4 + CL'_{cs} \beta_5 + \lambda_s + \epsilon_{ics} \quad (1)$$

where i, c, s represent student, class, and school. We denote by TS_{ics}^{end} and TS_{ics}^{base} the end-

of-year and beginning-of-year test score in math/language. $PVI_{-i,cs}$ is the Peers' Violence Index, the average violence index of the class, excluding student i . SC_{ics} is a set of student characteristics (own violence index, grade repetition status, gender, minority status, parental education). TC_{cs} is a set of teacher characteristics (gender, education, qualifications, "Excellent Teacher" award at the province level). CL_{cs} captures classroom covariates including class size, the fraction of female students, and class-average beginning-of-year test scores of class c (excluding student i). λ_s stands for school fixed effects. ϵ_{ics} is the error term. Standard errors throughout the paper are clustered at the school level. The Peers' Violence Index is constructed based on students' responses to the beginning-of-year questionnaires. This measure reflects the true peer interactions because the end-of-year classroom composition is almost identical to the initial assignment. In our sample, over 99% of the students remain in the same class.

The effects of peers' exposure to corporal punishment in the home can work through different peer effect channels. One channel is the direct spillover of students achievement. Particularly, students exposed to physical punishment in their family may suffer from poor achievement; thus, affecting the academic performance of other students in the class. It is documented in previous works that student academic performance is influenced by the achievement level of his/her classmates ([Hanushek et al. 2003](#); [Lavy et al. 2012](#); [Burke and Sass 2013](#); [Antecol et al. 2016](#)). The second channel includes all mechanisms other than peer achievements such as changes in classroom/learning environment and changes in inter-student and teacher-student relation ([Lavy and Schlosser 2011](#); [Eren 2017](#)). We separate the first channel by controlling for average peer performance score in equation (1). As a result, β_1 captures the effects of peers' exposure to corporal punishment in the home that operates through channels other than achievement. We further explore other mechanisms in Section 5.

In addition to a linear-in-means model given in equation (1), we can also specify a nonlinear model along the lines of student baseline achievement, as peer effects have been shown to

be nonlinear in previous works (Hoxby 2000; Burke and Sass 2013; Imberman et al. 2012; Antecol et al. 2016). Specifically, our nonlinear specification is given by:

$$TS_{ics}^{end} = \theta_0 + \sum_{k=1}^3 I_{ics}^k PVI_{-i,cs} \theta_{1,k} + \theta_2 TS_{ics}^{base} + SC'_{ics} \theta_3 + TC'_{cs} \theta_4 + CL'_{cs} \theta_5 + \lambda_s + \epsilon_{ics} \quad (2)$$

where I_{ics}^k is a categorical variable indicating whether student i 's baseline achievement score is in tercile k ($k =$ top third; middle third; bottom third) of the school-level baseline achievement distribution. In this model, low achievers and high achievers could potentially be affected differently by the interaction with peers who are exposed to corporal punishment by their parents.

4 Results

The linear-in-means estimates of the effects of peers' exposure to physical punishment in the home on math achievement are presented in Table 3. In Column 1, the baseline classroom average performance score in math is controlled for, while the regression in Column 2 does not condition on peers' math achievement. Point estimates in Column 1 and Column 2 are not substantially different, suggesting the impacts of peers' exposure to corporal punishment on math achievement do not transmit through the achievement channel. Estimates are negative and statistically significant. In particular, one standard deviation increase in the Peers Violence Index leads to 0.12-0.14 standard deviation reduction in math achievement.

The estimated effects of peers' exposure to physical punishment by parents on language achievement are presented in Table 4. Whether controlling for peers' performance in the beginning-of-year test in language does not alter our coefficient estimate. Interacting with peers who suffer from corporal punishment at home poses negative and significant (both statistically and economically) impacts on the language test score. Specifically, language achievement declines by 0.15 of a standard deviation in response to one standard deviation rise in the Peers Violence Index.

Taken together, results from Table 3 and Table 4 highlight the serious ramifications of the exposure to corporal-punishment-inflicted peers on student achievement. To put these estimates into perspective, the effect of interactions with peers subject to physical punishment by parents is roughly half of the effect observed from decreasing teacher quality by one standard deviation (Hanushek 2011). These results underline the negative externalities of corporal punishment on children in the household, in a sense that such practice generates adverse spillover effects on the achievement of their classmates, which goes beyond the consequences on the victim children. Our finding is consonant with Carrell and Hoekstra (2010).

Table 5 presents the nonlinear estimates of the impacts of peers' exposure to corporal punishment in the home on students' end-of-year test scores in math and language. So far we have documented unfavorable consequences of interactions with peers who suffer from physical punishment at home on student's own learning, we also want to see if the effects differ by student ability. In other words, we are interested in whether these negative impacts are more pronounced on low achievers. Since students are tested in language and math at the beginning of the school year, student ability is measured by the student's position in the school-level baseline achievement distribution, i.e. whether he/she belongs to the top third; middle third; bottom third of the distribution. Point estimates in Table 5 suggest no heterogeneity in the effects of peers' exposure to corporal punishment on test scores along the lines of student ability.

5 Mechanisms and Discussion

The effects of corporal punishment in the home could be transmitted to the learning of victim children's classroom peers through poor achievement, and other channels such as behavioral problems. As mentioned in Section 3, our estimates reflect the impacts of peers' exposure to corporal punishment that operate through channels other than achievement. We find that interacting with peers who suffer from physical punishment by parents lowers

student achievement. Specifically, one standard deviation increase in the Peers' Violence Index is associated with a decline of 0.14-0.15 standard deviations in math and language performance scores respectively. In this section, we explore whether the adverse spillover effects transmit through affecting student academic expectations and through the extent of aggressive interactions among students.

Exposure to corporal punishment by parents is associated with internalizing behavioral problems (Gershoff and Grogan-Kaylor 2016). Students with these problems can instill the negativity to their classmates, thus reducing their peers' academic expectations. Since student expectation is regarded as a strong predictor of academic achievement (Tavani and Losh 2003; Rubie-Davies et al. 2010), the presence of corporal-punishment-inflicted classmates could depress student's own achievement. We proceed to construct a variable for student academic expectation as follows. In the end-of-year questionnaire, students are asked to indicate their expectations for a college education. Specifically, students respond to the following statement, *"If I work hard, I can go to college"*. We code their response into a dummy variable, *"Expectation For College"*, which takes the value of 1 if students either *strongly agree* or *agree* to that statement, and takes the value of 0 otherwise.

Violent disciplinary practices against children at home increase child's externalizing behavioral problems (Becker 1964; Patterson 1982; Gershoff and Grogan-Kaylor 2016). It is possible that the students who are victims of corporal punishment in the home are more likely to be aggressive toward, and perhaps physically bully, their classroom peers. Physical bullies at school pose a serious threat to students' academic performance, physical as well as psychological health (Kowalski and Limber 2013; Oliveira et al. 2018). Physical bullies, therefore, could be one potential mechanism behind the effects of peers' exposure to physical punishment in the home. Next, a variable capturing the incidence of physical bullies at school is constructed as follows. In the questionnaire, students are also asked about whether they are bullied at school. We turn their responses into a dummy variable, *"Physically Bullied"*

at School”, taking the value of 1 if a student indicates he/she is either *always* or *sometimes* physically bullied at school, and 0 if he/she is *rarely/never* bullied.

We estimate equation (1) with dependent variables being “*Expectation For College*” and “*Physically Bullied at School*”. Table 6 reports the results. Exposure to classmates who are subject to corporal punishment by parents reduces students’ expectations for a college education and increases the incidence of physical bullies at school. Particularly, one standard deviation increase in Peers Violence Index results in a reduction of student expectation for college by 1.9 percentage points, and an increase in the probability of being physically bullied at school by 3.9 percentage points. We thus attribute our estimated effects of interactions with peers inflicted by physical punishment by parents on student achievement to the increase in the incidence of physical bullies at school and the decrease in future academic expectations.

While previous works underscore the immense private costs of the adoption of physical punishment on children (Becker 1964; Patterson 1982; Whipple and Richey 1997; Gershoff 2002), our results emphasize the negative externalities of violent disciplinary practices at home. We provide compelling evidence that students subject to corporal punishment in their family hurt the learning of their classmates. These effects are commensurate with those of increasing class size by one percent (Krueger 1999), or decreasing per-pupil expenditure by 500 USD (Greenwald et al. 1996). Students exposed to physical punishment in their home could affect the learning of their classmates by reducing their peers’ academic expectations and through their own aggressive behaviors. In all specifications, we control for classroom average baseline test scores; therefore, our estimates reflect the impacts of interacting with corporal-punishment-inflicted peers that work through channels other than achievement. While our results show how students subject to corporal punishment in the home affect their classmates at school, they may understate the full extent of the negative spillover effects on others. It is because students are likely to interact with peers outside of their classroom and in their neighborhood. If so, our estimates could be interpreted as the lower bound.

Our results have important implications for social policies. Corporal punishment on children at home imposes a social cost that goes beyond the private cost borne by the victim children. Although the United Nations adopted the Convention on the Rights of the Child in 1989, only 24 countries adopt legislation that ban the use of corporal punishment against children (Zolotor and Puzia 2010). Despite their both private and social costs, violent disciplinary practices remain common in households in 33 developing countries (UNICEF 2010). According to a report by the UNICEF, among children aged 2 to 14, the probability of being exposed to corporal punishment is three out of four in these countries. The prevalence of physical punishment is highest among the 5-9 age group. Alyahri and Goodman (2008) show that more than 50% of Yemeni caregivers and around 25% urban Yemeni caregivers reported using harsh corporal punishment as a way of disciplining children. Endorsement of physical punishment toward is prevalent in sub-Saharan Africa (Monyooe 1996; Oburu and Palmerus 2003). Our results provide support for the passage and implementation of laws that prohibit the use of corporal punishment on children. Given the adverse spillover effects of violent disciplinary practices, interventions that target improvements in the family environment may produce larger favorable gains than previously estimated.

Findings of this paper are also relevant to education policies. Our results imply that changing the classroom composition of students may adversely affect the academic performance of those exposed to peers who suffer from physical punishment from parents. Careful consideration should be given to any decision on the allocation of students into classrooms. In the light of the negative externalities of corporal punishment in the home, getting disadvantaged students exposed to corporal-punishment-inflicted peers could potentially perpetuate the achievement gap. This is consistent with the suggestions in Carrell and Hoekstra (2010) with the focus on children living in domestic-violence-ridden families.

6 Conclusion

This paper contributes to the literature by presenting the first empirical evidence on the adverse spillover effects of corporal punishment on children at home on the achievement of other students in elementary classrooms. The studied context is a developing country, Vietnam, where the adoption of violent disciplinary practices at home is a prevalent problem. Our findings indicate that fifth-grade students who are exposed to corporal punishment at home harm the learning of their classmates. In other words, interacting with peers who suffer from physical punishment by parents lowers student achievement. Specifically, one standard deviation increase in the Peers' Violence Index is associated with a reduction of 0.14-0.15 standard deviations in math and language test scores respectively. These effects are comparable to those of increasing class size by one percent (Krueger 1999), or decreasing per-pupil expenditure by 500 USD (Greenwald et al. 1996). Potential mechanisms underlying these negative impacts on achievement are the reduction in student academic expectation and the increase in the incidence of physical bullies at school in the presence of more corporal-punishment-inflicted kids.

Collectively, our results have meaningful implications for education and social policies. We present the first concrete empirical evidence of the existence of a “bad apple” peer effects where students who are exposed to corporal punishment in the home hamper the learning of their classmates. Educational policies which alter the composition of students across classrooms/schools may hurt the academic performance of the group exposed to physical-punishment-inflicted kids. Our findings justify the allocation of more resources to tackle the problem of parental employment of corporal punishment on children in developing countries. It is necessary for policymakers to take into account the social cost of violence against children that exceeds the private cost that falls on the victim children. According to a 2010 report by the UNICEF, three out of four children suffer from corporal punishment by their caregivers on a regular basis, meaning that many children are left unprotected from this violent disciplinary

practice. Our results lend support to the passage of legislation that prohibit the use of corporal punishment on children.

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Figure 1: Distribution of the Peers' Violence Index

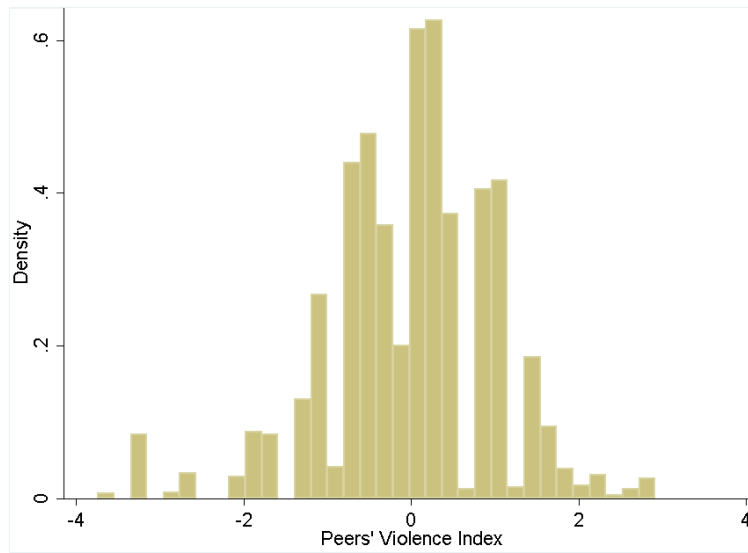


Figure 2: Distribution of the Residualized Peers' Violence Index

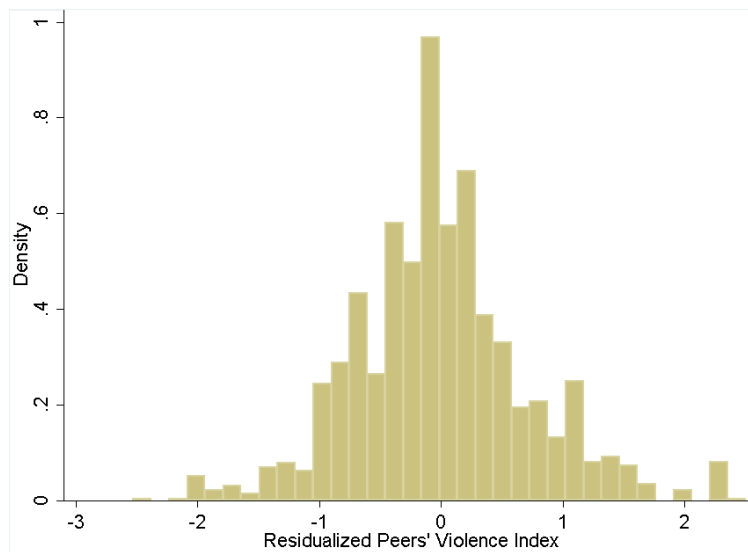


Table 1: Summary Statistics and Variance Decomposition

Panel A: Student Controls	Mean (SD)	Panel B: Teacher and Class Controls	Mean (SD)	Panel C: Variables of interest	Mean (SD)
Own Violence Index	-0.002 (0.999)	Female Teacher	0.739 (0.439)	Endline Language Score	0.039 (1.001)
Baseline Language Score	0.073 (0.955)	Teacher Education	0.472 (0.499)	Endline Math Score	0.043 (1.012)
Baseline Math Score	0.064 (0.960)	Teacher Qualifications	0.471 (0.499)	Peers' Violence Index	0 (1.000)
Grade Repetition	0.042 (0.201)	Excellent Teacher	0.183 (0.387)	Number of Teachers	130
Female	0.474 (0.499)	Teacher Experience	17.972 (8.482)	Number of Classes	130
Minority	0.074 (0.262)	Fraction of Girls	0.472 (0.097)	Number of Schools	60
Mother Education	0.138 (0.345)	Class Size	30.24 (8.39)	Panel D: Variance Decomposition of Peers' Violence Index	
Father Education	0.155 (0.362)	Baseline Class Average Language Score	0.067 (0.532)		Sum squares
Level of Family Support	2.485 (0.883)	Baseline Class Average Math Score	0.057 (0.609)	Within School	49.11
Perceived own Ability	2.466 (0.814)			Between School	49.67
Level of Motivation at School	2.361 (0.755)			Total	97.83

Table 2: Balancing Test

	Y = Peers' Violence Index		Y = Peers' Violence Index
Own Home Violence Index	0.057 (0.038)	Mother Education	-0.031 (0.062)
Baseline Language Score	-0.045 (0.035)	Father Education	-0.001 (0.074)
Baseline Math Score	0.095** (0.038)	Level of Family Support	-0.024 (0.047)
Retention	-0.026 (0.069)	Perceived own Ability	0.011 (0.043)
Female	0.011 (0.029)	Motivation at School	-0.005 (0.057)
Minority	0.068 (0.057)	Sample size	2,506
		P-value of joint significance test	0.28

NOTE: Each cell reports the coefficient on the corresponding control variable, which lies on the left-hand side of the coefficient, in a regression of Peers' Violence Index on these variables, conditioning on school fixed effects. Standard errors provided in the parentheses are clustered at the school level. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Impacts of Interacting with Corporal-Punishment-Inflicted Peers on Student Math Achievement

	Endline Math Score (1)	Endline Math Score (2)
Peers' Violence Index	-0.137** (0.063)	-0.115* (0.060)
Sample size	2,506	2,506
Control for Peer Achievement	Yes	No
Student and Teacher Controls	Yes	Yes

NOTE: The table reports the coefficient estimate β_1 on the Peers' Violence Index in equation (1). Regressions are conditioned on school fixed effects, class size, and the fraction of female students in a class, along with other student-teacher-class observables. Student characteristics consist of beginning-of-year math test score, own domestic violence index, grade repetition status, gender, minority status, parental education. Teacher control include gender, education, qualifications, "Excellent Teacher" award at the province level. Peer achievement is class-average beginning-of-year test scores in math. Standard errors provided in the parentheses are clustered at the school level. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Impacts of Interacting with Corporal-Punishment-Inflicted Peers on Student Language Achievement

	Endline Language Score	Endline Language Score
	(1)	(2)
Peers' Violence Index	-0.145*** (0.055)	-0.140** (0.057)
Sample size	2,506	2,506
Control for Peer Achievement	Yes	No
Student and Teacher Controls	Yes	Yes

NOTE: The table reports the coefficient estimate β_1 on the Peers' Violence Index in equation (1). Regressions are conditioned on school fixed effects, class size, and the fraction of female students in a class, along with other student-teacher-class observables. Student characteristics consist of beginning-of-year language test score, own domestic violence index, grade repetition status, gender, minority status, parental education. Teacher control include gender, education, qualifications, "Excellent Teacher" award at the province level. Peer achievement is class-average beginning-of-year test scores in language. Standard errors provided in the parentheses are clustered at the school level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Impacts of Interacting with Corporal-Punishment-Inflicted Peers - Nonlinear Model

	Endline Math Score	Endline Reading Score
	(1)	(2)
Bottom Third \times Peers' Violence Index	-0.154** (0.070)	-0.149*** (0.061)
Middle Third \times Peers' Violence Index	-0.111* (0.061)	-0.135** (0.055)
Top Third \times Peers' Violence Index	-0.150** (0.072)	-0.155** (0.063)
Sample size	2,506	2,506
Control for Peer Achievement	Yes	Yes
Student and Teacher Controls	Yes	Yes

NOTE: The table reports the coefficient estimate $\theta_{1,k}$ on the interaction between Peers' Violence Index and student's baseline achievement tercile indicators in equation (2). Regressions are conditioned on school fixed effects, class size, and the fraction of female students in a class, along with other student-teacher-class observables. Student characteristics consist of beginning-of-year language test score, own domestic violence index, grade repetition status, gender, minority status, parental education. Teacher control include gender, education, qualifications, "Excellent Teacher" award at the province level. Peer achievement is class-average beginning-of-year test scores in language. Standard errors provided in the parentheses are clustered at the school level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Mechanisms: Impacts of Interacting with Corporal-Punishment-Inflicted Peers

	Expectation For College	Physically Bullied at School
	(1)	(2)
Peers' Violence Index	-0.019* (0.011)	0.036* (0.021)
Sample size	2,430	2,488
Control for Peer Achievement	Yes	Yes
Student and Teacher Controls	Yes	Yes

NOTE: The table reports the coefficient estimate on the Peers' Violence Index in equation (1). Regressions are conditioned on school fixed effects, class size, and the fraction of female students in a class, along with other student-teacher-class observables. Student characteristics consist of beginning-of-year math and language test scores, own domestic violence index, grade repetition status, gender, minority status, parental education. Teacher control include gender, education, qualifications, "Excellent Teacher" award at the province level. Peer achievement is class-average beginning-of-year test scores in math and language. Standard errors provided in the parentheses are clustered at the school level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.