Supplemental Appendix for Online Publication

Reducing Parent-School Information Gaps and Improving Education Outcomes: Evidence from High-Frequency Text Messages

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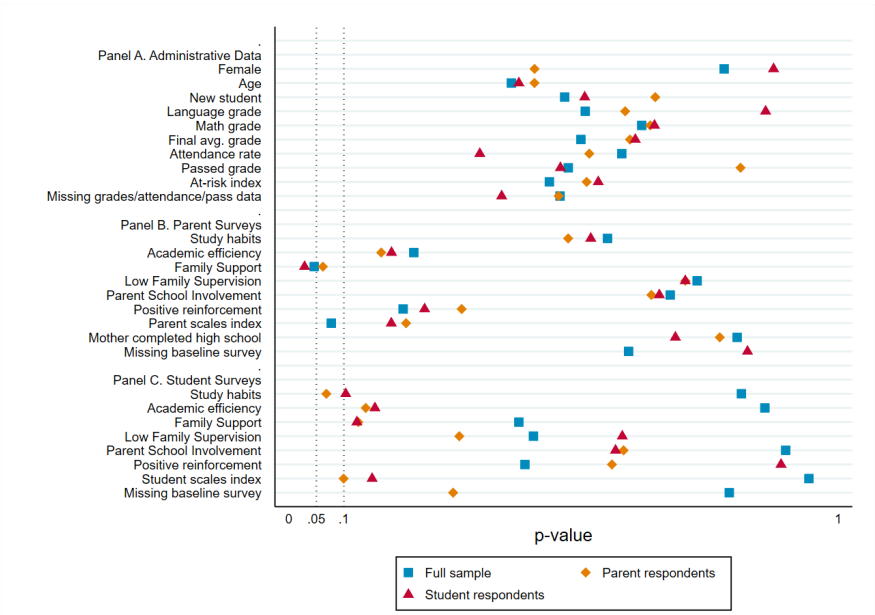
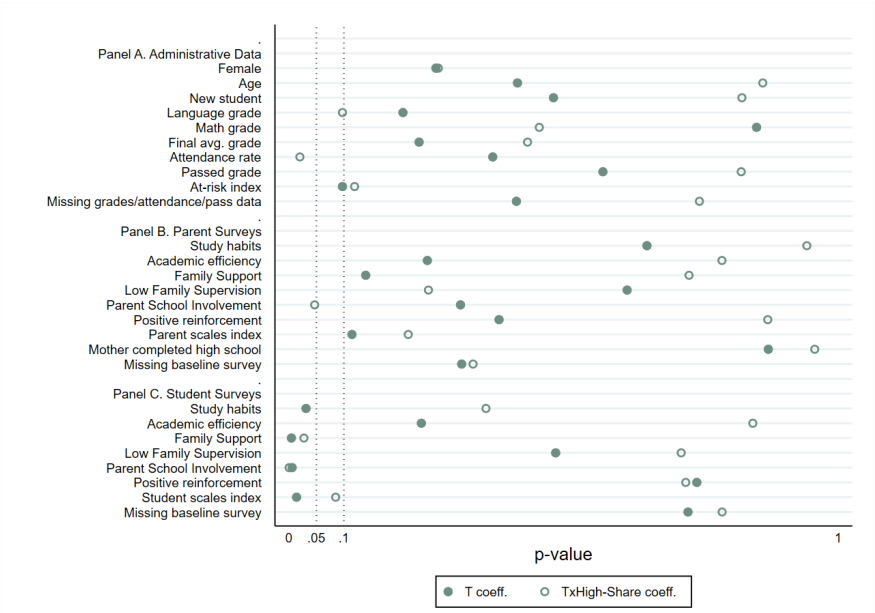
Appendix Figures

Figure 1: Balance in alternative samples and specification

(a) Alternative samples



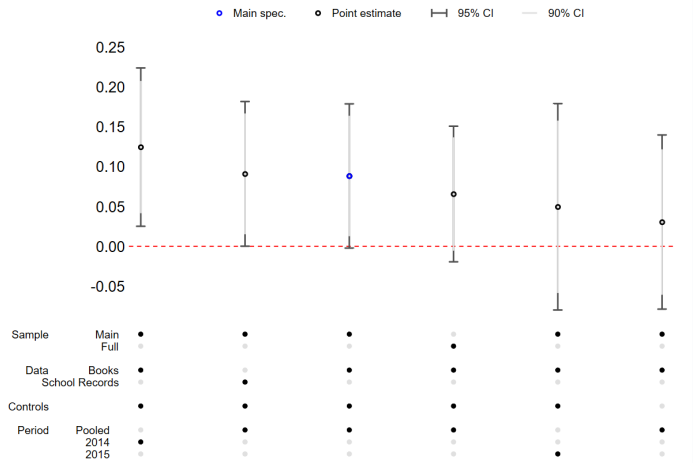
(b) High-share specification



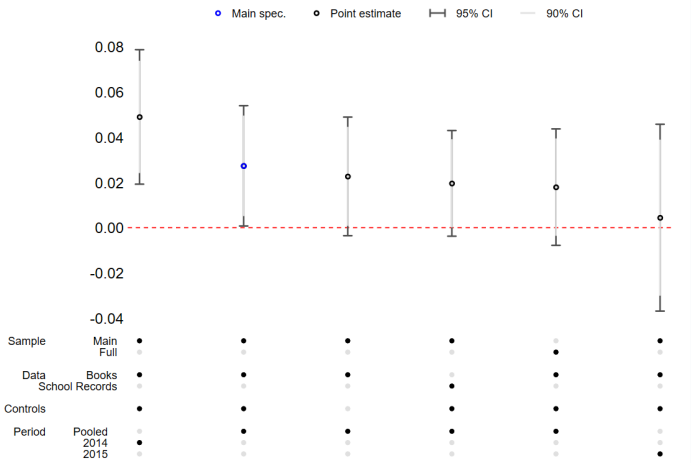
Note: Panel A plots the p-value on the treatment coefficient in a regression using each baseline characteristic as the dependent variable for alternative samples (full sample, surveys' parent and student respondents). Panel B plots p-values on the treatment coefficient and on the interaction between treatment and high-share classrooms in regressions using each baseline characteristic as the dependent variable. All regressions include classroom fixed effects and robust standard errors are clustered at this level. Observable variables correspond to 2013 except for new student variable that refers to 2014.

Figure 2: Robustness

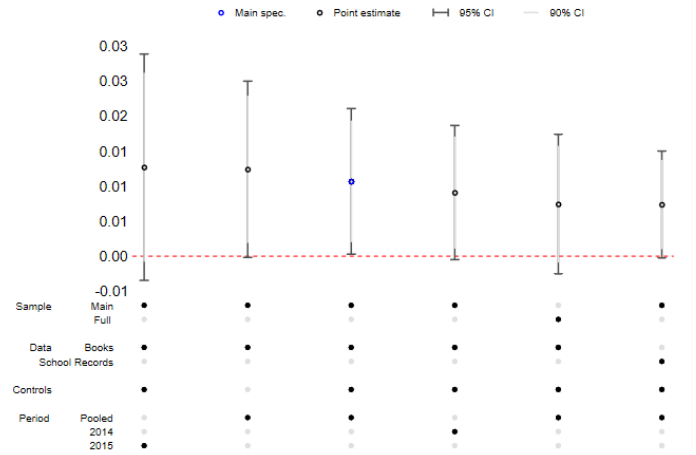
(a) Standardized math grade



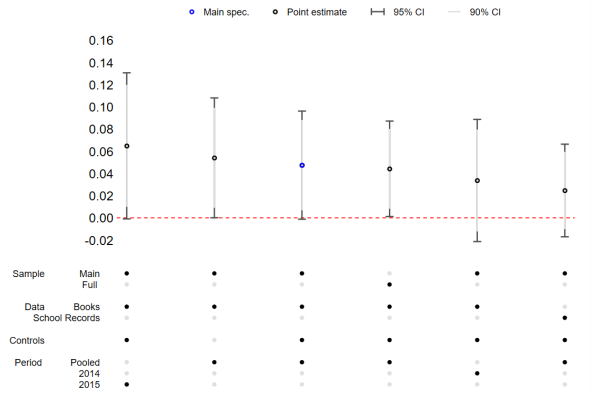
(b) Math grade > 4



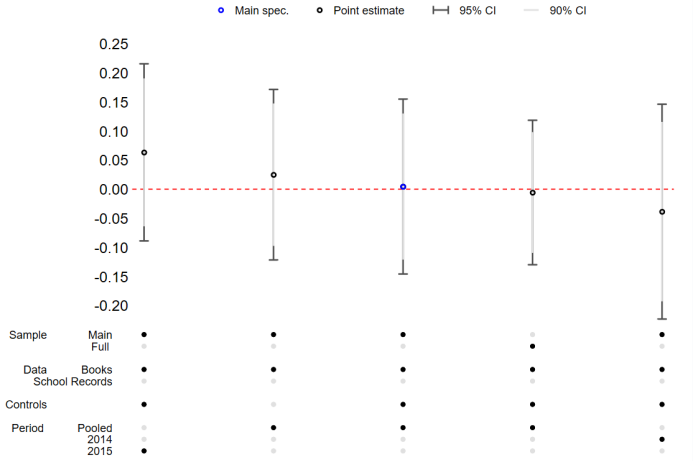
(c) Attendance



(d) High attendance



(e) Standardized # negative behavioral notes



Note: Figure plots the treatment coefficients (and 90% and 95% confidence intervals) for each panel outcome using different specifications (with and without baseline controls), different samples (with and without the students who leave the sample due to being in grade 8 in the first year, or being in one school that left our sample in the second year; using the pooled sample versus separating the midline and endline samples), and different data sources for outcomes (using administrative data from the national ministry or administrative data from the school records collected by our research team). Each combination is represented by black/white dots in the bottom of each subfigure.

Appendix Tables

Table 1: Retention and drop-out

	Retention	Drop-out	Retention	Drop-out
	[1]	[2]	[3]	[4]
GPA_{t-1}	–0.034***	–0.005***		
	[0.000]	[0.000]		
GPA_{t-2}	–0.019***	–0.001***		
	[0.000]	[0.000]		
GPA_{t-3}	–0.039***	0.000		
	[0.000]	[0.000]		
$Attendance_{t-1}$	–0.003***	–0.001***		
	[0.000]	[0.000]		
$Attendance_{t-2}$	–0.001***	–0.001***		
	[0.000]	[0.000]		
$Attendance_{t-3}$	–0.000	–0.001***		
	[0.000]	[0.000]		
$At-risk\ index_{t-1}$			0.076***	0.027***
			[0.000]	[0.000]
$At-risk\ index_{t-2}$			0.037***	0.017***
			[0.000]	[0.000]
$At-risk\ index_{t-3}$			0.037***	0.007***
			[0.000]	[0.000]
Observations	6,594,877	6,594,877	6,594,877	6,594,877
Adjusted-R2	0.116	0.0970	0.0944	0.0522

Note: Table shows estimates of a linear probability model with retention or drop-out in year t as dependent variable. Columns 1-2 show standardized GPA attendance $t-k$ years ago ($k=1,2,3$) estimate coefficients. Columns 3-4 estimate the same lags for an at-risk index. At-risk index is the negative of a simple average of standardized attendance and GPA. Based on public data for primary and secondary education level for the period 2002-2020 from the Ministry of Education of Chile. We restrict the sample to educational trajectories of students who were in grades 8-12 between 2006 and 2013 and that ever attended any school in the Santiago metropolitan region. Grades 1-3 are excluded. All models control for student's sex and include municipality fixed effects. Standard errors clustered at the student level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2: Compliance in different samples

	All	Attendance	Behavior	Grades	General
	[1]	[2]	[3]	[4]	[5]
Panel A: 2014					
Text messages sent	29.600***	21.079***	4.509***	4.021***	–0.008
	[0.365]	[0.260]	[0.074]	[0.052]	[0.029]
Text messages received	20.080***	14.289***	3.085***	2.748***	–0.042
	[0.649]	[0.402]	[0.120]	[0.093]	[0.083]
Observations	1063	1063	1063	1063	1063
Panel B: 2015					
Text messages sent	60.403***	40.129***	9.236***	11.111***	–0.073
	[1.366]	[0.886]	[0.159]	[0.259]	[0.158]
Text messages received	33.464***	21.452***	6.125***	6.144***	–0.257
	[1.284]	[0.720]	[0.206]	[0.208]	[0.250]
Observations	948	948	948	948	948
Panel C: Full Sample					
Text messages sent	42.178***	28.879***	6.456***	6.890***	–0.047
	[0.723]	[0.452]	[0.097]	[0.149]	[0.067]
Text messages received	25.463***	17.162***	4.344***	4.127***	–0.170
	[0.722]	[0.422]	[0.119]	[0.124]	[0.104]
Observations	2439	2439	2439	2439	2439
Panel D: Parent Surveys 2015					
Declares to have received text messages	0.359***	0.523***	0.431***	0.443***	-
	[0.049]	[0.042]	[0.042]	[0.047]	-
Observations	549	565	561	567	-

Note: Panel A uses the 2014 data of the intervention. Panel B uses the 2015 data of the intervention. Panel C analyzes compliance in the full sample. Panel D uses 2015 parents' surveys data. Text messages sent/received refers to the cumulative number of text messages sent to/received by student's parents. For Panels A-C columns [2]-[5] report the T_{icjg} coefficient of equation (1) with the annual number of each type of text message as the dependent variable. Column [1] adds all types of text messages. For Panel D columns [1]-[4] report the T_{icjg} of equation (1) using each column parent's self-declared text messages' reception as the dependent variable. Parents answer on a four-value scale the frequency in which they have received each type of text message ("never or almost never" to "always or almost always") in the last month. Outcomes are indicator variables equal to one if parent answer value 4 and zero otherwise. Column [1] outcome equals one if at least one of the attendance, grades and behavior text messages outcomes equals one. Attendance, grades, and classroom behavior text messages were sent only to the treatment group. General text messages were sent to all treatment and control individuals. All models include the baseline math grade and attendance rate as control variables. If baseline values are missing, we impute them using the classroom-level mean and flag these observations in the regression. Regressions additionally include year and classroom fixed effects and standard errors are clustered at the classroom level (shown in brackets). * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3: Local Average Treatment Effects

	Standardized math grade	Math grade >4.0	Attendance rate	Cumulative attendance >85%	Standardized # negative beh. notes
	[1]	[2]	[3]	[4]	[5]
Panel A: LATE					
D	0.106*	0.033**	0.012**	0.055*	0.005
	[0.054]	[0.016]	[0.006]	[0.028]	[0.090]
Panel B: Heterogeneity					
D	0.108**	0.032**	0.012**	0.054*	–0.027
	[0.053]	[0.016]	[0.006]	[0.028]	[0.080]
D x at-risk index	0.172**	0.030	0.016*	0.084***	–0.256**
	[0.085]	[0.022]	[0.008]	[0.031]	[0.115]
Observations	2011	2011	2011	2011	2011
Control mean	0.00	0.934	0.877	0.728	0.00

Note: Panel A shows estimates of the local average treatment effects (LATE) shown on each column for each outcome. Let D_{icjg} be an indicator variable equal to one for those treated students whose parents received at least one text message with information on each specific outcome (i.e., compliers). D_{itcjg} –instead of T_{icjg}– is included in equation (1) which we instrument in a first stage with the randomized treatment variable T_{icjg}. Panel B adds the interaction with the student-level at risk index. At-risk index is a simple average of standardized baseline attendance, math grades and negative behavioral notes. All models include the baseline math grade, attendance rate as control variables, classroom (randomization strata) and year fixed effects. If baseline values of baseline math grade/attendance were missing, we imputed them using the classroom-level mean and added an indicator variable for these imputed observations. Models in Panel B additionally include the at-risk index variable as control. Columns 1 and 5 report results on outcomes that were standardized so that mean among the control students is zero and the standard deviation is one. Standard errors are clustered at the classroom level (shown in brackets). * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Treatment Effects Over the Week (Weekly Fade Out)

	Daily Attendance
T x Monday	0.015**
	[0.007]
T x Tuesday	0.017**
	[0.007]
T x Wednesday	0.014*
	[0.007]
T x Thursday	0.005
	[0.006]
T x Friday	0.006
	[0.007]
Observations	222827
p-value of equal coeff.	0.037
p-value of TxMonday = TxFriday†	0.065

Note: Table shows intention-to-treat estimates (T) by day of the week estimated using OLS. Attendance outcome is measured at a daily basis. T refers to the randomized treatment (equal to 1 if parents were sent text-messages and zero otherwise) and is interacted with each day-of-the-week indicator variables. All models include the day-of-the-week indicator variables as controls, baseline math grade, attendance rate as control variables, classroom (randomization strata), and month x year fixed effects. If baseline values of baseline math grade/attendance were missing, we imputed them using the classroom-level mean and added an indicator variable for these imputed observations. Standard errors are clustered at the classroom level (shown in brackets). † One-sided test against the alternative that TxFriday > TxMonday. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Treatment Effects Over Time

	Standard. math grade	Attendance rate	Standard. # negative beh. notes
	[1]	[2]	[3]
T x months 1–3	0.114**	0.007	–0.014
	[0.057]	[0.006]	[0.073]
T x months 4–6	0.053	0.009	–0.024
	[0.054]	[0.007]	[0.044]
T x months 7–9	0.068	0.004	0.059
	[0.071]	[0.007]	[0.076]
T x months 10–12	0.109**	0.016*	0.042
	[0.054]	[0.009]	[0.050]
T x months 13–17	0.054	0.018*	0.015
	[0.051]	[0.010]	[0.052]
Observations	10,391	15,912	15,568
p-value of equal coeff.	0.766	0.751	0.584

Note: Table reports intention-to-treat (T) estimates for each group-of-months estimated using OLS. Outcomes are measured at a monthly basis. T refers to the randomized treatment (equal to 1 if parents were sent text-messages and zero otherwise) and is interacted with each group-of-months indicator variables. All models include the group-of-months indicator variables as controls, baseline math grade, attendance rate as control variables, classroom (randomization strata), month and year fixed effects. If baseline values of baseline math grade/attendance were missing, we imputed them using the classroom-level mean and added an indicator variable for these imputed observations. Standard errors are clustered at the classroom level (shown in brackets). * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6: Treatment Effects on Parental Behavior at Home: Indicators

	Organized for school work	Understand difficult content	Parents show pride	Went to school alone	Parents contacted teacher	Parents congratulated student
	[1]	[2]	[3]	[4]	[5]	[6]
Panel A: Parent scales						
T	–0.063*	0.018	0.004	0.021	0.010	–0.027
	[0.032]	[0.028]	[0.020]	[0.038]	[0.031]	[0.023]
Control mean	0.769	0.871	0.943	0.364	0.294	0.927
Observations†	1125	1112	1164	1161	1168	1158
Panel B: Student scales						
T	0.008	0.010	0.031	–0.020	0.049*	0.012
	[0.030]	[0.021]	[0.029]	[0.025]	[0.026]	[0.025]
Control mean	0.656	0.816	0.720	0.466	0.334	0.746
Observations†	1787	1781	1761	1784	1772	1772

Note: Table shows intention-to-treat effects estimates from equation (1) shown on each column for each outcome. Coefficients were estimated using OLS. T refers to the randomized individual-level treatment (equal to 1 if parents were sent text-messages and zero otherwise). Outcomes are behavior indicators built with answers to surveys (see Tables F.2 and F.3 for details). For each scale, we take the item with the largest loading factor and build an indicator variable that takes value 1 when student/guardian answer 3 or 4 in the four scale. Items are (student versions): 'I organize well my time to do my school work', I am sure that I can understand the hardest things, My parents or guardians showed that they were proud of me, I went alone to school, My parents or guardians contacted teacher through e-mail, My parents or guardians congratulated me for my effort. Panel A shows results for scales built with answers parents gave to survey questions. Panel B shows results for scales built with answers students gave to survey questions. All models include the baseline math grade, attendance rate and outcome scales, classroom (randomization strata), and year fixed effects. If baseline values of baseline math grade/attendance or baseline outcomes were missing, we imputed them using the classroom-level mean and added an indicator variable for these imputed observations. Standard errors are clustered at the classroom level (shown in brackets).† Number of observations vary by column because of survey and item non-response. * significant at 10%; ** significant at 5%; *** significant at 1%.

I Appendix: Prior Research

Table A.1 presents an overview of the literature studying interventions providing information to children or parents to improve student's school outcomes.

Table A.1: Literature Review

Study	Method	Sample	Information	Intensity	Effect	Explored mechanisms
Kraft and Dougherty (2013)	RCT	140 students, grades 6 and 9, summer school program, Boston	Student's academic progress and class behavior, upcoming homework assignments and tests, and suggestions for student's improvement	Daily teacher-to-parent phone calls and daily written messages for five consecutive days	Increased the odds of completing homework by 40%, decreased in-class misbehavior by 25%, and increased class participation rates by 15%	Teacher–student relationships, parental involvement, student motivation
Avvisati et al. (2014)	RCT	34 middle-schools, 96 classes, 2008-2009 school-year, Paris	Advice on how to support and monitor children with school work	Three parent–school meetings every two-three weeks	Reduced truancy by 25% and the probability of being sanctioned and increased positive behavior (effects-size around 15% of a sd), no test scores improvement	Parent's school-and home-based involvement
Castleman and Page (2015)	RCT	5,753 recent high school graduates identified as college-intending, summer 2012, Dallas, Boston and Philadelphia	Text messages intervention: tasks required by the students' intended college required for successful matriculation + offer of counselor assistance via messages	A series 10 texts messages sent to students and their parents about every five-days	Increased by 3 p.p. the likelihood to enroll at two-year institutions, more effective on students with low access to college-planning supports	-
Kraft and Rogers (2015)	RCT	435 high school students in a summer credit-recovery program in the Northeastern US	Child's performance and behavior in school: on what their students were doing well and should continue doing (Positive treatment), or what their students needed to improve upon (improvement treatment)	Weekly one-sentence individualized messages from teachers to the parents	Decreased the percentage of students who failed to earn course credit by 41%	Parent-child interactions' content
De Walque and Valente (2018)	RCT	Girls in the last two grades of primary school, 173 schools, 2016 school year, Mozambique	Child's attendance (three treatments: (i) "information only"; (ii) (i) + cash transfers to parents conditional on regular attendance; (iii) (i) + cash transfers to girls in form of a voucher conditional on regular attendance)	Weekly attendance information through a report card over the school year	Effect of 4.5 p.p. on attendance (as large as 75% of the effect of the CCT treatment)	Parental monitoring
Rogers and Feller (2018)	RCT	28,080 students, kindergarten to 12th grade; 2014-2015 school-year, School District of Philadelphia	Treatments: (i) reminder on importance of absences, (ii) student's number of absences, and (iii) student's relative absences	Up to five rounds of mail-based messaging throughout the school year	Most effective versions reduced total absences by 6% and chronic absenteeism by 10% or more, spillover effects on untreated cohabiting students, no effect on student performance	Parent's beliefs about total absences and relative absences

York, Loeb and Doss (2019)	RCT	1,031 preschoolers, 2013-14 and 2015-16 school years, San Francisco Unified School District (SFUSD)	Parenting strategies	Three type of text-messages each week during eight months	Effect of 0.15 to 0.29 sd on parental involvement at home and school and of 0.11 SD on child's early literacy	-
Bergman and Chan (2021)	RCT	1,137 students, grades 5 to 11, 22 middle and high schools during 2015-2017, West Virginia	Missed assignments, grades, and class absences	Weekly alerts for assignments and absences and monthly alerts for grades, 32,000 text-messages	Reduced course failures by 28%, increased class attendance by 12%, and increased student retention by 1.5 pp, increased in-class exam scores by 0.1 SD (larger effects for below-median GPA students and high school students)	Accuracy of parents' beliefs about child's performance, parental behavioral responses
Dizon-Ross (2019)	RCT	3,451 households with at least two children enrolled in grades 2–6, 39 schools, Malawi	Student's average performance on school tests (Report Cards)	Once after baseline survey visit	Improved what parents knew about their children and causes family educational investments to adjust	Parent's beliefs
Angrist, Bergman and Matsheng (2022)	RCT	4,500 families with primary-school-aged children, April-July 2020 (COVID-19 Pandemic), Botswana	Treatments: (i) SMS text messages with basic numeracy "problems of the week", (ii) (i) + phone calls which walk-through of the learning activities sent via text message	Weekly treatment over 4 months	The combined treatment increased the average numerical operation learned by 0.12 SD, the SMS messages only treatment effective when targeted	Children cognitive skills effects vs. effort effects. Parental educational investment.
Barrera-Osorio et al. (2020)	RCT	4,371 students, grades 4 to 6, 31 public schools, Manizales, Colombia	Children's reading and math achievement + suggestions about how parents could engage with their children's education	Information delivered once at the end of the baseline household interview	Effect of 0.09 SD to 0.10 SD in student's performance (math and reading scores) in the first two semesters, effect fades out in year two	Information gap between beliefs and performance, parental behavioral responses.
Bergman (2021)	RCT+ structural modeling	279 students, grades 6 to 11, 2010-2011 school year, low-income communities in Los Angeles	Missed assignments and grades	Emails, text messages and phone calls several times a month over a six-month period	0.19 SD increase in GPA and classes missed by students decreased by 28%	Parent's beliefs about child's efforts and parental monitoring
Bergman, Lasky-Fink and Rogers (2020)	RCT	7,000 parents, 12 middle- and high-schools, 2015, Washington DC	Missed classes, missed assignments and low-grades	Weekly automated text-message alerts from January to June	Automatically enrolling parents improved student GPA by 0.06 points and reduced course failures by 9%	Enrollment defaults and simplification in technology adoption, decision-makers beliefs on implementation strategies
Gallego, Malamud and Pop-Eleches (2020)	RCT	7,700 children, grades 7 and 8, 2013, Chile	Children's last week internet use and/or offering assistance with installing parental control software	Weekly SMS messages mainly sent during summer vacation	Information treatment reduced children's internet use by 6–10%, no significant impacts from helping parents directly control their children's internet access	Parenting behavior (punishment and discussions about internet use), substitution for the presence of a parent at home without lowering parental involvement
Bettinger et al. (2021)	RCT	19,300 ninth graders students, 287 schools, Sao Paulo, Brazil	Treatments: (i) text message with information on child's attendance and school effort, and (ii) messages that try to redirect parent's attention without child-specific information	Weekly text messages for 18 weeks	Information treatment increased attendance by 2.1 pp, math GPA and standardized test scores by 0.09 SD, and grade promotion rates by 3.2 pp. The treatment without child-specific information improved outcomes by 89-126% relative to those in the information group.	Salience. Parent's accuracy about changes in children's school effort. Parental behavior.

II Appendix: Sample and Recruitment of parents

II.A Sample of students

In early 2014, we worked with education leaders in a deprived administrative of Santiago de Chile to recruit schools to join our study. Eight schools consented to work with the program. All students enrolled in grades 4 through 8 in each of these schools were included in the study (a total of 85 classrooms and 1,447 students). Throughout the paper, we call this sample "full sample".

During 2015 one school (with 65 students) decided not to continue during the second academic year. Similarly, students in grade 8 participated during the first part of the experiment (a total of 316 students across the remaining schools). These students could not be treated or followed into secondary school. We also dropped them from the main analysis. Because randomization was done at the individual level stratifying by classroom we drop this school from the main analysis without invalidating the experimental design. Throughout the paper, we call this sample "main sample".

II.B Recruitment of participants

During a series of school meetings, we invited parents of all children in grades 4-8 to participate in the project and over 50 percent of parents signed consent. Consent rates were very similar across grade-levels (Table B.1). Younger students, those not new to the school, and those with better baseline attendance and math grades were somewhat more likely to consent (see Table B.2).

Table B.1: Consent rate by grade level

Grade level	Full Sample	Main Sample
	[1]	[2]
4	0.57	0.58
5	0.49	0.50
6	0.54	0.55
7	0.52	0.52
8	0.53	
Total	0.53	0.54

Note: N=2,720 for the full sample and N=1,987 for the main sample.

Table B.2: Likelihood to Consent

	Full Sample	Main Sample
	[1]	[2]
Age	-0.013**	-0.017**
	[0.006]	[0.008]
New student in 2014	-0.092***	-0.087**
	[0.035]	[0.039]
Attendance rate in 2013	0.744***	0.743***
	[0.116]	[0.138]
Math grade in 2013	0.013	0.009
	[0.010]	[0.011]
Students	2720	1987

Note: The table shows the estimated coefficients of a regression of an indicator for whether the parent's student consented to participate in the intervention as the dependent variable. Column [1] uses the full sample (i.e. including grade 8 in 2014 and the dropped school). Column [2] uses the main sample.

III Appendix: Intervention

III.A Text messages: Production

The experiment offered each participating parent the chance to receive high frequency information about their selected child via text message. The specific information covered attendance, behavior and mathematics test scores of their child. In addition to the information text messages, parents of both treatment and control groups received general text messages about school meetings, holidays and other general school matters throughout the year.

Once the intervention began our project teams digitized the classroom books described in Section V.B, which contained information on attendance, behavior, and math score. This information was collected weekly and uploaded to a platform designed for the purpose of this study (called, in Spanish, *Papás al Día*) which turned the information into text messages for the treatment groups. Treated parents received weekly messages on attendance, and monthly messages on behavior and math test scores. In the case of attendance information, we told parents how many days out of the last week (usually five days) the child was in school. In the case of behavior information, we provided parents the number of positive, neutral and negative behavior notes recorded in the classroom books over the prior month. Regarding the math test scores, we provided monthly updates on the record of all math test scores, the average of these scores, and the class average score. Hence, parents learned information about their own child, as well as how their child performed relative to the class mean.

III.B Timeline of distribution of text messages

The Chilean school year runs from March to December, with two weeks of winter vacation in July. We introduced parents to the intervention at school meetings located at school premises in May, and collected consent forms at these meetings. Since school meetings were not always well attended, we also sent project introduction materials and consent forms home with students and followed up by phone to get verbal and written consent.

In Chile, receiving a text message is free. The cost of text messages was paid by the research team.

Table C.1 presents the first day and text of each of the text messages. On May 23rd, we first sent all participants, including those randomized to the control group, in seven out of eight schools a welcome text message to introduce the intervention and let them know they might expect further free messages from their child's school. The child was mentioned by name. This message helped identifying valid phone numbers for caregivers, following up on all undelivered welcome messages to correct phone numbers. After that, we started sending behavior text messages on July 9th, 2014; attendance text messages around June 13th, 2014; and math test scores text messages around July 14th 2014. The 8th school was incorporated into the experiment slightly later. The implementation milestones for this school were as follows: July 28th, 2014 (welcome message); August 1st, 2014 (first attendance message); August 11th 2014 (first math test score message); and August 12th, 2014 (first behavior message). Because winter vacations are taken in July, differential timing of the start of the intervention for the 8th school is of little consequence. The intervention continued for a second year. From April 2015 to December 2015, we continued to send text messages to treated parents in a retained sample of students. We recorded all text message information such as day and time, the message's content, the name of the recipient parent, etc.

Table C.1: Text messages

text message Type	Frequency	Start Date	Text
Behavior	Monthly text message	July 9th, 2014 (August 12th, 2014 for 8th school)	{Name parent}, according the school's record of {month}, {Name student} had {Number} positive notes and {Number} negative notes. Papas al dia
Attendance	Weekly text message	June 13th, 2014 (August 1st, 2014 for 8th school)	{Name parent}, according the school's record, {Name student} attended to school {week attendance days} of {week total days}. Papas al dia.
Mathematics Scores	Monthly text message	July 14th 2014 (August 11th, 2014 for 8th school)	{Name parent}, the math scores of {Name student} are {List of student's grade} and his/her average now is {Current GPA}. The average in the class is {Average class GPA}. Papas al dia

III.C Text messages: Delivery

All text messages were sent as planned. However, not all text messages sent were delivered or received. Several factors contributed to message failure. A message was more likely to fail if the network was very busy, if there was some technical problem with the network, if parents turned off their phones or if they changed their numbers during the experiment. To maximize the chances of message receipt, we changed the dates of message delivery from Friday to Monday in August 2014, early on in the intervention. We also re-contacted all consenting parents in March 2015 to verify and/or update their cellphone numbers, to minimize the chance of message failure due to new phone numbers. We also gathered these data on the delivery status of the text message (i.e. whether the phone number received the message).

Technical reasons affecting whether a text message is successfully delivered or not (e.g. network overload at certain times of the day/week) are unlikely to be correlated with family-level unobservables that also affect child outcomes. However, we check this possibility by regressing the total share of successful text messages (total received/total sent) of each type (attendance, grades, behavior and general text messages) on baseline attendance and math grades, a composite index of the parent scales and mother's education, age, gender and classroom fixed effects. Table C.2 shows that students with higher baseline grades or attendance behaviors were no more (or less) likely to receive text messages that were sent. Mother's education seems to be weakly correlated with the share of messages received.

Table C.2: Share of text messages received and pre-treatment characteristics

	Attendance	Grades	Behavior	General
	[1]	[2]	[3]	[4]
Attendance in 2013	–0.217	–0.138	–0.159	0.052
	[0.203]	[0.197]	[0.196]	[0.167]
Math grade in 2013	0.009	0.008	0.009	0.006
	[0.018]	[0.019]	[0.017]	[0.011]
Parent scales index	0.018	0.020	0.018	0.007
	[0.024]	[0.025]	[0.025]	[0.014]
Mother completed high school	0.071*	0.060	0.040	0.064**
	[0.040]	[0.043]	[0.037]	[0.027]
Students	530	530	530	1066

Note: Table shows the coefficients of a regression of the total share of successful text messages (total received/total sent) of each column type (attendance, grades, behavior and general text messages) on attendance and math grades at baseline in the main sample. Regressions of columns [1]-[3] use the sample of treated students. Regression of columns [4] uses the sample of treated and control students. Parent and student scales index are simple scales' averages. All regressions include controls for class fixed-effects, age and gender. If survey variables are missing, we imputed them using the classroom-level mean and added an indicator variable for these imputed observations. Robust standard errors are clustered at the class level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table C.3 compares the pre-treatment characteristics of those who complied (i.e., those who received at least one message in both years, when available, of the sent messages) and those who did not. All in all, there are not systematic differences between students and parents that complied to the treatment.

Table C.3: Compliers' and non-compliers' pre-treatment characteristics

	Obs.	Complier Mean	Non-complier Mean	p-value of adj. dif.
	[1]	[2]	[3]	[4]
Panel A: Administrative records				
Female	530	0.45	0.44	0.85
Age	530	9.76	10.01	0.11
New student	530	0.08	0.07	0.96
Language grade	483	5.11	5.09	0.84
Math grade	483	5.15	5.09	0.53
Final avg. grade	483	5.58	5.50	0.26
Attendance rate	483	0.89	0.89	0.96
Passed grade	499	0.95	0.93	0.55
At-risk index (standardized)	530	0.04	0.09	0.94
Multiple hypotheses Wald test				0.81
Panel B: Parents' Survey Data				
Standardized scales				
Study habits	351	–0.09	0.05	0.26
Academic efficiency	367	–0.11	0.04	0.50
Family Support	373	–0.09	–0.27	0.42
Low Family Supervision	357	–0.08	0.02	0.38
Parent School Involvement	359	–0.03	0.11	0.23
Positive reinforcement	372	–0.04	–0.19	0.64
Parent scales index	390	–0.04	–0.07	0.95
Mother completed high school	389	0.54	0.47	0.24
Multiple hypotheses Wald test				0.05
Panel C: Students' Survey Data				
Standardized scales				
Study habits	459	–0.20	–0.14	0.65
Academic efficiency	458	–0.16	–0.07	0.49
Family Support	431	–0.18	0.01	0.18
Low Family Supervision	435	0.03	0.12	0.46
Parent School Involvement	430	–0.12	–0.08	0.90
Positive reinforcement	430	–0.08	0.10	0.38
Student scales index	483	–0.18	–0.06	0.34
Multiple hypotheses Wald test				0.79

Note: Column [1] shows the number of observations with non-missing data, columns [2] and [3] the mean value of each baseline characteristic in the compliers and non-compliers group, respectively. Complier students are defined as those treated students whose parents received at least one attendance, grades or behavior messages in both years. Column [4] reports the p-value on the treatment coefficient in a regression using each baseline characteristic as the dependent variable. All tests adjust for classroom fixed effects and robust standard errors are clustered at this level. Parent and student scales index are simple scales' averages. Observable variables in Panel A correspond to 2013 except for new student variable that refers to 2014. The rows reports the p-value of a joint test of the null that all the differences in means of the variables reported in each panel (of treated and control students) are zero.

IV Information and parenting styles

The effects of information interventions such as the one analyzed in this paper could be mediated by parenting styles (generally understood as the strategies parents use in raising their children). To examine this issue, we implemented a complementary intervention to evaluate the additional effect of providing parents with tools to relate to their children more positively using an established "positive parenting" intervention. We wanted to test whether the original text messaging intervention would be made more effective in combination with

the complementary investment.

Randomization.– To test this approach, we stratified by school grade-level and randomized a complementary input at the classroom-level, assigning half of the classrooms to treatment (V=1) and the other half to control (V=0). Only parents in video treated classrooms (V=1) who were randomized into the text messages treatment (T=1) received the complementary input. Parents in video treated classrooms (V=1) who had not being randomized to received text messages (T=0) received a placebo compact disc (containing music).[65] Therefore the complementary input acted as an add-on to the original text-messaging treatment in the V=1 classrooms.

Intervention.– To design the complementary intervention, we worked with educational psychologists at Arizona State University to adapt a video of their successful parenting intervention, "Family Check-up", which has been delivered to hundreds of low-income schools in the United States (Lim et al. (2005)). Our training video provided parents with three vignettes, showing parents how to use the school-provided information on attendance, grades, and classroom behavior. The video was 9 minutes in length. Videos were distributed in DVD format to SMS treated parents in classrooms randomized to get the complementary input.

The field work to deploy the DVDs was challenging for two reasons. First, it was delayed due to development of the content and production of the videos so that distribution of the DVDs to families started only two months before the school year ended and the summer break started. Second, the distribution itself was imperfect. DVDs were sent home with students and did not always reach parents; sometimes parents received the DVD but did not have a DVD player at home to facilitate viewing.

We surveyed text messages-treated parents assigned to receive the parenting video (i.e. T=1 and V=1) to determine whether they watched the video. We were only able to collect information for 59% (173) of these parents. Among these parents, 85 out of 173 reported having watched the videos. Therefore, only 12% of all text messages-treated parents (in the full sample, there are 710 text messages-treated parents) were confirmed to have watched the videos.

Research Design.– To measure the effects on students' outcomes of inducing parents to use a more positive parenting style when processing the information received via text message, we differentiate between parents that get the text messages from those that additionally received the video. To do this we interact the individual-level treatment text messages intervention variable T_{ic} with the classroom-level video treatment V_c. That is:

$$Y_{ic} = \alpha + \beta T_{ic} + \delta T_{ic} \times V_c + \psi X^0_{ic} + \gamma_c + \pi_t + \epsilon_{ic} \tag{IV.1}$$

[65] In an early version of the paper we incorrectly claimed that all parents in video treated classrooms received the parenting video intervention. In reviewing our fields logs and protocols we discovered this inaccuracy which we have corrected in this version of the manuscript.

where Y_{ic} is the individual outcome, X^0_{ic} are the individual baseline standardized math grade and attendance rate, and γ_c is the classroom fixed-effect, π_t is the year fixed-effect and ϵ_{ic} is the individual error term. The estimate of δ tells us how much more impact the text messages treatment had after parents were exposed to the parenting video.

Results.– Table D.1 presents the results of equations (1) (the main specification of the paper) and (IV.1). Panel A shows the parameter β_1 in our main analysis, which in principle may be capturing two effects: the treatment effect of the text messages and the treatment effect of the parenting intervention times the probability of receiving that parenting intervention. Panel B presents results of the augmented model of equation (IV.1). The interaction coefficient indicates whether the treatment effects of the text messages intervention are equal with or without the video treatment.

Panel B indicates that the parenting intervention does not seem to have had an effect on students whose parents were receiving information through text messages. No coefficient associated with interaction terms $T_{ic} \times V_c$ is statistically significant. Moreover, the effects are quantitatively small in columns 1-3, while the point estimates in column 4 and 5 are quantitatively larger. The last line of Table D.1 shows that in all cases, we cannot reject equality between the text messages treatment effects with or without the video intervention (at 5% significance level).

There are several reasons why it was unlikely that the video intervention as implemented would have substantially affected the way the text messages treatment worked on schooling outcomes. In addition to the distribution challenges and the low levels of take-up, the parenting intervention itself was fairly low intensity (9 minutes). Unlike the high frequency text messaging treatment which went on to be sustained over 18 months, the video intervention was a once-off delivery of information to parents. While the parenting intervention did deliver useful guidance on how parents might talk to their kids using the text messages provided information from schools, it is hard to imagine how parents would have retained this information over the 18 months of the experiment. In similar settings (e.g. Dinkelman and Martínez A (2014)), researchers have shown relatively low retention of information (about financial age eligibility) delivered via a DVD randomly distributed to parents of 8th grade students in Chile.[66]

The results in Table D.1, combined with the evidence of low take up of the video intervention, lead us to conclude that the treatment effects obtained in our main specification are primarily capturing the effect of the information delivered through text messages.

[66]For example, Dinkelman and Martínez A (2014) administer a DVD information treatment about financial aid for college to Grade 8 students and their parents in Chile. At follow up, 4 months after the DVD was distributed to parents, control parents scored only 0.89 points on a 5 point question about financial aid eligibility requirements, and exposure to the DVD raised this parent score by a small, significant, 0.29 points.

Table D.1: Parenting Intervention: Effects on Grades, Attendance and Behavior

	Standardized math grade	Math grade >4.0	Attendance rate	Cumulative attendance >85%	Standardized # negative beh. notes
	[1]	[2]	[3]	[4]	[5]
Panel A: Text messages only					
T	0.088*	0.027**	0.011**	0.047*	0.004
	[0.045]	[0.013]	[0.005]	[0.024]	[0.075]
Observations	2011	2011	2011	2011	2011
Panel B:Text messages and Parenting Intervention (DVD)					
T	0.085	0.035*	0.009	0.029	–0.045
	[0.059]	[0.018]	[0.007]	[0.036]	[0.113]
T x Parenting Intervention (DVD)	0.006	–0.014	0.002	0.034	0.091
	[0.088]	[0.026]	[0.010]	[0.048]	[0.152]
Observations	2,011	2,011	2,011	2,011	2,011
H_0 : T (Panel A)= T (Panel B) (p-value)	0.130	0.0800	0.110	0.110	0.830

Note: Panel A augments the model in equation (1) the interaction between the individual-level treatment, T, (equal to 1 if parents were sent text messages and zero otherwise) and V, the classroom-level video treatment (equal to 1 for classrooms in which the DVD was distributed and zero otherwise). All models include the baseline math grade, attendance rate as control variables, classroom (randomization strata) and year fixed effects. If baseline values of baseline math grade/attendance were missing, we imputed them using the classroom-level mean and added an indicator variable for these imputed observations. Standard errors are clustered at the classroom level (shown in brackets). Panel B shows the intention-to-treat effects estimates of Table 3 using equation (1). * significant at 10%; ** significant at 5%; *** significant at 1%.

V Data Sources

V.A School Records

Our analysis takes advantage of rich administrative data collected from several sources throughout the project. First, before the intervention, we collected basic demographic data (age, gender) and school performance data (e.g. average test scores, annual attendance rate, and grade repetition) from administrative school records (i.e. transcripts, called *Actas* in Spanish) provided by the Ministry of Education of Chile (MINEDUC). After that, to measure the impact of the intervention, we collected administrative school records for our sample schools at midline (end of year 1) and endline (end of year 2) using the same source. For students who left our sample of schools during the experiment, we collected their aggregate data on attendance and scores (subject-specific GPA) from the municipality school records and tried to track the remaining students by phone. This allowed us to fill in the missing midline and endline data.

V.B Classroom books

Our research team also collected data (attendance, behavior note, and mathematics score) on a weekly basis throughout the duration of the experiment. Table E.1 highlights the sources, frequency, and availability of this information. Once the intervention began, each of our project teams visited their assigned school once per week and collected the administrative data by photographing daily attendance entries, behavior reports, and all recent mathematics test records for all children in treated classrooms. For attendance data, the information was originally reported at a daily frequency (0: absent, 1: attended class, .: not in roster of students). We then aggregated this information at a weekly, monthly and yearly frequencies (as sum of days and percentage of days) to facilitate comparison with other sources of information. These attendance data are available since the school year starts in 2014. In the case of behavior outcomes, we collected all positive and negative notes recorded on a daily basis if they exist. We collected these data since June 2014. For aggregating the number of positive/negative records at the monthly level we considered only the months when the student was in the school. In the case of mathematics score, we collected all test scores recorded for each student on each month. We then aggregated these simple averages into a monthly score. The semester and annual averages were computed in the same way. Math scores data are available since when we started to send text messages in July 2014.

Table E.1: Classroom books data

Outcomes	Data Source	Years	Frequency
Attendance	Attendance register pictures	2014 (since March), 2015	Daily
Behavior	Behavior records pictures	2014 (since June), 2015	Daily
Mathematics Test Score	Test records pictures	2014 (since July), 2015	Monthly

V.C Surveys

We administered surveys to all participating parents and all children in all grades. Surveys were administered before treatment (baseline, around June 2014), at midline (end of year 1) and endline (end of year 2). Student surveys were administered in class; parent surveys were sent home with children and encouraged to be returned to the school.

Baseline and follow-up parent surveys collected information on what parents knew about their child's attendance (questions were for a specific child in our sample), grades and behavior; their level of involvement with the school and the child; demographics and economic characteristics; and any concerns they had with schooling. Some of these questions were later used to form scales on study habits, academic efficiency, parental support, parental supervision, parental school involvement and parental positive reinforcement. We describe the estimation process underlying scales construction in detail in section VI.A. Child surveys

collected demographics, self-reported performance, engagement in schooling, engagement of parents, and information on their peer networks within the classroom. We also tested them on a few age-appropriate simple math problems.

Follow-up surveys also included specific questions regarding the intervention. For example, we asked parents how much they were willing to pay (WTP) to continue receiving text messages from their school. We randomly assigned one out of three WTP amounts to this question for each parent. In particular, we ask parents: *"It is possible that next year your daughter's/son's school can send you regularly text messages with information about their school performance (attendance, grades, and behavior) four times a month. However, there might not be enough funds to provide this service free of charge. Thinking about how valuable would this service be for you, please tell us whether you will be willing to pay a month to receive four text messages a month, from April to December."* Parents were assigned with equal probability to a value of $500, $1000 or $1500. In addition, we asked if parents were receiving text messages with general school information and student's attendance, behavior and grades.

VI Variables' Construction and Description

Table F.1 lists all the variables used in the paper, including details on their construction and sources.

Table F.1: Variable definitions and sources

Variable definition	Source	Description
Demographic		
Female	School records	Indicator variable equal to 1 if female student; 0 if male student.
Age	School records	Student's age computed based on his/her date of birth.
Primary outcomes		
Std. math grade	Classroom books	Math grade at the end of each year. Standardized using grade-year control mean and standard deviation.
Math grade > 4	Classroom books	Indicator variable equal to 1 if the annual math grade was a passing grade (above 4.0).
Attendance rate	Classroom books	Yearly attendance rate recorded at the end of each year.
Cumulative attendance $> 85\%$	Classroom books	Indicator variable equal to 1 if the annual attendance rate for passing the grade.
Std. # negative behavioral notes	Classroom books	Sum of negative behavioral entries during the school year (post-treatment). Standardized using grade-year control mean and standard deviation.
Secondary outcomes		
Daily attendance	Classroom books	Indicator variable equal to 1 if student attended school that day; 0 if absent.
Std. monthly math grade	Classroom books	Simple average of all the test scores recorded on each month. Standardized using grade-year control mean and standard deviation.
Monthly attendance rate	Classroom books	Monthly attendance rate recorded at the end of each month.
Std. monthly # negative behavioral notes	Classroom books	Sum of negative behavioral entries during the month. Standardized using grade-year control mean and standard deviation.
Language grade	School records	Language grade at the end of each year. Standardized using grade-year control mean and standard deviation.
Natural science grade	School records	Natural science grade at the end of each year. Standardized using grade-year control mean and standard deviation.
History grade	School records	History grade at the end of each year. Standardized using grade-year control mean and standard deviation.
Attendance misinformation (Surveys)	Surveys	Indicator related to all absenteeism (with and without parent permission) in the previous two weeks, constructed by contrasting the responses of parents with those from students. Parents are classified as misinformed if they do not answer at least one of the questions, or if at least one of the answers (in bracket days) provided by students and parents do not match.
Attendance misinformation (Admin.)	Surveys; classroom books	Indicator related to all absenteeism (with and without permission) constructed by contrasting parent responses with classroom books. The ends of original bracket days in absences with and without permission are added to construct new bracket days. Parents are classified as misinformed if they do not answer at least one of the questions, or if classroom books' records of absences over the previous two weeks do not fall in the range.
All grades misinformation (Surveys)	Surveys	Indicator related to all grades constructed by contrasting parent and student responses. Parents are classified as misinformed if they do not answer, or if reported grades' brackets do not match.
All grades misinformation (Admin.)	Surveys; school records	Indicator related to all grades constructed by contrasting parent responses about the student's last end-of-year grades with school records. Parents are classified as misinformed if they do not answer, or if the absolute difference between reported and actual grades is greater than 0.5.
Misbehavior misinformation (Surveys)	Surveys	Indicator constructed by contrasting parent answers with student answers. Using a four-value scale, parents and students were asked about the degree of agreement with the student's misbehavior statements. Parents are classified as misinformed if they do not answer at least one of the questions, or if the average absolute difference between parent and student answers are larger than the median (0.8).
Misbehavior misinformation (Admin.)	Surveys; classroom books	Indicator constructed by contrasting parent answers with classroom books. Using a four-value scale, parents were asked about the degree of agreement with the student's misbehavior statements. Parents are treated as misinformed if they do not answer; if the parent's average answer is equal to or larger than the median (2), and student did not misbehave according to classroom books; or if the parent's average answer is less than the median answer and student misbehaved in class according to books.

Variable definition	Source	Description
Language misinformation	Surveys; school records	Indicator related to language grades constructed by contrasting parent responses about the student's last end-of-year grades with school records. Parents are classified as misinformed if they do not answer, or if the absolute difference between reported and actual grades is greater than 0.5.
Natural science misinformation	Surveys; school records	Indicator related to natural science grades constructed by contrasting parent responses about the student's last end-of-year grades with school records. Parents are classified as misinformed if they do not answer, or if the absolute difference between reported and actual grades is greater than 0.5.
History misinformation	Surveys; school records	Indicator related to history grades constructed by contrasting parent responses about the student's last end-of-year grades with school records. Parents are classified as misinformed if they do not answer, or if the absolute difference between reported and actual grades is greater than 0.5.
Parent and student scales	Surveys	See Appendix Section VI.A for a description of the variables of each scale used
Willingness to Pay (WTP)	Surveys	Indicator variable equal to 1 if parent reports being willing to pay for continued text message service (4 text messages per month from the school) after the end of the year.
Control variables		
Baseline standardized math grade	School records	Math grade at the end of 2013. Standardized using grade-year control mean and standard deviation.
Baseline attendance rate	School records	Yearly attendance rate recorded at the end of 2013.
Missing baseline	School records	Indicator variable equal to 1 if student has missing baseline variables which were imputed with classroom-level mean; 0 otherwise.
Other variables		
Text messages sent	Intervention	Yearly cumulative number of text messages sent to student's parents.
Text messages received	Intervention	Yearly cumulative number of text messages received by student's parents according to cellphone companies marks.
Declares to have received text messages	Surveys	Parents answer on a four-value scale the frequency in which they have received each type of text message ("never or almost never" to "always or almost always") in the last month. Indicator variable equal to one if parent answer value 4 and zero otherwise.
At-risk index	School records; classroom books	Simple average of standardized baseline attendance, math grades and negative behavioral notes. Final attendance and math grades from 2013 and accumulated negative behavioral marks during the month prior to the start of the intervention.
New student	School records	Indicator variable equal to 1 if student not in the schools sample in 2013; 0 otherwise
Final avg. Grade	School records	End of 2013 average of all subjects grades.
Passed grade	School records	Indicator variable equal to 1 if student passed the grade in 2013; 0 otherwise.
Missing grades/attendance/pass data	School records	Indicator variable equal to 1 if student has missing 2013 school records information; 0 otherwise.
Parent and student scales index	Surveys	Constructed by adding all the standardized scales with a positive connotation and subtracted the low family supervision scale. Then normalized by the number of scales and standardized using the control group's mean and standard deviation.
Mother completed high-school	Surveys	Indicator variable equal to 1 if student's mother completed high-school; 0 otherwise.
Intervention		
Treatment (T_i)	Intervention	Indicator variable equal to 1 if treated student; 0 if control student.
Strata	Intervention	Strata for individual level treatment randomization is the classroom (school-grade-section).
High-Share (E_c)	Intervention	Randomized classroom-level treatment equal to 1 for high-share (75%) classrooms and zero for low-share (25%) classrooms.
DVD (V_c)	Intervention	Randomized classroom-level treatment equal to 1 for classroom assigned to DVD Parenting Intervention; 0 otherwise.

VI.A Survey Data: Construction of scales

Throughout the questionnaires we asked students and parents a series of questions (items) that we later used to form scales on: study habits, academic efficiency, parental support, parental supervision, parental school involvement and parental positive reinforcement. The survey items were drawn from: The University of Chicago Consortium on Chicago School Research, the Manual for the Patterns of Adaptive Learning Scales (PALS) developed by the University of Michigan, and scales on positive parenting developed by the Prevention Group at Arizona State University. These items were randomly mixed into the student and parents' survey instruments. Students and parents could give categorical answers of the type "strongly agree", "agree", etc. to each statement.

We aggregated student and parent answers into scales (indices) using a maximum likelihood (ML) principal components estimator where only one latent factor was retained to describe all responses to the same category of questions. The models were estimated on the treatment and control groups for baseline scales. For follow-up scales, models were estimated only in the control group and then results were applied to the full sample. After the prediction was computed to produce each scale, we standardized them using the mean and standard deviation of the control group. Each scale was pre-specified and had been previously used and validated in other studies.

In the Tables F.2 and F.3 we describe these scales and their properties at *baseline*. Column 1 states the scale name, the eigenvalue of each latent factor, and the Cronbach's alpha. Column 2 presents the items that belong to each scale. Column 3 shows the loading associated with each item. Rather than repeating the information, Table F.4 summarizes the properties of these scales by the eigenvalue and Cronbach's Alpha for follow-up measures, both for parents and students.

Table F.2: Student Scales — Baseline

Scale	Variable	Loadings
Study Habits	I always study for the exams	0.622
Eigenvalue: 2.134	I spend free time doing homework and study	0.516
Cronbach's Alpha: 0.750	I try to do well my school work even though I do not find interesting	0.448
	If I must study I do not spent time with friends	0.428
	I always know the homework that I must present	0.532
	I organize well my time to do my school work	0.745
	I can organize school tasks and spent time with friends and family	0.507
Academic efficiency	I am sure that I can dominate all the school subjects	0.674
Eigenvalue: 2.279	I am sure that I can understand the hardest things	0.779
Cronbach's Alpha: 0.801	I can do almost all the work or I give up	0.540
	Even though subjects are hard I can learn	0.696
	I can do the hardest homework if I try	0.664
Family support	My parents or guardians checked that I really made my homework	0.454
Eigenvalue: 2.100	My parents or guardians motivated me to work hard at school	0.489
Cronbach's Alpha: 0.753	My parents or guardians supported me in activities outside school	0.565
	My parents or guardians heard me when I needed to talk with them	0.507
	My parents or guardians showed that they were proud of me	0.739
	My parents or guardians helped me to take decisions	0.729
Low family supervision	I went alone to school	0.757
Eigenvalue: 1.490	My parents or guardians checked the behavior and attendance book	-0.187
Cronbach's Alpha: 0.575	I returned to home alone	0.716
	I stayed alone at home without adult supervision	0.347
	I left home without letting know my parents where I went or who I was with	0.367
	I allowed that my parents or guardians spoke with my school friends	-0.042
	I went to school and did not enter or left home saying I will not assist	0.214
	I signed in school but I left before class' end	0.255
Parent school involvement	My parents or guardians met with school's director	0.549
Eigenvalue: 1.782	My parents or guardians met with school teachers	0.529
Cronbach's Alpha: 0.665	My parents or guardians contacted the director through e-mail	0.649
	My parents or guardians contacted teacher through e-mail	0.650
	My parents or guardians went to school meetings	0.106
	My parents or guardians went to school events	0.396
	My parents or guardians volunteered at school	0.435
Positive reinforcement	My parents or guardians thanked me for helping with housework	0.549
Eigenvalue: 3.405	My parents or guardians told me they have fun with me	0.727
Cronbach's Alpha: 0.862	My parents or guardians congratulated me for my effort	0.794
	My parents or guardians told me that I have outstanding qualities	0.578
	My parents or guardians told me that they were proud of me	0.770
	My parents or guardians congratulated me for having done well or having improved	0.721
	My parents or guardians encouraged me when I was doing something hard	0.706

Table F.3: Parent Scales — Baseline

Scale	Variable	Loadings
Study Habits	My child always studies for the exams	0.693
Eigenvalue: 3.187	My child spends free time doing homework and study	0.627
Cronbach's Alpha: 0.846	My child tries to do well my school work even though he/she do not find interesting	0.631
	If my child must study he/she does not spent time with friends	0.450
	My child always knows the homework that he/she must present	0.654
	My child organizes well time to do his school work	0.858
	My child can organize school tasks and spent time with friends and family	0.740
Academic efficiency	I am sure that my child can dominate all the school subjects	0.773
Eigenvalue: 2.854	I am sure that my child can understand the hardest things	0.823
Cronbach's Alpha: 0.860	My child can do almost all the work or he/she gives up	0.504
	Even though subjects are hard my child can learn	0.781
	My child can do the hardest homework if he/she tries	0.845
Family support	I checked that my child really made his homework	0.555
Eigenvalue: 2.156	I motivated my child to work hard at school	0.481
Cronbach's Alpha: 0.747	I supported my child in activities outside school	0.471
	I heard my child when he/she needed to talk with me	0.533
	I showed that I was proud of my child	0.752
	I helped my child to take decisions	0.738
Low family supervision	My child went alone to school	0.715
Eigenvalue: 1.586	I checked the behavior and attendance book	-0.219
Cronbach's Alpha: 0.576	My child returned to home alone	0.872
	My child stayed alone at home without adult supervision	0.377
	My child left home without letting me know where he/she went or with who he/she was	0.235
	My child allowed that I speak with my school friends	-0.130
	My child went to school and did not enter or left home saying he/she will not assist	0.179
	My child signed in school but he/she left before class' end	0.139
Parent school involvement	I met with school's director	0.629
Eigenvalue: 1.874	I met with school teachers	0.481
Cronbach's Alpha: 0.651	I contacted the director through e-mail	0.727
	I contacted teacher through e-mail	0.714
	I went to school meetings	-0.071
	I went to school events	0.301
	I volunteered at school	0.338
Positive reinforcement	I thanked my child for helping with housework	0.440
Eigenvalue: 2.960	I told my child I have fun with me	0.617
Cronbach's Alpha: 0.839	I congratulated my child for his effort	0.756
	I told my child that he/she has outstanding qualities	0.654
	I told my child that I was proud of him	0.732
	I congratulated my child for having done well or having improved	0.638
	I encouraged my child when he/she was doing something hard	0.666

Table F.4: Parent and Student Scales at Follow-Up

Year	Respondent	Scale	Eigenvalue	Cronbach's Alpha
[1]	[2]	[3]	[4]	[5]
2014	Parent	Study habits	2.775	0.809
2014	Parent	Academic efficiency	2.992	0.877
2014	Parent	Family Support	1.974	0.733
2014	Parent	Family Supervision	1.554	0.578
2014	Parent	Parent School Involvement	1.644	0.631
2014	Parent	Positive reinforcement	3.755	0.867
2015	Parent	Study habits	2.895	0.831
2015	Parent	Academic efficiency	2.642	0.840
2015	Parent	Family Support	2.236	0.778
2015	Parent	Family Supervision	1.480	0.537
2015	Parent	Parent School Involvement	1.716	0.666
2015	Parent	Positive reinforcement	3.458	0.858
2015	Parent	Parent feelings	1.080	0.539
2014	Student	Study habits	2.442	0.784
2014	Student	Academic efficiency	2.486	0.826
2014	Student	Family Support	2.412	0.795
2014	Student	Family Supervision	1.514	0.604
2014	Student	Parent School Involvement	1.902	0.685
2014	Student	Positive reinforcement	4.087	0.891
2015	Student	Study habits	2.246	0.760
2015	Student	Academic efficiency	2.623	0.837
2015	Student	Family Support	2.418	0.794
2015	Student	Family Supervision	1.236	0.478
2015	Student	Parent School Involvement	1.832	0.676
2015	Student	Positive reinforcement	4.145	0.890

Note: See Table F.2 and F.3 for details on variables used in each scale. Parent feelings scale was only asked for parents in endline 2015.

VI.B Correlations between parental and student's scales

Table F.5 shows, for each scale, the cross-sectional correlation between parents and students values. We find that there is a stable positive correlation between parent and student scales across the different survey waves (baseline, midline and endline).

Table F.6 analyzes the correlation of each scale over time (baseline-midline and baseline-endline), both for parents (Panel A) and students (Panel B). This correlation appears to be positive and stable in all cases.

Taken as a whole, this information suggests that scales seem to be capturing constructs that are similar across the different survey waves.

Table F.5: Parents and Students' Scales Correlation

	Baseline	Follow-Up 1	Follow-Up 2
	[1]	[2]	[3]
Study habits	0.34	0.40	0.34
Academic efficiency	0.25	0.28	0.18
Family Support	0.23	0.31	0.27
Low Family Supervision	0.65	0.66	0.69
Parent School Involvement	0.22	0.26	0.29
Positive reinforcement	0.29	0.29	0.32

Note: Columns [1], [2] and [3] show the Pearson's correlation coefficient between parent and student scales at baseline (mid-2014), midline (end 2014) and endline (end 2015), respectively. Correlation figures are calculated with the main sample (excluding grade 8 in 2014 and dropped school).

Table F.6: Scales' Correlation Over Time

	Baseline - FU1	Baseline - FU2
	[1]	[2]
Panel A: Parents' Scales		
Study habits	0.56	0.51
Academic efficiency	0.46	0.39
Family Support	0.56	0.51
Low Family Supervision	0.73	0.57
Parent School Involvement	0.43	0.42
Positive reinforcement	0.54	0.53
Panel B: Students' Scales		
Study habits	0.49	0.38
Academic efficiency	0.39	0.33
Family Support	0.59	0.46
Low Family Supervision	0.69	0.56
Parent School Involvement	0.44	0.35
Positive reinforcement	0.63	0.50

Note: Columns [1] and [2] show the Pearson's correlation coefficient between scales at baseline and midline (end 2014) and between scales at baseline and endline (end 2015), respectively. Panel A focus on scales constructed with parent answers. Panel B focus on scales constructed with student answers. All correlation figures are calculated with the main sample (excluding grade 8 in 2014 and dropped school).

VII Data Quality

VII.A Response rates

Table G.1 summarizes the response rates of consenting students for the data sources described in Section V. Columns 1 and 2 present the response rate of all consenting students in our experiment with non-missing data for each year (i.e., full sample). Columns 3 and 4 show the statistics of consenting individuals in our main sample.

Table G.1: Response Rates

	Full sample		Main sample	
	Total sought	Found(%)	Total sought	Found(%)
Consent	1447	1.000	1066	1.000
Panel A: Administrative Data				
Student outcomes				
2013	1334	0.922	976	0.916
2014	1439	0.994	1063	0.997
2015	1090	0.753	955	0.896
Panel B: Survey Data				
Student surveys				
Baseline 2014	1332	0.921	970	0.910
Endline 2014	1283	0.887	947	0.888
Endline 2015	906	0.626	854	0.801
Parent surveys				
Baseline 2014	1045	0.722	782	0.734
Endline 2014	775	0.536	609	0.571
Endline 2015	612	0.423	578	0.542

Note: Column [2] presents the response of consenting individuals with non-missing data. Column [4] presents the response rate of consenting individuals in the main sample (excluding all students enrolled in Grade 8 at the baseline and those from dropped school) who have non-missing data. Administrative data is considered available for a student if an individual has data on grades, attendance, and pass/fail/exited school status at the end of the year.

Administrative data is considered available for a student if an individual has data on math scores, attendance, and pass/fail/exited school status at the administrative school records (*actas*) by the end of the year. These data is available for most students excluding those who withdraw before the end of the school year. We use the administrative data of the last school in case students change schools during the school year to one of the schools in our sample.[67]

Panel A of Table G.1 shows that we have baseline data for 92.2% of the full sample, and 91.6% of the main sample. The baseline data exist for all students enrolled in our sample schools in 2013, and for about half of the students who joined the school in 2014.[68] For these

[67] In very few cases, we further use classroom books to impute missing data on math scores and attendance with the annual data coming from math test records and attendance register, respectively.

[68] We collected their aggregate data on attendance and math scores (subject-specific GPA) from the municipality school records.

students who joined our sample schools in 2014, we assign classroom-level mean attendance and math grades to fill in missing baseline data. In all regressions, we use these imputed values and include an indicator variable denoting that the attendance/math grade baseline data are imputed. Focusing on the main sample, in 2014, these administrative data exist for 99.7% and in 2015 for 89.6% of the sample.

Most of the students who drop out of the full sample between 2014 and 2015 are those enrolled in grade 8 in 2014. As mentioned above, when they pass to grade 9, many of them change schools. Other students who left our sample include those who repeated grade 4 and those who left the schools and move out of the municipality. Section VII.B discusses these issues in detail.

Panel B shows the response rates for parents and student surveys. Whereas students present high response rates (90% in baseline and end of 2014, and 80% in 2015 for the main sample), parents have more missing data, specially in follow-up surveys.

VII.B Attrition and entry

Table G.2 describes the possible data status a student can have according to different data dimensions. Specifically, we analyze whether students change school or not, whether and when they were sent general text messages, and data availability (school records and classroom books). For each of these dimensions, we classify students into mutually exclusive categories. About 90% of the students are always in the same school and the majority of the attrition happens after the change of academic years.

General observations by panel:

- School status. Change of school can be to an in-sample or to an out-of-sample schools (out of the municipalities participating in the study). Students that drop out of the sample are very likely moving to other municipalities (and changing school as a consequence).
- Text message status. Those students with never sent general text messages are mainly students retired in 2014 and not found in 2015 (12 out of 18 in the main sample). From those 18, most of the treated students did not received either treatment text messages in 2014. 6 students never appear in text messages data.
- Data Availability (school records). 4 students were *not found* in the school records (*actas*) for which school and grades were imputed using classroom books.
- Data Availability (classroom books). We use annual (rather than high frequency) attendance and grades. Data is considered not missing when *both* attendance and grades are available. There are a few cases (15) in which the student withdrew early in the year and attendance takes very low values (more than half of the observations are zeros) and there are no available grades.

Table G.2: Data Classification

Dimension	Category	Main Sample	Full Sample
School status	Same school always	942	991
	Change school during 2014	5	5
	Change school between 2014 and 2015	17	59
	Change school during 2015	5	6
	Not found between 2014 and 2015	97	321
Text messages status	Sent messages in 2014 and 2015	907	958
	Sent messages only in 2014	139	399
	Sent messages only in 2015	2	2
	Never sent	18	23
Data availability status			
School records	Available 2014 and 2015	955	1041
	Available 2014 and missing 2015	108	335
	Missing 2014 and 2015	3	6
Classroom books	Available 2014 and 2015	948	1004
	Available 2014 and missing 2015	115	371
	Missing 2014 and 2015	3	7

Note: Table presents the frequency distribution of students in the main and full samples for different dimensions and their categories. For all dimensions, N=1,066 for main sample and N=1,382 for full sample. The full sample does not include the school not participating in the study in year 2.

Minor observations:

- We found two students in the main sample who only receive text messages in 2015. They have complete administrative data. It is likely that we did not have their correct phone number.
- Students with missing data in 2014 and 2015 (school records and classroom books) drop out of their schools before treatment (April/May/June of 2014).
- Within students that changed school during 2014 there is one that also changes school between 2014 and 2015 returning to the original one.

Table G.3 presents how students are distributed when we consider the combination of the defined categories of Table G.2. We find that almost 90% either remain in the same school and we have data for both years, or we do not find them in 2015 and, consequently, we only have data for 2014.

Table G.3: Data classification: Combined Categories

School status	text messages status	Data Actas	Data Books	Freq.
Same school always	Sent messages in 2014 and 2015	Available 2014 and 2015	Available 2014 and 2015	873
Not found between 2014 and 2015	Sent messages only in 2014	Available 2014 and missing 2015	Available 2014 and missing 2015	69
Same school always	Sent messages only in 2014	Available 2014 and 2015	Available 2014 and 2015	26
Same school always	Sent messages in 2014 and 2015	Available 2014 and 2015	Available 2014 and 2015	18
Not found between 2014 and 2015	Sent messages only in 2014	Available 2014 and missing 2015	Available 2014 and missing 2015	11
Not found between 2014 and 2015	Never sent	Available 2014 and missing 2015	Available 2014 and missing 2015	9
Same school always	Sent messages only in 2014	Available 2014 and missing 2015	Available 2014 and missing 2015	8
		Other combinations		52
		Total		1066

Note: Table shows the frequency distribution for the main sample of the combination of categories in Table G.2.

VII.C Administrative records: no differential attrition

We next estimate an OLS regression model where the dependent variable is an indicator variable for each possible status and the independent variable is the treatment binary variable. Table G.4 shows that there are no systematic differences between treatment and control students regarding all possible status of each dimension in the main sample used in this paper. There are, however, small differences in the full sample with students in the treatment group being less likely to have missing data from school records or classroom books and more likely to have continued receiving messages in 2014.

Table G.4: Differential attrition of administrative records

Dep. var	Treatment coeff.	
	Main Sample	Full Sample
School status		
Same school always	0.001	-0.005
	[0.025]	[0.020]
Change school during 2014	-0.002	-0.001
	[0.005]	[0.004]
Change school between 2014 and 2015	-0.008	-0.003
	[0.012]	[0.015]
Change school during 2015	-0.005	-0.005
	[0.006]	[0.004]
Not found between 2014 and 2015	0.014	0.015
	[0.022]	[0.022]
Text messages status		
Sent messages in 2014 and 2015	-0.033	-0.040
	[0.029]	[0.024]
Sent messages only in 2014	0.031	0.041*
	[0.028]	[0.024]
Sent messages only in 2015	0.002	0.002
	[0.002]	[0.001]
Never sent	-0.000	-0.003
	[0.009]	[0.007]
Data availability status		
School records		
Available 2014 and 2015	-0.010	-0.011
	[0.023]	[0.022]
Available 2014 and missing 2015	0.011	0.015
	[0.023]	[0.021]
Missing 2014 and 2015	-0.002	-0.004*
	[0.002]	[0.002]
Classroom books		
Available 2014 and 2015	-0.000	-0.017
	[0.024]	[0.021]
Available 2014 and missing 2015	0.002	0.022
	[0.024]	[0.022]
Missing 2014 and 2015	-0.002	-0.005*
	[0.002]	[0.003]
Students	1066	1382

Note: Column [1] shows the dependent variable of a regression of each category dummy on the treatment variable. The coefficients for the main sample and full sample are presented in column [2] and [3], respectively. text messages status relates to general text messages. All regressions are estimated by OLS including classroom fixed-effects (strata). Robust standard errors are clustered at the classroom level (shown in brackets). * significant at 10%; ** significant at 5%; *** significant at 1%.

VII.D Survey data: no differential response rates

Table G.5 shows that there are no significance differences in the surveys' response rate between the treatment and control group. This is true for all survey waves (baseline and the two follow-up) and both for students and parents.

Table G.5: Surveys Differential Response Rate

	Obs.	Treatment Mean	Control Mean	p-value
	[1]	[2]	[3]	[4]
Panel B: Parents' Survey Data				
Baseline 2014	1066	0.74	0.73	0.59
Endline 2014	1066	0.58	0.57	0.36
Endline 2015	1066	0.55	0.54	0.70
Panel C: Students' Survey Data				
Baseline 2014	1066	0.92	0.91	0.84
Endline 2014	1066	0.90	0.88	0.38
Endline 2015	1066	0.80	0.80	0.95

Note: Column [1] shows the number of observations with non-missing data, column [2] and [3] the average response rate for treatment and control group, respectively, for the estimating sample (excluding grade 8 and dorpped school). Column [4] reports the p-value on the treatment coefficient in a regression using a dummy indicating response as the dependent variable. All regressions include controls for classroom fixed-effects (randomization strata) and standard errors clustered at the classroom level.* significant at 10%; ** significant at 5%; *** significant at 1%.