

Promoting Parental Involvement in Schools: Evidence From Two Randomized Experiments

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Motivation

- ▶ Parents play an important role in shaping their children's educational experiences and outcomes. (Cunha et al. 2006; Houtenville & Conway, 2008; Todd & Wolpin, 2007)
- ▶ But parents often face challenges when supporting their children through school.
 - ▶ Biased beliefs (Jensen, 2010; Dizon-Ross, 2019)
 - ▶ Limited cognitive bandwidth (Mullainathan & Shafir, 2013)
 - ▶ Organizational structure of schools (Lee & Bowen, 2006)
- ▶ Proposed education policy lever: Parental involvement (family engagement) programs to increase school-and-parent communication to support children's overall learning environment.

This Paper

- ▶ Estimate the effect of low-cost, group-based parental involvement programs on parent and teacher behaviors, and children's educational outcomes.
- ▶ Data from two field experiments in four rural states in Mexico, with large indigenous population.
 - 1 **Information** experiment: Parent associations received information about how parents can support their children's learning (treatment) or no information (control).
 - 2 **Double grant** experiment: Parent associations received double the grant amount (treatment) or the standard grant amount (control) that is typically offered to parent associations in Mexico.
 - 3 Compare groups *across* experiments using a conditional independence strategy to estimate the effect of receiving the **standard/single grant** amount.

Three main results:

- 1 Different interventions induce **different types of parental response**
 - ▶ Information: Increases involvement in school activities/events; improves parenting behavior at home.
 - ▶ Double grant: Temporarily increases involvement in school decision-making.
 - ▶ Single grant: No effect on parental involvement.
- 2 **Null effects on test scores** across all interventions.
- 3 Parental involvement interventions alter parent-teacher relationships: significantly changing **trust** between teachers and parents.

Related Literature

- ▶ Evidence on parental involvement programs:
 - ▶ Updates parent's biased beliefs & reallocate resources (Dizon-Ross, 2019)
 - ▶ Improves student behavior (Avvisati et al. 2014; Rogers & Feller, 2018)
 - ▶ Raises academic performance (Barrera-Osorio et al., 2020; Bergman, 2016)

Our contribution:

- ▶ Study a program **implemented at scale** by the national government.
 - ▶ Efficacy trials do not always replicate when scaled up. (Banerjee et al., 2017)
- ▶ **Group-based** intervention through parent associations.
 - ▶ Efficient platforms for information delivery. (Diaz-Martin 2020)
 - ▶ Creates opportunity for social interaction among group members. (Small & Gose, 2020)
- ▶ Empirically examine dynamics of parent-teacher relationships, **focusing on trust.**

Apoyo a la Gestion Escolar (AGE)

Mexico's parental involvement program contains two components:

- 1 Grants:** Parent associations receive USD 500-700 annually.
 - ▶ $\approx 83\%$ of family out-of-pocket cost per student in public schools.
 - ▶ Parent association decides how to spend (cannot be used for teacher salary).
- 2 Information:** Parent associations receive five information sessions (one hour each)

Session:	1	2	3	4	5
Topic:	Overview	Role of parents	Community resources	Child development	Action plans
Main activities/ group discussion:	Establish community norms	How parents can work with teachers	Map of where to access community resources	How parents can support at home	Develop individual action plan

Study Setting

- ▶ 4 rural states with large indigenous population
- ▶ 430 public schools
- ▶ 15,000 students in grades 3-5
- ▶ Historical marginalization of indigenous people in education



Figure 1: % Indigenous in states of Mexico

Evaluation Design

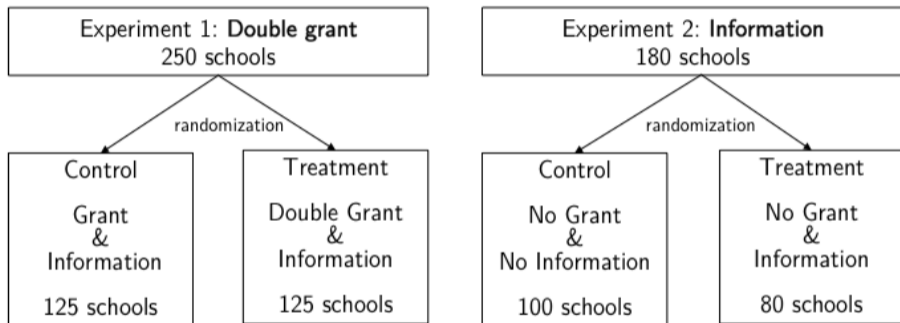


Figure 2: Evaluation design

Empirical strategy

To estimate the effect of the **double grant** & effect of **information**:

$$y_{ij} = \alpha T_j + X_{ij}\beta + \varepsilon_{ij} \quad (1)$$

- ▶ y_{ij} is the outcome for student i in school j ,
 - ▶ T_j is a dummy variable (1 if school j was a treatment school), and
 - ▶ X_{ij} is a vector including a constant and baseline covariates at the student and school levels.
 - ▶ Robust standard errors clustered at the school-level.
- ▶ Baseline measures show balance between treatment and control schools
- Balance table - double grant Balance table - information
- ▶ No evidence of differential attrition/non-response rates between treatment and control schools
- Attrition - double grant Attrition - information
- ▶ Correct for multiple hypothesis testing

To estimate the effect of the **single grant**, we compare across experiments. Design

- ▶ Goal: Effect of providing grants at the extensive margin (whereas the double grant experiment focuses on the intensive margin).
 - ▶ Strategy: Conditional independence assumption
- 1 Trim data to schools with similar indigenous population (common support). Figures
 - 2 Covariate selection using post-double selection (PDS) lasso (Belloni et al., 2014)
 - ▶ Lasso's shrinkage property makes it optimal for variable selection
 - ▶ Lasso tends to exclude small coefficients that are actually non-zero.
 - ▶ PDS reduces omitted variable bias.

Post-double selection lasso

1. Fit lasso regression to predict the outcome Y_i from observed covariates $x_{i,1}$ to $x_{i,p}$:

$$Y_i = \beta_1 x_{i,1} + \beta_2 x_{i,2} + \dots + \beta_p x_{i,p} + \varepsilon_i \quad (2)$$

Covariates with non-zero coefficients from this model are A .

2. Fit lasso regression to predict the treatment assignment T_i from observed covariates $x_{i,1}$ to $x_{i,p}$:

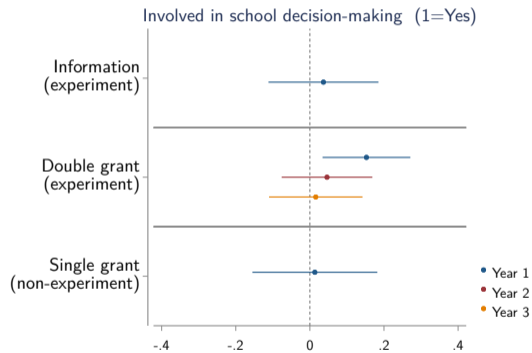
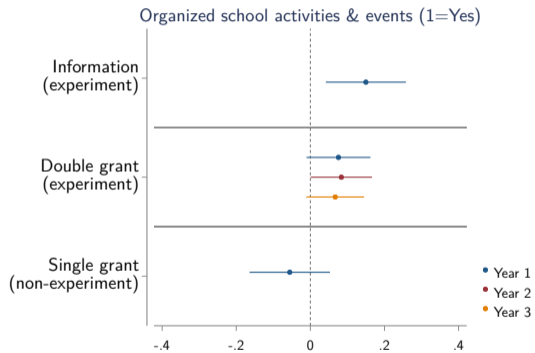
$$T_i = \sigma_1 x_{i,1} + \sigma_2 x_{i,2} + \dots + \sigma_p x_{i,p} + \varepsilon_i \quad (3)$$

Covariates with non-zero coefficients from this model are B .

3. Fit a linear regression of the outcome Y_i on the treatment assignment T_i and covariates $\mathbf{w}_i = A \cup B$:

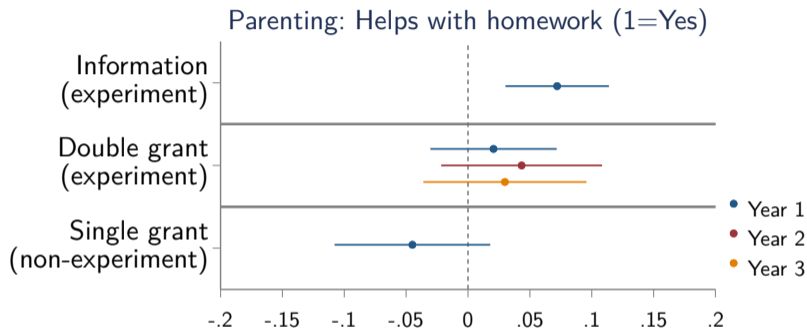
$$Y_i = \alpha T_i + \mathbf{w}_i' \beta + \varepsilon_i \quad (4)$$

Effects of parental involvement in schools



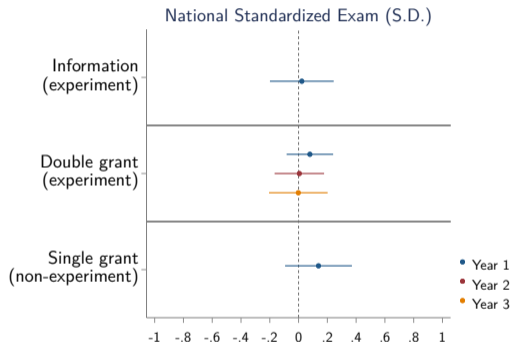
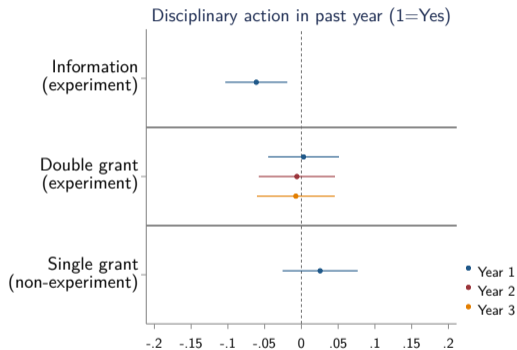
► Different types of response from parent associations

Effects on parenting behavior at home



- ▶ Information changed parenting behavior at home
- ▶ Larger impacts for indigenous parents
- ▶ (Lack of response from teachers: Strength of teacher unions in Mexico, which ensures considerable job security in the profession.)

Effects on educational outcomes



- ▶ Information reduced disciplinary action in treatment schools
- ▶ No impact on national standardized exam scores

Mechanisms: Trust

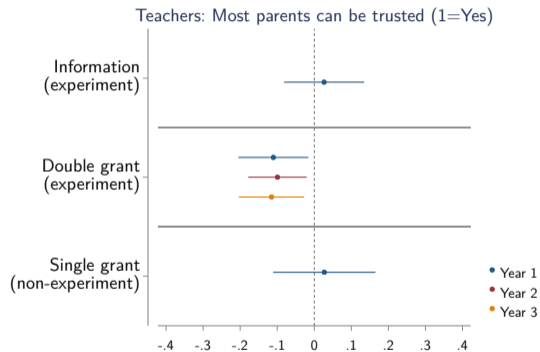
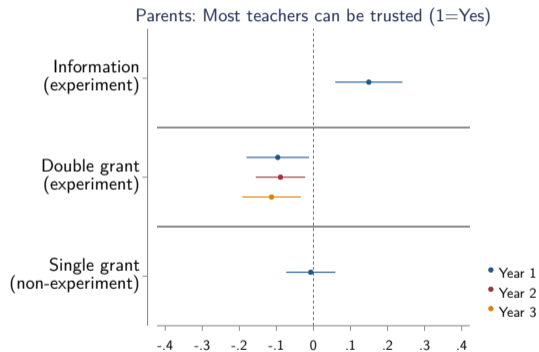
- ▶ Parental involvement programs rely on the formation of social capital between parents and teachers to collectively support the needs of children.
- ▶ **Trust** is a core component of social capital (Putnam 2001, Coleman 1994) and the absence of trust severely hampers transactions between actors (Fehr 2009).
- ▶ Trust is formed between individuals through **networks** and **institutions**. (Ostrom 2001)
 - ▶ Networks: the repeated nature of social interaction allows individuals to examine each others' behaviors. If these repeated interactions send a positive (negative) signal, trust is enhanced (diminished).
 - ▶ Institutions: rules are established to punish or reward behaviors, and a common understanding of these rules between individuals can foster trust. However, when rules are not clear in institutions, a lack of common expectations can decrease trust.

Mechanisms: Trust

Theoretical predictions of how parental involvement affects trust:

- ▶ Information intervention: Enhances network between parents & teachers
 - ▶ Parents learn about what teachers are teaching in school and how the learning objectives align with children's development. Information sessions give parents an opportunity to receive repeated positive signals about teachers.
 - ▶ Prediction: Improves trust
- ▶ Grant interventions: Alters rules in institutions (schools).
 - ▶ Grants gave parents more authority over financial resources but there was considerable flexibility in how the funds could be spent (and funds could not be spent on teachers). Introduces lack of common expectations between teachers and parents,
 - ▶ Prediction: Decreases trust
- ▶ Measure of trust (based after GSS & WVS): “do you [parent] think most teachers can be trusted?” and “do you [teacher] think most parents can be trusted?”

Trust



► Results are consistent with predictions

- 1 Different interventions induce **different types of parental response**
- 2 **Null effects on test scores** across all interventions.
- 3 Parental involvement interventions alter parent-teacher relationships: significantly changing **trust** between teachers and parents.

Thank you!

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Pre-treatment balance for double grant

	Control:		Treatment:		Difference:	
	Grant & Info		Double Grant & Info		T-C	(S.E.)
	Mean	(S.D.)	Mean	(S.D.)		
<i>Panel A: School characteristics</i>						
Type of school						
General school (1=Yes)	0.600	(0.492)	0.496	(0.502)	-0.104 *	(0.063)
Indigenous school (1=Yes)	0.400	(0.492)	0.504	(0.502)	0.104 *	(0.063)
Parent association president						
Highest edu. is primary (1=Yes)	0.776	(0.419)	0.816	(0.389)	0.040	(0.051)
Years as president	1.376	(1.336)	1.328	(1.148)	-0.048	(0.158)
Indigenous (1=Yes)	0.400	(0.492)	0.504	(0.502)	0.104 *	(0.063)
Teachers						
Prop. with teaching college degree	0.165	(0.315)	0.210	(0.361)	0.045	(0.043)
Prop. with university degree	0.606	(0.446)	0.544	(0.462)	-0.063	(0.057)
Failure rate	0.099	(0.066)	0.097	(0.093)	-0.003	(0.010)
Repetition rate	0.070	(0.060)	0.068	(0.061)	-0.003	(0.008)
Dropout rate	0.022	(0.039)	0.024	(0.072)	0.002	(0.007)
Number of schools	125		125			
<i>p-value of joint F-test</i>						0.768
<i>Panel B: Student characteristics</i>						
Indigenous (1=Yes)	0.391	(0.488)	0.426	(0.495)	0.035	(0.064)
Female (1=Yes)	0.487	(0.500)	0.488	(0.500)	0.000	(0.012)
Household wealth index (S.D.)	0.000	(1.000)	-0.026	(1.013)	-0.026	(0.088)
Grade 3 (1=Yes)	0.333	(0.471)	0.338	(0.473)	0.004	(0.008)
Grade 4 (1=Yes)	0.337	(0.473)	0.341	(0.474)	0.004	(0.008)
Grade 5 (1=Yes)	0.329	(0.470)	0.321	(0.467)	-0.008	(0.008)
Language score	440.642	(87.424)	437.721	(89.524)	-2.921	(9.746)
Math score	450.692	(97.216)	447.850	(102.299)	-2.842	(11.484)
Number of students	4796		4570			
<i>p-value of joint F-test</i>						0.943

Return

Pre-treatment balance for information

	Control:		Treatment:		Difference	
	No Grant & No Info		No Grant & No Info		T-C	(S.E.)
	Mean	(S.D.)	Mean	(S.D.)		
<i>Panel A: School characteristics</i>						
Type of school						
General school (1=Yes)	1.000	(0.000)	1.000	(0.000)	0.000	(0.000)
Parent association president						
Highest edu. is primary (1=Yes)	0.650	(0.479)	0.662	(0.476)	0.013	(0.072)
Years as president	1.590	(0.830)	1.688	(0.894)	0.098	(0.129)
Indigenous (1=Yes)	0.200	(0.402)	0.150	(0.359)	-0.050	(0.058)
Teachers						
Prop. with teaching college degree	0.207	(0.323)	0.246	(0.333)	0.038	(0.049)
Prop. with university degree	0.603	(0.424)	0.529	(0.419)	-0.073	(0.063)
Failure rate	0.080	(0.060)	0.068	(0.063)	-0.013	(0.009)
Repetition rate	0.055	(0.053)	0.047	(0.044)	-0.009	(0.007)
Dropout rate	0.025	(0.042)	0.026	(0.045)	0.001	(0.007)
Number of schools	100		80			
<i>p-value of joint F-test</i>					0.477	
<i>Panel B: Student characteristics</i>						
Indigenous (1=Yes)	0.151	(0.358)	0.115	(0.319)	-0.036	(0.047)
Female (1=Yes)	0.499	(0.500)	0.492	(0.500)	-0.007	(0.011)
Household wealth index (S.D.)	0.000	(1.000)	-0.009	(0.915)	-0.009	(0.080)
Grade 3 (1=Yes)	0.314	(0.464)	0.329	(0.470)	0.015	* (0.008)
Grade 4 (1=Yes)	0.349	(0.477)	0.332	(0.471)	-0.018	** (0.007)
Grade 5 (1=Yes)	0.336	(0.473)	0.339	(0.473)	0.003	(0.005)
Language score	491.740	(102.853)	488.167	(94.763)	-3.573	(9.796)
Math score	509.688	(115.991)	506.189	(111.732)	-3.499	(11.302)
Number of students	4576		3602			
<i>p-value of joint F-test</i>					0.329	

Return

Attrition for double grant

	Control: Grant & Info		Treatment: Double Grant & Info		Difference:	
	Mean	(S.D.)	Mean	(S.D.)	T-C	(S.E.)
<i>Attrition rate</i>						
Attrition (1=Yes)	0.032	(0.177)	0.016	(0.126)	-0.016	(0.019)
Number of schools	125		125			
<i>Panel A: School characteristics</i>						
<i>Type of school</i>						
General school (1 = Yes)	0.603	(0.491)	0.496	(0.502)	-0.107 *	(0.064)
Indigenous school (1=Yes)	0.397	(0.491)	0.504	(0.502)	0.107 *	(0.064)
<i>Parent association president</i>						
Highest edu. is primary (1=Yes)	0.777	(0.418)	0.813	(0.391)	0.036	(0.052)
Years as president	1.388	(1.350)	1.309	(1.146)	-0.079	(0.160)
<i>Teachers</i>						
Prop. with teaching college degree	0.159	(0.310)	0.213	(0.363)	0.054	(0.043)
Prop. with university degree	0.613	(0.446)	0.544	(0.461)	-0.068	(0.058)
Failure rate	0.099	(0.066)	0.091	(0.075)	-0.008	(0.009)
Repetition rate	0.072	(0.060)	0.069	(0.061)	-0.003	(0.008)
Dropout rate	0.021	(0.035)	0.018	(0.036)	-0.003	(0.005)
Number of schools	121		123			
<i>p-value of joint F-test</i>						0.738
<i>Panel B: Student characteristics</i>						
Female (1=Yes)	0.488	(0.500)	0.489	(0.500)	0.000	(0.010)
Household wealth index (S.D.)	0.000	(1.001)	-0.024	(1.016)	-0.025	(0.021)
Grade 3 (1=Yes)	0.334	(0.472)	0.337	(0.473)	0.003	(0.010)
Grade 4 (1=Yes)	0.336	(0.472)	0.340	(0.474)	0.004	(0.010)
Grade 5 (1=Yes)	0.330	(0.470)	0.323	(0.468)	-0.007	(0.010)
Language score	441.494	(87.238)	437.846	(89.820)	-3.648	** (1.859)
Math score	451.288	(97.365)	448.153	(102.530)	-3.135	(2.099)
Number of students	4547		4524			
<i>p-value of joint F-test</i>						0.979

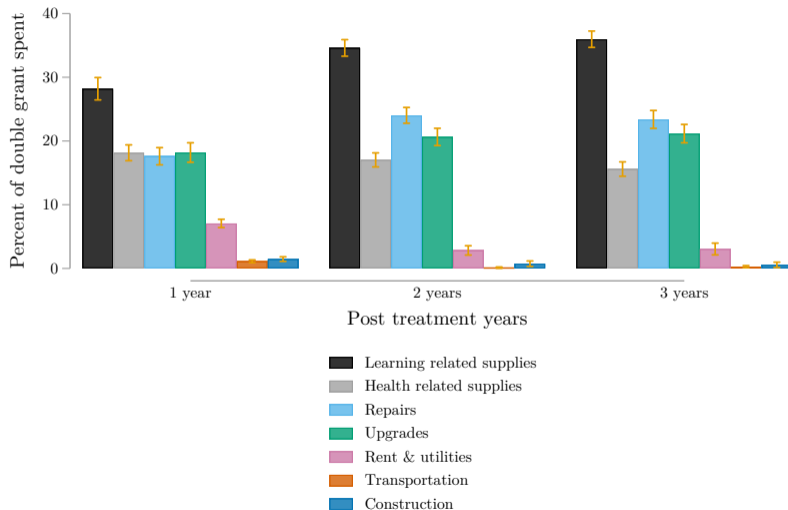
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Attrition for information

	Control:		Treatment:		Difference	
	No Grant & No Info		No Grant & Info		T-C	(S.E.)
	Mean	(S.D.)	Mean	(S.D.)		
<i>Attrition rate</i>						
Attrition (1=Yes)	0.040	(0.197)	0.025	(0.157)	-0.015	(0.027)
Number of schools	100		80			
<i>Panel A: School characteristics</i>						
Type of school						
General school (1 = Yes)	1.000	(0.000)	1.000	(0.000)	0.000	(0.000)
Parent association president						
Highest edu. is primary (1=Yes)	0.646	(0.481)	0.654	(0.479)	0.008	(0.073)
Years as president	1.583	(0.842)	1.679	(0.904)	0.096	(0.133)
Teachers						
Prop. with teaching college degree	0.209	(0.324)	0.252	(0.335)	0.043	(0.050)
Prop. with university degree	0.614	(0.421)	0.530	(0.417)	-0.084	(0.064)
Failure rate	0.079	(0.055)	0.069	(0.063)	-0.010	(0.009)
Repetition rate	0.054	(0.047)	0.048	(0.044)	-0.007	(0.007)
Dropout rate	0.023	(0.031)	0.027	(0.046)	0.004	(0.006)
Number of schools	96		78			
<i>p-value of joint F-test</i>						0.378
<i>Panel B: Student characteristics</i>						
Female (1=Yes)	0.498	(0.500)	0.492	(0.500)	-0.007	(0.011)
Household wealth index (S.D.)	0.000	(1.000)	-0.009	(0.915)	-0.009	(0.022)
Grade 3 (1=Yes)	0.314	(0.464)	0.329	(0.470)	0.015	(0.010)
Grade 4 (1=Yes)	0.349	(0.477)	0.332	(0.471)	-0.017	(0.011)
Grade 5 (1=Yes)	0.337	(0.473)	0.340	(0.474)	0.002	(0.011)
Language score	491.674	(103.119)	490.483	(95.250)	-1.191	(2.226)
Math score	509.559	(116.262)	508.352	(112.202)	-1.207	(2.555)
Number of students	4544		3595			
<i>p-value of joint F-test</i>						0.296

Return

Implementation: How was the double grant used?



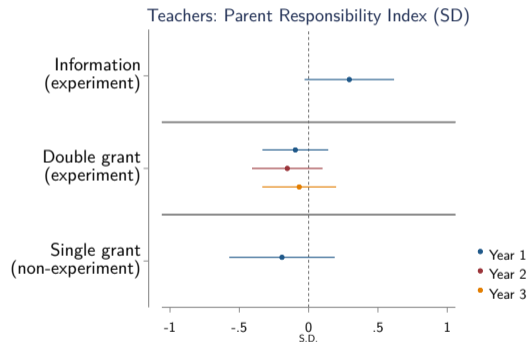
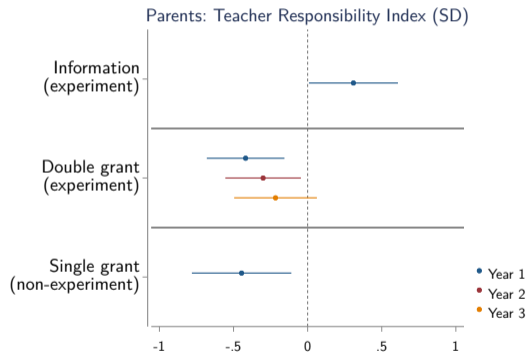
Implementation: Did information sessions take place?

	(1) Overview	(2) Role of parents	(3) Community resources	(4) Child development	(5) Action plans
<i>Information experiment</i>					
Treatment	0.936*** (0.028)	0.910*** (0.033)	0.936*** (0.028)	0.949*** (0.025)	0.936*** (0.028)
Control mean	0.000	0.000	0.000	0.000	0.000
Observations	174	174	174	174	174

Notes: Robust standard errors.

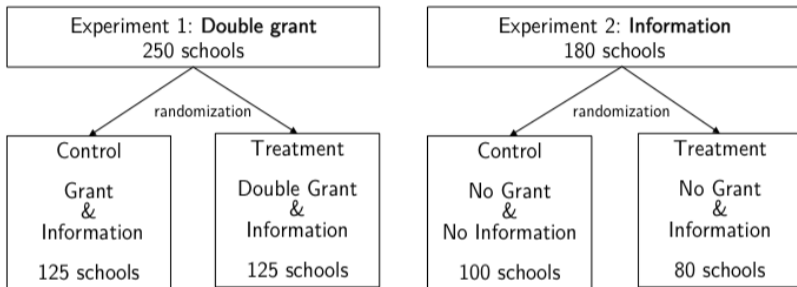
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Responsibility



Evaluation Design

Return



Government priority during scale-up:
Parental involvement program in schools with large indigenous student population

Already receiving government program:
Indigenous student population tends to
be relatively large

Not yet receiving government program:
Indigenous student population tends to
be relatively small

Selection into non-experimental treatment

Return

