HOPE AND COMMITMENT.

LESSONS FROM A RANDOMIZE CONTROL TRIAL IN A SHANTY TOWN.

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Abstract

This paper documents the impact of an after-school program called *Apoyo Escolar,* sited in the most vulnerable neighborhood of a developing country. The outcomes of interest are academic achievement, behavior in the classroom and grade repetition. We designed a field experiment exploiting the existence of oversubscription to the program. We found a novel result that should guide policy design for vulnerable children: increasing time spent in safe, supervised settings does not guarantee academic success. The after-school program is effective in improving academic performance when children have committed parents. This finding is crucial for policy because it is not be enough to merely take children off of the streets, parents' commitment is needed. Interestingly, results show that students' performance at school is highly correlated with parents' educational expectations. This correlation fosters future research that may be designed specifically to explore the causal impact of expectations on educational attainment among disadvantaged children.

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

The impact of After-School Programs

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 student's achievements, behavior in the classroom and social skills. Some studies find that after-school children outperform those who do not attend the program. Other investigations show that these programs have no effect, and also others find that after-school programs have negative effects.

Recent evidence provides new explanations for these mixed results. Cid (2011) showed evidence suggesting that the impact of after-school programs depends on the type of parent. One could roughly argue that in a population like a shanty town, one could find two types of individuals, (i) those who live there and represent a *neglectful type* of parent (not necessarily their own fault; but usually due to their highly adverse previous circumstances) —they typically show a lack of responsibility and conscientiousness, have no great aspirations, and are uncommitted to the education of their family—, and (ii) those who are *committed* to their children's future well-being through education but live in that poor area because of bad luck (*committed* individuals who have had bad luck or made bad decisions in their lives and have been unable to escape the shanty town).

Cid takes the number of books at home as a form of evidence of parent commitment and find that the after-school program *Apoyo Escolar* at *Los Pinos* is effective in raising children's school performance and improving behavior for those who have committed parents. Previous findings (Liu & Whitford, 2011) suggested that the presence of books at home might be a measure of a family's cultural capital and a predictor of personal and family habits such as a relative preference for educational activities, parental guide on school

matters, the encouragement to explore and discuss ideas and events, the language employed at home, and parents' aspirations.

To study whether the impact is heterogeneous across parent types we evaluate a program initiated in a shanty town in Uruguay. Since 1997, the Education Center *Los Pinos* has been developing an after-school program called *Apoyo Escolar* in a neighborhood that has one of the highest rates of poverty, school-drop out 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 short term objective of the program is to improve academic achievement and behavior at school; the long term objective is to prevent young adults from entering into crime.

This second follow up is designed as a robustness check of a seminal hypothesis: the hypothesis that impact of an after-school program depends on parents' type. The results 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 responsible and dedicated parents 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 *neglectful parents*?

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

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 is an increased interest in viewing out-of-school time as an opportunity for children and adolescents to develop skills and attitudes that may complement and foster achievements gained in formal education. Thus, after-school programs were created with the idea that participation in organized activities after school would be beneficial for the academic and social growth of young people. These "organized activities" are characterized by structure, 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 problem 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 in home and school activities. Also, 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 experiences

that school provides. The hypothesis is that after-school care schemes offer a better knowledge-basis for learning than school and home environments only—that is, attending an after-school program can mean 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 student's achievements, behavior in the classroom and social skills. Some studies found that after-school children outperform other students (Arbreton et al., 2008; Dumais, 2009; Durlak & Weissberg, 2007; Lauer et al., 2006), others found that they are no different (Bodilly & Beckett, 2005; Zief, Lauver & Maynard, 2006; Zimmer, Hamilton & Christina, 2010) and others found that after-school programs have negative effects (Black, Somers, Doolittle, Unterman & Grossman, 2009; Grolnick, Farkas, Sohmer, Michaels & Valsiner, 2007; James-Burdumy, Dynarski & Deke, 2008).

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 persons 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 can be mixed because of heterogeneity. Hence, it is important to answer questions related to the variation in the impact across individuals or groups of individuals. In particular, we study the influence of heterogeneity in parents' type on the performance of their children at school. In a slum, parents may have faced pressure to conform to peer norms and it may influence their type. For instance, when parents move to a shanty town or slum, they can choose to associate with "committed" parents and adopt their norms, or befriend "neglectful" 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. Thus, each parent may care about popularity/social esteem in their neighborhood and we could assume that social esteem depends on whether or not an individual is an accepted member of his or her peer group. Parents are able to choose whether

to identify with neglectful or committed type parents. Type is unobservable, but others can infer an individual's type from their observable choices.

We employ the number of books at home as a proxy of parent's type. Extensive research has been conducted to examine the relationship between student achievement and home environment such as the number of books. Liu and Whitford (2011) suggested that the presence of books at home may be a measure of family cultural capital and a predictor of personal and family habits such as the relative preference for educational activities over other activities, parents' guidance on school matters, the encouragement to explore and discuss ideas and events, the language employed at home, and parents' aspirations. This cultural capital could in turn guide social mobility and the accumulation of human capital (Korat, Klein & Segal-Drori, 2007; Ngorosho, 2011; Ozkal, Tekkaya, Sungur, Cakiroglu & Cakiroglu, 2011).

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.

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 and VI provide the conclusions and the discussion.

Method

Challenges at the evaluation of an after-school program

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).

Grolnick et al. (2007) examined the effects of an after-school program – "Investigators' Club"- that focused on providing motivation (a self-directed, inquiry-oriented experience) for 7th grade students from a low income neighborhood. Authors evaluated its impact on autonomous motivation, learning goals, school engagement, and performance in science class. Pairs of students were individually matched on sex, race/ethnicity, free lunch status, and science grades and each member was randomly assigned to either a 15 week, after-school program or a control group. Students participating in the program improved in learning goals, engagement in school and in science grades. Gottfredson et al. (2004) examine effects of participation in after-school programs conducted in Maryland during the 1999–2000 school years and the mechanism through which such programs may affect problem behavior.

Results imply that participation reduced risk behavior for middle-school but not for elementary-school aged youths. This reduction was achieved not by increasing time spent supervised or by increasing involvement in constructive activities, but by increasing efforts to avoid risk behavior and positive peer associations. Effects on these outcomes were strongest in programs that incorporated a high emphasis on social skills and character development. Gottfredson, Cross, and Soulé (2007) explored characteristics of 35 after-school programs that criminological research and theory predict should be related to risk behavior outcomes. Several characteristics of the after-school programs were found to be related, as predicted, to victimization, substance use, and delinquent behavior.

The study extended previous findings that providing structured programming and small program size are important for reducing problem behavior through after-school programs. It was also found that two characteristics of the program staff are related to reductions in problem behavior: more and better educated staff and a higher percentage of male staff were related to reductions in levels of risk behavior. The study concludes that program structure, staffing, and size are important in producing more positive behavioral outcomes. Tebes et al. (2007) examined an after-school program that specifically targets substance use attitudes and behavior among urban minority adolescents. This program involves the implementation of an evidence-based 18-session curriculum that teaches substance use prevention skills along with participation in health education and cultural activities. The results showed that adolescents receiving the intervention were significantly more likely to view drugs as harmful at program exit, and exhibited significantly lower increases in drug use one year after beginning the program. Zimmer, Hamilton, and Christina (2010) examined student achievement in two public-funded after-school programs in Pittsburgh that provide learning opportunities by tutoring and supplemental educational services. Participation data suggested that less than a quarter of all students eligible for these programs take advantage of them and that the participation rates decline at higher grade levels. The analysis also suggested that lower performing students and African-American students were more likely than other students to take advantage of these opportunities. In terms of academic achievements, results were mixed however, from some gains to none at all.

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.

Description of the treatment

The Education Center *Los Pinos* is a non-governmental organization in Casavalle, 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 a land illegally appropriated. 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, Montevideo 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 six 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 from *Los Pinos*, there's 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. Also, 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%).

Participants

In an attempt to evaluate the previous findings that suggest that the impact of after-school programs depends on parent type, we collected new follow-up 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. Figure 1 shows a summary of the timeline of the experiment.

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.

Randomization procedures

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.

Measures and data on outcomes

In December 2010, as a first follow up of this field experiment, Cid (2011) studied the effect of *Apoyo Escolar* on student's 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 reports the variation 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.

In that first follow-up, the author finds no evidence of positive average effects on student's academic performance and behavior at elementary school (see Table 2). By employing the number of books at home as an indicator of parent type, he assesses the influence of heterogeneity in parent type on the performance of their children at school. Cid 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).

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 of the 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.

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, Variation of Academic Performance and Variation of 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.

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 variation 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.

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 variation of academic performance or number of grade retentions. There is a statistically significant effect on the variation of 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).

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. 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:

$$Y_i = a + b(T_i x M_i) + c T_i + d M_i + e_i$$

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 interacting with having parents who are engaged in their children's education reduces the number of grade retentions and impacts favorably on the

variation of 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 Variation of 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 Variation of 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 + variation of academic performance + variation of 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 and 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).

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 a parental commitment to education. These results confirm the findings of the first follow-up at the end of the year 2010 (Cid, 2011).

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 variation in school performance and positive variation in behavior at school). Similar results are obtained when we consider the association between academic outcomes and the variation in aspirations. In sum, children whose parents have higher educational aspirations or experienced a positive variation 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.

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: on one hand, 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, on the other hand, 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.

Discussion

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. This result is in line with previous literature. In addition, we explore the interaction effects of being randomly assigned to an after-school program with an indicator of parent commitment (i.e. the number of books at home). We find that an after-school program improves children's academic performance and behavior at school when they have parents committed to and involved in their offspring´s education.

In other words, after-school programs do not produce positive impacts simply by changing the environment in which students spend their time out of school. Parental commitment is a pivotal factor and given this crucial role, future studies should explore this

issue. 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). Therefore, this might explain how parent type might affect children's educational outcomes.

The relationship between educational aspirations and educational outcomes is worth exploring too. We find that there is a statistically significant positive correlation. This result fosters future research on the role of students' aspirations among vulnerable populations.

Finally, we should bear in mind that this second year follow-up still focuses on short term impacts. However, its results provide an important impulse to continue follow-ups in the long-run and deeper evaluations to unravel the mechanisms behind the positive impacts obtained.

With the aim of providing lessons for future research in areas related to vulnerable populations, we point out some useful issues.

Firstly, eleven children could not be located for the second year follow-up. The presence of attrition is something usual in impact evaluations of programs directed to poor populations. More resources should be devoted since the start of the evaluation to the continuous follow-up of both treatment and control groups. This was an intervention with a small number of candidates participating in the program (n=54). This fact constitutes a threat to the statistical power of the analysis, which may have been reduced by devoting more resources to achieve greater oversubscription and exploiting it in more cohorts.

With reference to the external validity of our experiment, though the sample is limited to children 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.

In this study we considered the variable "More than ten books at home" as the measure of parental commitment because, given the information gathered in the baseline survey, it provided more sample variability. It remains unclear whether books alone are sufficient to explain the educational commitment parents might have with their children. Having more books at home could be a signal of how literate or even intelligent parents are and that this is not explicitly an indicator of parental commitment. However, we found that having more than ten books at home alone is not enough to improve the educational outcomes. In future interventions, it would be useful to explore and include other indicators concerning involvement in children's education. Identifying only committed and neglectful parents is surely a simplistic view of the existing variety of parent types. In regard to further research, we will consider other mechanisms and indicators to describe parental commitment that could allow the introduction to the analysis of a greater variety of parent types.

This second follow-up still focuses on short term impacts. We plan to evaluate mid-term and long-term impacts: how new skills are acquired with time, involvement in criminal activities, drug abuse and participation in higher education. Also, in future interventions we will focus on the evaluation of the diverse features of the after-school program in order to have a better understanding of how the program works and what mechanisms are behind the positive outcomes. In addition, we could implement a follow-up that could allow the study of how after-school programs may change parent type. For instance, collecting information on changes in the number of hours parents help children with homework or the variation in the

number of books purchased could show if parents are more involved or committed in their children's education.

Is it a good policy to suggest that responsible and dedicated parents should leave their children many hours a day in an after-school program placed in a poor neighborhood? Wouldn't it be better for those children to remain at home in contact with their *committed parents*? These questions had no answers before this present research. Our findings argue in favor of further investigation into the interaction effects between after-school programs and parents' type. These findings are promising and suggest that after-school programs are effective in raising children's school achievement when they have committed parents. Our results are particularly novel in light of research documenting the variation of impact of after-school programs across individuals or types of individuals. Additionally, the positive correlation found between parents' expectations and educational achievement will foster research on the role that expectations may play on vulnerable populations.

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	Mean	Min	Max	Treated	Control	Difference	p-value
Table 1 -Pre-treatment characteristics by treatment assignment							
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.

<div align="center">Table 2 – 1ˢᵗ Follow-up findings</div>

A)

	Dependent variable: Index of performance at school	
	(1)	(2)
Randomly assigned to after-school	0.0437 (0.238)	-0.493 (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		Variation of academic performance at school		Variation of behavior at school	
	(1)	(2)	(3)	(4)	(5)	(6)
Randomly assigned to after-school	-0.0483 (0.112)	0.123 (0.158)	0.0833 (0.377)	-0.552 (0.507)	-0.00758 (0.370)	-0.818 (0.491)
More than ten books at home		0.217 (0.160)		-0.322 (0.507)		-0.741 (0.491)
Randomly assigned to after-school x More than ten books at home		-0.340 (0.225)		1.450* (0.738)		1.741** (0.716)

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

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	0.000	1.000	48.000
Variation of academic performance at School	Academic performance December 2011 – Academic performance 2009	2.302	1.833	-1.000	6.000	43.000
Variation of behavior in the classroom	Behavior in the classroom December 2011 – Behavior in the classroom December 2009	1.721	1.533	-2.000	5.000	43.000

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

	Number of grade retentions		Variation of academic performance at school (from the start of the program to the second follow-up)		Variation of 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

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

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

	Number of grade retentions		Variation of academic performance		Variation of 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)	
Variation in aspirations (from the start of the program to the second follow-up)		-0.159**		0.538*		0.303
		(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

Figure 1. Timeline of the program and data collection

| November 2009 -February 2010

The program Apoyo Escolar is promoted in the neighborhood & local schools | February 2010

Randomization and start of the program | December 2010

1st Follow-up | December 2011

2nd Follow-up |