Does lengthening the school day reduce the likelihood of early school dropout and grade repetition: Evidence from Colombia

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Abstract

Previous research on the effects of the length of instructional time has found that academic performance is higher when more time is spent in instruction. These findings have been found in research examining both the length of the school day, as well as the length of the school year (Patall, Cooper & Allan, 2010). However, most research on the topic has focused on academic assessments, such as standardized tests, or on longer-term outcomes, such as wages. Overlooked in these studies are the more proximate measures of schooling that also influence student trajectories. Specifically, as yet, no analysis has focused on the effects of the length of school schedule on the likelihood of grade repetition, nor of dropping out of school before graduation. In this analysis, we use data from a remarkable source in Colombia to examine the effects of a change from half-day schooling (*media jornada*) to full-day schooling (*jornada completa*) on student outcomes. We estimate family-fixed effects models and found that full-day schooling reduces the probability early dropout and grade repetition. We complement our analysis with a qualitative case study comparison of schools with high and low dropout rates, and discuss the possible mechanisms underlying the effect of school schedule on student outcomes.

Background

One of the basic questions that any state or government establishing a schooling system must address is how long youth should spend in school. Length of instructional time is a fundamental issue in education and education policy, whether the focus is on the minimum number of years of school required, the number of days in the school year, or the length of the school year. However, relatively little research has been devoted to understanding the effects of instructional time on student outcomes. Instead, researchers generally hypothesize (but do not often examine) that the greater the time required for attendance, the more positive the effect on student outcomes (Bloom, 1974; Millot, 1995).

The notion that student learning is a function, at least in part, of time in school is a central idea in education research (Brown & Saks, 1986). Previous research in education policy has documented positive effects of length of schooling on student learning. The length of the school year, for example, has been shown to be positively related to learning in the near-term (D'Agostino, 2000) as well as earnings over the life course (Card & Krueger, 1992; Llach, Adrogue, Gigaglia, & Rodriguez, 2009).

Historically, most locations exhibited a wide range of mandated schooling for their youth. For example, the early periods of public schooling in the United States showed rather remarkable variation in the length of the schooling period. In the middle of 19th Century, several urban areas, such as Buffalo, New York, and Philadelphia, had school years that were open more than 250 days per year (Weiss & Brown, 2003). Historical evidence has documented the importance of the length of the instructional period on children's learning and development, both in the United States and abroad (e.g. Card and Krueger 1992).

Yet research documenting the importance of the length of time in schooling is not limited to the historical period. For example, in a recent pilot project Massachusetts experimented with extending the length of the school day in 10 schools to assess whether the additional time improved student performance. A study conducted recently among elementary school children in Illinois found a positive benefit of instructional time on students' standardized test scores in reading and mathematics (Coates, 2003). And at a more micro-level of instructional time, a set of recent papers have documented the positive relationship between class attendance and student learning (Gottfried, 2010; Stanca, 2006).

Much of the recent evidence on the effects of instructional time and length of school period comes from reports examining international comparisons. A number of these have drawn a link between the higher levels of achievement among students (relative to the United States) in other countries and the fact that students in the U.S. spend much less time in school than those who score higher (Gonzales et al., 2004). Nearly three decades ago, *A Nation at Risk* highlighted the disparity between the length of school term in the U.S., as compared with Western Europe and Japan (National Commissionon Excellence in Education, 1983).

Not all research has found that increasing the length of the schooling has beneficial effects. For example, some studies have found that increasing the length of time is not in and of itself beneficial, since there is significant variation in how time is used in school (Karweit, 1985).

Only a handful of studies have examined the effect of changes in the length of school day on non-academic outcomes. Some studies have found that increasing the length of the day decreases the number of disciplinary problems (Bishop, Worner, & Weber, 1988; Ross, McDonald, Alberg, & McSparrin-Gallagher, 2007). However, there are a number of

dimensions of school performance that remain unexamined with respect to their relationship with instructional time. Specifically, research on the effects of instructional time have not examined whether and how the risk of dropping out before completing a terminal degree nor the risk of repeating a grade change in response to changes in the length of the instruction.

Double-Shift Schooling

One particularly marked change in instructional time – a point at which particular insight on its effects might be gained – is when educational systems eliminate practices such as "double-shift schooling." Double-shift schooling (*media jornada*) was a strategy designed in the late 1960s in Colombia as a strategy to increase education enrollment. Similar to programs that were common in many parts of the world at different points in time (e.g., Detroit public schools into the late 1950s (Mirel, 1999), the idea behind it was to increase efficiency in the use of resources (both professors and infrastructure) in order to reach the maximum number of students.

Moreover, there is a growing body of evidence that increasing the length of the schooling period can yield benefits for students (Patall, Cooper, & Allen, 2010). Based upon such research, over the past two decades, a number of countries in Latin America have adopted proposals to lengthen the school day (Gajardo, 1999; Martinic, 1998). For example, a recently published paper based upon results from a natural experiment in Chile reveal that an increase in the school day – from half-day to full-day – resulted in significant gains in academic performance (Bellei, 2009).

The structure of the policy change implemented in Chile in the mid-1990s is very similar to the changes in Colombia that are the basis of our evaluation. In 1996, the Chilean

government implemented a policy to end the practice of schooling in "shifts" – in which two different groups of students attend the same school, one attending in the morning, another in the afternoon – to full school days with students attending all morning and half the afternoon (Bellei, 2009; Cariola, Bellei, & Nuñez Prieto, 2003).

While Colombia has not implemented a change of "*jornada*" at national level, some municipalities have made some changes in this direction. Technically, in the early 1990s there was a law that mandated full-time schooling as a strategy to improve education quality (law 115, 1994); however, the implementation of the law has been very slow and it was actually derogated in 2002 and gave more freedom to school administrators to organize school time instruction depending on the particular needs of municipalities.

As stated, the law specifies the number of hours that students of different grades must spend in school each week. Students in preschool are to receive a minimum of 20 hours of educational instruction each week. Those in primary grades are to receive 25 hours per week, while middle school and high school students are to receive 30 hours. Yet, compliance with the law has been limited and, at present, only 18 percent of students are in "full-time" schooling.

Consequences of Grade Repetition

Research on grade repetition has generally found that repeating a grade in school has negative consequences for the retained student. A recent meta-analysis of studies of repetition's effects concluded that students who are held back a grade have worse academic, socio-emotional, and behavioral outcomes, relative to students who do not repeat a grade (Jimerson, 2001).

Further, many studies have found that grade repetition increases the odds of dropping out of high school. Several analyses have concluded, for example, that retained students are more likely to drop out of high school before graduation than are similar groups of low-achieving students not retained (Alexander, Entwisle, & Dauber, 1994; Brooks-Gunn, Guo, & Furstenberg, 1993; Cairns, Cairns, & Neckerman, 1989; Eide & Showalter, 2001; Jimerson, 1999). Moreover, a number of studies have concluded that one of the best predictors for leaving school before graduation is prior grade repetition and the subsequent condition of being overage for grade (Grissom & Shepard, 1989; Roderick, 1993; Rumberger & Larson, 1998).

In addition to having higher odds of dropping out, those who have been retained have significantly lower odds of post-secondary enrollment than those never held back (Fine & Davis, 2003; Jimerson, 1999). Repetition has also been shown to be associated with lower future earnings and poorer employee competence ratings than poor performing, but non-retained, students (Eide & Showalter, 2001; Jimerson, 1999).

Lastly, existing research on behavior problems following grade repetition, though sparse, suggests that there may be adverse effects of repetition, although they are not as strong as the effects on academics (Jimerson, 2001). For example, repetition has been associated with poorer emotional health and more behavioral problems such as aggression in the long term (Jimerson et al., 1997; Jimerson & Ferguson, 2007; Meisels & Liaw, 1993). A comparison of children retained between kindergarten and third grade to similarly low achieving peers found that at age 16, those who were retained were rated as lower in emotional health by their teachers, net of initial differences in their social adjustment (Jimerson, et al., 1997). Interestingly, this difference was not evident one year after the promotion. In another study, children who were retained before sixth grade demonstrated

higher levels of anxiety, inattentiveness and disruptiveness at ages 10-12 than other

children (Pagani et al., 2001). Results for anxiety and inattentiveness were particularly

pronounced for children retained early in grade school, such that their symptoms were

stronger even than those children who had just been retained.

Consequences of Dropping Out of School before Graduation

The negative effects of dropping out of school are well documented (Cairns &

Cairns, 1994). The most immediate consequence of dropping out of school is the

disruption in the accumulation of human capital. School dropouts have less favorable

outcomes in the labor market in terms of employment and wages (Sum, Fogg, & Mangum,

2000). They are also more likely to become single parents (Sum, Khatiwada, &

McLaughlin, 2009) and to participate in unhealthy or delinquent behaviors (Sweeten,

Bushway, & Paternoster, 2009; Townsend, Flisher, & King, 2007).

In the developing countries context, where dropping out starts occurring many years

before graduation, leaving school without completing even and intermediate level of

schooling is a pathway towards poverty and its intergenerational transmission (Morán,

2003).

Research Questions

Based upon previous research about the effects of time in school on student

outcomes, in this analysis we examine the effects of a structural change in the educational

system in Colombia. Specifically, we want to know whether and to what extent the changes

in educational outcomes as a result of the change in educational structure. We have chosen

two outcome measures that have not been examined in previous research on the effects of

length of schooling: grade repetition and early school dropout. As mentioned above, both have been identified in previous research as markers of previous and future educational difficulties, ones that significantly influence educational trajectories (Rumberger and Lim 2008; Jimerson 2001). We examine three related research questions in our analysis:

- What is the effect of one-shift schooling (*jornada completa*) on early school dropout?
- What is the effect of one-shift s*chooling (jornada completa*) on grade repetition?
- What are the mechanisms that explain such effects?

Data and Methods

We use panel data on Colombian children in public schools in 2007 and 2008. Provided by the Ministry of Education, these data have unique identifiers for every child in the public school system, allowing us to track every child over time and to detect dropout and grade repetition. Moreover, the unique identifiers allow us to merge these educational data to data from a household national survey that is used to target social programs (SISBEN[1]).

By doing so, we were able to identify the households of children in the educational data, and therefore construct unique household identifiers. In our analysis, we seek to exploit the fact that there is variation within some households in the form of schooling that different children experienced. We estimate a causal effect by examining households with at least two children, at least one of whom experienced half-day schooling in the early years

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[1] Identification System of Potential Beneficiaries of Social Programs (*Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales*). The SISBEN is a score based on a survey of socio demographic household characteristics used to focalize public policy programs in Colombia.

and another who experienced full-day schooling. This estimation strategy fixes household resources, allowing us to better isolate the effect of schooling differences.

In order to understand more in-depth our quantitative results, we complement our analysis with a qualitative case study comparison of two municipalities in Colombia with distinct socio-economic conditions. In each municipality we selected two schools for the case study comparison, one school with extremely high dropout rates and another with low dropout rates.

Causal estimation strategy

One of the main challenges in estimating the effects of double-shift on schooling is that the characteristics of children (and parents) from double-shift schools are different from those of full-shift schools. Many of these characteristics are unobserved, such as expectations from schooling, motivation or ability. The data we were able to assemble has unique identifiers of households (parents). Since we have all children who were in public schools in 2007 and 2008, we were able to identify pairs of siblings and estimate family-fixed-effect models. Family-fixed effects models account for unobserved characteristics at the family level that do not vary over time and therefore give a better estimate of the effect of double-shift on education outcomes.

The estimated model is

$$p(Y_{ifst} = 1) = \beta X_{ijs(t-1)} + \theta T_{ijs(t-1)} + \gamma S_s + \alpha_f + \varepsilon_{ift}$$

where p_{isft} is the probability of dropping out of school or repeat a grade in year t, $X_{ifs(t-1)}$ are child characteristics, S_s are school characteristics, and α_f are family fixed effects and

$T_{ifs(t-1)}$ is a dummy for one-shift schooling. The coefficient of interest is θ, which captures the effect of the double-shift on school outcomes.

Child characteristics include gender, age, whether or not the child belongs to an ethnic group, whether or not the child has a disability, whether or not the child is victim of the internal conflict and whether or not the child comes from another municipality. School characteristics include whether or not the school is located in an urban area and the teaching methodology (new school, etnoeducation or other). Household characteristics include education of the household's head and socioeconomic strata.

To complement the analysis and in check for robustness of results, we also apply an instrumental variable estimation. We use as instrument the slots available for full-time schooling at the municipality level. The main assumption is that the percentage of slots available for full-time schooling affect the probability of having full-time schooling (our treatment variable) but does not affect directly the probability of dropping out or repeating a grade.

Qualitative approach

The goal for the comparative case studies was to understand mechanisms behind early school dropout drawing on the experiences of children, parents and teachers associated with schools that differed substantially in their dropout rates. To this end, we drew upon administrative data and selected the sites for the case studies following a three-step selection procedure. First, all municipalities in the country were clustered into a high poverty or low poverty group based on the Unmet Basic Needs Index (median split of the distribution). As the second step, we selected municipalities with the 10% highest variance

in dropout rates in each group. This ensured that extreme cases (low vs. high dropout

schools) were identifiable within the municipality. One municipality was randomly selected

from each group (Pereira for low poverty case; Corozal for high poverty).   Finally, we

randomly selected one school from the top and one from the bottom 10% of the dropout

distribution for each municipality. Thus, the four school case studies represent: (1) a high

dropout school within a high poverty municipality (HPHD); (2) a low dropout school

within a high poverty municipality (HPLD), (3) a high dropout school within a low poverty

municipality (LPHD); and (4) a low dropout school within a low poverty municipality

(LPLD). We conducted focus groups with students enrolled in first and second grade,

parents of those students, and first and second grade teachers. In addition, we interviewed

school principals or academic coordinators. All focus groups and interviews were audio

recorded and transcribed verbatim. The text files were imported into AtlasTi. Version 5.6.

and coded for thematic analysis.

Results

Table 1 presents the descriptive statistics of our analytic sample. On average,

children attending half-day school are more likely to belong to an ethnic group, be a

conflict victim and come from another municipality than children attending full-day

schooling. In terms of households characteristics, children attending half-day school are

more likely to live in a household where the head of household has a high school degree

and more likely to belong to socioeconomic strata one (second to lowest) than those in full-

day. This may be a counterintuitive result because one might expect that more educated

parents would look for a full-day program. It is important to remind here that this is a

sample of only public schools. Therefore, what this suggests is that within the public-schools system, attending a full-day of half-day school is not always a "choice".

Table 2 shows school characteristics by length of school-day offered. On average, half-day schools are more likely to be located in urban areas and more likely to offer traditional methodologies of instruction, as opposed to "new school[2]" methodologies that are implemented mostly in rural areas. Also, half-day schools are more likely have teachers with college or masters degrees but, in contrast, have higher student-teacher ratios.

Tables 3 and 4 present the estimates of the effects of full-time schooling on school dropout and repetition using the siblings sample. The first column present OLS estimates controlling for child and household characteristics, the second column adds as control variables school characteristics and the third and fourth columns present models adding municipality and household fixed effects respectively. Our preferred model is model 4 because it includes school characteristics and, by using household fixed effects, takes into account unobserved characteristics of households and therefore the endogeneity that could emerge from the fact that parents preferences affect the probability of attending a full-day program.

Full-day schooling has a negative (desirable) effect both on early dropout and grade repetition. One-day schooling reduces early school dropout by 2.3 percentage points. Also, full-day schooling has a positive effect on reducing grade repetition by 1.7 percentage points.

New school or *Escuela Nueva* was implemented in the late 1970s in rural areas as a strategy to impart primary education in low density areas where one teacher per grade is not possible. The core of the strategy was to have flexible curriculum , cooperative learning, teacher training and instruction in a multi-grade setting (one or two teachers for several grades) (Colbert, 1999).

Table 5 presents IV estimate results. Consistent with the household fixed-effects analysis, we find that full-day schooling reduces drop-out and repetition. However, the point estimates are smaller for dropout (1.8 percentage point reduction) and larger for grade repetition (4.4 percentage points reduction).

Qualitative results

Results from the qualitative case study comparisons shed some light on the mechanisms possibly underlying the effect of full time vs. part time schooling on school dropout on first and second graders. We identified school-related and family-related mechanisms that suggest ways in which the length of the school day schedule might influence children's permanence in the school system. The first mechanism relates to the constrained use of the physical learning environment in part-time schools and its consequences on pedagogy. The second mechanism centers on greater availability of adult supervision, academic guidance and socio-emotional support in full-time schools. In this section, we describe qualitative findings that offer plausible explanations about the mechanisms by which double-shift schools may have a negative effect on first and second graders permanence in the school system.

During the field site visits and through teacher focus groups we found that limitations in the use of the physical learning environment in part-time schools constitute a plausible mechanism by which students in double-shift school are more likely to repeat a grade or dropout. We observed that elementary and high school students in part-time schools share the same classrooms in alternating shifts (morning/afternoon). In double-shift schools, the classroom set-up needs to be open and flexible in order to accommodate

children of various grade-levels all year round. These types of classrooms were striking in their lack of "identity". Children's work in the walls, reference materials, library corners, instructional poster boards, or welcoming messages were absent in these classrooms. Since students in these schools share the classroom space with students from other grades, they do not have an opportunity to take ownership of their learning environment or have access to educational resources appropriate for their grade level. These limitations in the use of the classroom space pose serious challenges for teachers to use the physical environment productively towards learning goals. It is known from the educational literature that the infrastructure and the characteristics of the physical space influence students' learning, attitudes and behavior (Durán-Narucki, 2008; Morrow, 1990; Tanner, 2008). During the early elementary years, children's access to a rich literacy environment is crucial for their academic achievement. Studies have shown that classrooms that provide access to stimulating literacy materials facilitate students' vocabulary growth and afford the teacher with a variety ways to exploit instructional strategies that help compensate the effects of low literacy-environment in the home (Snow, Barnes, Chandler, Goodman, & Hemphill, 1991). Therefore, the constrained use of the physical learning environment in part time schools is likely to have an effect on school dropout through its negative effect of students' academic achievement and school engagement.

The second mechanism we identified is related to more instructional time, and greater availability of adult supervision, academic guidance and socio-emotional support in full-time schools. Parents' and teachers' discourse in the focus groups revealed that first and second grade teachers play an important subsidiary care-taker role for their children. Teachers are not only expected to deliver academic instruction, but also to provide socio-

emotional support, to transmit values and moral standards and to provide adult supervision during non-parental care hours. Teachers in part time schools expressed their concern for children of single working mothers (the majority), particularly, for their lack of homework support and academic guidance. After their part-time school shift, many of these students stay unsupervised at home or under the care of neighbors or grandparents who are rarely in capacity to provide adequate academic support. In full-day schools, the extended instructional time and adult supervision seems to have a positive effect of students' school permanence by leveraging children's social capital, increasing their sense of belongingness to a learning community and compensating (to some extent) for the unavailability of parental supervision and academic support at home.

Conclusions

Full-day schooling has a positive effect both on early dropout and grade repetition. Full-day schooling reduces early school dropout by 1 to 2 percentage points. This represents an effect size of 10% to 20%, suggesting that is a potential intervention for reducing school dropout. Also, we find that full-day schooling reduces grade repetition by 2 to 5 percentage points. Our findings are consistent with previous evidence in Colombia and Chile on the positive effects of full-day (*jornada complet*a) on high school test scores (Bellei, 2009; Bonilla, 2011).

The debate of whether or not grade repetition is a desirable policy still remains (Manacorda, 2010). Proponents of grade repetition policies may argue that the threat of repeating a grade is an incentive for students' academic performance and that students who

fail to meet achievement standards for a given grade may benefit from additional instruction in order to match their peers on curricular content and skills On the other hand, such policies add burden and cost to the school system and may compromise students' self-efficacy and socio-emotional adjustment. Evidence from this study suggests that full-time schools reduce the likelihood of school repetition which also represents an important risk factor for school dropout among Colombian children (Pardo & Sorzano, 2004), as it has also been shown in Uruguay (Manacorda, 2010).

We also explore possible mechanisms of the effects of double-shifting using qualitative case study comparisons and find two main mechanisms: (1) the constrained use of the physical learning environment in part-time schools, which is particularly important for young children, and (2) compensatory effects of adult supervision, academic guidance and socio-emotional support in full-day schools.

In terms of policy implications, Colombia is a middle-income country that can afford the implementation of full-day schooling (at least gradually, as Chile did). One argument against the implementation of such policy can be that the operational costs will double because of hiring of new teachers. However, at least in the Colombian context, this will not be the case because both "*jornadas*" are served by different groups of teachers. Therefore a change to full-day instruction may imply a small salary increase for current teachers' longer hours of instruction, but it will not entail hiring twice as many teachers.

Another argument against the implementation of full-day schools is that to keep enrollment at the same level, there is a need to invest in school infrastructure or to increase classroom seize (more students per classroom). A higher student-teacher ratio may not be

in favor of student learning. However, it can be complemented with a strategy to incorporate low cost teaching aides in larger classrooms and make it financially viable. As per the need to invest in infrastructure, not all schools that offer "double-shift" have two shifts in the same school (Bonilla, 2011) so there is already the infrastructure to change at least some of the schools to full-day

One limitation of our study is that we have a sample of public schools and elementary grades only. Thus, we cannot extrapolate our results to the entire school system. Future research should incorporate private schools into the analysis as well as all grades. We expect that for higher grades the effects on dropout may be even higher because adolescents have higher opportunity costs (more opportunities in the labor market) and are exposed to more risks (for example, higher exposure to gangs or "*pandillas*") in the hours that they are not attending school.

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Table 1. Descriptive statistics: sample of children enrolled in primary school in 2007 with at least one sibling

	Length of school day	
	Full day	**Half-day**
Child characteristics		
Girl	47.66	47.56
Belongs to an ethnic group	2.30	7.20
Age	6.09	6.16
Has a disability	0.68	0.53
Conflict victim	0.81	2.02
Comes from another municipality	2.64	3.54
Household characteristics		
Household's head education		
No education	13.77	12.92
Primary	72.04	58.55
High school	13.20	27.00
Higher education	0.99	1.53
Socioeconomic strata		
0 (lowest)	25.75	20.36
1	26.37	43.78
2	43.98	30.73
3 or more	3.91	5.12
Number of siblings in the household		
2	56.67	61.82
3	26.81	25.47
4 or more	16.52	12.71
Urban area	29.21	64.47
	997,389	
Number of children		

[a] n= 696,889
[b] n =588,643

Table 2. School characteristics by length of school day offered –sample of children with at least one sibling-

	Full-day	Half-day		
		All	Morning	Afternoon
Urban area	10.22	30.92	24.00	82.16
Teaching				
Traditional	23.92	60.53	55.76	95.81
New school	74.12	34.20	38.52	2.20
Etno-education	1.91	4.98	5.48	1.32
Other	0.06	0.29	0.24	0.66
Educational level offered by school				
Preeschool	60.13	64.46	64.75	62.33
Primary	92.31	85.73	86.84	77.53
Middle-school	31.27	54.81	94.71	49.42
High school	16.79	43.06	37.09	87.22
All grades (primary through HS in the same school)	24.87	40.73	36.44	72.47
Number of teachers				
Preeschool	0.36	0.58	0.53	0.97
Primary	1.48	2.42	2.23	4.16
Middle-school	3.10	5.02	4.81	5.96
High school	2.10	3.00	2.75	3.92
Teachers educational level (%)				
High school degree	9.64	13.67	14.99	3.85
Pedagogy high school degree	26.10	10.96	12.06	2.85
Pedagogy technical degree	2.89	2.54	2.57	2.27
College degree	47.33	55.47	54.92	59.52
Masters degree or more	14.04	17.35	15.46	31.29
Number of students				
Preeschool	27.92	53.60	46.86	104.97
Primary	72.17	164.04	140.12	366.28
Middle-school	150.31	281.37	252.94	391.31
High school	86.50	128.22	115.66	168.90
Student /teacher ratio				
Primary	42.61	96.75	81.32	206.78
Middle-school	68.69	133.19	104.95	215.13
High school	48.62	84.10	77.65	98.81
N	1,781	3,813	3,359	454

Table 3. Effects of full-time schooling on early school dropout

	(1)		(2)		(3)		(4)	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Full time schooling	-0.037***	(0.001)	-0.036***	(0.001)	-0.017***	(0.002)	-0.025***	(0.007)
Child characteristics								
Girl	0.019***	(0.001)	0.019***	(0.001)	0.020***	(0.001)	0.022***	(0.002)
Belongs to an ethnic group	0.030***	(0.002)	0.026***	(0.002)	-0.024***	(0.003)	-0.009	(0.010)
Age	0.065***	(0.000)	0.065***	(0.000)	0.066***	(0.000)	0.078***	(0.000)
Has a disability	-0.049***	(0.006)	-0.050***	(0.006)	-0.049***	(0.006)	-0.059***	(0.013)
Conflict victim	0.001	(0.003)	-0.001	(0.003)	-0.004	(0.003)	-0.001	(0.009)
Comes from another municipality	-0.005*	(0.002)	-0.007*	(0.002)	0.008*	(0.003)	0.010+	(0.006)
Household characteristics								
Household's head education (omitted: no education)								
Primary	0.006***	(0.001)	0.007***	(0.001)	0.015***	(0.001)		
High school	0.025***	(0.002)	0.027***	(0.002)	0.034***	(0.002)		
Higher education	0.074***	(0.004)	0.076***	(0.004)	0.077***	(0.004)		
Socioeconomic strata (omitted: 0 (lowest))								
1	0.009***	(0.001)	0.008***	(0.001)	0.008***	(0.001)		
2	0.009***	(0.001)	0.010***	(0.001)	0.026***	(0.001)		
3 or more	0.000	(0.002)	0.006*	(0.002)	0.036***	(0.002)		
School characteristics								
Urban area			-0.003*	(0.001)	0.008***	(0.001)	-0.009	(0.007)
Teaching methodology (omitted: Traditional)								
New school			-0.004*	(0.001)	-0.004*	(0.002)	-0.042***	(0.005)
Etno-education			0.014*	(0.005)	0.019*	(0.006)	0.016	(0.020)
Other			0.101***	(0.007)	0.109***	(0.007)	0.088***	(0.016)
Educational level offered by the school								
Preschool			-0.001	(0.001)	0.002	(0.002)	0.011	(0.008)
Primary			-0.057***	(0.010)	-0.078***	(0.011)	-0.169***	(0.039)
Secondary			-0.027*	(0.010)	-0.079***	(0.011)	-0.150***	(0.039)
High School			-0.012***	(0.002)	-0.000	(0.002)	-0.017+	(0.010)
All grades (primary through HS in the same school)			0.053***	(0.010)	0.078***	(0.011)	0.166***	(0.039)

Table 3 (cont). Effects of full-time schooling on early school dropout

Number of teachers in each education level							
Preschool	-0.004***	(0.001)	-0.003*	(0.001)	0.003	(0.004)
Primary	0.000+	(0.000)	0.000	(0.000)	-0.001	(0.001)
Secondary	0.001***	(0.000)	-0.000	(0.000)	-0.000	(0.001)
High School	-0.002***	(0.000)	-0.000	(0.000)	-0.001	(0.001)
Teachers educational level (%)							
High school degree	0.000	(0.000)	0.000	(0.000)	0.001	(0.003)
Pedagogy high school degree (*normalista*)	-0.000	(0.000)	0.000	(0.000)	0.001	(0.003)
Pedagogy technical degree	0.000	(0.000)	0.000	(0.000)	0.001	(0.003)
College degree	0.000	(0.000)	0.000	(0.000)	0.001	(0.003)
Masters degree	0.000	(0.000)	0.000	(0.000)	0.001	(0.003)
Number of students by education level (/100)							
Preschool	0.010***	(0.001)	0.003*	(0.001)	-0.005	(0.005)
Primary	-0.002***	(0.000)	-0.000	(0.000)	-0.000	(0.001)
Secondary	0.001***	(0.000)	0.001*	(0.000)	0.001	(0.002)
High School	-0.007***	(0.001)	-0.001+	(0.001)	-0.001	(0.003)
Teacher/student ratio (*10)							
Preschool	0.094*	(0.039)	0.041	(0.042)	-0.098	(0.240)
Primary	0.045+	(0.024)	0.018	(0.025)	-0.104	(0.131)
Secondary	0.109*	(0.035)	0.118*	(0.038)	0.143	(0.197)
High School	0.103***	(0.020)	0.095***	(0.023)	0.122	(0.118)
Municipality fixed effects					X		
Household fixed effects							X
Number of schools	5,541		5,541		5,541		5,541
Number of children (with at least one sibling)	997,389		997,389		997,389		997,389

Table 4. Effects of full-time schooling on early grade repetition

	(1)		(2)		(3)		(4)	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Full time schooling	-0.046***	(0.001)	-0.065***	(0.001)	-0.012***	(0.002)	-0.014+	(0.009)
Child characteristics								
Girl	-0.038***	(0.001)	-0.037***	(0.001)	-0.037***	(0.001)	-0.041***	(0.002)
Belongs to an ethnic group	0.076***	(0.002)	0.057***	(0.002)	-0.008*	(0.004)	-0.007	(0.014)
Age	0.002***	(0.000)	0.002***	(0.000)	0.001***	(0.000)	-0.007***	(0.001)
Has a disability	0.067***	(0.007)	0.067***	(0.007)	0.071***	(0.007)	0.075***	(0.017)
Conflict victim	0.001	(0.003)	0.007*	(0.003)	0.006+	(0.003)	0.008	(0.012)
Comes from another municipality	0.003	(0.002)	-0.000	(0.002)	0.004	(0.002)	0.002	(0.007)
Household characteristics								
Household's head education (omitted: no education)								
Primary	-0.044***	(0.001)	-0.038***	(0.001)	-0.026***	(0.001)		
High school	-0.084***	(0.002)	-0.065***	(0.002)	-0.054***	(0.002)		
Higher education	-0.102***	(0.003)	-0.083***	(0.003)	-0.082***	(0.003)		
Socioeconomic strata (omitted: 0 (lowest))								
1	-0.025***	(0.001)	-0.016***	(0.001)	-0.019***	(0.001)		
2	-0.062***	(0.001)	-0.046***	(0.001)	-0.029***	(0.001)		
3 or more	-0.089***	(0.002)	-0.065***	(0.002)	-0.033***	(0.002)		
School characteristics								
Urban area			-0.032***	(0.001)	-0.020***	(0.001)	-0.021*	(0.010)
Teaching methodology (omitted: traditional)								
New school			-0.000	(0.002)	0.015***	(0.002)	0.019*	(0.006)
Etno-education			0.003	(0.006)	0.023*	(0.007)	-0.011	(0.030)
Other			-0.058***	(0.007)	-0.050***	(0.007)	-0.057*	(0.026)
Educational level offered by the school								
Preschool			-0.015***	(0.001)	-0.005***	(0.002)	-0.006	(0.010)
Primary			-0.003	(0.007)	-0.004	(0.008)	-0.031	(0.039)
Secondary			-0.001	(0.007)	-0.019*	(0.008)	-0.058	(0.040)
High School			-0.018***	(0.002)	-0.010***	(0.002)	0.007	(0.013)
All grades (primary through HS in the same school)			0.004	(0.007)	0.007	(0.008)	0.047	(0.039)

Table 4 (cont). Effects of full-time schooling on early grade repetition

Number of teachers in each education level							
Preschool	-0.002*	(0.001)	-0.003***	(0.001)	-0.008+	(0.004)	
Primary	-0.001***	(0.000)	0.001*	(0.000)	0.001	(0.001)	
Secondary	0.001***	(0.000)	-0.000***	(0.000)	0.000	(0.001)	
High School	-0.002***	(0.000)	-0.000	(0.000)	-0.000	(0.001)	
Teachers educational level (%)							
High school degree	0.001***	(0.000)	0.001*	(0.000)	-0.001	(0.003)	
Pedagogy high school degree (*normalista*)	0.001*	(0.000)	0.001*	(0.000)	-0.002	(0.003)	
Pedagogy technical degree	0.001+	(0.000)	0.001	(0.000)	-0.002	(0.003)	
College degree	0.001*	(0.000)	0.001*	(0.000)	-0.002	(0.003)	
Masters degree	0.001	(0.000)	0.001+	(0.000)	-0.002	(0.003)	
Number of students by education level (/100)							
Preschool	0.009***	(0.001)	0.002*	(0.001)	-0.000	(0.006)	
Primary	-0.001***	(0.000)	-0.001*	(0.000)	-0.002	(0.002)	
Secondary	0.002***	(0.000)	0.000	(0.000)	0.002	(0.002)	
High School	-0.006***	(0.001)	0.002*	(0.001)	-0.004	(0.004)	
Student/Teacher ratio							
Preschool	0.067	(0.042)	-0.041	(0.045)	0.254	(0.328)	
Primary	0.136***	(0.027)	-0.099***	(0.030)	-0.024	(0.150)	
Secondary	0.378***	(0.038)	0.145***	(0.040)	0.021	(0.278)	
High School	0.066*	(0.022)	0.027	(0.024)	-0.072	(0.174)	
Municipality fixed effects			X				
Household fixed effects					X		
Schools N	3,826		3,826		3,826		3,826
Siblings N	671,787		671,787		671,787		671,787

Table 5. Instrumental variable estimation. Instrument: % of students on full time schooling at municipality

	Drop out				Grade repetition			
	IV		IV + Departamental fixed effects		IV		IV + Departamental fixed effects	
Full time schooling	-0.061***	(0.001)	-0.018***	(0.001)	-0.087***	(0.001)	-0.044***	(0.001)
Child characteristics								
Girl	0.013***	(0.001)	0.014***	(0.001)	-0.034***	(0.001)	-0.033***	(0.001)
Belongs to an ethnic group	0.031***	(0.002)	0.019***	(0.002)	0.063***	(0.002)	0.047***	(0.002)
Age	0.060***	(0.000)	0.061***	(0.000)	0.003***	(0.000)	0.004***	(0.000)
Has a disability	-0.047***	(0.004)	-0.048***	(0.004)	0.067***	(0.005)	0.067***	(0.005)
Conflict victim	0.015***	(0.003)	0.014***	(0.003)	0.015***	(0.003)	0.010***	(0.003)
Comes from another municipality	0.012***	(0.002)	0.020***	(0.002)	0.005*	(0.002)	0.007***	(0.002)
Household characteristics								
Household's head education (omitted: no education)								
Primary	-0.002+	(0.001)	0.007***	(0.001)	-0.034***	(0.001)	-0.026***	(0.001)
High school	0.016***	(0.001)	0.023***	(0.001)	-0.059***	(0.001)	-0.051***	(0.001)
Higher education	0.061***	(0.003)	0.061***	(0.003)	-0.074***	(0.002)	-0.074***	(0.002)
Socioeconomic strata (omitted: 0 (lowest))								
1	0.007***	(0.001)	0.002+	(0.001)	-0.012***	(0.001)	-0.019***	(0.001)
2	0.005***	(0.001)	0.016***	(0.001)	-0.038***	(0.001)	-0.027***	(0.001)
3	0.003*	(0.002)	0.030***	(0.002)	-0.052***	(0.001)	-0.028***	(0.001)
School characteristics								
Urban area	-0.011***	(0.001)	0.000	(0.001)	-0.037***	(0.001)	-0.022***	(0.001)
Teaching methodology (omitted: Traditional)								
New school	0.000	(0.001)	-0.001	(0.001)	0.010***	(0.001)	0.014***	(0.001)
Etno-education	0.009*	(0.004)	0.016***	(0.004)	0.020***	(0.005)	0.027***	(0.005)
Other	0.104***	(0.005)	0.112***	(0.005)	-0.057***	(0.005)	-0.050***	(0.005)
Educational level offered by School								
Preschool	-0.007***	(0.001)	-0.003*	(0.001)	-0.018***	(0.001)	-0.011***	(0.001)

Table 5 (cont). Instrumental variable estimation. Instrument % of students on full time schooling at municipality

	Drop out				Grade repetition			
	IV		IV + Departamental fixed effects		IV		IV + Departamental fixed effects	
Primary	-0.087***	(0.007)	-0.059***	(0.007)	-0.045***	(0.005)	-0.017***	(0.005)
Secondary	-0.057***	(0.007)	-0.046***	(0.007)	-0.048***	(0.005)	-0.031***	(0.005)
High School	-0.013***	(0.001)	-0.007***	(0.001)	-0.015***	(0.001)	-0.009***	(0.001)
All grades (primary through HS in the same school)	0.085***	(0.007)	0.059***	(0.007)	0.047***	(0.005)	0.019***	(0.005)
Number of teachers								
Preschool	-0.006***	(0.001)	-0.005***	(0.001)	-0.002*	(0.001)	-0.002*	(0.001)
Primary	0.000+	(0.000)	0.000	(0.000)	-0.001***	(0.000)	-0.001***	(0.000)
Secondary	0.001***	(0.000)	0.000+	(0.000)	0.000***	(0.000)	-0.000***	(0.000)
High School	-0.002***	(0.000)	-0.001***	(0.000)	-0.001***	(0.000)	-0.000***	(0.000)
Teachers educational level								
High school degree	0.001***	(0.000)	0.001*	(0.000)	0.001***	(0.000)	0.001***	(0.000)
Pedagogy high school degree	0.000	(0.000)	0.001*	(0.000)	0.000+	(0.000)	0.001*	(0.000)
Pedagogy technical degree	0.001*	(0.000)	0.001*	(0.000)	0.000	(0.000)	0.000	(0.000)
College degree	0.000	(0.000)	0.001+	(0.000)	0.000	(0.000)	0.000	(0.000)
Masters degree or more	0.001+	(0.000)	0.000+	(0.000)	0.000	(0.000)	0.000	(0.000)
Number of students								
Preschool	0.017***	(0.001)	0.010***	(0.001)	0.010***	(0.001)	0.004***	(0.001)
Primary	-0.003***	(0.000)	-0.002***	(0.000)	-0.002***	(0.000)	-0.000	(0.000)
Middle-school	0.001*	(0.000)	-0.000	(0.000)	0.002***	(0.000)	0.001***	(0.000)
High School	-0.006***	(0.000)	-0.001+	(0.000)	-0.007***	(0.000)	-0.002***	(0.000)
Student/Teacher ratio								
Primary	0.126***	(0.031)	0.040	(0.031)	0.085*	(0.032)	0.020	(0.032)
Middle-school	0.083***	(0.020)	0.004	(0.019)	0.154***	(0.022)	0.077***	(0.021)
High School	0.180***	(0.027)	0.115***	(0.027)	0.377***	(0.029)	0.314***	(0.029)
Number of schools	3,433				2,300			
Number of children	1,934,058				1,240,101			
WaldTest	270000		310000		40663.70		57907.09	