After School Effects on Students' Academic Outcomes: Evidence from Chile

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Abstract

After school care policies have been considered as tool to improve vulnerable student's outcomes. The evidence of after school programs is incomplete and concentrated in developed countries. In this paper, we experimentally evaluate the impact of a publicly run after school program in Chile. We find that the program had on average no effect in academic outcomes (school attendance and grades). However, if the after school program is replacing other forms of non-paternal care, and the programs are of good quality, it positively affects grades, increasing the average GPA in 0.8-1 decimals and the probability of having a GPA above the median in around 10 pp. This evidence is consistent with the importance of the quality of the institutionalized care vs. alternative care in the program impacts.

Keywords: Childcare; randomized control trial; afterschool programs

JEL Codes: J13, I25

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1. Introduction

In efforts to increase the quality of education and/or to improve female access to the labor market, childcare policies have been implemented in several countries, raising global gross enrolment ratio (GER) for preprimary education all over the world, from 33% in 1999 to 54% in 2012 (Shaeffer, 2015).But, from the seminal paper of Baker et al (2008), that finds that a universal subsidized childcare in Quebec for children younger than five years old had a negative impact on children socio-emotional and health outcomes, there is a concern that childcare could have a positive impact on female labor force participation, but a negative effect on their children. This potential trade-off has been usually studied separately, with a strand of the literature focused on the effects on the children (Havnes and Mogstadd (2011, 2015), Cornelissen et al (2017) for example), and another one focused on the labor market impact (Gelbach, 2002; Lefebvre and Merrigan, 2008; Cascio 2009 for example).

The effect of childcare on children's outcome has been intensively studied for infants and to a lesser extent for older children. The evidence on early childhood is not conclusive, but the quality of care and alternative care seems pivotal. For example, Bernal and Keane (2011) find a negative impact of informal childcare on children cognitive outcomes, but not from formal center-based care. Furthermore, Cascio and Schanzenbach (2013) Corneliseen et al (2017), and Havnes and Mogstad, (2011, 2015) find that childcare access has larger impacts on children of low-income families.

Increase in supervised time for school age-children has been studied typically in the form of more instructional time (more days of school per year or longer school hours each day) and in after-school programs (ASP). In the first case, extra hours or days are devoted to academic activities. In the case of ASP, the extra hours could are generally spent on more ludic activities, such as arts, sports and games. This literature also overlaps with that considering the effects of academic remedial programs (for disadvantage kids) or programs whose only focus is to prevent risky behavior. The impact of having longer school days (more hours per day) has been studied in developing countries finding a decrease in teen pregnancy (Berthelon and Kruger, 2011 for Chile), and improvements in both reading and math scores (Bellei, 2009; Berthelon et al, 2016, both for Chile; Hincapie, 2016 for Colombia; Cerdan, 2007 for Uruguay), especially among children from poorer backgrounds. For developed countries, longer school days also had a positive impact on college matriculation rates (Lavy and Scholoser, 2005) and performance in math, English and science (Lavy, 2012) in Israel and had large returns on math scores in Denmark (Jensen, 2013). For Italy, Battistin and Meroni (2015) also find that increasing instruction time has a positive impact on math scores, especially for poorer students.

After School Programs (ASP) are structured programs operating under adult supervision in the schools throughout the academic year. They usually include a variety of activities, such as homework, social activities, snacks, sports, crafts, etc. Impact evaluations of ASP programs are scarce in developing countries. The evidence in developed countries is mixed (Goerlich et al., 2007, Kremer et al., 2015) but points out that more at-risk students seem to

benefit the most from ASPs (Levine and Zimmerman, 2010). It also seems relevant the alternative care that children would have in the absence of the ASP program. The lower the quality of the alternative care, the higher the program impact (Felfe and Zierow, 2012).

In this paper, we report the effects of an after-school program on students' academic outcomes in a developing country. The program was implemented in Chile, and consisted of three hours of care after the school day for children aged between 6 and 13. The intervention provided children recreational activities, time for homework and a snack. There was no direct support for academic activities. We randomly assigned program applicants (mothers) to the program and reported the labor market effects in Martínez A. and Perticará (2017), finding that the program increased labor force participation and female employment. In this paper, we use the same variation to identify the program impact on students' academic outcomes.

On average, ASP had no impact on student school attendance, while only a small effect on grades for physical education. As the literature reports that the alterative care should affect the ASP effects, we study the effect for children that had been using childcare at baseline, before the ASP program started. Consistent with the literature, we find that for those children, the program increased grades (art, physical education and average GPA) and the probability of being above the median of the grade distribution. Furthermore, we also study program implementation heterogeneity and location (when the program is given at the same school the child is attending), finding positive impacts the better the quality and the more convenient the location.

Our main contributions to the literature are analyzing the causal effect of an ASP on academic outcomes with an RCT. As far as we know, this is the first evaluation this type of programs with this methodology in a developing country. We also report that the program effects depend on the quality of the ASP and alternative care available for students.

Furthermore, the literature has discussed the childcare effect impact mechanism, as it both provides care and disposable income (through labor market participation or free care) to the families (Bernal (2008), Bernal and Keane (2010), Bernal and Keane (2011), Brilli (2014), Black et al (2014)). This paper focuses on children's outcomes, however together with the analyzed impact on the mother's labor force outcomes reported in Martínez A. and Perticará (2017); we find the program had a positive impact both on children and mothers' outcomes, and shed light on the mechanism underlying the children outcomes.

In the next sections, we describe the interventions and experimental design, data description, empirical strategy, results and conclusions.

2. The Intervention and Experimental Design

2.1 The Intervention

The ASP program named "4 to 7" objective was to contribute to the female labor force participation of mothers or women responsible for the care of children aged 6 to 13 years old, throughout ludic activities after school hours in the school year.

The ASP depends from the Ministry of Women and Gender Equity. The Ministry chooses municipalities to implement the program, targeting those where was expected a high demand based on the number of children aged 6-13 and female labor force participation. Schools apply to have the program through their municipality and are selected based on having an adequate infrastructure, not having other ASP programs, and that, if possible, had had an increase in their SIMCE score.

Mothers apply to the program at the school. The eligibility requirements are all related to mother's characteristics: being economically active, older than 18 years old, working or living in the municipality where the school is located, and having a low score in the socioeconomic targeting score. Funds are transferred to the municipalities which then selects an implementing organization through a bidding process. Most of the programs were opened to children from other schools.

The Ministry set up terms of references that describe the minimum characteristics of the ASP. The program is set up in each school with a maximum of 50 or 100 beneficiaries, where the number of slots is defined ex-ante based on potential demand. Each program had a coordinator. Programs with 50 students should have two monitors, and programs with 100 students should have five. The coordinators should be a professional of the area of education, psychology or business. It was recommended to be a teacher from the implementing school; however this was only the case in 85% of the monitors in the evaluating sample. Instructors should be professionals or students of higher education in the

areas of education, sports, arts, etc. In the participating schools, 77.3% were assigned 50 slots, and the reminding 22.7% 100 slots.

The intervention consisted of three hours of after-school care during school days. As not all schools have the same daily hours, the actual program schedule varied across schools, but most schools in the evaluation (18 out of 25) offered the program from 4 to 7 pm[1].

According to the terms of reference, each day activities should follow the following schedule: arrival (10 minutes), motivation (20 minutes), school-work support (30 minutes), a recess (30 minutes) where a snack was provided, and a thematic workshop (90 minutes). School-work support was structured to help students with their homework, teach studying techniques and reinforce school material. Thematic workshops could be related to art, sports or TICs. Each ASP program decided the thematic workshop to be implemented, based on the students' interest and age. The most common thematic was related to art (crafts, theater, dance, music, cinema, circus), followed by TICS and sports.

In parallel to the impact evaluation, an independent process evaluation was implemented in 22 out of the 25 schools under evaluation. Each ASP program was visited twice, with the purpose of documenting the implementation. The number of monitors required by protocols was followed in 72.7% of the schools; the figure increases to 94% in schools assigned to 50 slots. Attendance was low, reaching an average of 17.5 students. Considering the low

[1] Only one school offered the program during the morning; in the rest of the schools the program is given in the afternoon. Starting time varies from 2 pm to 5 pm.

attendance rate, the ratio of monitors over students was above what was recommended in the program's terms of reference.

2.2 Experimental Design

The impact evaluation took place in in 25 schools where the program was being implemented for the first time in 2012. Mothers or legal guardians of 6-13 years old children were invited to apply for this after school program. In order to do so, they were required to fill-out an application form informing how many children were applying for the program and some demographic and schooling data. Women were also asked to answer a full questionnaire about their individual and family labor and socioeconomic characteristics.

As there was oversubscription in each school where the program was offered, we randomized available spots. The unit of randomization was the mother, so if a women was offered a spot in the program, all the children reported in the application form got an invitation to attend the after school program. This has to be done in order to abide the main objective of the program that is, to help women to find employment. For each available slot we had 1.7 applicants (mothers). Randomization was stratified considering baseline mother's work status and having small children (younger than five). The offering process was done by the implementing agency.[2]

[2] It is important to mention that as participating schools were not random, external validity is not guaranteed. However, in the companion paper we report that there are not observable differences in school size, vulnerability, mother's and children's characteristics with comparable schools.

3. Data and Descriptive Statistics

3.1 Data

We use administrative data from the Ministry of Education on attendance and grades in the implementing year. All outcome variables are from this data, and therefore are limited to student's academic achievements. Monthly attendance is reported by the Ministry of Education as the fraction of the monthly school days that each child was present at school. Grades are reported as end of the year average by subject and overall GPA.

This administrative data is merged with the experiment data (treatment assignment, strata and baseline characteristics), and self-reported information on childcare use provided by mothers in the program application form. It is also merged with the follow-up household survey data with the sole objective of use reported program take-up. Finally, we also merge it to data from the process evaluation, to have measures of program quality.

Although the implementing agencies were required to collect attendance data to the ASP, this was not enforced, and the collected data was unreliable. We do not use this attendance rate in our impact analysis.

3.2 Baseline Characteristics and Balance

Table 1 presents the data on the outcome of the randomization process. The original sample of eligible children at baseline consists of 1,358 children in the treatment group and 1,208 in the control group. Twenty-five percent of the children in the control group attended the

program (as reported by their mothers); in the treatment group, this figure was 57% (column (4)). This low take-up decreases the power of the experiment, limiting therefore the probability of finding effects.

Descriptive statistics and balance are reported in Table 2. Panel A reports children's' characteristics, panel B their mothers'. For each variable, we show the sample mean, standard deviation and number of observations at baseline (columns [1]-[3]), the treatment and control mean (columns [4] and [5]), and the p-value of the null that the treatment and control group means are equal (column [6]) [3].

Students were on average 9.7 years old, 47% were female, and were in 4th grade. Only 52% of the students were offered the ASP program in their same school. Their average grade in the previous academic year was 5.6 (grades range in Chile are 1-7, with 4 being the passing grade), and the average attendance in the year before the intervention was 89% (85% of attendance is required to pass, with some exceptions).

Regarding mothers characteristics, their average age was 37 years old, 53% were the household head, had on average 2.2 children, and 61% were using some kind of childcare at baseline. Their average years of education were 9.4. The per capita household income was

[3] Note that some of these variables are missing for some observations. For this reason, sample size varies in each row of the table.

116. Their stress level was 7.1[4]. Finally, 63% of the children were in the strata characterized by mothers working at baseline and not having children younger than five years old.

The p-values in column [6] show that the groups were balanced in all these variables. Therefore the randomization could allow us to estimate the causal impact of the program, and we do not need to control by any of these variables in our regressions.

3.3 Attrition

These two set of outcome variables (grades and attendance) are compiled in different data sets by the Ministry of Education, and therefore there are different attrition rates. In the attendance data we find approximately 93% of students that were eligible at baseline. The level of attrition is higher (almost 11%) for grades in 2012). Then, the final estimation sample comprised 2284 in the grade data and 2379 children in the attendance data.

We study whether attrition of attendance and grade data is correlated with treatment assignment in Table 3. The dependent variable is the probability of being in the administrative data, and the parameters of interest are the coefficients of the treatment variable. Columns [1] and [4] report the correlation of treatment assignment with the probability of being in final regressions (for attendance and grades respectively) without

[4] The stress indexed is defined according to the Cohen-Kamarck-Mermelstein scale. This was adapted for Chile by Tapia et al. (2007).

controls. Column [2] and Column [5] include control variables (child's age, gender and a dummy indicating if he used childcare at baseline, mother's age, education, household head, per capita household income and number of children). Finally, in column [3] and [6] we interact them with treatment assignment (not shown). In all cases, the coefficients of treatment assignment are not significant. Furthermore, the full set of interactions is jointly not different from zero. Therefore, there is no differential attrition by treatment arm.

However, we find that the older the children, the more likely to have follow-up data on their grades. Although the estimated coefficient is very small, we control for age in all our regressions.

4. Results

4. 1 Estimated Equation and Interpretation

Our main equation is as follows:

$$Y_{ij} = \propto_j + \beta T_{ij} + \delta y_{ij,t-1} + \gamma age_{ik} + v_{ij} \qquad (1)$$

Where i refers to the individual, j to school-strata (defined by mother's working status and having children younger than 5 at baseline). T_{ij} is and indicator of the treatment assignment, $y_{ij,t-1}$ is the lagged value of the dependent variable, age_{ij} is the student age, and α_j are school - strata fixed effects. Whenever the baseline value of the dependent variable is

missing, we impute a zero, and include a dummy indicating if the value was imputed. Standard errors are clustered at school level. β represents the Intent to Treat estimate. As there seems to be substantial imperfect compliance, these estimates might differ from the ATE.

To study heterogeneities for a given subgroup, we define a dummy variable $D_{ijk} = 1$ if individual i in school j and strata k belongs to this particular group, cero otherwise[5]. Then we estimate the following equation:

$$Y_{ijk} = \propto_{jk} + \beta T_{ijk} + \theta T_{ijk} * D_{ijk} + \pi D_{ijk} + \delta y_{ijk,t-1} + \gamma X_{ijk} + v_{ijk} \qquad (2)$$

where θ represent the heterogeneous impact of the treatment on the sub-group D_i.

4.2 Average Effects

Average effects are presented in Table 4. Panel A shows the effects on attendance and Panel B on grade related outcomes, both in the implementing year (2012). Columns [1] and [2] report the program impact on attendance rate for period May-November (implementing months) and the probability of passing the 85% attendance rate respectively. The latter is relevant because an 85% of attendance is a requirement to pass grade in Chile. We observe that average attendance rates are high (90.7% in 2012,), and the program had no impact on

[5] If the dummy is constant within school-strata, the fixed effect captures the level effect of this dummy.

any measure of attendance. Point estimates are positive, but very small in magnitude and not significant.[6]

Regarding academic outcomes (Panel B), the point estimates of the program effects are all positive, but small in magnitude and only significant for grades on physical education. This result is consistent with a program that offered that only devoted 30 minutes for homework activities, and where most of the workshops offered were on arts and sports.

4.3 Heterogeneous Effects

The literature reports that the ASP program effects depend on the quality of the program, the alternative childcare, and the program activities. We study whether the program effects depend on who were taking care of the child at baseline. (Table 5) and the program quality (Table 6). Following the same structure of Table 4, we first report impacts on attendance (Panel A), and on academic outcomes (Panel B).

Baseline Childcare

Regarding baseline childcare, mothers reported in the baseline survey who took care of the child after school. Almost 45% of children of children stayed with one of their parents (4.5% with the father and 40% with the mother). Others forms of care included grandmothers

[6] We also do not find effects on attendance in 2013, the year after the implementation. Results available by request.

(19%), and siblings, neighbors or other family (27%), while 11% were left at home alone. For the analysis, we define a variable (non-parental care) that takes value of 1 if the children used any kind of childcare after school hours or were left alone at baseline and 0 if they were taken care of by their parents.

Table 5, column [1] shows that there is no differential impact on attendance measures. However, the after-school program had a positive impact on grades on students that weren`t taken care of by their parents at baseline, increasing the overall GPA in almost a decimal (column [9]), the grade in art in 1.4 decimals (column [4]) and the grade in language and literature in 12.8 decimals. The program also increased the probability of being above the median in 7.1 percentage points (column [10]). The coefficients on other grades outcomes are also positive, but not significant. On the other hand, the coefficient on the program assignment for the base category (parental care at baseline) on all grades outcomes is insignificant, but always negative, suggesting that substituting parental care for institutional care does not necessarily improve children outcomes. But substituting informal care does have a positive impact on children's academic performance.

As all reported results correspond to ITT, it is relevant to look at the program take-up for these two groups. Although take-up is slightly higher for children with non-parental care at baseline (what is consistent with families substituting other forms of childcare for the ASP), the difference is not statistically different from zero (Table 5, column [1]). Therefore, results are not mechanically driven by differences in use, but could be driven by differences in the care quality.

Note also, that as the program is substituting potentially low-quality childcare for better one, different types of childcare at baseline (grandparents, other adults, siblings, etc.) could drive heterogeneous program effects. Table A-1 explore whether there are further heterogeneities associated to the quality of childcare at baseline, showing that positive effects in Table 5 are mostly driven by children that are either left alone at home or placed under the care of another adult (relatives and non-relatives). In fact, the stronger effects are for children left alone, what could be related to the fact that the program is providing them a safe environment. For these children, there is also a strong impact (3.3 pp) on attendance rates, suggesting that the program might have had a deterrence role on absenteeism. This effect is relative large, considering that attendance rates are high (around 91% for the control group). Again, although take up is higher for some of these groups with different types of childcare at baseline, all these coefficients are not statistically different from zero.

Program Quality

The quality of the program also plays an important role when considering its potential impact, as what matters is how good the program is relative to the alternative care. In Table 6, we report the impact of high-quality programs, where quality was measured by an index that captures quality of infrastructure, teachers, materials and children's attitude. Program quality was measured in the process evaluation. We do not find that quality affects attendance (Panel A, Table 6). Consistent with the literature, when studying the impact on grades, all estimated effects of the interaction of treatment assignment and a high-quality dummy are positive but are only significant for art (columns 4), for the overall GPA

(column 9) and for the probability of being above the median in the grade distribution (column 10). Students in high-quality programs are 10 pp more likely to have a GPA above the median than students in low quality versions of the program. Students in low-quality versions of the program are less likely to have a GPA above the median (5 pp.)[7]. Note that take-up does not differ by quality (around 30.0 pp larger than the control group), and therefore the effects are again not mechanically driven by differences in use.

5. Discussion

On average, the after-school program had no impact on attendance, and grades. However, program impacts are larger (and statistically significant) for children that were not taken cared by their parent in the program hours at baseline, and for programs of better quality.

Moreover the stronger effects are found for children that were left alone at home at baseline or for children who were taken care of by non-relative adults. Informal care arrangements for young children are common in Chile, where massive public provision of childcare for small (and vulnerable) Children is a relatively recent policy. For older children a common practice is to leave them with neighbors, extended family or alone at home. Our results show that providing them a safe and fun environment might increase attendance rates and their academic achievements.

[7] We reject that the overall effect for students placed at high-quality program (of around 5.5 pp) is equal to cero.

Both Table 5 and Table 6 are consistent with the idea that the quality of both the program and the alternative care is what matters to predict the success (in terms of children's outcomes) of an after school program. In Table A-2 we present heterogeneous effects combining both the quality of the alternative care and the quality of the AFS program. The base category is for children exposed to low-quality programs, who were taken care of by their parents at baseline. From this table it can be seen that providing children with a low quality AFS program and replacing parental care, always hurt them. All the coefficients are negative and statistically significant for Art, Math, Science, overall GPA and for the probability of being above the median of the grade distribution. For all the other three groups (children with parental care at baseline but in high quality programs, or children with non-parental care at both low-quality and high-quality programs) the impact of the program is positive and statistically different from zero for Art, overall GPA and the probability of being over the median. In fact for kids with non-parental care at baseline placed in high-quality programs, the AFS program has a positive effect for all the outcomes considered.

The perception of the quality of the program might also matters. During the process evaluation of the program, it was reported in several focus groups that mothers felt more comfortable sending their children to the ASP when this program was given at the same school where the child was studying. Therefore, we could expect higher take-up and

attendance rates in these cases[8]. In Table 7 we can see that take-up rates are much higher for kids that attend the ASP and their regular classes in the same school. For these kids there is also some effect of the program over attendance outcomes. For example, offering the program in the same school where the kid attended increases the attendance rate in 2012 by 1.6 percentage points. The effects on grades are also positive, but only significant for physical education (column 5), overall GPA (column 9) and on the probability of being above the median (8.7 pp.).

As the program also increase female employment (Martínez A. and Perticará, 2017), one wonders what drives students' outcomes. The program can have a direct effect on their grades through the curriculum, providing better care than the alternative. The effect could also be indirect, by increasing family disposable income through female employment and decreasing childcare cost.

Although the research design does not allow us to disentangle the mechanisms, we can shed light on them analyzing the program impact in different groups. We do find that neither the type of childcare at baseline nor the quality of the program had any heterogeneous impact on mothers' employment outcomes. Considering these are the groups for whom we find impacts on children' outcomes, we interpret this as evidence that the driving mechanism behind our results is the provision of formal care as opposed to informal care mechanisms.

[8] At the same time, as the program didn´t provided transportation to the program site, what could also affect attendance and take-up rates.

6. Conclusions

We studied the impact of an after-school program on children's academic outcomes in Chile using and experimental strategy. We find that the program had no average impact on academic outcomes.

However, we do have compelling evidence that both the quality of the program and the quality of the alternative care matters. The most robust results are found for art grades, overall GPA and the probability of being above the median of the grade distribution. The stronger effects are found for children in high-quality programs who were placed at informal care arrangements at baseline for all the outcomes. On the contrary, children with parental care at baseline, who were placed at low-quality programs, were hurt the most. For this group the impact of the program is negative and statistically significant for all the outcomes.

Overall we do not find that take-up rates different for these different groups. So, our results are not automatically driven by differences in use. But the program effects could be mitigated by the low take-up rates. Any attempt to escalate the program should change the program design to encourage its use and allow mothers to have flexibility on its use. At the same time, efforts should be devoted to increase and homogenize program quality. Consistently what was found for developed countries, quality is the key ingredient to the success of any childcare program.

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Table 1: Compliance Rates

	Base Line	In follow-up	Participating	Participation Rate
	[1]	[2]	[3]	[4]=[3]/[2]
Control	1.208	1.073	267	0,25
Treatment	1.358	1.184	668	0,56
Total	2.566	2.257	935	

Note: Columns [1] and [2] indicate the number of applicants who were surveyed at the baseline and follow-up. Column [3] presents the number of applicants who report having participated in the program (take-up).

Table 2: Balance between treatment and control group at baseline

Variables	Average [1]	SD [2]	Nº [3]	Treatment [4]	Control [5]	P-value T=C [6]
Age	9,72	2,26	2566	9,76	9,68	0.424
Female	0,47	0,50	2566	0,47	0,47	0.352
Grade	4,04	2,03	2557	4,06	4,03	0.775
=1 if attend school where the program is given	0,52	0,50	2566	0,5	0,53	0.553
GPA (previous year)	5,59	0,65	2014	5,58	5,6	0.564
GPA (previous year) is missing	0,22	0,41	2566	0,22	0,21	0.671
Attendance rate (previous year)	0,89	0,13	2379	0,89	0,89	0.351
Attendance rate (previous year) is missing	0,07	0,26	2566	0,07	0,07	0.911
			Panel B: Mothers			
Age	36,89	8,55	2561	36,92	36,87	0.821
=1 if household head	0,53	0,50	2566	0,52	0,54	0.867
# of children	2,19	1,16	2566	2,19	2,18	0.950
=1 if uses childcare at baseline	0,61	0,49	2105	0,60	0,63	0.732
Years of education	9,37	3,22	2482	9,35	9,39	0.822
Per capita income of household (US$)	116	86	2544	117	116	0.287
Stress Index	7,10	3,88	2382	7,24	6,96	0.702
Works and children <5 years old	0,20	0,40	2566	0,20	0,20	0.246
Does not work and children <5 years old	0,06	0,23	2566	0,06	0,06	0.679
Works and children >5 years old	0,63	0,48	2566	0,63	0,62	0.343
Does not work and children >5 years old	0,11	0,32	2566	0,11	0,12	0.680

Note: Baseline survey data collected from March to May 2012. The sample size varies according to the amount of data without observations for each respective variable. Income variable is measured in U$ dollars (march 2013). Columns [1], [2] and [3] show the variable mean for the total of the sample, the standard deviation and the number of observations, respectively. Column [4] and [5] show the variable mean for the treatment and control group, respectively. Column [6] the p-value of the null hypothesis that Treatment=Control.

Table 3: Attrition and Base Line Characteristics

	In final regressions (attendance)			In final regressions (grades)		
	[1]	[2]	[3]	[4]	[5]	[6]
Treatment	-0.001	-0.005	0.030	-0.008	-0.008	-0.086
	(0.012)	(0.011)	(0.053)	(0.012)	(0.011)	(0.072)
Child's gender		-0.008	-0.018		-0.010	-0.004
		(0.013)	(0.017)		(0.015)	(0.024)
Child's age		0.004	0.005		0.017***	0.012***
		(0.003)	(0.003)		(0.003)	(0.004)
Mother's Age		-0.002*	-0.002		-0.002	-0.001
		(0.001)	(0.002)		(0.001)	(0.002)
Household Head		-0.002	0.009		-0.020	-0.017
		(0.016)	(0.019)		(0.015)	(0.023)
Number of children		-0.005	-0.010		-0.012	-0.017
		(0.008)	(0.010)		(0.010)	(0.021)
Used childcare at baseline		-0.008	0.002		0.000	-0.001
		(0.017)	(0.017)		(0.019)	(0.027)
Mother's education		-0.000	-0.000		-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)
Per capita household income		1.005***	0.994***		0.855***	0.898***
		(0.073)	(0.084)		(0.075)	(0.106)
Constant						
		2,014	2,014		2,014	2,014
	0.928***	0.135	0.136		0.125	0.126
Observations			0.552			0.320
R-squared	0	0	0	0	0	0
F-test: all interactions with treatment are zero (p-value)		0	0	0	0	0
Specification	No controls	Controls	Controls and interactions of controls and treatment variable	No controls	Controls	Controls and interactions of controls and treatment variable

Note: The dependent variable takes a value of 1 if the individual was found on either attendance data (columns [1]-[3]) or grades data (columns [4]-[6]). The sample is all students participating in the study (with baseline). The sample size varies according to the missing covariate data. Standard error in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 4: Intent-to-Treat Effects in Attendance and Grade (2012)

	Panel A: Attendance		Panel B: Grades						
	Attendance rate May-November	=1 if attendance rate is >0.85	Art	Physical Education	Language and Literature	Math	Science	GPA	=1 if above the median
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Treatment	0.006	0.024	0.043	0.055**	0.010	0.030	0.012	0.020	0.016
	(0.005)	(0.016)	(0.029)	(0.026)	(0.032)	(0.032)	(0.027)	(0.022)	(0.023)
Observations	2,379	2,379	2,280	2,277	2,280	2,280	2,280	2,284	2,284
R-squared	0.276	0.186	0.309	0.276	0.372	0.348	0.396	0.488	0.359
Control group mean	0.907	0.840	5.926	6.250	5.134	5.149	5.231	5.532	0.494

Note: Columns [1] - [9] report the intent-to-treat (ITT) estimates and standard errors (in parenthesis) of program assignment. The sample size varies according to the number of observations with missing values in the respective outcome variable. All regressions include school-strata fixed effects and control for age. Cluster standard errors at school level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Heterogeneous Effects by Childcare use at baseline (2012)

	First Stage Program Participation	Panel A: Attendance		Panel B: Grades						
		Attendance rate May-November	=1 if attendance rate is >0.85	Art	Physical Education	Language and Literature	Math	Science	GPA 2012	=1 if above the median
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Treatment	0.259***	-0.001	0.010	-0.030	-0.014	-0.076	-0.029	-0.051	-0.050	-0.032
	(0.056)	(0.006)	(0.022)	(0.052)	(0.045)	(0.050)	(0.069)	(0.063)	(0.038)	(0.029)
Treatment * Non-parental care at baseline	0.051	0.012	0.030	0.147**	0.100	0.128*	0.073	0.106	0.123**	0.086**
	(0.058)	(0.009)	(0.043)	(0.054)	(0.069)	(0.071)	(0.082)	(0.080)	(0.053)	(0.037)
Observations	2,122	2,379	2,379	2,280	2,277	2,280	2,280	2,280	2,284	2,284
R-squared	0.233	0.277	0.186	0.313	0.280	0.373	0.349	0.398	0.489	0.362
Control group mean	0.253	0.907	0.840	5.926	6.250	5.134	5.149	5.231	5.532	0.494

Note: Columns [2] - [10] report the intent-to-treat (ITT) estimates and standard errors (in parenthesis) of program assignment. Column [1] reports the first stage for program participation. The sample size varies according to the number of observations with missing values in the respective outcome variable. Non-parental care is a dummy variable that takes value of 1 for all the kids who weren`t taken care of by their parents at baseline, zero otherwise. All regressions include school-strata fixed effects and control for age. Cluster standard errors at school level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Heterogeneous Effects by Program Quality

	Panel A: Attendance			Panel B: Grades						
	First Stage Program Participation	Attendance rate May-November	=1 if attendance rate is >0.85	Art	Physical Education	Language and Literature	Math	Science	GPA	=1 if above the median
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Treatment	0.300***	0.004	0.010	-0.029	0.016	-0.025	-0.036	-0.042	-0.033	-0.054*
	(0.054)	(0.009)	(0.028)	(0.046)	(0.041)	(0.058)	(0.042)	(0.034)	(0.032)	(0.030)
Treatment * High Quality	-0.006	0.003	0.023	0.114**	0.061	0.057	0.104	0.086	0.084*	0.111***
	(0.078)	(0.011)	(0.034)	(0.052)	(0.051)	(0.069)	(0.061)	(0.051)	(0.041)	(0.039)
Observations	2,122	2,379	2,379	2,280	2,277	2,280	2,280	2,280	2,284	2,284
R-squared	0.230	0.276	0.186	0.310	0.277	0.372	0.349	0.397	0.489	0.361
Control group mean	0.253	0.907	0.840	5.926	6.250	5.134	5.149	5.231	5.532	0.494

Note: Columns [2] - [10] report the intent-to-treat (ITT) estimates and standard errors (in parenthesis) of program assignment. Column [1] reports the first stage for program participation. The sample size varies according to the number of observations with missing values in the respective outcome variable. Non-parental care is a dummy variable that takes value of 1 for all the kids who weren`t taken care of by their parents at baseline, zero otherwise. All regressions include school-strata fixed effects and control for age. Cluster standard errors at school level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Program is given in the same school

	Panel A: Attendance			Panel B: Grades						
	First Stage Program Participation	Attendance rate May-November	=1 if attendance rate is >0.85	Art	Physical Education	Language and Literature	Math	Science	GPA	=1 if above the median
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Treatment	0.217***	-0.003	0.009	0.002	-0.017	-0.027	0.005	-0.032	-0.028	-0.031
	(0.056)	(0.004)	(0.017)	(0.058)	(0.037)	(0.043)	(0.049)	(0.050)	(0.037)	(0.031)
Treatment * Same school	0.146*	0.016***	0.028	0.073	0.128***	0.068	0.044	0.081	0.088*	0.087*
	(0.073)	(0.006)	(0.022)	(0.074)	(0.043)	(0.067)	(0.061)	(0.064)	(0.045)	(0.042)
Observations	2,122	2,379	2,379	2,280	2,277	2,280	2,280	2,280	2,284	2,284
R-squared	0.267	0.278	0.187	0.309	0.279	0.372	0.348	0.397	0.489	0.361
Control group mean	0.253	0.907	0.840	5.926	6.250	5.134	5.149	5.231	5.532	0.494

Note: Columns [2] - [10] report the intent-to-treat (ITT) estimates and standard errors (in parenthesis) of program assignment. Column [1] reports the first stage for program participation. The sample size varies according to the number of observations with missing values in the respective outcome variable. Same school is a dummy variable that takes value of 1 if the child attended a school were the program was given, zero otherwise. All regressions include school-strata fixed effects and control for age. Cluster standard errors at school level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A-1: Heterogeneous Effects by Childcare use at baseline (2012)

	First Stage Program Participation	Panel A: Attendance		Panel B: Grades						
		Attendance rate May-November	=1 if attendance rate is >0.85	Art	Physical Education	Language and Literature	Math	Science	GPA 2012	=1 if above the median
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Treatment	0.243***	-0.003	0.007	-0.040	-0.003	-0.062	-0.038	-0.053	-0.047	-0.039
	(0.062)	(0.007)	(0.025)	(0.053)	(0.041)	(0.055)	(0.071)	(0.068)	(0.041)	(0.031)
Treatment * Father	0.137	0.013	0.021	0.092	-0.100	-0.128	0.064	0.002	-0.036	0.071
	(0.177)	(0.020)	(0.091)	(0.157)	(0.189)	(0.127)	(0.135)	(0.123)	(0.099)	(0.093)
Treatment * Grandmother	-0.015	0.009	0.019	0.171*	0.093	0.059	0.082	0.091	0.093	0.084
	(0.077)	(0.013)	(0.050)	(0.093)	(0.077)	(0.095)	(0.102)	(0.102)	(0.078)	(0.055)
Treatment * Other adult	0.095	0.008	0.029	0.142	0.137*	0.183*	0.151	0.226*	0.186***	0.110***
	(0.099)	(0.010)	(0.050)	(0.094)	(0.069)	(0.095)	(0.105)	(0.125)	(0.064)	(0.037)
Treatment * Siblings	0.093	0.011	0.027	0.049	-0.028	-0.033	-0.119	-0.109	-0.048	0.012
	(0.105)	(0.017)	(0.073)	(0.095)	(0.099)	(0.152)	(0.170)	(0.137)	(0.105)	(0.076)
Treatment * Alone	0.131	0.033**	0.071	0.234***	0.098	0.203*	0.127	0.104	0.183***	0.141*
	(0.097)	(0.012)	(0.067)	(0.069)	(0.088)	(0.116)	(0.100)	(0.100)	(0.061)	(0.080)
Observations	2,122	2,379	2,379	2,280	2,277	2,280	2,280	2,280	2,284	2,284
R-squared	0.236	0.280	0.190	0.314	0.282	0.375	0.351	0.401	0.491	0.363
Control group mean	0.253	0.907	0.840	5.926	6.250	5.134	5.149	5.231	5.532	0.494

Note: Columns [2] - [10] report the intent-to-treat (ITT) estimates and standard errors (in parenthesis) of program assignment. Column [1] reports the first stage for program participation. The sample size varies according to the number of observations with missing values in the respective outcome variable. Childcare at baseline could be provided by the father, grandmother, other adults, siblings or the child could have been left alone. Dummy variables for all these categories are defined and this table presents the heterogeneous effects of the program for all these groups. All regressions include school-strata fixed effects and control for age. Cluster standard errors at school level are given in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A-2: Heterogeneous Effects by type of Childcare use at baseline and quality of the program (2012)

	First Stage Program Participation	Panel A: Attendance		Panel B: Grades						
		Attendance rate May-November	=1 if attendance rate is >0.85	Art	Physical Education	Language and Literature	Math	Science	GPA 2012	=1 if above the median
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Treatment	0.270***	0.002	0.016	-0.123**	-0.027	-0.098	-0.107*	-0.109*	-0.106**	-0.112***
	(0.065)	(0.011)	(0.038)	(0.056)	(0.061)	(0.068)	(0.062)	(0.059)	(0.043)	(0.031)
Treatment * Parental-childcare and high quality	-0.020	-0.006	-0.012	0.159**	0.019	0.036	0.131*	0.096	0.094*	0.135***
	(0.093)	(0.011)	(0.037)	(0.063)	(0.066)	(0.077)	(0.068)	(0.076)	(0.046)	(0.034)
Treatment * Non-parental-childcare and low quality	0.036	-0.000	-0.015	0.210**	0.042	0.109	0.106	0.121	0.140**	0.117**
	(0.082)	(0.011)	(0.048)	(0.071)	(0.084)	(0.079)	(0.078)	(0.087)	(0.065)	(0.044)
Treatment * Non-parental-childcare and high quality	0.043	0.015	0.048	0.251**	0.154*	0.173*	0.171*	0.184**	0.196**	0.188***
	(0.088)	(0.014)	(0.058)	(0.061)	(0.086)	(0.094)	(0.091)	(0.079)	(0.061)	(0.050)
Observations	2,122	2,379	2,379	2,280	2,277	2,280	2,280	2,280	2,284	2,284
R-squared	0.233	0.279	0.188	0.314	0.281	0.374	0.350	0.398	0.490	0.364
Control group mean	0.253	0.907	0.840	5.926	6.250	5.134	5.149	5.231	5.532	0.494

Note: Columns [2] - [10] report the intent-to-treat (ITT) estimates and standard errors (in parenthesis) of program assignment. Column [1] reports the first stage for program participation. The sample size varies according to the number of observations with missing values in the respective outcome variable. Childcare at baseline could be provided by the father, grandmother, other adults, siblings or the child could have been left alone. Dummy variables for all these categories are defined and this table presents the heterogeneous effects of the program for all these groups. All regressions include school-strata fixed effects and control for age. Cluster standard errors at school level are given in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.