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► **To cite this version:**

Adrien Bouguen, Kamilla Gumedé, Marc Gurgand. Parent's Participation, Involvement and Impact on Student Achievement: Evidence from a Randomized Evaluation in South Africa. 2015. halshs-01241957

HAL Id: halshs-01241957

<https://shs.hal.science/halshs-01241957>

Preprint submitted on 11 Dec 2015

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PARENT'S PARTICIPATION, INVOLVEMENT AND IMPACT ON STUDENT ACHIEVMENT: EVIDENCE FROM A RANDOMIZED EVALUATION IN SOUTH AFRICA

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December 11, 2015

Abstract

This article investigates the role of parents by looking at the effect of a parental involvement program implemented in poor primary school in South Africa. Based on a random variation of the program assignment and on a partial population design, it allows to rigorously identify impacts on parental involvement, on the relationship between parents and teachers and on student outcomes. We find mixed results suggesting that parents who volunteer to attend the meetings changed their behavior toward more involvement at home and at school. Such behavioral change appears stronger for a sub-group of parents whose children is enrolled in the facilitating teacher's class, suggesting positive interactions between parents and teachers. Yet, no cognitive or non cognitive impact on students can be detected. We interpret these disappointing results as evidence that in a developing country context, parents face constraints that makes such program unable to have significant effects on student performances.

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1 Introduction

It is widely believed that a child’s family and socioeconomic status play a central role in his early cognitive and non-cognitive development, determining educational outcomes in the longer run. Traditional models of skill formation (Becker and Tomes, 1986) support this view but tend to restrict parental investment to an early shock that causes a gap between children from different social backgrounds, a gap that formal schooling is supposed to fill. More recent models suggest that complementarity exists between investments realized at different age stages (Cunha and Heckman, 2007), between initial endowment and subsequent parental investments (Cunha et al., 2010), and between socio-emotional and cognitive skills (Borghans et al., 2008). This literature paves the way to the exploration of other forms of complementarity, specifically between the inputs of teachers/schools and the inputs of parents. In that view, parents can be seen as an input, complementary to other formal investments, that a well-designed education policy can efficiently stimulate. Empirical evidence from developed countries confirms that increasing parental involvement in their children’s education can mediate the effects of a poor socioeconomic background and bolster school performance (Avisati et al., 2013, Goux et al., 2014). Unfortunately, this proposition has not yet been empirically tested in developing countries, where the role of parents has rarely been studied.

This article explores the topic of parental involvement and the relationship between parents and teachers by looking at the impact of a parental involvement program implemented in poor South African townships. We are specifically interested in two main questions: First, is parenting a valuable input that can be modified and which impacts students’ schooling achievement, behavior, or socio-emotional skills? In the context of South Africa – where poor and black/colored¹ parents rarely had access to a satisfactory level of education themselves, where constraints on parental involvement may be strong, and where the literature is mute – this is a fully open question. Second, is parenting a useful complement of a teacher’s effort to improve student school performance? As mentioned, complementarity between school inputs is an interesting research venue, and again, remains here widely empirically unexplored.

To answer both questions, we rely on a social experiment conducted in South Africa, where parental involvement is stimulated by a program designed to improve parenting both at home and at school. We also rely on a variation of the teacher-parent relationship, allowing

¹ In the South African context, “black” refers to african descendants people, using speaking their original african language (mainly Xhosa or Zulu) while “colored” refers to people from African and european origin and who usually speak Afrikaans. During the apartheid, both ethnic groups were treated differently which still have consequence today in term of poverty level

to look at complementarity between these two inputs. We have reasons to believe that South Africa would be particularly adapted for that sort of program: the overall level of education is reported to be very weak in townships, and parents are thought to ignore what is expected from them, as many did not necessarily benefit from a functioning school system when they were young. As an example, in our sample composed essentially of poor black and colored parents and students, the average grade at the national math test did not reach 20%, and 92% of the sample parents declared receiving an insufficient amount of information, or no information at all, from the school.

The parenting program studied in this article consists of several meetings between one school teacher, who volunteers to facilitate the meetings, and several parents, who volunteer to attend them. During the meetings, teachers invite parents to become more involved in their child's education, stress the importance of parents in their child's education, and give parents practical guidance to effectively help their child. Since meetings are facilitated by teachers, part of our results come from improved relations between parents and teachers; distinguishing such complementarity from pure parenting will be one of the contributions of this research. The data, furthermore, allows for analysis of students' cognitive and socio-emotional skills, self-reported teachers and parents involvement; it also attempts to objectively measure parental involvement via a source of endogenous variation of the information given to parents. Finally, our design, based on a partial population model, will allow identification of within-classroom spillovers.

We find self-declared evidence that parents who volunteer to attend the meetings changed their behavior, becoming more involved in their child's education. Such behavioral change appears stronger for a sub-group of parents whose children are enrolled in the facilitating teacher's class. On that subgroup, not only self-declared evidence, but also observed evidence, of change in parental behavior can be identified. This suggests that an improved relationship between parents and teachers is one explanatory factor of success. Yet, while parents changed their behavior, we are unable to detect better cognitive/non-cognitive or behavioral impact on students. Absence of results on students may suggest that in the South African context, where parents' education remains weak, parents are not an input that can easily have an effect on students' education. To trigger the behavioral change expected on students, a much more intensive intervention is probably needed, as illustrated in a related study in India ([Barnerji et al., 2015](#)).

In the remaining portion of the article, we will first summarize the literature to which this

research may be related: for example, (a) parental involvement evidence from developed countries (France and United States); (b) parental involvement programs in developing countries; and (c) parents and school governance. We will then describe more at length the program, the study design, and the data. Finally, after having described the empirical model used, we will first look at the baseline results, the compliance, and the attrition, and second, present more at length the impacts of the program. We will conclude by discussing and interpreting the results.

2 Literature Review

The results presented in the article may be related to (a) the existing evidence in the developed countries (mainly the United States and France) and a recent one in developing country (India); (b) some experiences involving parents in developing countries; and (c) in the articles relating parenting and school governance.

Although comparing results in developed countries with the ones found in a South African context may not be meaningful, the studies conducted in the United States on parental involvement convey a sense of what we may expect from such programs. In the systematic review of evidence, based on 19 small RCTs² conducted in the US since the 70's, [Nye et al. \(2006\)](#) suggest that a very intensive (around 20 hours of individual training with trained caseworkers) and structured parental program, preferably implemented early, is effective in improving student performances at school. Such results are also confirmed by other early intervention policies (Head Start, Perry Preschool, Abecedarian...) that all include parental involvement components. Yet such programs, highly intensive and costly, hardly allow for isolating the effect of parents from the effect of the institutionalized program itself. In many cases, these programs can be considered as traditional schooling programs conducted at home, with only a marginal participation of parents. Therefore, the programs depart significantly from our topic. Closer to our subject is the article by [Aizer \(2004\)](#), which relies on a large panel of households in the US to estimate the effect of parental supervision after class: the results are positive, specifically on behavior and socio-emotional skills, suggesting that parents, when involved in their child's education and without any support from external caseworkers, may be efficient in shaping children's performance. Even more interestingly for our purpose, large

² The Randomized Controlled Trials used in this meta-analysis are from the education sciences or educational psychology literature, with sample size comprised between 10 and 100 parents. Evidences are hence closer to lab experiments rather than social experiments.

social experiments run in France suggest that small interventions targeted toward parents may have positive effects on students' attitudes at school, both on behavior (Avvisati et al., 2013) and on school career and dropout (Goux et al., 2014). The last two results, together with some evidence about the effect of parental supervision, indicate that parents may be a useful and reliable tool when education programs are designed.

In developing countries, to the best of our knowledge, only one very recent research study can be directly related to ours³. In India, Banerji et al. (2015) explores the impact of a door-to-door intervention where caseworkers individually visit mothers and give them instructions on how to review their child's school notebooks, discuss child learning with their child's schoolteacher, and encourage the child to do schoolwork at home. The authors found positive results on parents' attitudes, participation in school work, and involvement. In addition, a small but significant effect (4% of a standard deviation) was found on the children's school performance (in maths). Our study departs from this one, as in South Africa, the intervention was (1) collective and (2) much less intensive. On the latter, while parents reported to have received 200 minutes of individual intervention in India (20 interventions in average, 10 minutes per intervention), we estimate that they only received the equivalent of 10 minutes of individual intervention in South Africa.⁴ Our results must hence be interpreted by keeping in mind these large differences of intensity. Other programs involving parents in developing countries concern very structured and intensive programs. The most famous one is certainly the long-term experiment conducted in Jamaica in the 80's on very poor/malnourished students (Walker et al., 2005, 2011). The authors show that while a simple food supplement has only short-sided consequences, very structured home-based stimulation has strong and long-lasting results. Yet again, the parental component is hard to distinguish from the involvement of the caseworker and is far from a pure parental involvement program.

Finally, the role that parents may play by either participating in school governing bodies or social programs is more evident in developing countries. This bottom-approach, while appealing in principle, often produced disappointing results. In India, Banerjee et al. (2010) show that involvement of adults in school were difficult due to constraints faced by parents and as a result, such programs had no effect on the activity of the school committee. The authors

³ Another recent study based on a structural model Attanasio et al. (2015) suggests that parental investment at young age is the main mechanism of the positive effects of an early psycho-social stimulation *a la Mac Gregor* implemented in Columbia. This confirms that parental involvement can be modified and may have positive impact on student.

⁴ Three sessions of two hours, given to an average of 10 parents, collectively with a take-up of 27%, gives $3 \times 120 \times 0.27 \times 0.1 \approx 10$.

conclude that parents face constraints to participate, and are not necessarily able to exert effective control over the way resources are spent. Yet the remedial education component of the intervention – which trains one volunteer (a parent or any other member of the community) to become a community teacher – effectively impacts student capacities. Likewise, in Kenya [Duflo et al. \(2015\)](#), the student assigned to a newly recruited contract teacher had better school performance (in comparison with a civil-servant teacher), while training parents to monitor the contract teacher affected teacher effort, but not student achievement. These results suggest that involving parents in the school committee – in activities at school or, more generally, in collective action – is not easy, and may face constraints. A parent’s role, furthermore, is only approached indirectly, via the teacher or the school institution, not like a direct input in the education production function. If we except the landmark studies in developed countries, this article, jointly with the previously mentioned result in India, are the first to consider the role of parents as a direct input, analyzed in complementarity to the role of teachers. Yet, since the program evaluated here implies that parents become more actively involved with teachers and schools, our results should be read in line with the shortcomings in term of participation.

3 Intervention, Study Design, and Data Collection

3.1 Intervention

The Bringing Parents at the Education Table (BPET) intervention consists of three training sessions organized for some Grade 4 (G4) and Grade 5 (G5) parents and is facilitated by one volunteer G4 or G5 teacher. The NGO, the General Motor Foundation for South Africa (GMFSA) that implements the program in the Port Elizabeth region, trains and monitors the teachers (later called *voluntary teachers*) who volunteer to facilitate the sessions. The original idea of the BPET program is based on two main observations: First, the recognition that poverty, low level of parents’ education, and young pregnancy have left many parents with very little skills to raise their children in a satisfactory environment; and second, the relationship between parents and teachers in South Africa is often tense and distrustful. The intervention is hence supposed to help with (1) mobilizing parents and educators to work together; (2) encouraging parents to get involved in their children’s education; and (3) providing parents with guidelines and skills to inspire and encourage children to attend school every day, complete their homework, and study for exams. Although light in intensity (only three

sessions), the intervention may affect behavior in a multitude of ways: while better parenting is the central objective, the program’s impact may also result in more involved teachers, better parent-teacher relationships, improved connections between parents of students from the same classroom, or even student/peer effects. Rigorously analyzing the various channels that may be at hand in this context is the challenge of the study design.

3.2 Study Design and Randomization

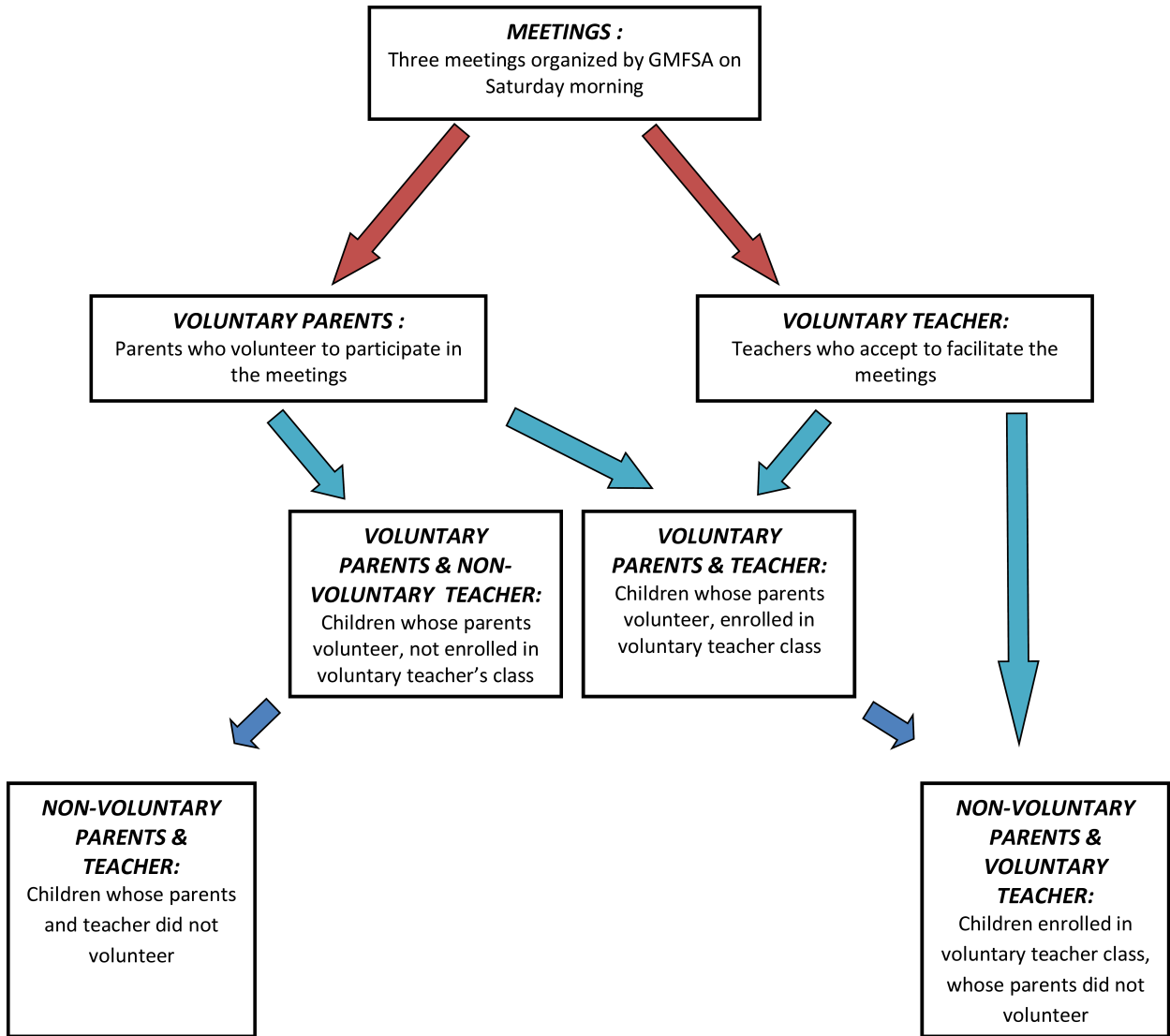
Studying this program poses two main difficulties. Since sessions are conducted by teachers, and the effects are transmitted to a large extent by parents to their children, the causal chain is complex and hard to fully map. Yet distinguishing the respective contributions of each stage of this causal chain is crucial for the analysis. It requires to isolate before randomization, sub-populations that are affected differently by the program and analyze them separately. The other issue concerns measurement. Parental involvement, teacher practices, and student behaviors are usually very hard to observe in an objective matter; these are, at best, self-reported or made from subjective records. In addition to these two difficulties, the design should be able to properly identify peer effects.

The study design, concealed in a Pre-Analysis Plan (PAP), allows to overcome some of the above issues. Given the potential presence of spillovers, a partial population design (Moffitt et al., 2001) was implemented. A total of 83 schools, located in the poorest neighborhood of Port Elizabeth, volunteered to participate. All G4 and G5 students targeted by the program are included in our sample, for an average of 160 students and 4.4 classes per school (cf table 1). This large number of individuals per school leaves enough sample within schools to form, before randomization, several sub-populations. First of all, when schools volunteered to participate in the program, they recorded the name of one G4 or G5 teacher who would volunteer to facilitate the program. Since the name of the teacher was known before randomization, the classes given by the *voluntary teacher* (later called the *voluntary teacher group*) in treatment and control can rigorously be compared to estimate the treatment effect on that sub-group.⁵ Second, before randomization, schools were asked to distribute to each parent a form where they could express their willingness to participate in the three teacher/parent sessions. Only the voluntary parents were contacted to attend the sessions. Again, the names of the *vol-*

⁵ As each class usually has a single teacher, the *voluntary teacher*’s classes subgroup is, on average, composed of a single class per school. This suffers some exceptions: in some cases, the teacher teaches in several classes (typically the case when teachers are assigned to specific disciplines); in others, the voluntary teacher did not teach in G4 or G5 classes.

untary parents were collected by the research team before randomization; therefore, we can define the *voluntary parent* sub-group, which is rigorously similar in treatment and control. The following figure 1 summarizes the different subgroups and the potential ways they are affected by the program. A similar version of the graph can be found in the Pre-Analysis Plan; this design was hence foreseen ex-ante and is not a mere consequence of our findings.

Figure 1: Sub-groups and mechanism of action



Where █ direct effect of the meetings
█ transmission of the direct effect to students through the adults (teacher or parent) directly involved in the meetings
█ (student) peer effect

It is clear from figure 1 that two main groups can be isolated: the group of *volunteer parents*, where the direct effect of the program can be analyzed, and the group of *non-volunteer parents*, which would only be affected by spillovers. On the group of volunteer parents, the program’s impact should be driven by the sub-group *voluntary parents and teacher*, as it benefits from the voluntary parents, the voluntary teacher, and the interaction between teacher and parents. It is on that sub-group that we expect the largest effect. On the group of voluntary parents but non-voluntary teachers, we are able to identify the *pure* parenting effect of the program, without the interaction between parents and teacher, as in these cases, the meetings were given by a teacher who is not the student’s teacher. The group of non-volunteer parents should only be affected by the spillover or the impact of the voluntary teacher on the non-voluntary parent’s group, again without interaction, as the parents did not attend the meetings. On this group, we do not expect to find a large effect.

After having collected the names of the voluntary teachers and parents in the control and treatment schools, we randomized the 83 schools: 42 assigned to a control group⁶, and 41 to a treatment group that started the program right away (2013).⁷ A pair-wise/ triplet-wise randomization was implemented using the grade taught by the voluntary teacher, the number of grade 4 and grade 5 classes, and the voluntary rate (the percentage of contacted parents who decided to participate in the meetings at baseline) as stratification variables.⁸

To more precisely describe the sample, we give in the following table some general information about the sample size for the full sample, the sample of volunteer parents, and the sub-sample of volunteer parents and teacher.

⁶ These schools benefited from the program in the following year (2014).

⁷ School years follow calendar years in South Africa: they begin in mid-January and finish at the beginning December, for a total of around 200 school days, or 40 weeks.

⁸ We first created groups of pairs and triplets based on voluntary teacher grade and number of grade 4 and grade 5 classes. For groups with more than one school, we ranked the schools within groups by voluntary rate and then created groups of pairs and triplets and assigned the schools to treatment randomly. For groups with only one school, we created new groups based on the voluntary teacher grade and the total number of G4 and G5 classes. This way, we obtained larger groups in which we created pairs and triplets and assigned randomly treatments within these strata. This process led us to leave one school alone in its randomization strata. This school had a much smaller voluntary rate than the other schools and hence ended up at the bottom of the list; it had only 3 voluntary parents out of more than 300 students, probably because the school did not properly communicate the program to the parents. In addition, in that school, the first and last name of the voluntary parents could not be collected (forms were lost), and hence, we are able to identify the voluntary population and are unable to run the analysis in that school. In the following, we will exclude this school from the analysis.

Table 1: Sample description

| | Total | Treatment | Control |
|-----------------------------------|-------|-----------|---------|
| <i>Full Sample</i> | | | |
| # of schools | 83 | 41 | 42 |
| # of classes | 368 | 185 | 183 |
| # of students/parents | 13339 | 6278 | 7061 |
| <i>Volunteer parent</i> | | | |
| # of schools | 83 | 41 | 42 |
| # of classes | 339 | 172 | 167 |
| # of students/parents | 4856 | 2537 | 2319 |
| <i>Vol. parents & teacher</i> | | | |
| # of schools | 82 | 41 | 41 |
| # of classes | 354 | 177 | 177 |
| # of students/parents | 13034 | 6278 | 6756 |

The table gives the sample size of schools, classes, and students/parents present in each sub-group.

Given the large number of G4/G5 classes per schools, we still have sufficient students per school to isolate the effect of our sub-population. Unfortunately, in some cases, we were not able to link the voluntary teacher name with his or her classes.⁹ That explains why the voluntary teacher and parents sub-sample is composed of only 65 schools. Attrition on the variable linking teacher names and classes, however, is constant across treatment branches, suggesting that it should not bias our results.

This design offers a relatively large number of hypotheses to be tested. We will return to that point in section 3. As for now, we turn to the data collected to see how we manage to cope with the difficulties relative to observing parenting, teaching, and student behavior.

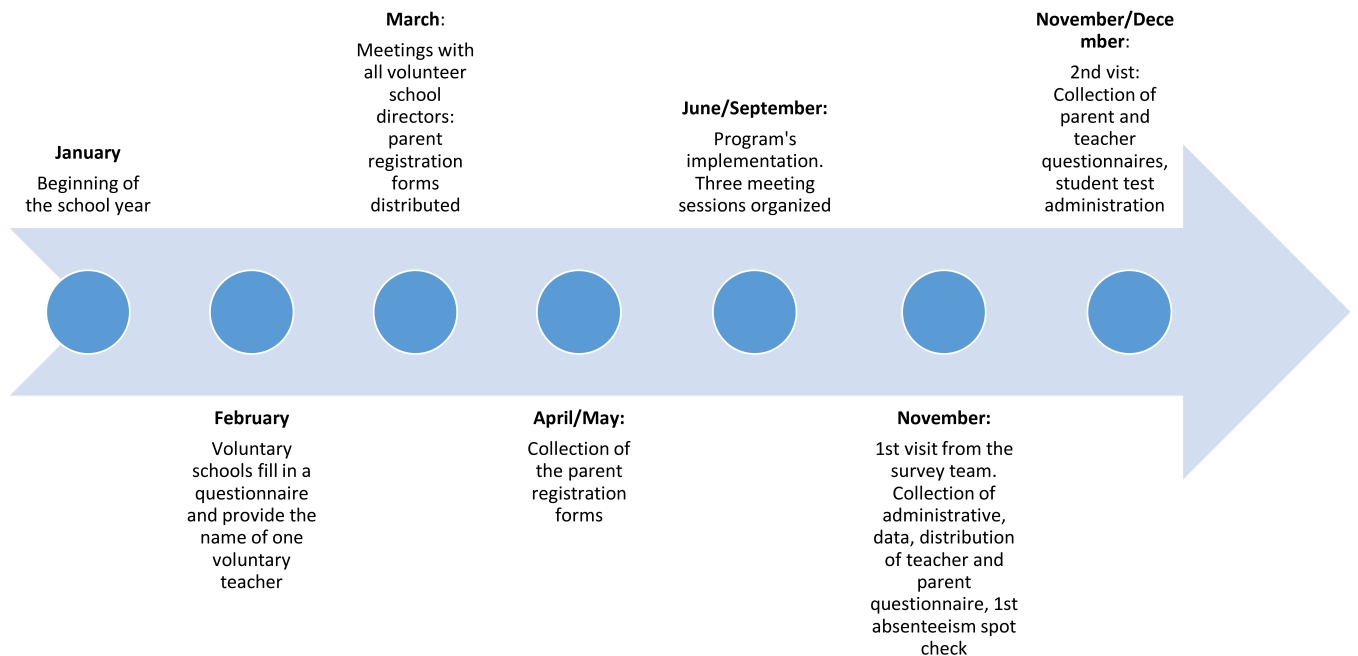
3.3 Data Collection

Data were collected in schools during two survey rounds at the end of the school year 2013. During the first survey round, enumerators collected administrative data and distributed teacher and parent questionnaires in each Grade 4 and Grade 5 class. During the second survey round, enumerators administered the student questionnaires and collected the filled-in

⁹ Either this information was missing in the registry or the teacher did not report this information during the survey.

teacher and parent questionnaires. Attendance was checked in both sessions.¹⁰

Figure 2: Timeline



3.3.1 First survey round

During the first survey round, grades, absenteeism as recorded by the school, parent and student information, and all other school-level data were either extracted from the centralized school software system (SA-SAMS) or printed from the handwritten registry. In each of the G4 and G5 classes, attendance was checked.¹¹ In addition, each G4 and G5 student was given a sealed letter to be handed in to his or her parents. In this letter, we included one consent form and one questionnaire to be filled in by the parent. Of much importance for our results,

¹⁰ Data collection timing was tight. Endline data could only be collected between the end of the third term (end of September) and the end of the school year (6th of December). Since attendance among children has a tendency to quickly diminish in November, we wanted to organize the second session as soon as possible (beginning of November). The first survey finally occurred from the 28th October to the 10th of November, while the second occurred from the 12th of November to the end of that month.

¹¹ For practical reasons, this first attendance spot check could not be implemented without advising the school administration; the date of the enumerator visit was communicated approximately two weeks in advance. Yet we have reasons to believe that this first spot check is as good as a random spot check, simply because we did not advise schools that we would spot absenteeism. Results show that absenteeism is quite high, suggesting that nothing has been done to reduce it. In any case, we do not believe school directors have any leverage, or any willingness, to modify student absenteeism in that context.

a random selection of half of the parents were additionally given crucial information about the maths test that was planned to be administered during the second survey round (typically 2 weeks after the first survey). We gave them half of the test questions and their answers and invited them to work with their child on the test. Since this information was randomized, by interacting the BPET treatment variable with the dummy indicating whether or not the parent got the information, we can assess whether parents are more likely to use the answers in the BPET treatment group than in the control. Note that, conversely to other instruments that only measure self-declared behavior, this strategy permits us to observe objectively how parents behave when the school provides them with information. Note also that we gave answers to only part of the mathematical tests; we are hence estimating not only the parental effort to help the child, but also the efficacy of such effort. On the sub-part of the test where answers were not given, we are estimating the parents' effectiveness in improving cognitive behavior. We will come back to these measures in the result section. Lastly, we hand in a teacher questionnaire, specific to each student. Each teacher had to fill in one questionnaire per student.¹²

3.3.2 Second survey round

The second round essentially consisted of administrating the student questionnaires and collecting the teacher and parent responses. This session occurred approximately two weeks after the first, between the 12th of November and the end of that month. As previously mentioned, in South Africa, school attendance tends to be very low at the end of November. Attendance as recorded by the second attendance check should hence not be taken at face value but rather be used solely as a comparison measure between treatment and control schools.

¹² Because some teachers complained about the time necessary to complete this task, we asked them to prioritize filling in the volunteer parents' questionnaires, and we then paid them a lump sum (50 Rands) if all volunteer questionnaires were completed.

4 Empirical Strategy

As mentioned, the design is expected to answer the following questions:

- (1) Do the meetings effectively improve parental involvement?
- (2) Do meetings modify student school performance or behavior ?
- (3) Is the parent-teacher relationship a main mechanism of the impact?
- (4) Can we identify spillovers among the students?

The above questions can be answered by relying on self-declared and observed data, cognitive tests, and non-cognitive tests. Given the design, one can rigorously estimate the following model:

$$Y_{its} = \beta_0 + \beta_1 T_s + \mathbf{X}\beta_7 + \mathbf{S}\beta_8 + \epsilon_{its} \quad (1)$$

with T_s the dummy variable indicating where the school s receives the program or not, \mathbf{X} the set of control variables, and \mathbf{S} the set of control variables used during the stratification. Y_{its} is the outcome for individual (parents/child) i , teacher t , and school s . β_1 gives the reduced form expression of the treatment effect (ITT). As said, six different sub-groups may be analyzed with very little assumptions: the group of voluntary parents and teacher (VPT), the group of voluntary parents and non-voluntary teacher (VPnT), the full sample of voluntary parent (VP), the full sample of non-voluntary parents (nVP), the sample of non-voluntary parents in classes given by voluntary teacher (nVPT), and the sample of non-voluntary parents in classes given by non-voluntary teacher (nVPnT). Since results at the student level are weak or null, no spillover can be detected, and we will concentrate the analysis on the direct effect of the program (VP, VPT, VPnT).

According to [Bruhn and McKenzie \(2009\)](#), standard errors are minimized when results are controlled for the set of dummy stratification variables. Yet when a pair/triplet-wise randomization is used, controlling for the full set of stratification dummies may, in presence of attrition, annihilate some of the within-stratification cell's variation: Controlling for the full set of dummies in presence of attrition boils down to dropping any stratification cells that present no treatment variation. As school attrition is sometimes large and a triplet/pair-wise randomization was used (see [3.2](#)), this study is particularly affected by this problem.

To avoid this concern, we do not control for the full set of pair/triplet dummies, but by a strata set ¹³ that always permits within-cells treatment variation. For baseline analysis, take-up, and attrition analysis (5), we will use this set of strata dummies alone. In addition, in the analysis of the endline data, we will include all variables not balanced at baseline, as well as race and gender, which are arguably highly correlated with the outcome variables analyzed here.

Finally, in addition to the exogeneous variation of the BPET program, we also rely on another source of random variation. Indeed, during our first visit, we randomly chose half of the volunteer parents and gave them information (in a letter addressed to them) about the math tests that the child would take during our first visit. The information contains the questions and answers of half of the questions included in the standardized test. We gave this information to trigger parental involvement and to analyze whether the information caused parents in the treatment schools to react more than those in the control ones. Formally, we estimate the following regression:

$$Y_{its} = \alpha_0 + \alpha_1 T_s + \alpha_2 T_s * I_i + \alpha_3 I_i + \alpha_7 \mathbf{X} + \alpha_8 \mathbf{S} + \nu_{its} \quad (2)$$

where T represents the BPET treatment, I the information given to a sub-sample of parents, and T*I their interaction. In that regression α_1 will equal zero if the treatment has no direct cognitive effect, α_2 represents the effect of giving information (in the control group) which is expected to be positive, and α_3 is interpreted as the observed parental involvement in the treatment group: if α_3 is positive, it indicates that the BPET treatment has induced parents to make more effort (or make an effort that is more productive) to prepare their child for the test.

5 Baseline Tests, Attrition, and Compliance

5.1 Baseline results

Baseline data originate either from the Department of Education or from the school registries of the first two terms (before treatment). Some school-level data are presented in table 2. As expected, characteristics are well balanced between treatment and control, with no coefficient statistically significant. Descriptive statistics indicate that 80% of the sampled schools are

¹³ This strata set is based on (1) the number of schools per cells, (2) the grade of the voluntary teacher, and (3) the percentage of voluntary parents per school.

Xhosa speaking, the dominant language among black people in Port Elizabeth. The poverty index, computed by the Department of Education, is 3.7 points, equivalent to the average in the whole Port Elizabeth area (3.9). Likewise, characteristics of the sample are in line with the rest of the district (number of orphans, number of student grants), indicating that the schools included in this survey are relatively similar in terms of poverty level, or perhaps slightly poorer, than the schools in Port Elizabeth.

Table 2: Baseline balancing - school level data

| | Obs. | Average | C | T-C |
|---------------------------|------|--------------------|--------------------|-------------------|
| # of orphans | 77 | 17.455 [16.26] | 19.538 [15.141] | -4.455 (3.695) |
| # of students held back | 80 | 68.838 [63.248] | 68.475 [58.939] | 1.544 (13.422) |
| School language (1=Xhosa) | 82 | 0.805 [0.399] | 0.78 [0.419] | 0.048 (0.087) |
| Poverty index 1-5, 1=poor | 81 | 3.691 [0.861] | 3.625 [0.868] | 0.111 (0.179) |
| No-fee school | 82 | 0.585 [0.496] | 0.659 [0.48] | -0.146 (0.101) |
| Survey zone | | | | |
| ... <i>Algoa Park</i> | 82 | 0.122 [0.329] | 0.122 [0.331] | 0.001 (0.074) |
| ... <i>Betheldrop</i> | 82 | 0.11 [0.315] | 0.146 [0.358] | -0.075 (0.069) |
| ... <i>Ibayi</i> | 82 | 0.159 [0.367] | 0.195 [0.401] | -0.072 (0.082) |
| ... <i>Motherwell</i> | 82 | 0.171 [0.379] | 0.122 [0.331] | 0.109 (0.079) |
| ... <i>New Brighton</i> | 82 | 0.195 [0.399] | 0.171 [0.381] | 0.045 (0.086) |
| ... <i>North End</i> | 82 | 0.122 [0.329] | 0.098 [0.3] | 0.048 (0.07) |
| ... <i>South</i> | 82 | 0.122 [0.329] | 0.146 [0.358] | -0.056 (0.066) |
| # G4 classes | 82 | 2.756 [2.502] | 3.049 [3.346] | -0.573 (0.481) |
| # G5 classes | 82 | 2.427 [2.166] | 2.634 [2.896] | -0.398 (0.442) |
| # G5 students | 82 | 95.671 [48.107] | 95.561 [47.018] | 1.245 (9.32) |
| # G4 students | 82 | 77.207 [47.114] | 80.707 [48.728] | -5.965 (9.809) |

The table presents baseline school characteristics. For each statistic, the number of schools (Obs.), the average in both experimental group (Average), the average in the control group (C) and the difference between the treatment and the control group (T-C) is provided. Usual strata dummies are included in the regression. The robust standard errors are given below in parenthesis.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Next, we present in table 3 and 4 some baseline measures at the student level: in the first panel, we look at the baseline results on the group of volunteer parents whose child is enrolled in the volunteer teacher’s class (volunteer parents & teacher, VPT); in the second, on the group of volunteer parents whose child is *not* enrolled in the volunteer teacher’s class (volunteer parents & non-volunteer teacher, VPnT); and in a third panel, the full group of non-volunteer parents (non-volunteer parents, nVP). In the last columns, we give the comparison between the group of non-volunteer and of volunteer parents (teacher volunteer or not) and the comparison between the volunteer parents and teacher and volunteer parents and non-volunteer teacher sub-sample. The first estimate (VP–nVP) gives a sense of how selected are the parents who volunteer to this program in comparison with the rest of the classes; the second (VPT–VPnT) tells how balanced are the two main sub-groups: because volunteer teacher and volunteer parents were selected before randomization (and the program was advised exactly the same way in both groups), both groups are expected to be close to each other. Yet some parents may have learned about the identity of the voluntary teacher and hence have changed their voluntary status accordingly. $VPT-VPnT$, therefore, tests whether such selection mechanism occurred or not.

Not surprisingly, given the context, almost no white students are present in the sample, consistent with the school districts targeted by the GMFSA in the area. The absence of white students is not surprising in these townships where the three main communities – Xhosa/Black, Afrikaans/Colored, and White (Afrikaans or English speakers) – live in very distinct neighborhoods. Consistent with table 2, the sample is mainly composed of Black people who speak Xhosa (approximately 80%) and more marginally of Colored people who speak Afrikaans. The vast majority of them are South African. A small proportion (around 5%) declare speaking English at home. The sample is composed of a large proportion of students who receive either a grant (to cover tuition fees) or the National Nutrition Program, again not surprising given the target.

Regarding balancing, data do not show many significant differences between the treatment and control groups, except for the date of birth, which is slightly higher in the group of Volunteer parents & non-volunteer teacher and the proportion of deceased parents in the group of Volunteer parents and teachers. Both characteristics will be included in the regressions throughout the analysis. Interesting also are the results displayed in the columns *Sample comparison*. Results presented in column $VP-nVP$ give the magnitude of the parent’s selection into the program. Volunteer parents are more likely to be Black, their child is more

often a girl, and the children are older. Although they are not richer (no less scholarship), they tend to speak English more often than not, which might indicate a higher socioeconomic status. The fact that volunteer parents are more likely to be Black may suggest that Black/Xhosa communities are more sensitive to the parental involvement approach, regardless of their socioeconomic status, or that the program was better implemented in Black/Xhosa schools. Although not clear-cut, these first results suggest that parents who participate in such programs are peculiar: more on this will be studied in table 4. Conversely, only one significant difference can be seen in column VPT–VPnT, which compares the voluntary parent’s children in the classroom of the volunteer teacher and the one in the other classroom. This would suggest that our design worked perfectly: parents were unaware of the identity of the facilitating teacher, and hence did not self-select. Both sub-samples might hence be comparable.

Table 3: Balancing using baseline student information

| | Volunteer parents (VP) | | | | Non-vol.parents (nVP) | | | | Sample comparison | | | | | |
|-------------------|------------------------|-------------------|------------------------|-------------------|-----------------------|-------------------|---------------------|---------------------|--------------------|--------------------|----------------------|----------------------|-------------------|-------------------|
| | Vol.teacher (VPT) | | Non-vol.teacher (VPnT) | | N | | C | | T-C | | VP-NV | | VPT-VPnT | |
| | N | C | N | C | N | C | N | C | T-C | T-C | T-C | VP-NV | VP-NV | VPT-VPnT |
| Sex (1=girl) | 1682 | 0.516 [0.5] | 3840 | 0.545 [0.498] | 6584 | 0.452 [0.498] | 0.04 (0.03) | 0.001 (0.021) | 0.006 (0.013) | 0.006 (0.013) | 0.1*** (0.014) | 0.1*** (0.014) | 0 | 0 (0.021) |
| Age in years | 1511 | 10.119 [1.143] | 3474 | 10.171 [1.095] | 5947 | 10.322 [1.192] | -0.053 (0.124) | -0.191** (0.079) | 0 | 0 | -0.219*** (0.052) | -0.219*** (0.052) | -0.005 (0.142) | -0.005 (0.142) |
| Race | | | | | | | | | | | | | | |
| ... white | 1526 | 0.003 [0.051] | 3506 | 0.001 [0.035] | 5995 | 0.002 [0.042] | 0.013 (0.015) | 0.008 (0.008) | 0.053 (0.037) | 0.053 (0.037) | -0.01* (0.006) | -0.01* (0.006) | 0.015 (0.012) | 0.015 (0.012) |
| ... colored | 1526 | 0.135 [0.342] | 3506 | 0.168 [0.374] | 5995 | 0.197 [0.398] | 0.003 (0.084) | 0.031 (0.09) | 0.128 (0.096) | 0.128 (0.096) | -0.017 (0.017) | -0.017 (0.017) | -0.012 (0.062) | -0.012 (0.062) |
| ... black | 1526 | 0.852 [0.356] | 3506 | 0.825 [0.38] | 5995 | 0.794 [0.404] | -0.009 (0.085) | -0.037 (0.09) | -0.178* (0.097) | -0.178* (0.097) | 0.03 (0.018) | 0.03 (0.018) | -0.006 (0.064) | -0.006 (0.064) |
| Home Language | | | | | | | | | | | | | | |
| ... English | 1526 | 0.063 [0.244] | 3506 | 0.056 [0.23] | 5995 | 0.053 [0.223] | -0.022 (0.036) | 0.039 (0.045) | 0.088* (0.052) | 0.088* (0.052) | 0.003 (0.009) | 0.003 (0.009) | 0.001 (0.035) | 0.001 (0.035) |
| ... Afrikaans | 1526 | 0.083 [0.275] | 3506 | 0.123 [0.328] | 5995 | 0.165 [0.371] | 0.041 (0.07) | 0.001 (0.059) | 0.1 (0.08) | 0.1 (0.08) | -0.039** (0.018) | -0.039** (0.018) | 0.013 (0.042) | 0.013 (0.042) |
| ... Xhosa | 1526 | 0.846 [0.361] | 3506 | 0.815 [0.388] | 5995 | 0.773 [0.419] | -0.017 (0.086) | -0.039 (0.091) | -0.183* (0.1) | -0.183* (0.1) | 0.038** (0.019) | 0.038** (0.019) | -0.016 (0.064) | -0.016 (0.064) |
| SA citizenship | 1524 | 0.992 [0.088] | 3503 | 0.993 [0.085] | 5993 | 0.99 [0.098] | 0.003 (0.004) | 0.003 (0.003) | 0.006* (0.003) | 0.006* (0.003) | 0.001 (0.002) | 0.001 (0.002) | -0.001 (0.003) | -0.001 (0.003) |
| Receive grant | 1524 | 0.439 [0.497] | 3503 | 0.348 [0.477] | 5993 | 0.292 [0.455] | -0.061 (0.09) | -0.068 (0.078) | 0.043 (0.077) | 0.043 (0.077) | 0.001 (0.017) | 0.001 (0.017) | 0.1* (0.052) | 0.1* (0.052) |
| Nutrition program | 1524 | 0.464 [0.499] | 3503 | 0.426 [0.495] | 5993 | 0.329 [0.47] | -0.04 (0.092) | -0.07 (0.1) | 0.085 (0.109) | 0.085 (0.109) | 0.014 (0.027) | 0.014 (0.027) | 0.036 (0.075) | 0.036 (0.075) |
| Deceased parent | 1523 | 0.085 [0.28] | 3482 | 0.07 [0.255] | 5986 | 0.059 [0.236] | -0.054*** (0.02) | -0.03** (0.015) | -0.012 (0.015) | -0.012 (0.015) | -0.004 (0.007) | -0.004 (0.007) | 0.008 (0.015) | 0.008 (0.015) |

The table presents baseline student data, the number of observation (“N”), the average in the control group (“C”) and the difference between the experimental groups (“T-C”), for different subsamples. The last two columns give the statistical comparison between the samples. Strata are used in the regressions. Robust and clustered standard errors are given in brackets, standard deviations in square brackets.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

In addition to socioeconomic data, we look in table 4 at the student baseline results as collected for terms 1 and 2. A clearer pattern appears when comparing volunteer and non-volunteer groups (VP–nVP): volunteer children are significantly (and quite strongly) better performing than non-volunteer children, both in term of absenteeism and grades. For instance, the global score is significantly larger in the volunteer sample than in the non-volunteer sample (approximately 3.5 pp, around .25 sd of the control group). Likewise, volunteer children miss approximately a third of a day less than the non-volunteer students (half a day less in the first term and almost a full day less in the second). This confirms that a clear selection process has occurred before randomization: while volunteer parents seem not to be wealthier and are of more Black/Xhosa origin, their children perform much better. Such a result, consistent with the one found by [Avvisati et al. \(2013\)](#) and [Goux et al. \(2014\)](#), confirms that participants in this type of program are very specific: their children are performing much at school, which suggests that they are themselves much more involved. One potential worry is that such parents may not be the ones that need the parental involvement program the most. In the result section, we will interpret the findings in regards to the selection process that occurred.

Regarding balancing, results suggest that, on the sample of volunteer parents (teacher volunteer or not), there is an initial difference in the favor of the treatment. Yet both groups of voluntary teacher and non-voluntary teacher are not significantly different as indicated by column ($VPT-VPnT$); the latter suggests that the fact that the meetings were facilitated by the teacher of the child’s parents had no impact on the composition of the voluntary group, and hence, VPT and VPnT can be compared in the analysis. For unknown reasons (probably bad luck), however, the treatment group slightly over-performed the control group of volunteer group initially in term of grades (other behaviors being unaffected). Since we do not believe the program would have a direct effect on school achievement (at least at short term), these initial differences should not significantly impact the reliability of our estimate. In any case, all baseline school grades will be added to the list of control variables.

Table 4: Balancing using baseline students' academic results

| | <i>Volunteer parents (VP)</i> | | | | <i>Non-vol. parents (nVP)</i> | | | | <i>Sample comparison</i> | | | |
|--------------------|-------------------------------|--------------------|-------------------------------|------|-------------------------------|--------------------|------|--------------------|--------------------------|----------------------|-------------------|----------|
| | <i>Vol.teacher (VPT)</i> | | <i>Non-vol.teacher (VPnT)</i> | | N | C | T-C | N | C | T-C | VP-NV | VPT-VPnT |
| | N | C | T-C | N | | | | | | | | |
| Repeated a year | 2240 | 0.301 [0.459] | 0.043 (0.067) | 2041 | 0.307 [0.461] | -0.037 (0.07) | 8178 | 0.411 [0.492] | -0.014 (0.069) | -0.074*** (0.014) | 0.033 (0.04) | |
| Absenteeism | | | | | | | | | | | | |
| ... <i>Term 1</i> | 1290 | 1.774 [2.75] | 0.046 (0.564) | 1361 | 1.507 [2.123] | 0.045 (0.3) | 4756 | 2.072 [3.537] | 0.332 (0.566) | -0.352*** (0.099) | 0.365 (0.271) | |
| ... <i>Term 2</i> | 1179 | 2.381 [3.234] | -0.177 (0.575) | 1328 | 2.115 [2.849] | 0.09 (0.392) | 4586 | 3.202 [4.484] | 0.124 (0.61) | -0.719*** (0.123) | 0.237 (0.31) | |
| Grades | | | | | | | | | | | | |
| Language 1 | 2034 | 52.058 [15.481] | 5.52*** (1.89) | 1760 | 53.833 [14.329] | -2.188 (2.113) | 6981 | 48.778 [15.495] | 1.333 (2.024) | 3.014*** (0.589) | 1.217 (1.716) | |
| Language 2 | 1999 | 48.51 [16.097] | 3.711 (2.266) | 1798 | 51.911 [16.582] | -1.665 (2.363) | 6944 | 47.809 [17.03] | -0.437 (2.372) | 2.873*** (0.791) | 0.079 (1.428) | |
| Maths | 2091 | 49.616 [18.382] | 2.365 (2.307) | 1913 | 48.854 [18.358] | 4.002* (2.176) | 7287 | 46.43 [19.107] | 0.971 (2.611) | 2.671*** (0.689) | 0.847 (1.476) | |
| Natural Sciences | 1896 | 51.421 [18.361] | 5.345** (2.632) | 1797 | 55.015 [18.581] | 1.914 (2.899) | 6711 | 50.923 [17.997] | 1.497 (2.264) | 2.502*** (0.692) | -1.708 (1.805) | |
| Social Sciences | 1892 | 49.843 [19.856] | 7.514*** (2.676) | 1776 | 53.119 [18.005] | 4.708** (2.353) | 6646 | 48.735 [18.902] | 3.215* (1.8) | 4.023*** (0.696) | -1.854 (2.065) | |
| Life Skills | 1898 | 55.517 [14.567] | 4.765** (2.355) | 1784 | 57.941 [13.877] | 3.947* (2.076) | 6718 | 55.627 [15.516] | 1.666 (2.085) | 1.731*** (0.534) | -1.389 (1.628) | |
| Global | 2114 | 51.039 [13.68] | 3.747** (1.695) | 1929 | 53.103 [13.181] | 2.248 (1.695) | 7334 | 49.063 [14.296] | 1.273 (1.969) | 3.026*** (0.504) | -0.643 (1.096) | |

The table presents baseline student data, the number of observation ("N"), the average in the control group ("C") and the difference between the experimental groups ("T-C"), for different subsamples. The last two columns give the statistical comparison between the samples. Strata are used in the regressions. Robust and clustered standard errors are given in brackets, standard deviations in square brackets.

* p < 0.1, ** p < 0.05, *** p < 0.01.

5.2 Attrition

Given the data collection strategy that relies almost exclusively on data collected at school, one may worry that response rates might be low. We present in table 5 attrition rates for three sub-samples: the volunteer parents and teacher, the volunteer parents (all together), and the non-volunteer parents.¹⁴ On surveys and on the sample of volunteer parents, attrition reaches relatively high but acceptable levels. Taken together, we have a piece of survey information on almost all students (4.5% attrition). This rate naturally increases for parent questionnaires (23%), as parents needed to send back the questionnaire, and is still high for teachers, who sometimes refused to fill in a questionnaire per student despite compensatory payment. Attrition on students is smaller and is only caused by absenteeism during the second survey round. Administrative data show much higher levels of attrition, essentially due to mismanagement of the computer system or the handwritten registry. While grade data are relatively well kept, absenteeism records are only recorded for 60% of the students. General information on students and parents is usually well-kept in the computer system (SA-SAMS) but is absent when the schools do not use SA-SAMS at all. In any case, attrition seems not to have differently affected treatment and control group with T-C coefficients far from the significance level. Moreover, attrition rates in the sub-group of volunteer parents and teacher are usually not different than in the full sample.

On the group of non-volunteer, collecting surveys happens to be even more difficult: teachers usually accepted to fill in questionnaires for the sole volunteer parents, and we did not have a very well-kept registry of non-volunteer parents. Hence, we were not able to distribute a parent questionnaire to each non-volunteer parent. As a result, attrition rates are very high on non-volunteer parents and teacher surveys. We will not rely on these two questionnaires in the following analysis.

¹⁴ Attrition rates for the sample of volunteer parents and non-volunteer teachers are no different than the one on volunteer parents and teachers.

Table 5: Attrition from endline survey questionnaires and tests

| | Volunteer Parents & Teacher | | Vol. parents Non-vol. teacher | | Non-Volunteer parents | |
|--------------------|--------------------------------|------------------|----------------------------------|------------------|--------------------------|-------------------|
| | N | C | N | C | N | C |
| Admin. data | | | | | | |
| All surveys | 2240 | 0.043 (0.042) | 4856 | 0.045 (0.031) | 8178 | 0.141 (0.051) |
| Student survey | 2240 | 0.162 (0.068) | 4856 | 0.166 (0.063) | 8178 | 0.279 (0.076) |
| Parent survey | 2240 | 0.234 (0.067) | 4856 | 0.229 (0.047) | 3728 | 0.581 (0.142*) |
| Teacher survey | 2240 | 0.157 (0.071) | 4856 | 0.193 (0.065) | 8178 | 0.437 (0.082) |
| Survey data | | | | | | |
| All admin data | 2240 | 0.006 (0.006) | 4856 | 0.003 (0.003) | 8178 | 0.005 (0.003) |
| Grade data | 2240 | 0.082 (0.059) | 4856 | 0.073 (0.053) | 8178 | 0.073 (0.061) |
| Absenteeism data | 2240 | 0.471 (0.135) | 4856 | 0.424 (0.108) | 8178 | 0.475 (0.115) |
| Student info | 2240 | 0.355 (0.139) | 4856 | 0.291 (0.113) | 8178 | 0.236 (0.108) |
| Parent info | 2240 | 0.53 (0.142) | 4856 | 0.424 (0.12) | 8178 | 0.394 (0.086) |

The table presents different measures of attrition for survey questionnaires and tests. Children who dropped out during the school years are excluded. For each statistic, the number of observation (N), the average attrition in the control group (C) and the difference between the treatment and the control group (T-C) is provided. For the coefficients, the robust and clustered (at school level) standard error is given below in parentheses.

* p < 0.1, ** p < 0.05, *** p < 0.01.

5.3 School-Level Compliance and Parent Attendance

Another concern of such a program is that it relies heavily on the goodwill of parents: sessions were organized after school hours, often on Saturday morning, and while food was provided, we still expected a low level of attendance. Indeed, low participation rates have been reported in two previous related studies about parental involvement ([Avvisati et al. \(2013\)](#), [Goux et al. \(2014\)](#)).

Data about school compliance (whether the school has implemented the program) and take-up (whether the parent has attended the program) were collected by the implementation partner (GMFSA). For each school participating in the program, the GMFSA provided us with a list of parents who attended the meetings at least twice. Parents would write down their names at the beginning of each session, and the NGO would then compile the data to establish a list of awarded parents. Unfortunately, the first and last name of the child was not asked, and hence participation data had to be matched with the rest of the data using parents' names. Because not all schools collected parents' names, because parents do not necessarily have the same name as their children, or because the name of the attendee may not be the same than the name stored in the school administration record, matching parental names and children's names proved very difficult. Additionally, the NGO was not able to collect data on 6 schools that participated in the program. While we do know in which schools the program was implemented (school compliance), take-up data are hence not perfect.

Table 6: School Compliance and Parent’s take-up

| | <i>Volunteer parents</i> | | | <i>Volunteer parents & teacher</i> | | <i>Vol. parents Non-vol. teacher</i> | |
|---------------------|--------------------------|---|---------------------|--|---------------------|--------------------------------------|---------------------|
| | N | C | T-C | N | T-C | N | T-C |
| School compliance | 82 | 0 | 0.927*** (0.041) | 75 | 0.926*** (0.042) | 75 | 0.926*** (0.042) |
| Take-up (matched) | 4590 | 0 | 0.184*** (0.017) | 2142 | 0.198*** (0.023) | 1873 | 0.173*** (0.025) |
| Take-up (predicted) | 4590 | 0 | 0.269*** (0.01) | | | | |

The table presents different measures of take-up and compliance. “School Compliance Rate” indicates whether or not the school has implemented the program, “Parent take-up (matched)” and “Parent take-up (predicted)” are two measures of whether or not the parent had attended at least two sessions. For each statistic, the number of observation (Obs.), the average in the control group (C) and the difference between the treatment and the control group (T-C) is provided. For the coefficients, the robust and clustered (at school level) standard error is given below in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6 provides a summary of the available information on participation. In the first row, we give the overall compliance at the school level. Compliance is good (around 93%); only three schools were not able to implement the program during the school year (one voluntary teacher was sick, another on leave, and a last was finally unwilling to organize the meetings). In the second row, we present the participation rate when the names, as recorded in the meetings’ attendance sheets, are matched with the names from the school registry. Such a measure is allegedly a low bound of the true participation: attendees may not be matched, names may be different in both data sets, or attendees’ names may be matched with the wrong parent. One of the specific issues is that it may match voluntary parent names with non-voluntary parent names and therefore overestimate the participation of non-voluntary parents. Results show that participation in at least two meetings (out of three) among volunteer parents remains relatively low (18.4%). Yet, as said, this is certainly a low bound of the true participation. On non-volunteer (not displayed here), we do find a participation of 2.7%, a level which could be considered an overestimation, as attendee names may have been matched to non-volunteer parents by mistake. In the third row, we present a measure of what we expect to be our upper bound of the true participation result: we assume here that all the names on the attendee lists were G4/G5 voluntary parents. This gives us a participation rate of 26.9%. All in all, participation in at least two sessions is very likely

between these two figures (18.4% and 26.9%), and probably much closer to the upper bound, as we do not expect that many non-voluntary parents (or parents from other grades) would attend meetings on Saturday morning; they were not instructed to attend, and they initially refused to attend (as they were not voluntary). It is hence safe to say that attendance was at least above 20%.

Next, we contrast the participation rate of volunteer parents on whether or not the child's teacher volunteered to facilitate the meetings. The attendance rate is slightly higher for the VPT group than for the VPnT group. Yet the difference (20% versus 17.3%) is not significant; hence, we cannot say whether it is due to teachers advertising the program better, to parents being more inclined to participate in meetings organized by her own child's teacher, or if this difference is only a statistical artifact. In any case, the small difference in participation rate between the two groups makes the ITT comparison between them relatively acceptable, under the assumption that compliers in both groups are similar (which seems to be the case, as shown in table 3 4).

While low, such a participation rate is consistent with two other research projects about parental involvement implemented in France. In [Avvisati et al. \(2013\)](#), parents' participation in at least two sessions reached 30.8% and only 21.1% in [Goux et al. \(2014\)](#). In India, where a similar program was run, the parenting intervention was a door-to-door visit, and hence had a very high take-up. Yet for the intervention branch where mothers were asked to attend literacy sessions, a take-up of 30% was reported, similar to the one found here. Such a result, together with the one found when characteristics of volunteer and non-volunteer parents were compared in tables 4 and 3, suggests that the group of parents who participate in such a program are a minority and are potentially very different from the rest of the parents. One of the possible risks of such selection is that parents participating in the meeting are already very much involved in their child's education and will learn little from the sessions. Our results should hence be interpreted in line with this observation.

6 Results

As mentioned earlier, the goal of this research is to clearly identify the first order program's impact on the parental involvement and to evaluate in a second step whether this first order improvement had an effect on the students' performances and behavior at school. Since the program primarily concerned the group of voluntary parents (later designed *VP*), the analysis will be essentially conducted on that group. In addition, using the two subgroups

defined in the research protocol, the voluntary parents whose child is enrolled in a voluntary teacher’s class (*voluntary parent and voluntary teacher, VPT*) and the ones whose child is not (*voluntary parent and voluntary teacher, VPnT*), we will also investigate whether a useful complementarity exists between the voluntary teacher and parent. Finally, we could have relied on the population of non-voluntary parents (*VnP*) to estimate spillover effects, but given disappointing results on students, these results will not be given here.

6.1 BPET and Parental Involvement

6.1.1 Relationship between parents and teachers

One of the first objectives of the parental intervention is to fill the gap between the teachers, the school administration, and the parents under the prior that parents, who have not necessarily benefited from an education, do not have sufficient relations with the school or their child’s teacher. As we will see later – in the control group, for instance – 92% of the parents declare not receiving enough information from school, a figure that stresses by itself the gap that exists between the school and the parents. The meetings are supposed to reinforce the relationship with the teacher/school, to improve mutual trust and respective involvement. We approach the parent-teacher relationship through two main angles: (1) the number of interactions between the school and the parents, and (2) the manner in which they represent each other’s commitment to the child’s education. In table 7, we look at the number of *individual* meetings between parents and teachers. Since we asked for individual meetings and not collective ones, like the ones organized by GMFSA, one can interpret such results as intermediary outcomes, not mere first-stage effects.

In the first set of rows, we look at the reports from the teacher questionnaire. On the *VP* sample (*Full sample* columns), results indicate that parents are more likely to ask for a meeting, but this demand has no consequence on the actual number of individual meetings organized. This results are, unfortunately, not confirmed by the parents, for which we find no difference between treatment and control. Results on the *VPT* sample (the *volunteer teacher* columns) are more positive, as they suggest that teacher and parents have been in contact with each other more often (+7.4 pts). On the compliers,¹⁵ this amounts to a large increase in the number of interactions: almost 1 additional meeting, with a baseline at 1.4. Unfortunately, this is still not confirmed in the parent questionnaire, leaving doubts about the reliability of this measure. The fact that we find positive effects on the teacher questionnaire, but not on

¹⁵ Compliers with a 26.9% take-up; see table. 6

Table 7: Meeting between parents and teachers

| | <i>Full sample</i> | | | <i>vol.teacher</i> | | <i>Non-vol. teacher</i> | |
|--------------------------|--------------------|------------------|--------------------|--------------------|-------------------|-------------------------|----------------------|
| | N | C | T-C | N | T-C | N | T-C |
| From teachers | | | | | | | |
| Any meeting(1=yes) | 3893 | 0.661 [0.474] | 0.007 (0.045) | 1822 | 0.075* (0.044) | 1601 | -0.155** (0.074) |
| ... teacher's initiative | 3920 | 0.598 [0.49] | -0.016 (0.047) | 1826 | 0.059 (0.048) | 1604 | -0.235*** (0.079) |
| ... parent's initiative | 3900 | 0.146 [0.353] | 0.052** (0.023) | 1825 | 0.016 (0.033) | 1604 | 0.057* (0.035) |
| Number of meetings | 3754 | 1.408 [1.475] | 0.104 (0.139) | 1720 | 0.169 (0.136) | 1575 | -0.49* (0.26) |
| ... teacher's initiative | 3782 | 1.137 [1.247] | 0.002 (0.119) | 1728 | 0.096 (0.125) | 1578 | -0.544** (0.228) |
| ... parent's initiative | 3887 | 0.27 [0.751] | 0.105** (0.051) | 1817 | 0.037 (0.077) | 1601 | 0.076 (0.065) |
| From Parents | | | | | | | |
| Any meeting(1=yes) | 3392 | 0.656 [0.475] | -0.035 (0.032) | 1599 | -0.01 (0.039) | 1397 | -0.046 (0.035) |
| ... teacher's initiative | 3391 | 0.375 [0.484] | -0.032 (0.034) | 1598 | 0.019 (0.036) | 1397 | -0.033 (0.039) |
| ... parent's initiative | 3391 | 0.422 [0.494] | -0.003 (0.027) | 1598 | -0.021 (0.03) | 1397 | 0.014 (0.026) |
| Number of meetings | 3147 | 1.603 [1.957] | -0.175 (0.116) | 1482 | -0.107 (0.146) | 1281 | -0.16 (0.137) |
| ... teacher's initiative | 3290 | 0.724 [1.206] | -0.104 (0.072) | 1541 | -0.037 (0.09) | 1355 | -0.101 (0.081) |
| ... parent's initiative | 3203 | 0.847 [1.359] | -0.061 (0.066) | 1527 | -0.068 (0.082) | 1311 | -0.032 (0.08) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient. Usual controls are used. In square brackets are given the standard deviations.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

the parent's, may indicate that we are only capturing a desirability response effect from the volunteer teacher.

Moreover, in the VPnT sample (*Non-volunteer teacher* columns), the situation seems to have worsened: meetings at the teacher's initiative have been reduced, while the parent's initiative has increased (non-significantly). This suggests that the number of interactions between the non-voluntary teacher and the voluntary parent have decreased. Although this is not confirmed by the parent survey, we can interpret this mixed result as a crowd-out

effect of the program on the non-voluntary teacher: while voluntary parents seem to be more motivated to encounter their child’s teacher, the teacher seems to consider that these parents have already enough interactions with the school, and hence refuses to see them more often and even decreases their interaction with them. Alternatively, it is possible that voluntary parents found themselves with a teacher, presumably less motivated and less likely to be keen on establishing a good relationship, who also refused to spend more time discussing the child’s education. In term of relationship, we may hence expect a reverse effect when a parent volunteered and his/her child’s teacher did not.

To look more closely at this first glimpse of the impact of the program, we investigate not only the number of interactions, but also the perceptions about the quality of parent and teacher’s role in the child’s education. Teachers were asked whether they considered that the child receives proper support at home, whether the child arrives late, whether the child is prepared, whether the child rested in class, and so on. Parents were asked to assess the quality of the education received at school. We regroup the set of results into a unique index for the clarity of the presentation.¹⁶ Results presented in table 8 tend to confirm the ones presented previously herein.

Table 8: Teachers and parents mutual perception

| | <i>Full sample</i> | | | <i>vol.teacher</i> | | <i>Non-vol. teacher</i> | |
|----------------------------|--------------------|------------------|-------------------|--------------------|------------------|-------------------------|----------------------|
| | N | C | T-C | N | T-C | N | T-C |
| Teacher’s view | | | | | | | |
| Parental involvement index | 4036 | 0.109 [0.72] | -0.041 (0.05) | 1880 | 0.045 (0.067) | 1633 | -0.229*** (0.073) |
| Parent’s view | | | | | | | |
| Index school perception | 3402 | -0.009 [0.79] | -0.034 (0.033) | 1597 | 0.073* (0.04) | 1414 | -0.182*** (0.054) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient. In square brackets are given the standard deviations. Scores are computed so that a positive result indicates a positive outcome. + indicates the items for which the scale has been reversed.

* p < 0.1, ** p < 0.05, *** p < 0.01.

In classes where teachers volunteer, teacher and parents seem to have a better perception of each other’s roles, not significantly for teachers, but significantly for parents. This improvement, together with mixed effects on the number of interactions, suggest that the program

¹⁶ It is worth noticing that the composition of the index, the statistical strategy used to build the index, and its standardization were all aspects that were pre-announced in a Pre-Analysis Plan attached to this article and written before data were available.

succeeds in shaping new relationships between parents and teachers when they did meet during the BPET session. The magnitude of the effect ($7.1/0.8= 9\%$ of a standard deviation) is small but converts to a large effect on the compliers (33% of standard deviation): it is hence consistent with a quite significant change in the perception of parents. Although we do not have precise data about this, our feeling, from field observation, has always been that teachers who agreed to conduct the meetings, to attend GMFSA trainings, and to come to class on Saturday mornings were very peculiar teachers: certainly very motivated ones, and probably more competent and enthusiastic than his other colleagues. It is hence no surprise that organizing meetings between parents and this type of teacher has changed parent's perception significantly.

Yet again, the reverse is true when the volunteer parents and his child's teacher did not meet; they both have a worse opinion of each other. Again, one possible explanation is that parents became more demanding about the teacher's role and that demands were not met by the teachers who have not participated in the BPET program. We here sense the possible differences in term of motivation, competence, and eagerness between the voluntary and non-voluntary teacher. The bottom line of Table 8 and 7 suggests that the net effect (full sample of volunteer parents) of the program is just null in terms of teacher/parent relationship, but encouraging when parents and teacher do meet. This suggests that the direct interaction between the voluntary teacher and the voluntary parents produced an interesting outcome, while the pure effect of the program on parents whose child is registered in a non-voluntary teacher's class is null to negative.

6.1.2 Parental involvement at school and in child's education

One other mechanism of the program is the relationship between the school itself and the parent. This time, we do not ask parents to evaluate their relationship with the teacher; we ask them to report their participation and information they receive from school. It is therefore arguably a more objective metric of the program's impact. We look at this aspect of parental involvement in Table 9 for the voluntary teacher and voluntary parents.

On the full sample of volunteer parents, all estimates are oriented positively (around 10% of a sd),¹⁷ but only the "talk with other parents" item is sufficiently large to be significant (+.12 sd). All together, the index of parental school involvement is positive and significant

¹⁷ School Governing Body regroups parents, educators, the administrative staff, and some representative of the older students (G8) where parents hold the majority of votes. The SGB may influence the way the school budget is spent, appointment of some teachers, and influence over some aspects of the curriculum.

Table 9: Self-Reported Parental School Involvement

| | <i>Full sample</i> | | | <i>vol.teacher</i> | | <i>Non-vol. teacher</i> | |
|--------------------------|--------------------|------------------|--------------------|--------------------|--------------------|-------------------------|--------------------|
| | N | C | T-C | N | T-C | N | T-C |
| SGB participation | 3404 | 1.776 [0.867] | 0.064 (0.054) | 1592 | 0.07 (0.079) | 1412 | 0.078 (0.068) |
| Talk with other parents | 3435 | 1.83 [0.839] | 0.102** (0.047) | 1611 | 0.181** (0.078) | 1423 | 0.077 (0.05) |
| Information from school | 3146 | 1.409 [0.722] | 0.061 (0.043) | 1475 | 0.001 (0.038) | 1304 | 0.148** (0.071) |
| Index school inv. | 3514 | 0.013 [0.642] | 0.086** (0.04) | 1648 | 0.094 (0.058) | 1450 | 0.107** (0.053) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient. In square brackets are given the standard deviations.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

and of relatively large magnitude given the participation rate: 15% sd ITT, 44% sd TOT.¹⁸ Results on both sub-samples are this time not significantly different from each other: the impact on the index, significant for the VPnT sample, is very close to the acceptance zone in the VPT sample. Results are also positive for information from schools, and positive and significant for the number of interactions with other parents (this may be a direct effect of the program). These results suggest that even if the program failed to improve parent/teacher relationships in the non-voluntary teacher’s classes, it did have an effect on the involvement of all parents in school. The fact that parents whose child is enrolled in the non-voluntary teacher’s class have a strongly positive effect on information from school may also confirm that parents who may not be satisfactorily informed by his child’s teacher find the BPET meetings useful in term of information. This result implies that the program’s impact does not only go through *relationship* effect but its content matter as well.

Another way to look at improvement in parental involvement is to ask parents about how well they know their child’s performance at school. Report cards are one of the main ways that schools and parents interact; an improvement in the way parents recall the report card may be indicative of a better parental involvement. We look at this aspect of involvement by relying on several questions asked directly to parents: we asked parents whether they record the last grade obtained by the child and contrast his answer with the truth that is given by the report cards. We present the results in table 10.

¹⁸ Based on a first stage of 26.9%, see table 6.

Table 10: Self-Reported Parental Interest in child's performance at school

| | <i>Full sample</i> | | | <i>vol.teacher</i> | | <i>Non-vol. teacher</i> | |
|----------------------------------|--------------------|-------------------|-------------------|--------------------|---------------------|-------------------------|-------------------|
| | N | C | T-C | N | T-C | N | T-C |
| <i>Recall child grade?</i> | | | | | | | |
| ... 11 | 2996 | 0.93 [0.254] | 0.016 (0.012) | 1376 | 0.038*** (0.014) | 1290 | -0.002 (0.022) |
| ... 12 | 2893 | 0.926 [0.262] | 0.014 (0.014) | 1330 | 0.033* (0.018) | 1243 | -0.009 (0.025) |
| ... math | 2950 | 0.927 [0.261] | 0.009 (0.014) | 1355 | 0.036** (0.016) | 1274 | -0.03 (0.025) |
| <i>Distance declared - truth</i> | | | | | | | |
| ... 11 | 2365 | 1.016 [1.231] | 0.02 (0.081) | 1125 | 0.055 (0.113) | 992 | 0.004 (0.118) |
| ... 12 | 2317 | 0.97 [1.191] | 0.075 (0.078) | 1066 | 0.002 (0.094) | 1015 | 0.166 (0.103) |
| ... math | 2509 | 0.971 [1.219] | -0.016 (0.086) | 1170 | -0.08 (0.147) | 1095 | -0.095 (0.125) |
| <i>Declared - truth</i> | | | | | | | |
| ... 11 | 2509 | -0.067 [1.557] | -0.132 (0.112) | 1170 | -0.182 (0.204) | 1095 | -0.022 (0.143) |
| ... 12 | 2365 | -0.291 [1.57] | -0.042 (0.102) | 1125 | -0.144 (0.167) | 992 | 0.006 (0.115) |
| ... math | 2317 | -0.313 [1.504] | -0.039 (0.11) | 1066 | -0.082 (0.135) | 1015 | -0.201 (0.132) |
| High. educ. expectation | 3393 | 0.908 [0.289] | -0.012 (0.015) | 1585 | -0.034 (0.023) | 1420 | -0.006 (0.02) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient. In square brackets are given the standard deviations.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

For the most part, results are this time very close to zero, but still stronger on the VPT group: in the classes given by the voluntary teacher, the voluntary parents do declare knowing the grades of their child more, but when contrasted with the truth, they do not record them better. Yet such a result may be interpreted again as a sole desirability effect, not a pure modification of behavior. It may also suggest that even if parents are more aware of the importance of their role (and more aware thanks to the program), they fail to actively change their behavior. Likewise, we find no evidence that parents have more expectations on their child, a topic that has only been indirectly covered by the program.

6.1.3 Student view on parental involvement

Thus far, results on parental or teacher involvement were potentially affected by a desirability effect, as these were self-reported measures or measures of opinion. The child’s point of view about the parent’s behavior and involvement in his own education does not present the same subjective limitations than the self-reported results presented so far. Students were not directly concerned by the BPET program; they normally did not attend the sessions and were not aware of the content of the discussion between parent and teacher. As a result, the program should not have modified the perception of their parent’s involvement.¹⁹ Hence, the way children report parental behavior is certainly a more objective assessment of true parental behavior change. We measure how children evaluate their parent’s involvement relying on a non-cognitive test developed to measure a child’s quality of life,²⁰ more specifically on the sub-score devoted to “quality of life at home.” We present the six items of that test in table 11.

Table 11: Parental involvement – Student’s view

| | <i>Full sample</i> | | | <i>vol.teacher</i> | | <i>Non-vol. teacher</i> | |
|----------------------------------|--------------------|---------|---------|--------------------|---------|-------------------------|----------|
| | N | C | T-C | N | T-C | N | T-C |
| Helped with homework | 3448 | 1.497 | 0.013 | 1625 | -0.005 | 1438 | 0.184*** |
| | | [0.874] | (0.048) | | (0.065) | | (0.057) |
| Quarrel with parent ⁺ | 3355 | 1.797 | 0.012 | 1593 | 0.041 | 1385 | 0.062 |
| | | [1.122] | (0.081) | | (0.13) | | (0.083) |
| Speak with parent | 3413 | 1.425 | 0.049 | 1612 | 0.076 | 1408 | 0.168*** |
| | | [0.754] | (0.035) | | (0.049) | | (0.044) |
| Like showing parents results | 3395 | 1.512 | 0.06 | 1614 | 0.054 | 1401 | 0.171** |
| | | [0.821] | (0.046) | | (0.045) | | (0.069) |
| Scold by parents ⁺ | 3364 | 2.103 | 0.083 | 1600 | 0.012 | 1383 | 0.143* |
| | | [1.184] | (0.063) | | (0.099) | | (0.074) |
| Like parent-teacher meeting | 3393 | 1.668 | 0.046 | 1612 | 0.18* | 1405 | 0.084 |
| | | [0.975] | (0.067) | | (0.099) | | (0.081) |
| Home life quality index | 3635 | 1.714 | 0.037 | 1710 | 0.076 | 1503 | 0.132** |
| | | [0.585] | (0.042) | | (0.047) | | (0.052) |

⁺ means that items were reversed so that a positive outcome means a positive effect. For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient.

* p < 0.1, ** p < 0.05, *** p < 0.01.

¹⁹ Recall that responses from the parents were asked at home, but students reported their responses to the student questionnaire in class, two weeks after. We hence cannot suspect any sort of influence exerted by parents to answer in a specific direction.

²⁰ We have used a sub-score of the Kidiqol scale “family quality of life” [Martine et al. \(2005\)](#).

On the full sample, results from individual items are oriented in the same positive direction but are not significant. Yet we find several positive results in each sub-sample. In the voluntary teacher’s classes, only one item is significant, but they are oriented in the expected direction, and the index is significant (7.8 pp equal to $0.078/0.585 = +13.3\%$ sd). On the sample of non-voluntary teachers, this time results are more clearly significant: when a student feels that they are more helped at school, they like speaking with parents, and are less often scolded by parents, the index is positive and significant ($.133/0.585 = +23\%$ of a standard deviation). Both subgroup’s results are not significantly different. Yet these results of both sub-samples hide somehow negative results on the schools for which we were not able to identify which classes teach the voluntary teacher: this explains why the index of relations with parent is not significant and small while both sub-samples are significant. We should hence read these results with care. Nevertheless, results from the first column indicate that the impacts are not driven by the children in a volunteer teacher’s classes but affect all volunteer parents, confirming the idea that something else happened than simple subjective parent-teacher interpersonal perception.

6.1.4 Observed involvement using the variation on information given to parents

Thus far, results depicted a mixed but relatively favorable first-stage mechanism of action where parental sessions changed the interpersonal relationship between parents and their teacher, the number of interactions they have, the involvement of parent at school, and the involvement of parents at home with the child. Although part of these results are self-declared and might well be only a consequence of change in perception, not grounded on actual behavior transformation, the last set of results on student’s opinion about parental involvement and the parent involvement at school tend to suggest that, at least in part, the effects measured are due to actual modification of behavior. To confirm this view, we conclude this first stage of analysis by looking at our strategy to objectively observe parental involvement. As mentioned earlier, a standardized test was administered to all students in the sample, but its primarily goal was not to measure school performance (as we did not expect much effect on that aspect), but as a measure of parental involvement. As described in equation 2, interacting the treatment variable and the information given to parents allows to measure the actual modification of parental involvement. Also, remember that since we have given answers only to half of the test’s items, we are able to estimate (1) whether the parent had only helped the child on questions with answers; and (2) whether the parent had

made their child progress on unknown items. Results are presented in table 12:

Table 12: Observed parental involvement - test score and information

| | <i>Volunteer Parents & Teacher</i> | | | | <i>Volunteer Parents Non vol. Teachers</i> | | | |
|----------------------|--|------------------|-------------------|--------------------|--|------------------|---------------------|----------------------|
| | N | C | I | I*T | N | C | I | I*T |
| Global score | 1741 | 0.187 [0.181] | 0.008 (0.009) | 0.019 (0.012) | 1595 | 0.234 [0.189] | 0.039*** (0.01) | -0.033*** (0.012) |
| ...answers given | 1741 | 0.19 [0.19] | 0.022** (0.01) | 0.032** (0.016) | 1595 | 0.238 [0.219] | 0.065*** (0.015) | -0.038** (0.016) |
| ...answers not given | 1741 | 0.181 [0.208] | -0.006 (0.011) | 0.005 (0.014) | 1595 | 0.23 [0.209] | 0.017 (0.011) | -0.031* (0.017) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient.

* p < 0.1, ** p < 0.05, *** p < 0.01.

Results from column *I* first indicate that our measurement strategy worked well: parents who were given answers in the control group did perform better at the test (2.1 additional points, amounting to 13% of a standard deviation in the *VPT* sample), suggesting that at least some parents have used the answers to the test to improve their child’s performance. They may have worked with the child, have given the child the answers to memorize, or have simply communicated the letter to the child. In any case, during the test, invigilated by our enumerators,²¹ children performed better. Yet the information letter had a positive effect only on questions for which the answers were given to the parents. This suggests that parents are able to help their children to prepare for a test but are not able to improve intrinsic mathematical competences in the short-run (two weeks).

More interesting for our purpose, we find consistent and significant results on the interaction term in the *VPT* sample. This indicates that parents benefiting from the BPET program used the information given more efficiently: this effect might have gone through a better monitoring of what comes from the school (they have actually read the letter), perhaps they were more likely to communicate this information to the child or in a more optimistic manner, or they have spent more time with the child (or spent their time more effectively) to help the child prepare for the final math tests. Notice that the effect, consistent with the results for the information effect, is only detectable for the part of the test where the answers were

²¹ Enumerators were attentive that children would not come to class with the answers to the test’s questions that could have been given by their parents. None of our enumerators reported such behavior; cheating seems not to be an explanatory factor here.

given: this indicates that parenting, on that subgroup, was able to help with the homework but not with progressing in maths. Of course, this is a short-term result (after two weeks) and does not say anything about the long-term effect of parents on school performance. Yet it shows that parental involvement can be improved with a relatively light policy. This being said, parents cannot be readily transformed into proper teachers: they may only be able to monitor homework but not *per se* to progress the child cognitively.

Unfortunately, the same cannot be said for the sub-group of non-voluntary teachers: parents who have not been in contact with the facilitating teacher did worse with the information in the treatment than in the control. As for the results from meetings 7 and relationship 8, this subgroup is here again affected negatively by the program. One interpretation might be that parents whose child is enrolled in a non-voluntary teacher's class, received disappointing feedback from the non-voluntary teacher and hence reduced their involvement, specifically with school-related matter, rather than increased it. Since the program had some positive effects on these parents, too (on reported home life quality and index of school involvement), it seems as though the program had a positive effect on involvement at school and at home, but a negative effect on the involvement with the teacher. Suffice it to say that on that group, the group did have mixed results on parental involvement, whereas it is quite successful on the subgroup whose child is registered in the facilitating teacher's class.

In any case, there are several general findings that must be highlighted before moving on to the impacts on the students. First, parents seem to have modified their behavior in terms of involvement: they ask for more meetings, they are more involved at school, and they have a better relationship with their child. Second, the sub-sample of children enrolled in the voluntary teacher's class seems to have benefited even more from the program, suggesting complementarity between parent and teacher involvement. Yet several limitations seem to impede parental involvement: parents are reluctant or unable to participate in a parental involvement program (only 1/3 are voluntary, and 1/4 from the voluntary group do participate), only parents of higher achievers actually volunteer, and some important expectations (higher education prospects, knowledge of report card, and better relationship with teachers) were not always met. It is hence uncertain whether the results found for the parents would translate into better student performances. We look at this in the second part of the analysis.

6.2 BPET and Students' Performances

6.2.1 School behavior

The first way to look at actual behavioral change is to ask children, teachers, and parents whether or not they feel the child's attitude and behavior have changed since beginning of the school year. Since no actual observations could be made, we rely on psychometric tests designed to capture a number of different attitudes in class and at home. To first get a general picture of the metrics used in this subsection and offer a tentative way to validate them, we correlate in table 13 the non-cognitive metrics with some measures that matter for the program's implementation or program's impact: the administrative grades given by the teacher, the absenteeism, or the status of being a girl, being Black (against Colored), or being a volunteer parent.

Results show strong correlations between most of the non-cognitive measures and the variables used in columns. Most of the non-cognitive tests administered to students (Harter's Perceived Competence Scale, scholastic and conduct sub-dimensions), teachers, and parents goes in the expected direction: i.e., negatively correlated with absenteeism, positively correlated with grades and volunteer status, and positively correlated with being a girl. Results on Black students are more mixed (positive effect on behavior but negative on motivation), confirming that in Port Elizabeth, the Black population is not necessarily poorer than the Colored one. Yet, while intrinsic ("I like going to school") and identified ("I know that going to school is important") motivation scales are correlated in the expected way, having a high controlled motivation ("I work at school to get a reward") has the opposite correlation sign: it is significantly correlated with a higher level of absence and lower school performance.²² Results from the correlation between the motivation scale and school performance are coherent with others found in developed countries – for instance Guay et al. (2008) – where controlled motivation was shown to be negatively correlated with school performance.²³ Like-

²² The terms "intrinsic," "extrinsic," and "identified" are derived from the theory of self-determination Deci and Ryan (1987), where motivation for a certain behavior is ranked depending on its level of self-determination or autonomy. From the most autonomous/self-determined motivation which is said intrinsic, one goes to different forms of motivation increasingly determined by external factors. The authors hence break down extrinsic motivation into three dimensions with a decreasing level of autonomy: identified ("I know why I am doing what I am doing, but I don't necessarily like it"), introjected ("I feel guilty if I don't do what I am supposed to"), and external ("I do what I am doing to please someone else"). The concept of controlled motivation developed by Guay et al. (2010) regroups the last two most extrinsic levels of motivation, isolating identified extrinsic motivation from the two others, the rationale being that identified extrinsic motivation may induce positive school outcomes while extrinsic motivation is not correlated positively with positive school behaviors.

²³ According to Guay et al. (2010), *Students who endorse autonomous types of motivation (intrinsic and identified regulation) are more persistent and cognitively involved in their tasks, experience more positive*

Table 13: Correlation between non-cognitive tests and other outcomes

| | Absenteeism | Grades | Girl | Black | Volunteer |
|----------------------------------|----------------------|---------------------|----------------------|----------------------|---------------------|
| <i>Student's questionnaire</i> | | | | | |
| Harter's scholastic | -0.003* (0.002) | 0.005*** (0.001) | 0.062*** (0.017) | 0.016 (0.014) | 0.035* (0.02) |
| Harter's behavioral conduct | -0.006*** (0.001) | 0.006*** (0.001) | 0.147*** (0.018) | 0.068*** (0.017) | 0.089*** (0.022) |
| KidIQoL's quality of school life | -0.001 (0.002) | 0.02*** (0.001) | 0.062** (0.03) | -0.094*** (0.035) | 0.015 (0.036) |
| Guay's Intrinsic | 0 (0.001) | 0.004*** (0.001) | 0.095*** (0.017) | -0.067*** (0.013) | 0.055*** (0.02) |
| Guay's Identified | 0.002 (0.002) | 0.01*** (0.001) | 0.116*** (0.014) | -0.083*** (0.019) | 0.039* (0.023) |
| Guay's Controlled | 0.002 (0.002) | -0.002* (0.001) | 0.069*** (0.024) | -0.035* (0.021) | 0.012 (0.027) |
| <i>Teacher questionnaire</i> | | | | | |
| Index student's behavior | -0.012*** (0.002) | 0.018*** (0.001) | 0.311*** (0.025) | 0.071*** (0.028) | 0.139*** (0.03) |
| <i>Parents questionnaire</i> | | | | | |
| Homework done | -0.008** (0.003) | 0.01*** (0.002) | 0.113*** (0.042) | -0.054 (0.053) | 0.045 (0.044) |
| Read a book | -0.006** (0.003) | 0.005*** (0.001) | 0.143*** (0.037) | 0.119*** (0.035) | 0.082** (0.039) |
| Helped with homework | -0.006** (0.002) | 0.005*** (0.001) | 0.092** (0.039) | 0.006 (0.046) | 0.016 (0.039) |
| Read a story | -0.003 (0.003) | -0.002 (0.001) | 0.017 (0.04) | 0.173*** (0.034) | 0.068 (0.042) |
| Played video game | 0.003 (0.002) | -0.002 (0.001) | -0.161*** (0.032) | 0.114*** (0.03) | 0.049 (0.039) |
| Be on the web | 0 (0.002) | -0.001 (0.001) | -0.029 (0.025) | 0.115*** (0.023) | 0.056** (0.027) |
| Watch TV | -0.005 (0.004) | 0.005*** (0.002) | 0.046 (0.048) | -0.107 (0.075) | -0.022 (0.046) |

The table represent the correlation between the non cognitive measures in rows and several outcomes in column. For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient. The regressions are controlled for a treatment dummy.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

wise, we find a strong correlation coefficient between the dummy for being a girl and positive non-cognitive outcome, suggesting that girls have a profile of non-cognitive skills which are

emotions and have better grades, whereas students who are motivated in a controlled fashion are less persistent, more distracted, experience more negative emotions (anxiety), and obtain lower grades.

systematically different from the boy. This finding remains true when results are controlled for school cognitive performance, suggesting that it is not because girls are better at school that they are strongly correlated with positive non-cognitive outcome but they *per se* behave differently.

On the parent questionnaire, measures of behaviors are more ambiguous. We asked parents how many times in a reference week (typically the last week) a certain number of event occurs. While the number of times the child has done his homework, read a book, or accepted help with homework is correlated as expected, “read a story,” “played video game,” “be on the web,” or even “watch TV” are not significantly correlated with either absenteeism or grade, while reading a book before sleeping remains correlated with being a voluntary parent. Results from that section of the questionnaire should hence be interpreted with care, as it is hard to know which behavior is supposedly positive or negative. Taken together, results from Table 13 indicate that the tests used in that South African context have some degree of validity²⁴ and hence can be used as outcome measure of the BPET program.

We first present the results from the student survey in which self-perception, motivation, and quality of school life were administered. Results are presented in Table 14.

Taken together, results cannot be differentiated from zero. This may suggest that while parents have changed their behavior, it did not significantly affect students. Yet, when looking at the group of voluntary teachers, results are more positive: we find small and slightly significant results on motivation. This does not concern the intrinsic motivation, the one that is strongly positively correlated with school performance, but affects extrinsic motivation. The fact that we are able to detect this effect on that specific sub-group – the group for which we were able to estimate the largest behavioral change on the parental teacher side – confirms that previous effects were not only perception, and that the program did something on the student behavior. Yet, as said, “controlled motivation” is the least interesting dimension of school motivation, as it is known to be correlated negatively with school outcomes. Hence, one cannot associate this result with a positive effect of the program. Conversely, finding a positive effect on extrinsic motivation and school behavior gives a much more precise characterization of the program’s impact. The program seems to have had an effect on arguably the most straightforward of dimensions: motivation that is related to rewards (of parent and teachers) and behavioral conduct. It hence did not have a profound effect on dimensions that are possibly the hardest to modify but also the most effective in improving student performance at

²⁴ Although they were not *per se* pre-validated in Xhosa and Afrikaans.

Table 14: Student behavior - student survey

| | <i>Vol. parents</i> | | | <i>Vol. teacher</i> | | <i>Non-vol. teacher</i> | |
|-----------------------------|---------------------|------------------|-------------------|---------------------|-------------------|-------------------------|---------------------|
| | N | C | T-C | N | T-C | N | T-C |
| Self-Perception Test | | | | | | | |
| Scholastic | 3730 | 3.24 [0.62] | -0.024 (0.042) | 1736 | -0.09* (0.052) | 1552 | -0.055 (0.048) |
| Behavioral conduct | 3697 | 3.226 [0.689] | 0.006 (0.047) | 1733 | 0.013 (0.051) | 1534 | -0.095 (0.06) |
| Overall | 3769 | 3.144 [0.518] | -0.004 (0.032) | 1754 | -0.046 (0.037) | 1565 | -0.065* (0.037) |
| Quality of life | | | | | | | |
| Quality of school life | 3635 | 2.581 [0.971] | -0.025 (0.054) | 1702 | -0.037 (0.069) | 1508 | 0.018 (0.077) |
| Motivation test | | | | | | | |
| Intrinsic | 3741 | 3.471 [0.583] | -0.007 (0.033) | 1734 | -0.014 (0.041) | 1555 | -0.107** (0.045) |
| Identified | 3725 | 3.551 [0.615] | 0.048 (0.037) | 1727 | 0.076* (0.043) | 1549 | -0.063 (0.055) |
| Controlled | 3715 | 3.204 [0.795] | 0.064 (0.052) | 1718 | 0.107* (0.057) | 1551 | -0.068 (0.075) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

school: Harter's scholastic competence and intrinsic motivation to work at school. Moreover, on the group of non-volunteer teachers, results are also very close to zero and sometimes even negative. Both estimates are significantly different (in the motivation scale), suggesting that the program's effect is stronger when parents and teachers meet. Yet this effect remains mostly not significant or affects competences that are not central to the student's performance.

To confirm this first set of results, we now turn to the teacher's perception of children's behavior in Table 15:

Table 15: Student behavior - Teacher survey

| | <i>Vol. parents</i> | | | <i>Vol. teacher</i> | | <i>Non-vol. teacher</i> | |
|---------------------------------|---------------------|------------------|--------------------|---------------------|-------------------|-------------------------|----------------------|
| | N | C | T-C | N | T-C | N | T-C |
| Sent to principal ⁺ | 3696 | 2.909 [0.363] | -0.019 (0.023) | 1721 | -0.015 (0.038) | 1492 | 0.001 (0.034) |
| Listen in class | 3981 | 3.074 [0.932] | -0.138* (0.081) | 1854 | -0.123 (0.096) | 1616 | -0.2* (0.109) |
| Restless ⁺ | 3948 | 3.266 [0.891] | -0.04 (0.067) | 1828 | -0.01 (0.077) | 1607 | -0.081 (0.11) |
| Participate in class | 3939 | 2.78 [1] | -0.091 (0.084) | 1834 | -0.038 (0.097) | 1601 | -0.255*** (0.098) |
| Unauthorized talks ⁺ | 3945 | 3.244 [0.874] | -0.051 (0.083) | 1838 | -0.039 (0.094) | 1604 | -0.07 (0.131) |
| Fights ⁺ | 3967 | 3.765 [0.616] | 0.003 (0.043) | 1847 | 0.145* (0.081) | 1610 | -0.039 (0.044) |
| Index student's behavior | 4041 | 0.048 [0.652] | -0.069 (0.059) | 1886 | -0.019 (0.066) | 1632 | -0.108 (0.089) |

Outcomes are presented so that a positive result means a positive effect. Reversed items are marked with a $+$. For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

On the *VPT* subgroup, results are mostly non-significant, except for “Fights,” which is slightly reduced. The index of student behavior on that sub-group is also not distinguishable from zero. Likewise, on the *VPnT* sample, results are never negative and would even point negatively for in-class behavior. All together, the teacher is not in a position to significantly see any noticeable change in children’s behavior: Absence of results at this level confirms that while the program seemingly reached its objective on parents and may have modified slightly some aspects of children’s self-reported attitude to education, it did not translate into observable and objective modifications of behavior.

Finally, we asked each parent about his child’s behavior at home. While some of these items are potentially a mixture of parental involvement and children’s behavioral change, they indicate whether parents are able to enforce a behavior change on their children at home. Results are presented in table 16:

Table 16: Student behavior - parent's survey

| | <i>Vol. parents</i> | | | <i>Vol. teacher</i> | | <i>Non-vol. teacher</i> | |
|--|---------------------|------------------|----------------------|---------------------|--------------------|-------------------------|----------------------|
| | N | C | T-C | N | T-C | N | T-C |
| <i>Last week, how many times your child...</i> | | | | | | | |
| ...did his homework | 3442 | 1.904 [1.324] | -0.215*** (0.065) | 1593 | -0.169 (0.11) | 1446 | -0.363*** (0.069) |
| ...read a book | 3442 | 1.672 [1.304] | -0.021 (0.049) | 1593 | -0.003 (0.073) | 1446 | -0.257** (0.1) |
| ...got help with homework | 3442 | 1.762 [1.312] | -0.021 (0.062) | 1593 | 0.045 (0.1) | 1446 | -0.241** (0.098) |
| ...was read a story | 3442 | 1.153 [1.224] | 0.076** (0.035) | 1593 | 0.152** (0.074) | 1446 | 0.125 (0.086) |
| ...played video game | 3442 | 0.615 [1.058] | 0.166*** (0.034) | 1593 | 0.106* (0.058) | 1446 | 0.293*** (0.064) |
| ...consulted online | 3442 | 0.412 [0.892] | 0.142*** (0.034) | 1593 | 0.151** (0.061) | 1446 | 0.093** (0.04) |
| ...watched TV | 3442 | 1.976 [1.436] | -0.142** (0.069) | 1593 | -0.043 (0.075) | 1446 | -0.251* (0.144) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Results on the full sample of volunteer parents are different in treatment and control but do not point necessarily towards a positive direction: parents seem to have helped the child less with homework, but the latter have watched less TV, played more video games, and went online more often. It is hard to conclude whether such modification goes any particular direction. On the VPT sample, many results are significant, suggesting that parents did notice some behavioral change, but not necessarily in the right direction: for instance, parents were not more likely to help the child with his homework, even though this is really where one may expect results. But parents seem to have been able to read a story more often. Here again, it looks like we are facing some of the constraints faced by parents in monitoring student activity after class. Results on the non-voluntary teacher sub-group also demonstrate some modification in the behavior of the child but point here again toward a decline in the overall behavior.

Taken all together, a student's behavioral results present a much more reserved perception on the program's impact. While it seems to have changed perception and possibly parent's behavior, it did not significantly modify the child's behavior. At most, it may have had a pos-

itive effect on the least intrinsic dimension of motivation, the one that relates to gratification and rewards. Change in behavior in class may also have positively changed on a subgroup of voluntary teachers, but results are not strong and are not completely consistent. Such mixed results may be consistent with the idea that the program had only a cosmetic effect on student behavior: it may have affected the relationship between parents but did not have an intrinsic effect on the child’s motivation and attitude in class. To confirm this view, we now look at the results obtained on a more objective measure on the child’s performance at school and parent involvement at home.

6.2.2 Students’ school performance

Absenteeism, together with home-based involvement, is one of the dimensions in which parents may play a role. They can be more strict about missing class, they can make more efforts to bring the child to school, or they can make sure that the child wakes on time every day. If we were to observe an non-disputable behavioral effect, it should be on the number of days of absence. To have the broad picture possible, we collected three sources of absenteeism: from the school register (administrative absence), from an end-of-year spot check, and from the teacher. We present these results in Table .

Table 17: Absenteeism - Strata control

| | <i>Full sample</i> | | | <i>vol.teacher</i> | | <i>Non-vol. teacher</i> | |
|----------------------------|--------------------|------------------|------------------|--------------------|-------------------|-------------------------|---------------------|
| | N | C | T-C | N | T-C | N | T-C |
| From teachers | | | | | | | |
| Last 4 days absence | 3303 | 0.446 [0.939] | 0.212* (0.11) | 1544 | 0.137 (0.174) | 1398 | 0.405*** (0.136) |
| From administration | | | | | | | |
| ...term 3 | 2779 | 2.502 [3.862] | 0.523 (0.416) | 1221 | 1.242* (0.686) | 1287 | 0.15 (0.351) |
|term 4 | 1868 | 1.388 [3.28] | 0.119 (0.3) | 748 | 0.26 (0.423) | 819 | 0.466 (0.399) |
| From spot checks | | | | | | | |
| ... first spot check | 4591 | 0.079 [0.27] | 0.017 (0.017) | 2078 | 0.025 (0.026) | 1938 | 0.037* (0.021) |
| ... second spot check | 4735 | 0.166 [0.372] | 0.018 (0.049) | 2207 | 0.073 (0.073) | 1953 | 0.004 (0.069) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient.

* p < 0.1, ** p < 0.05, *** p < 0.01.

Results are all consistently non-different from zero or even point to a wrong direction. Not finding effect on absenteeism confirms the interpretation that the program, while affecting the parent-teacher relationship and some aspect of the parent’s behavior, did not have a large effect on observable behaviors such as absenteeism. The same conclusion can be taken when looking at the results on the grades, although having an effect on school performance was less expected.

Table 18: Grades - administrative records

| | <i>Full sample</i> | | | <i>vol.teacher</i> | | <i>Non-vol. teacher</i> | |
|-----------------|--------------------|--------------------|-------------------|--------------------|----------------------|-------------------------|--------------------|
| | N | C | T-C | N | T-C | N | T-C |
| Home language | 4177 | 55.244 [15.89] | -1.151 (1.18) | 1928 | -2.745** (1.399) | 1787 | 0.43 (1.234) |
| Add. language | 4035 | 50.554 [17.089] | -0.725 (1.054) | 1795 | -1.223 (1.499) | 1801 | -2.503* (1.359) |
| Maths | 4262 | 53.078 [18.895] | -2.27 (1.554) | 1948 | -2.336 (2.203) | 1876 | -0.975 (1.843) |
| Technology | 3904 | 56.07 [18.856] | 0.741 (1.736) | 1696 | 2.108 (2.55) | 1808 | -0.786 (2.036) |
| Social Sciences | 3865 | 53.937 [20.012] | -1.487 (2.363) | 1694 | -7.092*** (2.353) | 1770 | 2.551 (3.033) |
| Life skills | 3751 | 59.265 [15.097] | 0.639 (1.61) | 1608 | 0.574 (2.202) | 1742 | 2.081 (1.583) |
| Score overall | 4381 | 54.373 [13.789] | -0.463 (0.993) | 2014 | -1.867 (1.46) | 1903 | -0.012 (1.113) |

For the column with coefficients, the robust and clustered (at school level) standard error is given in parentheses below the coefficient.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Results from Table 18 are not completely consistent, with negative results on the sub-sample of volunteer parent and teachers but no effect on the full sample. This is probably due to the lack of initial equilibrium on these dimensions. Note also that results from the math test used in table 12 do not provide evidence of any cognitive effect, either. In any case, results do not point to any positive direction. It is worth noting, in line with these disappointing results on the students, that spillover results not displayed here are equally null, consistent with the idea that spillovers would have channeled through the students.

7 Discussion and Conclusion

Is parenting a valuable input that can be enhanced and modified? Should parenting be fully integrated by education policies? This article addresses these issues based on a parental program implemented in South Africa. Despite the disappointing results found on students, some important policy guidances should be highlighted. First of all, although mixed, we do find some evidence that parents have changed their behavior: they ask for more interactions with their child's teacher, they declare obtaining more information from school, and they have better relationships with their children. In addition, we find some evidence that when parents and teachers both volunteer to participate in the meetings, their interaction produces larger treatment effects: on that sub-group, we have evidence that parents changed their behavior significantly and are more likely to help the child with assignments and have better relationships with their child's teacher. Such results confirm the role that parents can play when they are fully integrated in a public policy design.

Parental involvement also displays some disappointing results, however: while declaring having knowledge of a report card's content, parents did not remember the correct grade more often; while asking for more meetings, they did not manage to see their child's teacher more often; and while students noticed better relationships with parents, they do not declare better behavior at home (in term of getting positive school habits...). It looks like some of the results found are only cosmetic and superficial but fail to truly trigger a fundamental change in parental behavior. Moreover, this article provides additional evidence that parents, in the context of poor townships in South Africa, face constraints to participate in such a program: only a third accepted to volunteer for the program and only a fourth actually attended the meetings. All in all, even at the parent level, the reactions of parents are not as positive as one could have expected.

These mixed results on the parent's side naturally translate into disappointing results at the student level. At most, the group of students enrolled in the teacher's class may be slightly more extrinsically motivated, but this result remains only slightly significant and is offset by a large number of non-positive (or even negative) results on many other dimensions. These mixed results indicate that parents did not manage to transform student behavior in a positive manner.

Given the small attendance rate, one may interpret this lack of results as a direct consequence of the low detection power. Yet attendance rate, although slightly smaller than expected, is approximately the same as those found in other related research. Since the

power calculation was based on these, we do have approximately the power that we expected. Besides, at the parent level, there are many instances where we found significant and positive effects, even of small magnitude (typically around 10% of a standard deviation).

More convincingly, we see two main reasons that this program did not produce the effect we expected. First, the parents who volunteered for the meetings were not only few but also very much selected. Their children already behaved much better (almost 1 day of absenteeism less), they had better grades (25% of a standard deviation better), and were probably from a wealthier social background. The marginal effect of a parental program on parents who are arguably already involved and on parents who already behave accordingly may not be very efficient. We can compare our findings to the two related studies conducted in France: in the first French study [Avvisati et al. \(2013\)](#), the selection was not as strong (maybe because inequalities in education outcome are not as large in France); and in the second, the program was uniquely targeted to the bottom quarter of the classroom in terms of school performance.

Second, as mentioned earlier, the intensity of the intervention is much smaller here than it was in India, where authors found positive effects on parental involvement and student performances ([Barnerji et al., 2015](#)). As said, the intensity of this intervention, translated in time per parents, is approximately 20 times lower. Since results on students found in India were very small (around 4% of a sd), it appears that a much larger intensity is needed in this context to obtain even very small results on students. Otherwise, said constraints such as the quality of parenting, the parents' education, their skills, their effectiveness in controlling students' behaviors, or/and the difficulties faced by students all seem to make the parental input much less manipulable in South Africa (and in India) than it was in France. While parents, even from poor neighborhoods, can easily be activated via meeting or transmitting information in a developed country, their constraints are probably much larger in South Africa. It would indicate that larger levels of intensity, longer periods of treatment (10 months in India against 4 months in South Africa), and different forms (individual better than collective) or location (door-to-door better than at school) of the intervention must be introduced in South Africa to fully produce the expected effects. The fact remains that the interaction between the teacher and the parent is valuable, yet it invites policy makers to find alternative ways to increase and improve their relationship in a more intensive or different way. More research is certainly needed to understand the conditions in which parents can be used effectively.

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