Parents' aspirations and commitment with education. Lessons from a randomized control trial in a shantytown

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Abstract

This paper documents the impact of an after-school program called *Apoyo Escolar,* sited in one of the most vulnerable neighborhoods of a developing country, Uruguay. The outcomes of interest are academic achievement, behavior at school and grade retention. By a field experiment, we explore the interaction effects of being randomly assigned to an after-school program with an indicator of parent commitment - an unaddressed question in previous literature. We found novel results that should guide policy design. Increasing time spent in safe settings does not guarantee academic success: the after-school program is effective in

improving academic performance when children have committed parents. And students' performance at school is highly correlated with parents' educational expectations. Thus, the interaction between hope, family and after-school for disadvantaged children deserves more attention in policy design.

Keywords: after-school program; poverty; education; impact evaluation; family; parenting

Introduction

The literature on the effects of after-school programs has been growing and receiving increasing attention in recent years. There is mixed evidence concerning its impacts on students' achievements, behavior in the classroom and social skills. Some studies find that after-school children outperform those who do not attend the program (Arbreton et al., 2008; Dumais, 2009; Durlak & Weissberg, 2007; Lauer et al., 2006). Other investigations show that these programs have no effect (Bodilly & Beckett, 2005; Zief, Lauver & Maynard, 2006; Zimmer, Hamilton & Christina, 2010), and some others find that after-school programs have negative effects (Black, Somers, Doolittle, Unterman & Grossman, 2009; Grolnick, Farkas, Sohmer, Michaels & Valsiner, 2007; James-Burdumy, Dynarski & Deke, 2008). One of the reasons behind these mixed findings is that the average effect of these programs could be mixed due to heterogeneity (for instance, Berlinski & Schady, 2015, stress that the impact on child development depends critically on the quality of the program: infrastructure; elements related to health, sanitation and safety; the training and experience of educators; frequency, type and quality of the interactions between children and their educators, between children and their peers, and between educators and parents). Hence, it is important to answer questions related to the in the impact across individuals or groups of individuals. We address this puzzle studying the interaction between the afterschool program and parents' involvement. In a seminal paper, Hoover-Dempsey and Sandler (1995) present a model suggesting that parents become involved in their children education primarily because (a) they develop a personal construction of the parental role that includes participation in their

children's education, (b) they developed a positive sense of efficacy for helping their children succeed in school, and (c) they perceive opportunities or demands for involvement from children and the school. "In most circumstances, parent involvement is most accurately characterized as a powerful enabling and enhancing variable in children's educational success, rather than as either a necessary or a sufficient condition in itself for that success. It absence eliminates opportunities for the enhancement of children's education; its presence creates those opportunities" (Hoover-Dempsey and Sandler, 1995, p. 319). Inspired by these suggestions, we study the influence of heterogeneity in parents' type on the performance of their children at school, by a randomized control trial, exploiting the oversubscription in an after-school program at a highly deprived neighborhood. This present study seeks to contribute to previous literature showing the second follow up of Cid (2014), two years after the intervention.

Cid (2014) showed evidence suggesting that the impact of after-school programs depends on the type of parent.

(i) A *committed type* of parent: they are committed to their children's future well-being through education but live in a poor area because they have had bad luck or made bad decisions and have been unable to escape the slum.

(ii) An *uncommitted type* of parent: they typically show lack of responsibility and conscientiousness, have no great accumulation of cultural capital, have no great aspirations and are uncommitted to the education of their family -maybe the costs of becoming a committed parent are extremely high because of previous

experiences. Being uncommitted is not necessarily their own fault, but usually they show this type due to their highly adverse previous circumstances.

Parents might also face pressure to conform to peer norms and it may influence their type. For instance, parents might have to choose to associate with "committed" parents and adopt their norms, or befriend "uncommitted" parents and adopt their norms to gain acceptance. The "marginal man" hypothesis was employed by Fryer, Khan, Levitt and Spenkuch (2012). This figure is depicted as someone who lives in a bi-cultural environment and is caught between two conflicting cultures thus causing inner conflict. Hence, parents may choose whether to identify with a committed or with an uncommitted type of parent. Type is unobservable, but others can infer an individual's type from their observable choices.

We take the number of books at home as a form of evidence of parents' *commitment*. One may argue that all parents that have decided to send their children to an afterschool program are *committed* parents. But it is not the case in a deeply underprivileged neighborhood like the one we are studying, where public Education is free but it is provided in double shifts schools (one group of children in the morning and a different group in the afternoon). Both *committed* and *uncommitted* parents need to find where to place their children while they are working. Thus, afterschool programs have to cope with both types of parents.

We are aware that the proxy *'More than ten books at Home'* is only a proxy of parent commitment with education. Though we do not rule out the possibility that other omitted factors could be influencing the parent type, previous findings show a positive association between books at home, cultural capital, and parents' aspirations and encouragement to

explore and discuss ideas (e.g., Bourdieu, 1986; De Graaf, De Graaf, and Kraaykamp, 2000; Downey, 1995; Lee and Bowen, 2006; Roscigno and Ainsworth-Darnell, 1999; Teachman, 1987).

To study whether the impact is heterogeneous across parent types we evaluate a program initiated in a shantytown in Uruguay. Since 1997, the Education Center Los Pinos has been developing an after-school program called Apoyo Escolar in a neighborhood that shows one of the highest rates of poverty, school-dropout rates, grade retention, drug abuse and domestic violence in Uruguay. Children attend Apoyo Escolar every day after school and there they have lunch, play sports and receive homework support for five hours. The objective of the program is to improve academic achievement and behavior at school.

The findings of the present study confirm the results of the first follow up (Cid, 2014): we find that the after-school program Apoyo Escolar at Los Pinos is also effective in the second follow up, two years after the intervention, in raising children's school performance and improving behavior for those who have committed parents.

The results of this second follow up provide new insights for policy research. The argument in favor of the correspondence between after-schooling and committed parents is not obvious. Is it a good policy to suggest that parents with a high accumulation of cultural capital or with high commitment should leave their children many hours a day in an after-school program? Wouldn't it be better for those children to remain at home in contact with their *committed parents*? Should policy be directed to the children of *uncommitted parents*?

Another finding of the present research is the high correlation between parents' educational aspirations and the performance of their children at school. Though we do not design an identification strategy to infer a causal relationship, the important correlation between expectations and academic achievements fosters future interventions to explore the role of parents' aspirations on the educational attainment of children living in deprived neighborhoods.

The rest of this paper is structured as follows: section II reviews related literature, section III describes the program and explains the experiment's design, section IV presents the econometric model and results, and section V provide the conclusions and discussion.

Related Literature

Some decades ago, public policy discussion focused selectively on the risks present at out-of-school time or even ignored this time. More recently, there has been an increased interest in viewing out-of-school time as an opportunity for children and adolescents to develop skills and attitudes that may improve and complement achievements gained in formal education. Thus, after-school programs were created with the idea that participation in organized activities would be beneficial for the academic and social growth of young people. These "organized activities" are characterized by structured, regular and scheduled participation, adult-supervision and a focus on skill building. Mahoney, Larson and Eccles (2005) provided an in-depth summary of the underlying theory of after-school programs. They discussed and provided foundations for the hypothesis that participating in these organized activities should facilitate the attainment of age-appropriate abilities, which in turn

would allow the child or adolescent to take advantage of personal and environmental resources that promote positive functioning in the present, reduce the risk for developing problematic behavior and increase the likelihood for healthy adjustment in the future. Zief, Lauver, and Maynard (2006) and Aizer (2004) also offered some mechanisms through which after-school programs could improve outcomes for participants, changing the environment in which young people spend their after school time—for example, increasing time in safe, supervised settings; academic support; participating in enriching activities; creating more positive peer associations; and increasing parental involvement at home and school activities. Turmo et al. (2009) emphasized other positive mechanisms and point to the fact that after-school programs provide pupils with more learning opportunities than the school environment. The hypothesis is that after-school schemes offer a better knowledge-basis for learning than school and home environments only—that is, attending an after-school program may translate into more time spent on homework (quantity of learning) and higher concentration on learning due to professional supervision by the after-school staff (quality of learning). Thus, after-school programs have been hypothesized to improve child behavior and educational achievements.

There is mixed evidence concerning the impact of after-schools on students' achievements, behavior in the classroom and social skills. There are several reasons for these mixed findings, including (i) the possible inexistence of a sequenced set of activities designed to achieve the targeted skill objectives (Apsler, 2009); (ii) the limited duration of the intervention evaluated (Durlak & Weissberg, 2007; Mahoney & Zigler, 2006); (iii) the existence of negative peer associations (Zief, Lauver & Maynard, 2006) that may provide "deviance

training" or may reinforce deviant attitudes and antisocial behavior (Rorie, Gottfredson, Cross, Wilson & Connell, 2011); (iv) children may be more fatigued and act up because they are spending more time away from their households, or could be misbehaving due to programs tolerating behavior for which students would be disciplined during regular school (James-Burdumy, Dynarski & Deke, 2008); (v) the possible low degree of contact with after-school educators (Grolnick, Farkas, Sohmer, Michaels & Valsiner, 2007); (vi) the necessity of staff effectiveness in creating emotional bonds with youth participants (Gottfredson, Cross, Wilson , Rorie & Connell, 2010); (vii) the fact that several other accepted goals of after-school programs (such as positive youth development, parent satisfaction, facilitating work, and peace of mind) were not considered adequately (Mahoney & Zigler, 2006); (viii) the "crossover" condition (also known as "contamination") that usually refers to the inadvertent application of the treatment to the control/comparison group or the inadvertent failure to apply the treatment to people assigned to receive it (Mahoney & Zigler, 2006; Riggs & Greenberg, 2004); (ix) it is not yet clear whether the relationship between attendance rates and after-school outcomes is linear or whether there is a point of diminishing returns after which attendance has a negative effect (Riggs & Greenberg, 2004); (x) it may be not enough to merely decrease children's free time, but rather it may be necessary to explore the type and quality of extracurricular involvement available to today's children (Weisman et al, 2003).

Another explanation not addressed in the literature is that the average effect of after-schools may be mixed because of heterogeneity in parents' type. In previous evaluations of after-school programs the questions related to the variation in their impact across individuals or groups of individuals is left unanswered. There is no precedent on the interaction effect of

attending an after-school program and parent type on children's education in poor or marginal areas.

Program and experiment design

Under the same name "after-school program" there are programs that differ notably in timing, aims, target population, staff qualifications, supplier and neighborhood characteristics (Beets, Beighle, Erwin & Huberty, 2009; Dzewaltowski, Geller, Rosenkranz & Karteroliotis, 2010; Eble et al., 2010; Engels, Gretebeck, Gretebeck & Jiménez, 2005; Gottfredson, Cross & Soulé, 2007; Gottfredson, Gerstenblith, Soulé, Womer & Lu, 2004; Gottfredson et al., 2005; Grolnick, Farkas, Sohmer, Michaels & Valsiner, 2007; He, Linden & MacLeod, 2009; Tebes et al., 2007).

It may be argued that this variability in after-school programs would challenge the external validity of any impact evaluation. Though the existence of this variability is real – as in any educational program that depends on the quality of directors, professors, buildings, activities, community involvement, etc. -, after-school programs show also core characteristics: structured activities, regular and scheduled participation, adult-supervision and an emphasis on skill building. These regularities allow researchers to assess effects in order to contribute to policy discussion. In the present study, we concentrate on the impact evaluation on children's educational achievements of an after-school program that serves primarily low-income students from poorly performing elementary schools.

The program at Los Pinos

The Education Center *Los Pinos* is a non-governmental organization in Casavalle[1], a neighborhood—of shanty towns—on the outskirts of Montevideo that has one of the highest rates of poverty, school dropout rates, grade retention, drug abuse and domestic violence in Uruguay. Shanty towns are deprived urban areas—developed as irregular settlements—, where people build their precarious houses in illegally appropriated land. The number and extension of shanty towns increased exponentially in the 1990's, especially in Montevideo, Uruguay's capital. In 1998, the number of shanty towns in Montevideo reached the figure of 348, with 132400 inhabitants – 11.5 % of Montevideo's population (Amarante & Caffera, 2003). In 2011, after seven years of significant growth in GDP, Montevideo still held 332 shanty towns with 112101 inhabitants (PMB-PIAI, 2011). Though some of the inhabitants of shanty towns come from the interior of the country, most of them are from Montevideo itself due to the higher cost of living in richer areas of the capital, growing social exclusion and unsuitable housing policy. The four main reasons—declared by shanty towns' inhabitants in the middle 1990's—behind the decision to move to these deprived neighborhoods are the formation of a new household, the cost of housing, family breakdown, and evictions from prior housing (Amarante & Caffera, 2003).

Male children between 6 and 15 years old attend the program *Apoyo Escolar* every day after school and there they have lunch, play sports and receive homework support for five hours.

The program focus on boys since its beginning because nearby, just four blocks away from *Los Pinos*, there is a similar program directed to girls that reaches about 300 children: thus, *Los Pinos* has become the natural complement to this other program for girls. In addition,

[1] A set of descriptive characteristics is provided about the neighborhood Casavalle and Montevideo - excluding Casavalle- in the Appendix Section.

the educational strategy of *Los Pinos* includes the intention of helping each child in his singularities: boys seem to have more attention and behavioral difficulties, lower levels of inhibitory control and perceptual sensitivity and are more likely to be diagnosed with attention deficit hyperactivity disorder. The directors of *Los Pinos* have become experienced and familiar with gender differences and their correlation with cognitive and non-cognitive skills (Bertrand and Pan, 2013; Ruigrok, et al., 2014).

About 220 children attend *Los Pinos* daily for five hours and are distributed in different groups by age and school grade. *Los Pinos* also has a computer room where children can improve their computer skills. The program includes sports competitions (mainly athletics and rugby) against private schools from other less under privileged neighborhoods in order to allow them to interact with children from different social backgrounds. In addition, during most of the vacations, children attend *Los Pinos* in the afternoon for recreational activities. Furthermore, twice a year *Los Pinos* organizes three-day trips to the countryside, and also to other cities that they would most likely never visit otherwise. Thus, the aim of the program is not only to improve children's cognitive skills such as their language and math proficiency (they devote at least one hour a day at *Los Pinos* to do school homework in these areas), but also to develop non cognitive skills such as study habits, industriousness, perseverance and self-control.

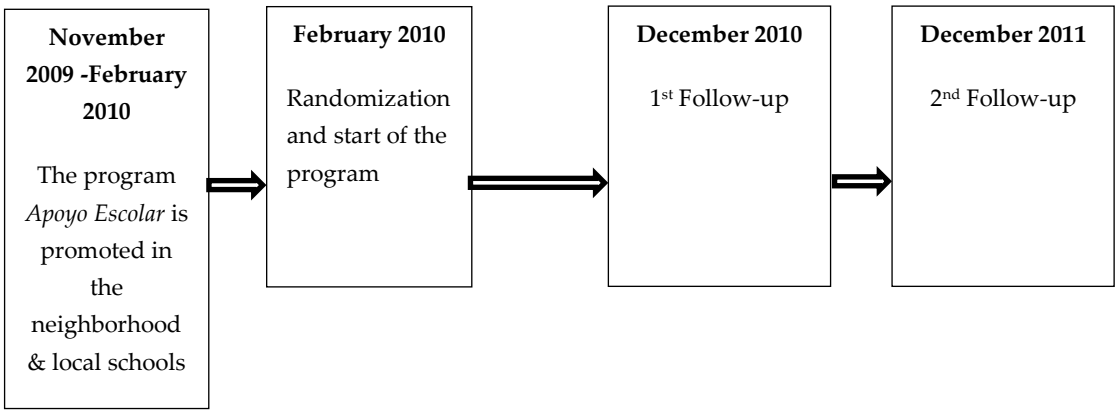
In order to attend *Los Pinos*, each child has to pay ten dollars monthly (the average salary in this neighborhood is 200 dollars per month); if he is not able to afford it, a relative has to help once a week in the cleaning of the building. The remaining funding of *Los Pinos* comes from public funds (20%) and private donors (80%).

The experiment's design and data

In an attempt to evaluate the persistence of previous findings that suggest that the impact of after-school programs depends on parent type, we collected new follow-up data on the same educational outcomes two years after the start of the field experiment.

For the evaluation design we used a randomized trial. The intervention started in March 2010 and the first follow-up took place in December 2010. The second follow-up contains data from the following year, that is, December 2011.

Timeline of the Program and Data Collection



Initially, the after-school program *Apoyo Escolar* was advertised in Casavalle with the aim to find male children starting primary school in 2010.

During November and December 2009 the program was promoted in eight local schools where directors were provided with brochures to distribute among parents. In February 2010, it also was promoted house to house in the neighborhood. At the end of this phase, 54 candidates showed up. All candidates were interviewed with parents or guardian at *Los Pinos* and they completed a baseline survey on children and household characteristics. From this population, 28 applicants were randomly assigned to the treatment group, that is, to the after-school program.

The sequence in the process of randomization was designed to eliminate any likelihood of bias in group assignment. Firstly, a specific period was determined in which parents could apply for the program; then, each candidate and their parents were interviewed; after this period, the randomization was done by a computerized random number generation where each one of the 54 applicants had the same likelihood of being selected to the subject group. The randomization was done independently—the directors of the program had no participation in any part of the randomization—and the sequence was concealed until the assignment occurred (the person enrolling participants did not know in advance if any children would end up in the treatment or control group).

The groups were balanced for eighteen observable characteristics. A necessary condition for the validity of the impact evaluation results is that every pre-treatment characteristic must be balanced between the control group and the treated group (the balancing condition). In principle, randomization renders baseline surveys unnecessary, since it ensures the treatment and control groups are similar. However, there are some reasons why researchers may want to conduct a baseline survey (Duflo, Glennerster, and Kremmer, 2006). First, a baseline survey generates control variables that will reduce the variability in final outcomes and therefore may reduce sample size requirements. Also, they make it possible to examine interactions between initial conditions and the impact of the program. Finally, a baseline survey provides an opportunity to check that the randomization was conducted appropriately, and offers an opportunity to test and refine the data collection procedures.

Table 1 -Pre-treatment characteristics by treatment assignment

	Mean	Min	Max	Treated	Control	Difference	p-value
Age (in months)	76.259	68.000	93.000	75.920 (6.710)	77.740 (7.798)	-1.810	0.359
Grade retention in 2009	0.204	0.000	1.000	0.214 (0.417)	0.222 (0.423)	-0.007	0.944
More than 10 books at home	0.463	0.000	1.000	0.428 (0.503)	0.518 (0.509)	-0.089	0.513

Attended preschool program	0.407	0.000	1.000	0.357 (0.487)	0.444 (0.506)	-0.087	0.517
Mother's first son	0.352	0.000	1.000	0.428 (0.503)	0.259 (0.446)	0.169	0.193
Drugs/alcohol problems at home	0.111	0.000	1.000	0.107 (0.314)	0.111 (0.320)	-0.003	0.963
Some kind of disability	0.389	0.000	1.000	0.357 (0.487)	0.444 (0.506)	-0.087	0.517
Parent unemployment	0.093	0.000	1.000	0.071 (0.262)	0.111 (0.320)	-0.039	0.616
Time from house to los pinos (in minutes)	12.704	1.000	60.000	12.141 (10.490)	13.001 (7.565)	-0.857	0.730
Number of siblings	1.481	0.000	5.000	1.531 (1.290)	1.550 (1.250)	-0.019	0.954
Inhabitants at home	4.593	2.000	8.000	4.600 (1.396)	4.700 (1.409)	-0.096	0.799
Both biological parents	0.463	0.000	1.000	0.392 (0.497)	0.555 (0.506)	-0.162	0.234
Mother's age (in years)	32.389	22.000	59.000	32.280 (8.780)	32.330 (7.021)	-0.047	0.982
Mother's education (in years)	7.019	0.000	14.000	7.100 (2.131)	7.000 (1.818)	0.107	0.842
Wealth index	0.245	0.034	0.599	0.247 (0.127)	0.242 (0.123)	0.004	0.887
School Los Junquillos	0.074	0.000	1.000	0.035 (0.188)	0.111 (0.320)	-0.075	0.290
School 341 Artilleros Orientales	0.111	0.000	1.000	0.107 (0.314)	0.111 (0.320)	-0.003	0.963
School 336 Los Ángeles	0.167	0.000	1.000	0.142 (0.356)	0.222 (0.423)	-0.079	0.454
School 335 Capitán Tula	0.259	0.000	1.000	0.285 (0.460)	0.222 (0.423)	0.063	0.597
Observations	54	54	54	28	26		

Note: Standard deviations are in parentheses.

In December 2010, as a first follow up of this field experiment, Cid (2014) studied the effect of *Apoyo Escolar* on students' academic performance and behavior. Academic performance and behavior in the classroom are measured using official school reports. It is the main source of data that provides educational outcomes for each student. In Uruguay each student attending primary school receives a final school report in December that accounts the gain in academic performance and behavior between March and December (the academic year in Uruguay). Both academic performance and behavior take on values within the interval 1 (Non satisfactory) – 10 (Excellent). In order to pass to a higher grade, each student must

receive at least a 4 (Good) in academic performance. All students that participate in the field experiment attend public schools – in Uruguay the educational system is highly centralized and nearly 90 percent of students attend public schools. Each school must comply with the subjects, contents, time assignments, and schedules of the national curriculum. Children are not allowed to choose their school nor their classroom: the national educational authority assigned the child to a school taking into account the address of the family and the available schools nearby. Thus, self-selection of students into schools and classrooms is not an issue in the present research.

In that first follow-up, Cid (2014) finds no evidence of positive average effects on students' academic performance and behavior at elementary school (see Table 2). By employing the number of books at home as an indicator of parent type, Cid (2014) assesses the influence of heterogeneity in parent type on the performance of their children at school. Cid (2014) found that this particular after-school program is effective in raising children's school achievement and behavior only for those who have committed parents (that is, parents that show commitment to their children's education).

Table 2 – 1st Follow-up findings

A)	**Dependent variable: Index of performance at school**	
	(1)	(2)
Randomly assigned to after-school	0.0437	-0.493
	(0.238)	(0.314)
More than ten books at home		-0.466
		(0.314)
Randomly assigned to after-school x More than ten books at home		1.160**
		(0.458)

Note: Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

B)	**Dependent variable**					
	Number of grade retentions		**Gain in academic performance at school**		**Gain in behavior at school**	
	(1)	(2)	(3)	(4)	(5)	(6)
Randomly assigned to after-school	-0.0483	0.123	0.0833	-0.552	-0.00758	-0.818
	(0.112)	(0.158)	(0.377)	(0.507)	(0.370)	(0.491)
More than ten books at home		0.217		-0.322		-0.741
		(0.160)		(0.507)		(0.491)
Randomly assigned to after-school x More than ten books at home		-0.340		1.450*		1.741**
		(0.225)		(0.738)		(0.716)

Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Note: This Table (both part A. and B.) solely summarizes results from Cid (2014).

For the second follow up, we obtained data on academic outcomes in December 2011. In the baseline survey they had left contact information in order to facilitate future contact. Parents or guardians were interviewed and school records were also obtained. Eleven observations suffered attrition (nine from the treatment group and two from the control group), thus, we had 43 observations. We compared the treatment characteristics between the individuals that have suffered attrition and those students who remain in the treated/control groups and fifteen variables remain balanced (age, grade retention in 2009, and both biological parents at home are unbalanced due to attrition; results are available from authors upon request). Also, as usual in randomized experiments, some of the children originally assigned to the treatment group ended up not being treated, and some of the children originally assigned to the control group ended up being treated. The presence of non-compliant students potentially reintroduces a selection bias, so we employ an intention-to-treat to address this issue.

Econometric Model and Results

The goal of this second-year follow-up study is to determine the causal effect of attending '*Apoyo Escolar'* on children's academic performance and behavior. Formally, we estimate the following equation:

$$Y_i = a + bT_i + e_i$$

where Y_i is one of the outcomes of interest for student i (*Number of grade retentions, Gain in Academic Performance and Gain in Behavior in the Classroom*), T_i is a dummy variable that takes the value of one if the student was randomly assigned to the after-school program and

zero otherwise and e_i is the error term. The intention to treat variable T_i was used in order to address the endogeneity caused by non-compliance. Also,

In Table 3 we define the outcomes used in the paper and present a set of descriptive statistics. None of the students suffer grade retention more than once in the two years of the study. However, nearly 42% of the sample experiences grade retention. With respect to the gain in academic performance at school, we find that, on average, students improve their academic grades by two points. Also, students improve, on average, their behavior in the classroom by 1.7 points.

Table 3 – Descriptive statistics of outcomes of interest

	Definition	Mean	Standard Deviation	Min	Max	Observations
Number of grade retentions	Sum of grade retentions in two years	0.417	0.498	0	1	48
Gain in academic performance at School	Academic performance December 2011 – Academic performance 2009	2.302	1.833	-1	6	43
Gain in behavior in the classroom	Behavior in the classroom December 2011 – Behavior in the classroom December 2009	1.721	1.533	-2	5	43

In Table 4 (columns (1), (3) and (5)) we investigate the intent-to treat estimates of the impact of the after-school program *Apoyo Escolar* on the three academic outcomes. We find that being randomly assigned to the treatment Apoyo Escolar has no statistically significant effect on the gain in academic performance or number of grade retentions. There is a statistically significant effect on the gain in behavior in the classroom, but at the 10% level. The results are similar when we control for the variables that are unbalanced due to attrition (age, grade retention in 2009 and both parents at home; results are available from authors upon

request). Also, our findings are similar when we employ "Academic performance at December 2011" and "Behavior in the Classroom at December 2001" as outcomes, instead of the "Gain in Academic performance" and the "Gain in Behavior" (results are available upon request).

Table 4 – Effects of Apoyo Escolar on specific outcomes – Second follow-up

	Number of grade retentions		Gain in academic performance at school (from the start of the program to the second follow-up)		Gain in behavior at school (from the start of the program to the second follow-up)	
	(1)	(2)	(3)	(4)	(5)	(6)
Randomly assigned to after-school	-0.083	0.117	0.684	-0	0.877*	-0.0909
	(0.145)	(0.195)	(0.559)	(0.775)	(0.456)	(0.599)
Randomly assigned to after-school x More than ten books at home		-0.478*		1.529		2.139**
		(0.282)		(1.126)		(0.871)
More than ten books at home		0.00699		-0.336		-0.559
		(0.198)		(0.745)		(0.576)
Constant	0.458***	0.455***	2.000***	2.182***	1.333***	1.636***
	(0.102)	(0.146)	(0.372)	(0.548)	(0.303)	(0.424)
Observations	48	48	43	43	43	43
R-squared	0.007	0.118	0.035	0.087	0.083	0.219

Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Before the start of the intervention, in an attempt to better understand the program, we interviewed educators at *Los Pinos* and found that they consider parental engagement crucial in children's education to guarantee the positive outcomes sought by the program *Apoyo Escolar*. Moreover, they state that despite their accumulated experience for 13 years at *Los Pinos*, they find the task of measuring "parents' engagement with education" very difficult because it does not seem to be related to observable variables, such as parents' education, the fact of living with both biological parents, or parents' status in the labor market. Taking into account this

qualitative information, proxy variables for parent commitment to education were included in the baseline survey. More precisely, the following four variables were included: i) frequency of parents' attendance at school meetings; ii) frequency of homework revision by parents; iii) frequency of parents and children having lunch/supper together; iv) a dummy variable that takes the value of one if the family reports having more than ten books (different from textbooks and simple magazines) at home (following Brunello, Weber, and Weiss, 2016, we opted for a dummy variable with a cut off of 10 books instead of a continuum of books at home). Among these four variables, only *More than Ten Books at Home* has sample variability.

It could be argued that the availability of books is a measure of income. Higher income families may afford a greater amount of books and might invest properly in nutrition, allowing children to have higher levels of energy and, as a result, better health and higher levels of concentration. To address this issue, we have built a wealth index.

The wealth index is calculated using baseline survey. It provides information on goods in the household such as hot water heater, refrigerator, color television, cable TV service, washing machine, dishwasher, microwave, computer, internet access and automobile for personal use. For each good i, we have constructed a dummy variable d_i that takes the value of one if the service or good is present in the house and zero otherwise. It is defined as: $Wealth\ index = \sum_i[1 - mean(d_i)]d_i / \sum_i[1 - mean(d_i)]$. Therefore, as an indicator or relative welfare, the formula assigned greater weight to those goods or services that were less frequent in households.

When we regress "More than ten books at home" against the wealth index, we find that the latter does not explain the availability of books at home (results are available from the

authors upon request). In this sense, the presence of books at home represents something different to household wealth.

The Programme for International Student Assessment (PISA)—an OECD initiative to evaluate education systems worldwide by testing the skills and knowledge of adolescents—employs books at home as one of several indicators of cultural capital. Students that participate in PISA were asked to estimate the number of books in their home. PISA employs this information as one of the variables that may be correlated with reading literacy and the cultural characteristics of the family. Thus, for PISA, the number of books at home may be one of the factors (others are home educational resources, cultural communication in the home, etc.) that define the early experiences that students receive, their preparation for school, their expectations about school and the value of education, and their familiarity with the kinds of academic language that they will encounter while in school (OECD, 2002).

Therefore, taking this variable as a proxy of parental commitment and engagement with their children's education we estimate the following equation:

$$Y_i = a + b(T_i x M_i) + cT_i + dM_i + e_i$$

where Y_i is any of the outcomes of interest for student i, T_i is a dummy variable that takes the value of one if students were randomly assigned to the after-school program and zero otherwise, M_i is a dummy variable that takes the value of one for the students with more than ten books at home and e_i is the error term. We now focus our attention on the interaction term.

In table 4 (columns (2), (4) and (6)) we explore the effects on each of the three educational outcomes. The coefficients of the interaction terms have the expected signs. Attending an after-school program interacted with the proxy of parents' type reduces the

number of grade retentions and impacts favorably on the gain in academic performance and behavior in the classroom. The interaction variable Randomly Assigned to After-School x More than Ten Books at Home is significantly different from zero at the 5% level on the Gain in Behavior in the classroom and at the 10% level on the number of Grade Retentions. We could not find a significant impact of the interaction term on the Gain in Academic Performance at School. This result may be related with the low statistical power. We obtain similar results when we control for the variables that are unbalanced due to attrition (age, grade retention in 2009 and both parents at home – results are available from authors upon request).

We also evaluate the effect of being randomly assigned to the after-school program interacted with the indicator of parent commitment on an *index* that aggregates information on the three educational outcomes. To construct this summary *index* we followed the procedure used in Kling, Liebman and Katz (2007) and Dal Bó and Rossi (2011). This *index* is defined to be the equally weighted average of z-scores of its components, with the sign of each measure oriented so that more beneficial outcomes have higher scores. The z-scores are calculated by subtracting the control group mean and dividing by the control group standard deviation:

Summary index= (-number of accumulated grade retentions + gain in academic performance + gain in behavior at school)/3, all components calculated as z-scores.

In table 5 (column 1) we find that being randomly assigned to an after-school program has a positive and significant effect on the academic performance – but the coefficient is significant only at the 10% level. It seems reasonable to think that children, who have spent two years in an environment where they are able to study and receive homework support, benefit from the program and develop good habits, and therefore achieve a better performance at school. Column 2 shows that the coefficient of being randomly assigned to *Apoyo Escolar*

interacted with the indicator of parent's type is positive and statistically significant at the 5% level. The size of the overall effect is more than one standard deviation, in comparison with the control group (column 2)—the absolute magnitudes of the indices are in units akin to standardized test scores and thus the estimates show where the mean of the treatment group is in the distribution of the control group in terms of standard deviation units. The results are similar to those we obtain when we control for the variables that are unbalanced due to attrition (age, grade retention in 2009 and both biological parents at home – results are available from the authors upon request).

Table 5 – Effects of Apoyo Escolar on performance at school – Second follow-up

		Index of performance at school
	(1)	(2)
Randomly assigned to after-school	0.533*	-0.0278
	(0.269)	(0.350)
Randomly assigned to after-school x More than ten books at home		1.262**
		(0.508)
More than ten books at home		-0.243
		(0.336)
Constant	0.000	0.131
	(0.179)	(0.247)
Observations	43	43
R-squared	0.087	0.237

Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Taking these results into account, we find that if an after-school program aims to improve the academic performance of students, it should be combined with positive parental attitudes towards cultural capital (as proxied by the number of books at home). Children living in households with lower levels of cultural capital do not benefit on average from the after-school

program. Which factors allow control group students to keep up with treated students with low cultural capital? Though the available data does not allow us to explore these issues, some explanations may be related to challenges in the personal interactions in the afterschool program: the frequency, type and quality of the interactions between children and their educators, between children and their peers, and between educators and parents. In the absence of high quality interactions between key players, the effect of the treatment weakens (Berlinski & Schady, 2015).

In order to foster future research on expectations and academic achievement among vulnerable children, we exploit the availability of data on parents' expectations for their children's education at the end of the year 2011. Our findings suggest that better performance at school is associated with higher educational expectations. There is a significant positive correlation between academic outcomes and educational aspirations. Table 6 shows that parents with higher expectations for their children at the end of the year 2011 have children that perform better at school (lower number of grade retentions, positive gain in school performance and positive gain in behavior at school). Similar results are obtained when we consider the association between academic outcomes and the change in aspirations. In sum, children whose parents have higher educational aspirations or experienced a positive change in their aspirations, perform better at school. This finding may shed light about the importance in taking into account educational aspirations in those who live in underprivileged contexts.

Table 6 – Associations between educational aspirations and academic performance – Second follow-up

	Number of grade retentions		Gain in academic performance		Gain in behavior in the classroom	
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Aspirations at the end of 2011	-0.088**		0.426***		0.198*	
	(0.036)		(0.133)		(0.114)	
Gain in aspirations (from		-0.159**		0.538*		0.303

the start of the program to the second follow-up)						
		(0.0698)		(0.280)		(0.228)
Constant	0.988***	0.292***	-0.599	2.609***	0.357	1.872***
	(0.252)	(0.0793)	(0.960)	(0.318)	(0.823)	(0.259)
Observations	43	41	40	38	40	38
R-squared	0.128	0.118	0.211	0.093	0.073	0.047

Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

We are aware about the possible concern that given the very small sample size, even in the presence of randomization, it would seem unlikely to say much meaningfully about the effect of school programs or the appropriateness of subgroup analysis. Moreover, this sample could make someone worry about our ability to generalize from these results to other settings. It is useful for the cautious reader, but we should bear in mind that we are trying to provide research on a type of population that is inherently difficult to survey and study. We have followed accurately all the issues to guarantee the internal validity, i.e., that the measured impact is indeed caused by the intervention in the sample. Thus, the aim of this research is twofold: (1) it is the second follow-up of a long run assessment of the heterogeneous effects of an after-school program directed to underprivileged children (this second follow-up provides more evidence as a robustness check), and (2) we seek to foster further research on other samples and populations about this novel approach of considering the role played by the type of parent involved.

With reference to the external validity of our experiment, though the sample is limited to children between 6 and 7 years old who attend a primary school in a shanty town, we should remember that the directors of the program do not employ any requirement to allow a candidate to attend the program. Socio-demographic statistics from Casavalle are similar to those from

other surrounding neighborhoods (Intendencia de Montevideo, 2012). Then, it is probable to find children living in shantytowns with similar characteristics to those depicted in Table 1.

Discussion

After-school programs do not produce positive impacts simply by changing the environment in which students spend their time out of school: parental commitment seems to be a pivotal factor, playing a crucial role.

Parent type could affect children´s outcomes through intergenerational cultural transmission. This might explain the determination of preference traits, cultural traits and attitudes towards education. Previous literature on immigration and ethnic capital documents the persistence of "ethnic capital" in second and third generations of immigrants. The existence of similar traits across generations has motivated research on cultural transmission (Bisin & Verdier, 2010). This may be one explanation on how parent type shapes and how it might affect children's educational outcomes.

In order to enhance understanding of processes behind our findings, we should ask the following question. Why do some parents become committed with children's education? Hoover-Dempsey et al. (2005) review work on school and family practices that may strengthen the incidence and effectiveness of parental involvement across varied school settings. The literature reviewed by them suggests that parents' decisions about becoming committed with their children's education are influenced by role construction for involvement (a sense of personal responsibility for the child's educational outcomes), sense of efficacy for helping the child succeed in school (e.g., my involvement helps my child succeed in school), perception of invitations to involvement (from school, teacher, and student), and life-context variables (skills and knowledge, time and energy).

One of the most important findings in this literature is that parents' decisions about involvement are influenced by schools (e.g., I can learn about effective involvement from others; I can contribute to others' knowledge of effective involvement). Specifically, the research suggests that schools may take steps to enhance parents' active role construction and sense of efficacy for helping children learn; and adapt involvement requests and suggestions to the circumstances of parents' life contexts.

"Overall, when schools take steps to motivate parental involvement, they support parents' effectiveness in helping their children learn. Similarly, when school systems attempt to promote teacher and principal contributions to effective parental involvement, they support schools' effectiveness in educating children. The public mandate for the effective education of all citizens would seem to require nothing less than strong school and community efforts to enable the many contributions that parents can make to their children's educational success" (Hoover-Dempsey et al., 2005, p. 124).

In sum, we need to learn more about *what parents do* with their children that contributes to children's learning and educational achievement, and explore *how parents' involvement activities influence* student outcomes. Also, we need to assess approaches to *encouraging parents who have not been involved* in their children's learning to become so.

Conclusions

In this second-year follow-up we evaluate the impact of the after-school program *Apoyo Escolar* in a shanty town using a randomized control trial as the evaluation design. We find no evidence of positive average effects on students' academic performance and behavior at

elementary school. In addition, we explore the interaction effects of being randomly assigned to an after-school program with an indicator of parent commitment - an unaddressed question in previous literature. We find that an after-school program improves children's academic performance and behavior at school when they have parents committed to their offspring´s education, and this effect persists in a second follow up, two years after the intervention.

We also find a positive and significant relationship between parents' educational aspirations and children's educational outcomes. In this line, Dobbie and Fryer (2013) summed up forty years of research on effective policies for school effectiveness, and highlight the importance of a culture of high parental expectations. In addition to previous studies (Arbona, 2000; Zimbardo & Boyd, 1999) that observed correlation between expectations and academic achievements, Sulimani-Aidan and Benbenishty (2011) suggested family support predicts higher positive expectations for education. This conjunction of family, expectations and educational achievements deserves more attention in future research.

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Disclosure of potential conflict of interest

The Authors declare that there's no conflict of interest.

Ethical approval

All the research was performed following the ethical standards.

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Appendix

Mean differences in descriptive characteristics between Casavalle and Montevideo

	Casavalle	Montevideo *	Difference	S.E.	p-value
	(1)	(2)	(3)	(4)	(5)
Demographics					
Age	27.523	38.079	10.557	0.628	0.000
Female	0.520	0.540	0.020	0.013	0.140
White	0.862	0.942	0.080	0.006	0.000
Head of Household works	0.204	0.250	0.046	0.012	0.000
Education					
Currently assists to primary School (6 & 7-year-old children)	0.984	0.987	0.004	0.015	0.805
Drop-out rates of secondary school (between 13 & 18 years old)	0.330	0.143	-0.187	0.028	0.000
Household Characteristics					
Monthly household income (2010 Uruguayan pesos)	21.244	42.124	20.880	2.152	0.000
Number of people in the house	3.608	2.682	-0.926	0.078	0.000
Number of bathrooms in the house	0.995	1.278	0.283	0.032	0.000
Household Wealth Index	0.229	0.276	0.047	0.007	0.000
People per room in the house	2.025	1.450	-0.574	0.038	0.000
Household receives food card from government	0.149	0.033	-0.116	0.009	0.000
Household below the poverty line	0.478	0.133	-0.345	0.018	0.000
Bad floor quality	0.228	0.059	-0.169	0.012	0.000
Electric connection	1.000	0.999	-0.001	0.002	0.469
House has a place to cook	0.889	0.970	0.082	0.009	0.000
General drainage network	0.881	0.982	0.101	0.007	0.000
Potable water network	1.000	0.996	-0.004	0.003	0.197
Owner of the house	0.706	0.585	-0.121	0.025	0.000
Education environment at the house	6.968	10.391	3.423	0.203	0.000

*excluding Casavalle neighborhood. Figures computed at household and individual levels in Montevideo and Casavalle using Continuous Household Survey 2010. Variable educational environment at home is calculated as the average of years of education of members above 18 years old; if there is a household with all of its members below 18 years old, we compute the maximum of the education years as the educational environment. For the construction of the wealth index we consider: water heater, refrigerator, TV, Plasma TV, radio, laundry-machine, cable TV, VCR, DVD, clothes dryer, air conditioner, microwave, dishwasher, PC, laptop, internet, telephone, car, motorcycle.