

After School Tutoring: Evidence from a Randomized Controlled Trial

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Supplementary teaching and private tutoring: issues and evidence

- ▶ Private tutoring exists in many parts of the developing and developed world to
 - ▶ Supplement school based education mainly for weak students ((Dang & Rogers, 2008; Banerjee & Wadhwa, 2013)
 - ▶ The year end evaluation mechanism (Kim & Lee, 2001; Jayachandran, 2014)
 - ▶ Teachers force students to supplement their income (Emran, Islam & Shilpi 2017)
- ▶ The rapid expansion of school system and the shortage of qualified regular teachers lead to the practice of contract teachers (Prichett 20014; Uzewo 2012)
- ▶ The results of hiring contract teachers are mixed (Kumar 2005; Raina 2006, 2009; Duflo, Dupas & Kremer 2015; Duflo & Kiessel 2012; ; Muralidharan & Sundaraman 2013; Bold et al. 2013)

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A12

CALL THIS SECTION: PRIVATE TUTORING AND SUPPL. TEACHING- ISSUES AND EVDIENCE....OR SOMETHING LIKE THAT.....RATHER THAN CALLING IT LIT REVIEW

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Private tutoring: Bangladesh

- ▶ Private tuition cost constitutes a significant proportion (42% for government schools; 29% for nongovernment schools) of the total education cost borne by families (Nath and Mahbub, 2007).
- ▶ Daily average instruction time in Bangladesh primary schools is only 2.5 hours (Unesco, 2010).
- ▶ High levels of teacher and student absenteeism and low teaching input (Ref)
- ▶ Parents themselves are not educated enough to help in their studies at home or afford study materials
- ▶ Nearly 50 percent of primary school students drop out before completing grade five, and only about 2 percent of the children achieve prescribed competencies by the end of grade five (BANBEIS, 2008).

After School Tutoring Program

- ▶ To increase effective teaching time in the primary school students in Bangladesh. PTs provided two hour of tutoring to grade 3 and 4 students, teaching Mathematics and English
- ▶ The program ran for two years
- ▶ Grade 3 and 4 students were selected as drop out rates are highest in grade four and five.

Contribution

- ▶ First RCT on after school tutoring
- ▶ The design is different from the existing ones in supplementary teaching
 - ▶ The Balsakhi program took students out of the class, reducing the class size (Banerjee et al., 2007) **A11**
 - ▶ The contract teacher program in India also reduced the pupil-teacher ratios in class (Muralidharan and Sundararaman, 2013)
 - ▶ The TCA program in Ghana was targeted for the weaker students in the class (Dulfo & Kiessel 2012)
 - ▶ The one in Bangladesh by CDPR provided group tutoring but it was not an RCT and there was no effect on test scores (Ruthbah et al., 2015)
- ▶ Our schools are all in rural areas serving disadvantaged students with limited choice as
 - ▶ There is only one school in one village.
 - ▶ Prevalence of private tutoring (both in group and one to one) in primary schools in very limited

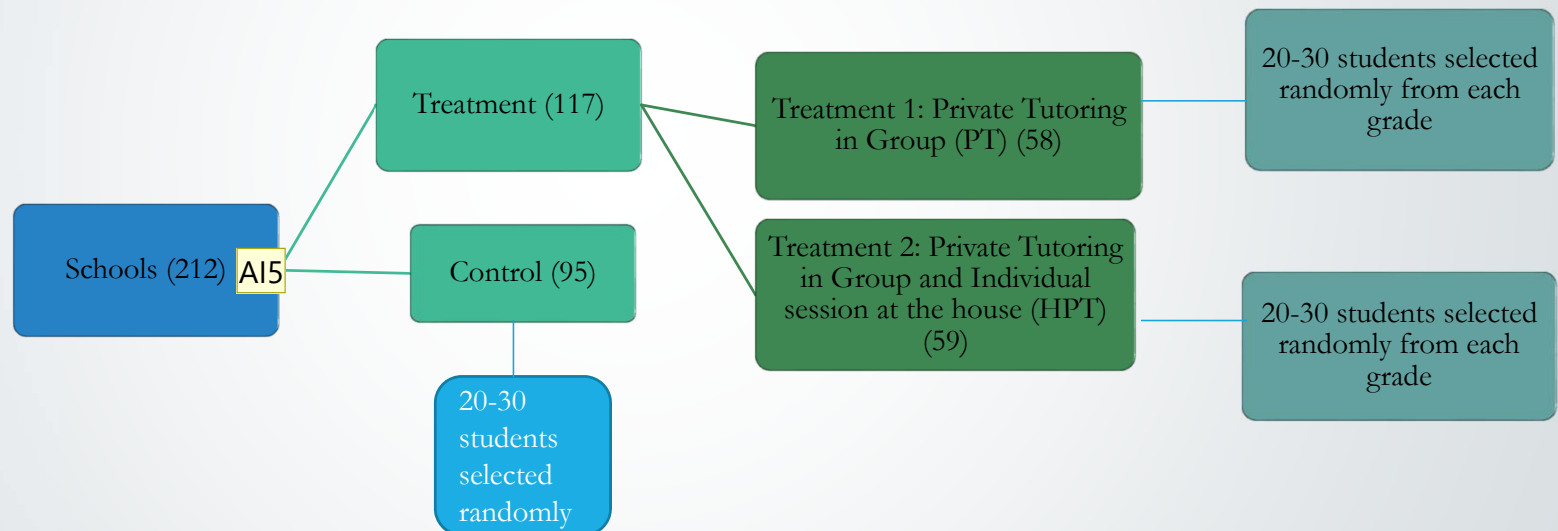
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AI1

CALL IT SUPP TEACHING PROGRAM. NOT TUTORING. OTHERWISE OURS NOT DIFFERENT . MAKE SURE YOU CLARIFY HERE HOW OURS ONE IS DIFFERENT- WE DO TYPICAL TUTORING RAHTER THAN TEACHING...TUTORING MEANS SOLVING PROBLEMS, HELPING HOMEWORK, AND TEACHING PARTLY TO HELP SOLVE THESE...ETC.

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The Tutoring Program ^{A19}



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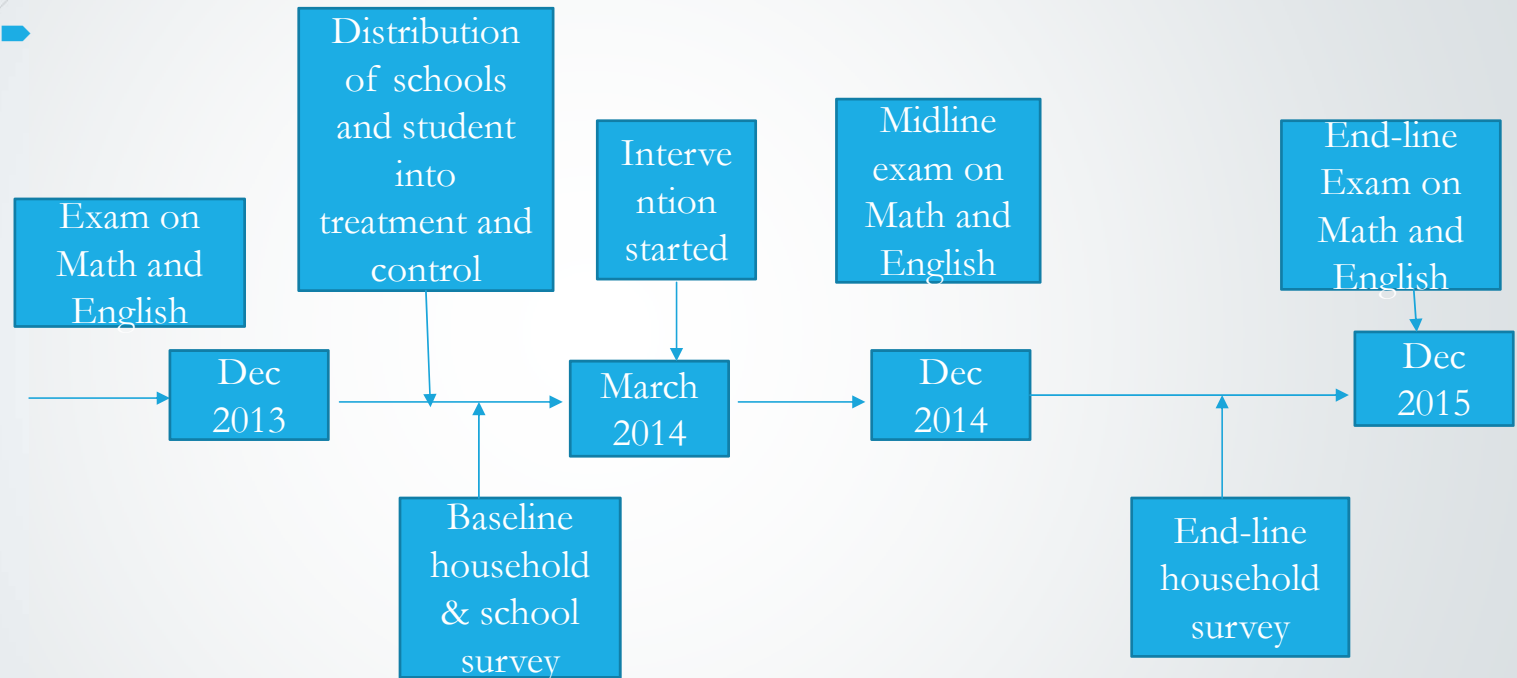
A15 WHAT IS TOTAL NUMBER OF SCHOOLS, $275=118+98???$

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A19 I SUPPOSE YOU WILL EXPLAIN THE DIFFERENCE HERE BETWEEN PT AND HPT, AND GIVE AN IMPRESSION THAT HPT ADDS SOMETHING SIGNIFICANT TO THE TREATMENT SO THE PEOPLE THINK THAT THE DIFFERENCE IN 'RESULTS' BETWEEN PT AND HPT MIGHT BE HUGE (AS WE FIND). PEOPLE SHOULD NOT GET SURPRISE BY THE DIFFERENCES IN RESULTS

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Timeline



Research Questions

- ▶ Does it help to increase the performance of the students?
- ▶ Which intervention is more effective?
- ▶ Spill-over effect?

Sampling distribution

Treatment (6940)							Control (6039)		
T1 (3679)				T2 (3261)					
Invited (2864)			Not-invited (815)		Invited (2526)		Not-invited (735)		
Attended (2300)	Not attended (564)	Attended (62)	Not attended (753)	Attended (2122)	Not attended (404)	Attended (47)	Not attended (688)		
A17 School (58)				School (59)				95	

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WHY THE SCHOOL SAMPLE HERE IS DIFFERENT...60 INSTEAD OF 59 IN T2?, AND CONTROL SHOULD BE 98?
ARE THESE NUMBERS AT THE END OF THE PROGRAM? IF SO, EXPLAIN...AND MISSING SCHOOL!! ALSO, ISSUES
OF ATTRITION FROM THE SAMPLE, ATTRITION FROM THE 'PROGRAM'- THOSE ATTENDED AT THE BEGINING
BUT DID NOT CONTINUE!!!

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Methodology

- ▶ The ITT (school level) estimates:

$$\text{▶ } y_{ij}^{POST} = \beta_0 + \beta_1 PT_{ij} + \beta_2 HPT_{ij} + \beta_3 y_{ij}^{PRE} + \pi X_i + \theta X_j + \epsilon_{ij} \quad (1)$$

- ▶ The LATE estimates: A16

$$\text{▶ } y_{ij}^{POST} = \beta_0 + \beta_1 S_{PTij} + \beta_2 S_{HPTij} + \beta_3 y_{ij}^{PRE} + \pi X_i + \theta X_j + \epsilon_{ij} \quad (2)$$

- ▶ Instrument S_{PTij} and S_{HPTij} by a dummies indicating whether the student receiving PT or HPT was invited by the program or not.

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A16 THIS IS STILL NOT TOT SINCE THE =1 IF DUMMY =1 IF INVITED OR NOT. THIS IS ITT SINCE 'INVITATION' WAS RANDOM...CALL IT 'ITT-SCHOOL' THE FIRST ONE, AND ITT-PROGRAM- SECOND ONE...SOMETHING LIKE THAT...WE HAVE EXACTLY THE SAME SCENARIO AS OUR SRI IMPACT PAPER...BOTH IN TERMS OF INVITATION AND AS WELL AS OUTCOMES..BASELINE, MIDLINE AND ENDLINE...SO YOU CAN THINK OF THE SAME LINE OF REGRESSIONS HERE

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Baseline school characteristics

	Treated		All control		Treated T1		T2		P-values	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	1	2
Head teacher characteristics:										
Education (years)	14.96	0.21	14.97	0.21	14.77	0.78	14.41	0.78	0.97	0.46
Male	0.87	0.03	0.82	0.31	44.72	2.30	43.09	2.30	0.90	0.26
School characteristics										
Private tuition	0.25	0.04	0.32	0.04	0.32	0.13	0.44	0.13	0.20	0.12
Accommodation	0.40	0.04	0.39	0.04	0.33	0.14	0.20	0.14	0.93	0.15
Toilet facility	0.94	0.02	0.94	0.02	0.95	0.07	0.96	0.07	0.90	0.72
Electricity (school)	0.18	0.03	0.18	0.03	0.18	0.12	0.16	0.12	0.96	0.85
Electricity (area)	0.41	0.04	0.44	0.04	0.44	0.15	0.50	0.15	0.61	0.52
Wall - Brick	0.77	0.03	0.77	0.03	0.79	0.12	0.82	0.12	0.95	0.70
Roof - Concrete	0.79	0.03	0.76	0.03	0.81	0.12	0.84	0.12	0.52	0.68
Floor - concrete	0.85	0.03	0.87	0.03	0.88	0.11	0.93	0.11	0.63	0.46
Teacher absent	0.17	0.03	0.17	0.03	0.25	0.11	0.39	0.11	0.86	0.04
Number of rooms	4.48	0.10	4.50	0.10	4.46	0.39	4.41	0.39	0.87	0.86
Male : Female teachers	1.43	0.10	1.54	0.10	1.32	0.13	1.54	0.14	0.29	0.27
Male: Female students	1.17	0.08	1.18	0.05	1.22	0.09	1.13	0.13	0.92	0.61
Joint Orthogonality (F) test	0.77				0.31					

Baseline student and HH characteristics

	All				Treated schools				Treated schools				P-values				
	Treated		control		T1		T2		Invited		Not invited		1	2	3		
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE					
Student Characteristics:																	
Test score: Grade 2																	
English	52.47	1.41	52.85	1.41	52.21	4.31	51.66	4.31	54.92	3.41	52.00	3.41	0.84	0.83	0.36		
Mathematics	60.30	1.14	61.44	1.14	60.87	3.96	62.09	3.96	62.52	3.18	61.63	3.57	0.51	0.64	0.28		
Test score: Grade 3																	
English	43.14	0.88	42.03	0.88	42.68	3.57	41.69	3.57	46.13	2.21	43.02	2.21	0.43	0.64	0.15		
Mathematics	51.46	1.18	51.65	1.18	52.26	3.72	53.98	3.72	54.25	3.43	54.41	3.59	0.91	0.45	0.96		
HH characteristics																	
Head: Age	39.00	0.33	38.02	0.33	38.88	0.87	38.64	0.87	39.27	0.61	38.36	0.61	0.02	0.64	0.11		
Spouse: Age	32.19	0.33	31.58	0.33	32.10	0.85	31.90	0.85	32.39	0.66	31.69	0.66	0.14	0.70	0.25		
Head: education	6.57	0.18	6.82	0.18	6.70	0.38	6.99	0.38	4.03	0.37	3.47	0.37	0.25	0.24	0.12		
Spouse: education	6.05	0.17	6.21	0.17	6.08	0.29	6.15	0.29	3.61	0.25	3.14	0.25	0.38	0.70	0.06		
Expenditure ('000Tk):																	
education	1.39	0.05	1.27	0.05	1.42	0.20	1.50	0.20	1.40	0.11	1.35	0.11	0.16	0.54	0.55		
Joint Significance (F test)				0.13					0.07					0.83			

Results: ITT (school level)

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	End-line				Midline			
	Grade 2	Grade 2	Grade 3	Grade 3	Grade 2	Grade 2	Grade 3	Grade 3
	Math	English	Math	English	Math	English	Math	English
Combined Treatment	0.48*** (0.05)	0.39*** (0.06)	0.58*** (0.06)	0.59*** (0.09)	0.41*** (0.05)	0.31*** (0.06)	0.38*** (0.07)	0.30*** (0.07)
Observations	5,406	5,404	5,413	5,412	5,137	5,136	5,164	5,163
R-squared	0.17	0.16	0.22	0.17	0.17	0.17	0.17	0.14
Treatment 1	0.31*** (0.05)	0.22*** (0.06)	0.44*** (0.07)	0.34*** (0.10)	0.34*** (0.06)	0.26*** (0.07)	0.28*** (0.09)	0.21** (0.08)
Treatment 2	0.68*** (0.06)	0.57*** (0.08)	0.75*** (0.07)	0.85*** (0.10)	0.49*** (0.06)	0.35*** (0.06)	0.50*** (0.08)	0.41*** (0.08)
Observations	5,406	5,404	3,867	3,868	5,137	5,136	5,164	5,163
R-squared	0.21	0.19	0.25	0.21	0.17	0.17	0.18	0.15
Prob>F	5.46e-10	1.02e-05	9.13e-05	3.12e-06	0.0130	0.106	0.0120	0.00390
HH Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scholl Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

LATE

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	End-line				Midline			
	Math 2	English 2	Math 3	English 3	Math 2	English 2	Math 3	English 3
Combined Treatment	0.52*** (0.05)	0.40*** (0.06)	0.64*** (0.06)	0.61*** (0.09)	0.47*** (0.05)	0.37*** (0.05)	0.48*** (0.07)	0.42*** (0.07)
Treatment 1	0.33*** (0.06)	0.24*** (0.06)	0.50*** (0.07)	0.37*** (0.10)	0.40*** (0.06)	0.33*** (0.06)	0.42*** (0.08)	0.38*** (0.08)
Treatment 2	0.74*** (0.05)	0.64*** (0.07)	0.83*** (0.07)	0.92*** (0.10)	0.57*** (0.06)	0.46*** (0.06)	0.58*** (0.08)	0.50*** (0.08)

Effects on test scores

- ▶ The program helped to improve students test score in Math and English in both the years.
- ▶ The HPT was more effective than the PT indicating that individually tailored tutoring sessions at AI8ood for the students.
- ▶ The magnitudes of these effects are much larger than those found in literature.
 - ▶ Balsakhi Program (PRATHAM) (Banerjee et al. 2007): 0.28 standard deviations.
 - ▶ The contract teacher program in Andhra Pradesh (Muralidharan and Sundararaman 2013): 0.115-0.16 standard deviations
 - ▶ TCA in Ghana (Duflo and Kiessel 2012): 6.2% increase in test score.
 - ▶ Contract teachers in Kenya (Duflo, Dupas and Kremer 2015): 0.29 standard deviations.

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TALK ABOUT THE MAGNITUDE HERE, AND HOW THEY COMPARE WITH OTHER PROGRAMS...BALSAKHI...PROGRAM...ADDITIONAL TEACHER PROGRAM...KARTHIK'S PAPER..ETC.

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Spill-over Effect (untreated in treated schools vs control)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	End-line				Midline			
	Math 2	English 2	Math 3	English 3	Math 2	English 2	Math 3	English 3
Combined Treatment	0.48*** (0.07)	0.53*** (0.07)	0.51*** (0.08)	0.78*** (0.10)	0.36*** (0.08)	0.19** (0.08)	0.37*** (0.10)	0.13 (0.10)
Treatment 1	0.37*** (0.08)	0.38*** (0.08)	0.40*** (0.09)	0.63*** (0.11)	0.26*** (0.09)	0.10 (0.10)	0.28** (0.12)	0.01 (0.13)
Treatment 2	0.61*** (0.09)	0.71*** (0.09)	0.77*** (0.10)	1.09*** (0.12)	0.47*** (0.10)	0.33*** (0.09)	0.58*** (0.11)	0.40*** (0.11)

The contribution of tutoring (treated and untreated in treatment schools)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	End-line				Midline			
	Math-2	English-2	Math-3	English-3	Math-2	English-2	Math-3	English-3
Combined Treatment	0.17** (0.08)	0.14 (0.09)	0.22*** (0.08)	0.12 (0.12)	0.22*** (0.06)	0.15* (0.08)	0.39*** (0.10)	0.38*** (0.10)
Treatment 1	0.10 (0.07)	0.04 (0.07)	0.26** (0.10)	0.03 (0.15)	0.15* (0.09)	0.00 (0.08)	0.35*** (0.12)	0.39*** (0.14)
Treatment 2	0.26** (0.11)	0.20* (0.12)	0.15** (0.07)	0.14 (0.11)	0.26*** (0.07)	0.24** (0.10)	0.32*** (0.10)	0.26** (0.12)

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- Though the untreated students had significant improvement in their test scores, there is a significant difference between the test scores of the treated and untreated student of the treated school.
- Being in the treatment school helps.
- Receiving the treatment helps more.

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AI12 not sure about this 'the value of treatment' and what the coeff. tells us..
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Any substitution in parental efforts?

- ▶ Household substitution in spending and other education inputs (Houtenville & Conway 2007; Das et al. 2013)
- ▶ Or parental effort can complement the initiatives (Gelber & Isen 2011; Murnane & Levy 1996)
- ▶ School teachers could reduce their effort (Duflo 2011)

Parents effort: treated students (ITT estimates)

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	Met school teacher	Help with exam	Follow result	Expenditure on education	Discuss with teacher	HH member help time	Parents help time	Check class work	Check Home work	Know exam schedule
Combined Treatment	0.14 (0.33)	0.12*** (0.04)	0.13*** (0.04)	9.97 (73.56)	0.11*** (0.04)	-0.13 (0.79)	-0.18 (0.78)	0.06 (0.04)	0.05 (0.04)	0.01 (0.01)
FDR adjusted p-value	0.89	0.00	0.00	0.89	0.00	0.89	0.89	0.29	0.42	0.81
Treatment 1	0.25 (0.38)	0.09* (0.05)	0.09* (0.05)	26.06 (101.34)	0.10** (0.04)	-0.59 (0.84)	-0.66 (0.82)	0.08* (0.05)	0.09* (0.05)	0.01 (0.01)
FDR adjusted p-value	0.73	0.19	0.18	0.93	0.09	0.71	0.68	0.23	0.20	0.73
Treatment 2	0.01 (0.39)	0.16*** (0.05)	0.16*** (0.05)	-8.20 (73.22)	0.12** (0.05)	0.39 (1.11)	0.36 (1.10)	0.04 (0.05)	0.01 (0.05)	0.01 (0.01)
FDR adjusted p-value	1.00	0.00	0.00	0.98	0.09	0.91	0.32	0.68	0.98	0.91

Parents effort: treated students (LATE estimates)

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	Met school teacher	Help with exam	Follow result	Expenditur e on education	Discuss with teacher	total help time	Parents help time	Check classwork	Check Homework	Know exam schedule
Combined Treatment	0.11 (0.31)	0.11** (0.04)	0.11*** (0.04)	4.53 (68.90)	0.09** (0.04)	-0.32 (0.74)	-0.32 (0.74)	-0.04 (0.04)	-0.06 (0.04)	0.00 (0.01)
FDR adjusted p-value	0.84	0.05	0.05	0.95	0.07	0.84	0.84	0.58	0.32	0.95
Treatment 1	0.18 (0.36)	0.10* (0.05)	0.09* (0.05)	45.18 (99.98)	0.10** (0.04)	-0.83 (0.85)	-0.84 (0.84)	-0.01 (0.05)	-0.01 (0.05)	0.01 (0.01)
FDR adjusted p-value	0.91	0.21	0.22	0.91	0.14	0.62	0.62	0.96	0.96	0.91
Adjusted R_squared	0.0645	0.0583	0.0459	0.0258	0.0329	0.0774	0.0769	0.00804	0.0156	0.0274
Treatment 2	0.02 (0.38)	0.14*** (0.05)	0.14*** (0.05)	-25.73 (63.87)	0.08* (0.05)	0.06 (0.93)	0.07 (0.93)	-0.07 (0.05)	-0.10** (0.05)	-0.00 (0.02)
FDR adjusted p-value	0.96	0.00	0.00	0.92	0.252	0.96	0.96	0.42	0.16	0.96

Student Effort

	(1)	(2)	(3)	(4)	(5)	(6)
	HH chore	Sports	Watch TV	Other Chores	School attendance	Study with tutor
ITT Estimates						
Combined Treatment	0.04 (0.06)	0.03 (0.06)	-0.02 (0.05)	-0.15*** (0.06)	0.110 (0.02)	0.58*** (0.15)
FDR adjusted p-value	0.60	0.60	0.60	0.04	0.60	0.00
Treatment 1	0.11 (0.07)	0.05 (0.06)	0.06 (0.05)	-0.15** (0.06)	0.02 (0.03)	0.71*** (0.19)
FDR adjusted p-value	0.22	0.52	0.48	0.06	0.52	0.00
Treatment 2	-0.04 (0.07)	0 (0.07)	-0.12** (0.05)	-0.14** (0.06)	0.01 (0.03)	0.45** (0.22)
FDR adjusted p-value	0.67	0.95	0.09	0.09	0.67	0.10
LATE estimates						
Combined Treatment	0.14** (0.06)	0.26*** (0.06)	0.04 (0.05)	-0.12** (0.06)	0.16*** (0.02)	0.61*** (0.15)
FDR adjusted p-value	0.03	0.00	0.38	0.04	0.00	0.00
Treatment 1	0.20*** (0.08)	0.30*** (0.07)	0.16*** (0.06)	-0.13** (0.06)	0.17*** (0.03)	0.85*** (0.2)
FDR adjusted p-value	0.02	0.00	0.02	0.04	0.00	0.00
Treatment 2	0.06 (0.07)	0.23*** (0.07)	-0.11* (0.06)	-0.14** (0.07)	0.15*** (0.02)	0.35* (0.2)
FDR adjusted p-value	0.39	0.00	0.06	0.05	0.00	0.08

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AI10 is it with other tutors?
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Mechanism of Spill-over: Parents effort (untreated vs control)

	Met school teacher	Help with exam	Follow result	Expenditure on education	Discuss with teacher	Total help time	Parents help time	Check classwork	Check Homework	Know exam schedule
Combined Treatment	-0.05 (0.49)	0.15** (0.07)	0.13* (0.07)	57.54 (129.35)	0.21** (0.08)	0.71 (1.32)	-0.71 (1.15)	0.39*** (0.04)	0.42*** (0.04)	0.03*** (0.01)
Treatment 1	0.17 (0.57)	0.18** (0.08)	0.13 (0.08)	154.38 (158.16)	0.23** (0.11)	0.17 (1.44)	-1.14 (1.25)	0.37*** (0.04)	0.41*** (0.04)	0.03*** (0.01)
Treatment 2	0.17 (0.57)	0.18** (0.08)	0.13 (0.08)	154.38 (158.16)	0.23** (0.11)	0.17 (1.44)	-1.14 (1.25)	0.37*** (0.04)	0.41*** (0.04)	0.03*** (0.01)

Parents of the untreated students put more effort in their children's education

- Checked their classwork, homework
- Helped with the exam
- Knew the exam schedule
- Discussed with the school teacher about the performance of their children

Mechanism of Spill-over: student effort (untreated vs control)

	(1)	(1)	(3)	(4)	(5)	(6)
	HH chore	Sports	Watch TV	Other Chores	School attendance	Study with tutor
Combined Treatment	-0.11 (0.12)	-0.00 (0.08)	0.01 (0.11)	-0.05 (0.15)	-0.01 (0.01)	-0.13 (0.28)
Treatment 1	-0.02 (0.14)	0.05 (0.10)	0.05 (0.14)	0.01 (0.17)	0.00 (0.00)	0.07 (0.32)
Treatment 2	-0.28* (0.15)	-0.15* (0.09)	-0.09 (0.15)	-0.22 (0.14)	-0.03 (0.04)	-0.48 (0.41)

- There was no significant difference in student effort
- It was the parents efforts that produced the spill over effects

Parents efforts (treated vs untreated in treated schools)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Met school teacher	Help with exam	Follow result	Expenditure - education	Discuss with teacher	Total help time	Parents help time	Check classwork	Check Homework
Combined Treatment	-0.40* (0.24)	-0.04 (0.04)	-0.06* (0.03)	-77.74 (70.23)	-0.01 (0.05)	-1.86** (0.82)	-1.88** (0.82)	-0.17*** (0.04)	-0.15*** (0.04)
Treatment 1	-0.42 (0.32)	0.02 (0.05)	-0.05 (0.05)	31.14 (85.18)	0.09 (0.06)	-1.10 (0.73)	-1.10 (0.72)	-0.07* (0.04)	-0.04 (0.04)
Treatment 2	-0.09 (0.23)	-0.07** (0.04)	-0.01 (0.04)	-128.98** (63.79)	-0.07 (0.05)	-0.65 (1.02)	-0.72 (1.02)	-0.20*** (0.05)	-0.21*** (0.06)

24

- Parents of the untreated students put more effort in their children's education compared to those of the treated students
 - They helped more with study, monitored classwork, homework
 - Other members of the households helped more with study as well
 - Spend more on education and helped with exam in HPT' schools.

Student effort (untreated vs treated in treatment schools)

	HH chore	Sports	Watch TV	Other Chores	School attendance	Study with tutor
Combined Treatment	-0.12 (0.07)	0.07* (0.04)	-0.02 (0.05)	0.00 (0.05)	-0.01** (0.00)	0.07 (0.20)
Treatment 1	-0.13* (0.07)	0.03 (0.06)	0.02 (0.08)	0.02 (0.06)	-0.01* (0.01)	0.35* (0.20)
Treatment 2	0.02 (0.07)	0.06 (0.04)	-0.06 (0.05)	0.00 (0.05)	-0.01 (0.01)	-0.28* (0.17)

25

- Untreated students were more regular in school than the treated students
- There are some differences in the distribution of time allocated to different tasks but they are not statistically significant.
- It is mainly the efforts that parents put in that compensates for the unavailable additional tutoring for these students.

How much do efforts matter? ^{AI11}

	ITT				LATE			
	Grade 2	Grade 2	Grade 3	Grade 3	Grade 2	Grade 2	Grade 3	Grade 3
	Math	English	Math	English	Math	English	Math	English
Combined Treatment	0.49*** (0.06)	0.39*** (0.06)	0.62*** (0.06)	0.63*** (0.09)	0.51*** (0.06)	0.42*** (0.06)	0.66*** (0.06)	0.66*** (0.09)
Parents effort	0.02* (0.01)	0 (0.01)	0.01 (0.01)	0.03** (0.01)	0.01* (0.01)	0.01 (0.01)	0.02* (0.01)	0.03** (0.01)
Treatment 1	0.29*** (0.06)	0.21*** (0.06)	0.44*** (0.07)	0.35*** (0.11)	0.31*** (0.06)	0.22*** (0.06)	0.53*** (0.07)	0.42*** (0.1)
Treatment 2	0.70*** (0.06)	0.60*** (0.08)	0.80*** (0.07)	0.93*** (0.1)	0.75*** (0.06)	0.67*** (0.07)	0.82*** (0.07)	0.96*** (0.11)
Parents effort	0.02** (0.01)	0 (0.01)	0.01 (0.01)	0.03** (0.01)	0.02*** (0.01)	0.01 (0.01)	0.02** (0.01)	0.03** (0.01)

26

- Even after controlling for parents and students efforts, students in the treated schools and students who were treated did better than those in the control schools.
- Individual tutoring were more effective than group tutoring.

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AI11 should report the 'effort' coefficient here as well since that is what we are talking about there...
Asadul Islam, 12/25/2018

The treated vs the untreated

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	(1)	(2)	(3)	(4)
	End-line			
	Grade 2	Grade 2	Grade 3	Grade 3
	Math	English	Math	English
Combined treatment	0.13*	0.17**	0.16**	0.11
	(0.07)	(0.09)	(0.07)	(0.10)
Parent effort	0.01	-0.00	0.00	0.03*
	(0.01)	(0.01)	(0.01)	(0.02)
Treatment 1	0.06	0.07	0.22**	0.02
	(0.08)	(0.08)	(0.09)	(0.13)
Parent effort	0.00	0.01	-0.01	0.01
	(0.10)	(0.10)	(0.05)	(0.06)
Treatment 2	0.26***	0.24**	0.12*	0.16
	(0.09)	(0.11)	(0.06)	(0.11)
Parent effort	0.00	-0.01	-0.00	0.03*
	(0.01)	(0.01)	(0.01)	(0.02)

- ▶ Being in the treatment school changes parents behaviour.
- ▶ Create an index for parents effort using all the parents effort variable.
- ▶ Even after controlling for the index parents' effort the program had significant impact on student's test scores.

Summary

- ▶ Additional tutoring helps to improve test score
- ▶ It changes parents behaviour.
- ▶ Parents becomes more involved in their children's education.
- ▶ They complement the efforts of the private tutors.
- ▶ It fosters competition. Parents of the untreated students compensates for the unavailable additional tutoring so much so that it almost equals the efforts of the privates tutors.

Slide 28

AI13 need to discuss above why we observe effects higher in HPT than PT, and what explains the difference- is it direct tutoring at home in a one to one treatment, is it tutors providing more efforts/sincerity since they are meeting parents or is it students/parents providing more efforts etc. we can't explain everything but can we provide a bit more suggestive evidence how HPT is working as opposed to PT to account for such a difference
Asadul Islam, 12/25/2018

UR1 I could not find any variable in the data set that can indicate difference in the way HPT and PT worked. Since the difference is one additional day of individual tutoring (33% more individual tutoring time). the time itself could explain the difference.
Ummul Ruthbah, 1/2/2019