

# Child Control in Education Decisions: An Evaluation of Targeted Incentives to Learn in India

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# Motivation—CCT Programs

- How can we encourage primary schooling (enrollment, attendance, effort) in developing countries?
- One increasingly popular intervention: conditional cash transfers
- General form: offer rewards to the household for child learning, enrollment or attendance in school

# Who receives the rewards?

- Programs in developing countries often target the parent
  - Progreso model—Incentives for enrollment and attendance (Barrera-Osorio et. al., 2008; Schultz, 2003)
  - Incentives to learn (Kremer, Miguel and Thornton (2006))
- Evidence that providing cash transfers to mothers rather than fathers maximizes the amount spent on the child
  - (Lundberg, et. al., 1997 ; Duflo, 2003)
- No evidence on whether it is more effective to target the parent or the child

# Main Question

- Do outcomes change when rewards are given to the parent or child?
- If parents are given the reward and child effort is important to achieve the objective, they must provide transfers to their children to encourage effort
- Whether the recipient matters in this case is theoretically ambiguous:
  - Recipient does not matter:
    - Becker's Rotten Kid Theorem (1974)
  - Recipient matters:
    - Moral Hazard / Limited liability (Bergstrom, 1989, Weinberg, 2003)
    - Parent can't commit to rewarding her child

# Study Summary

- Test empirically whether outcomes change when incentives to learn are given to the child relative to when they are given to the parent
- Develop a model of education production in which both the parent and child contribute inputs, and the productivity of each input varies
- Main implications:
  - More productive parents → parent incentives are more effective
  - More productive children → child incentives are more effective

# Field Experiment

- Offer incentives to increase reading ability to primary school students in India
- Basic treatments—reward for reaching a literacy goal
  - Money (appropriable by parent)
  - Toys (only useful to the child)
- Specific test: Do parents provide low incentives to their children because they cannot commit to rewarding their children for learning?
  - Parent chooses between toy for child and money for herself at the start of the program
- Outcomes:
  - attendance in after-school classes
  - reaching the literacy goal

# Preview of Empirical Results

- Strong impacts of all of the incentive treatments on test scores
- Overall, no differences in attendance or achievement when incentives are given to the child, relative to when they are given to the parent
- Evidence that children with higher productivity parents perform better when the parents are given the incentives, and vice versa
- Evidence does not support the hypothesis that parents cannot commit to rewarding their children.
  - Allowing parents to commit does not improve outcomes

# Outline

- Introduction
- **Model of Household Education Production**
- Experimental Design
- Results
- Conclusion



# Model of Education Production

- Model of success in educational tasks (e.g., reaching literacy milestone)
- Both the child and parent can contribute inputs
- Two possible outcomes: success / failure
- Success has a value to either the parent or the child
- Residual claimant shares this value with the other party, but imperfectly (moral hazard)

# Model: Ingredients

- Input is not contractible; parties decide on inputs based on their expected share of the value of success
- Both child and parent have “productivity”: ability to contribute to success
- Experiment: manipulate residual claimant on value of success (parent or child)

# Model: Implications

- Implication: reward the more productive input
- How can we determine productivity:
  - Child test scores at the beginning of the experiment may reflect parent or child productivity
- Suppose that parental productivity varies across households
  - More productive parents → higher test scores → parent incentives more effective
  - Main testable prediction

# Commitment

- If the parent cannot commit to rewarding her child, she will not transfer anything to her child *ex post*
  - Child never exerts effort
- If commitment is a problem, then what will happen if we give the parents a commitment device which guarantees the child to receive at the reward?
- Parents who don't reward their children *ex post* will be willing to commit *ex ante*
- If they do commit, then the probability of success will necessarily increase

## Summary of Predictions

- The variation of the child's pretest score related to parent productivity will be positively correlated to the relative effectiveness of parent incentives
- If parents cannot commit on their own, they will choose to reward their child *ex ante* but not *ex post*
- Allowing parents to commit will improve outcomes

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# Experiment and Treatment Groups

- 900 primary-school students, grades 1-3 in 10 government (slum) schools in Gurgaon, a suburb of Delhi
- Provide incentives for reaching literacy goals two months after the program announcements.
- Randomization over four main incentive groups:
  - Money
    1. Money To Parents (Rs. 100, about \$2.50)
    2. Money to Child (Rs. 100)
  - Toys
    3. Voucher to Child (Rs. 100)
    4. Toy to Child ( $\leq$  Rs. 100)

# Treatment Groups

- Four main treatment groups

	Appropriable	Not Appropriable
Given to Parent	Parent Money	
Given to Child	Child Money	Voucher/Toy

- Two additional treatments offering parent a choice
  - Ex ante choice between money to parent and toy to child
  - Ex post choice between money to parent and toy to Child



# Experiment—More Details

- Program announced at the child's home
  - Two reminders at the child's home for the parent and child
- Within-school, within-class randomization between the 6 treatments. 150 kids in each treatment.
  - Stratified by test score
- Each school gets an after-school teacher to help with reading (1 school refused).
  - Public schools can be a poor platform for learning
  - Very difficult to measure effort
- Outcomes
  - Attendance of children in the after-school classes
  - Achievement of literacy goal

# Literacy Levels and Goals

- Based on the evaluation tool of Pratham NGO
  - used in Banerjee et. al. (2007)

## Reading Level Definitions

- 0 - Child can't recognize letters
- 1 - Child can recognize letters
- 2 - Child can read simple words
- 3 - Child can read a simple paragraph
- 4 - Child can read and understand a short story

## Target for Each Pretest Score

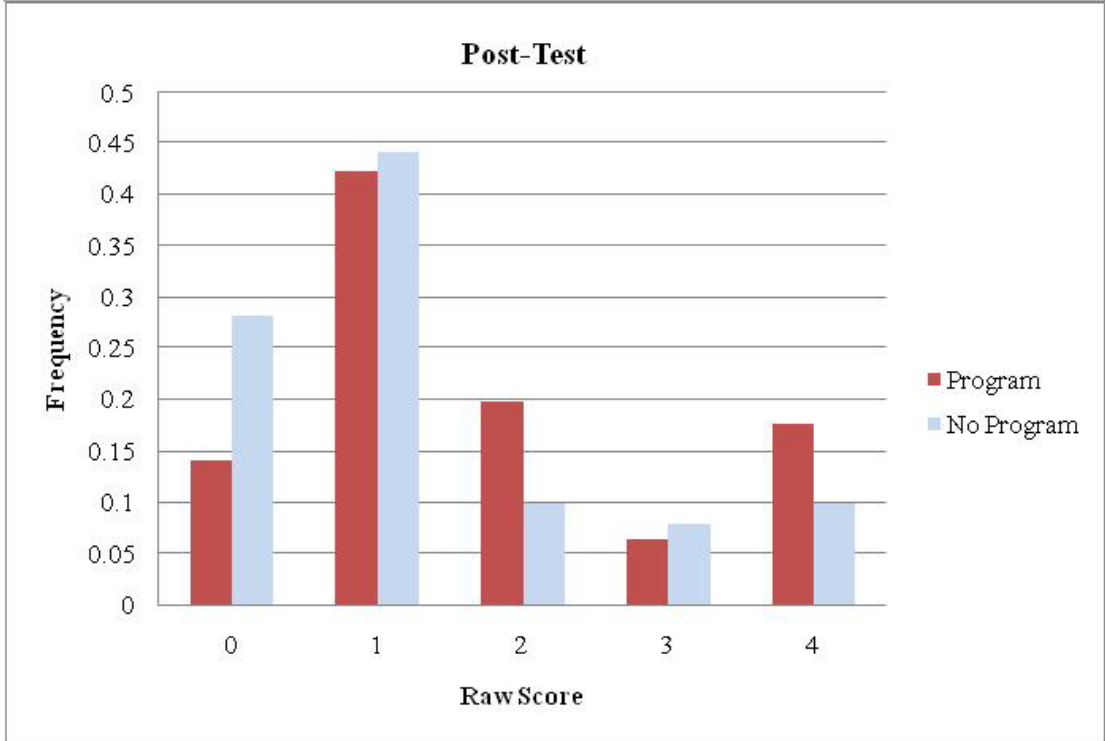
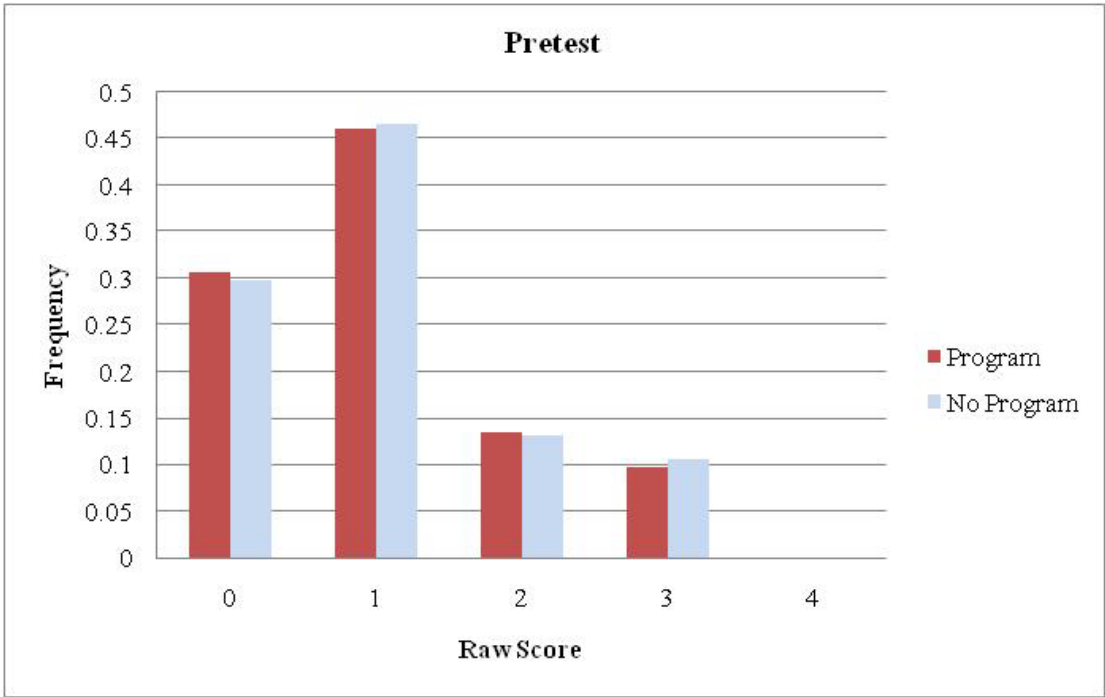
Starting Level	Goal
0	1
1	2
2	4
3	4

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# Overall Effect of Program

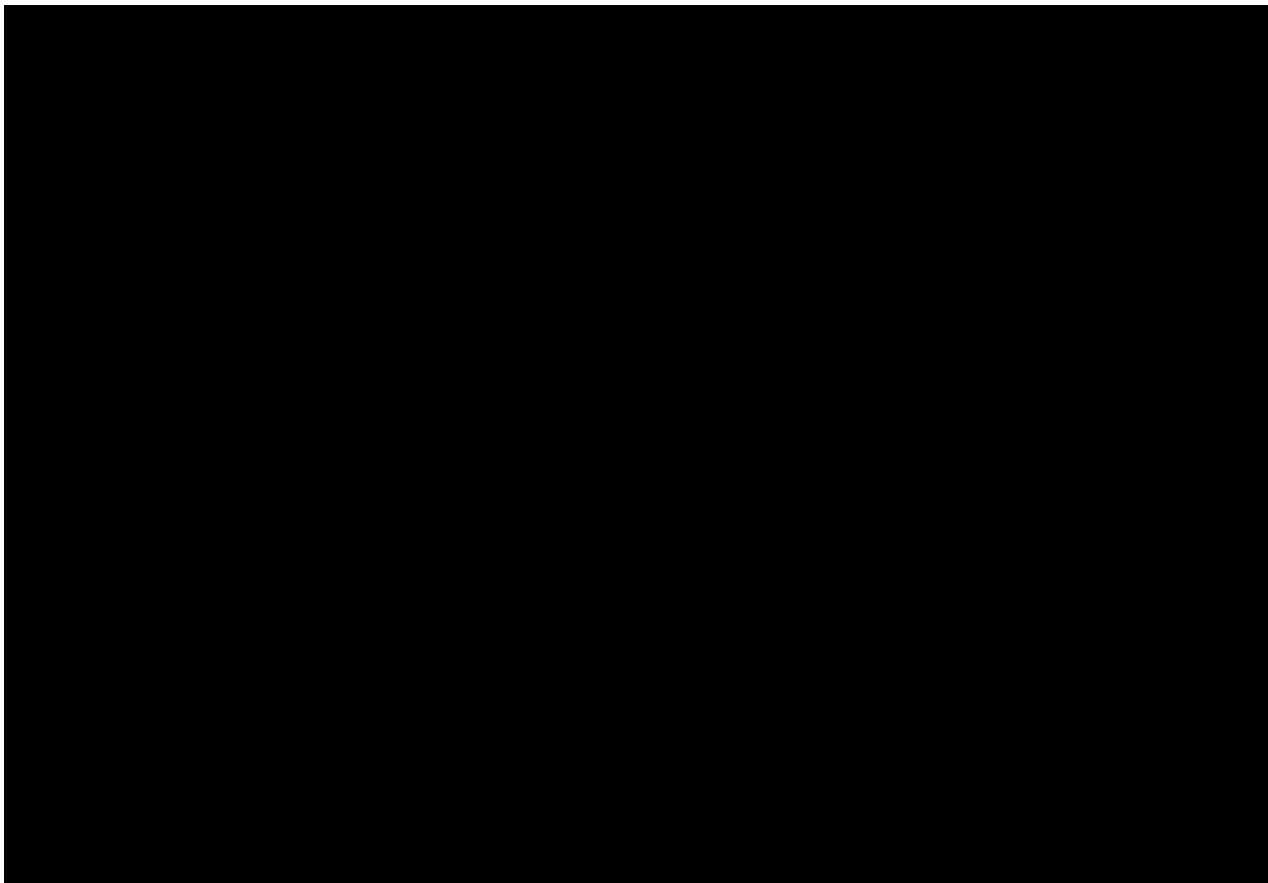
- No pure control group, but some children were not offered the program if the surveyors couldn't find their parents at home with their children, or if the children were not available when the addresses were collected
- Out of 1086 children randomized, 161 were not available for the baseline and were not included in the program. 152 of these were in school on the day of the post-test.
- Strategy: use these children as quasi-control group





Over entire sample, no differences between toys  
and money treatments

Omitted categories: parent and child money treatments



# Heterogeneity by Pretest Score

$$outcome_i = \alpha_0 + \alpha_1 money_i + \alpha_2 zpretest_i + \alpha_3 money_i * zpretest_i + \kappa' X_i + \varepsilon_i$$

# Parental Productivity

- Strategy: use survey responses to construct an index of parental productivity
- $\text{productivity} = - \# \text{ under } 15 + \# \text{ } 15 \text{ and over} + \text{durables} - 1(\text{mother employed}) + \text{mother's education} + \text{father's education} + 1(\text{helped with studies}) + \text{amount spent on tutoring}$
- Use regression of normalized pretest score on these variables to determine weights of index



Relationship between  
relative pretest scores  
and parental  
productivity measures

	Dependent Variable:	
	Zpretest	
	(1)	(2)
# Children under 15	-0.051* (0.023)	-0.039+ (0.022)
# Adults 15+	0.017 (0.033)	0.059+ (0.031)
Pct durables owned	-0.613** (0.171)	-0.383* (0.161)
Mother employed	-0.111* (0.055)	-0.101+ (0.052)
Mother education	0.016+ (0.009)	0.008 (0.008)
Father education	-0.004 (0.008)	0 (0.008)
Helped with studies	0.064 (0.055)	0.029 (0.052)
Tutoring fees paid/10	0.018** (0.051)	0.015** (0.048)
Classroom Dummies	NO	YES
Observations	925	925
R-squared	0.047	0.277

# Heterogeneity by Parental Productivity

$$outcome_i = \alpha_0 + \alpha_1 money_i + \alpha_2 \square zpretest_i + \alpha_3 money_i * \square zpretest_i + \kappa' X_i + \varepsilon_i$$

Parents do not choose the toy more often *ex ante*

## Fraction choosing the toy

	Sample		
	All	Achievers Only	
	Ex Ante Treatment	Ex Ante Treatment	Ex Post Treatment
	(1)	(2)	(3)
Chose Toy	0.331	0.325	0.494
Chose Money	0.669	0.675	0.506
Observations	154	77	79

No evidence that *ex ante* choice improves outcomes

(relative to



# Summing up

- Experiment offering different types of incentives to learn to primary school students in India
- Strong overall impact of incentives
- No mean differences between different incentive schemes
- Consistent with the model, incentives targeted at children result in better outcomes among children with low-productivity parents and vice versa
- Evidence inconsistent with hypothesis that parents cannot commit to rewarding their children

# Conclusions and Extensions

- Recipient of the incentive matters
- Incentives to children may reduce inequality in education outcomes
  - More research is needed on long-term impacts
- Results for older children
  - Cash in hand may matter
  - Parental inputs may matter less