

Can Mobile Phones Improve Learning? Evidence from a Field Experiment in Niger

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Web Appendix

Table A1: Attrition and Test Absenteeism

	ABC	Non-ABC	Difference Coeff (s.e.)
	Mean (s.d.) (1)	Mean (s.d.) (2)	
<i>Panel A: Drop-Out</i>			
Pre-ABC Module	.042 (.2)	.035 (.184)	-.01 (.015)
Post-ABC Module	.036 (.186)	.06 (.238)	-0.02 (.02)
<i>Panel B: June Test Rounds (Immediate)</i>			
Absenteeism (absent day of test=1)	0.20 (.4)	0.19 (.394)	0.000 (.018)
Age of absentee	34.13 (11.26)	37.48 (12.088)	-1.32 (0.92)
Gender of absentee (female=1)	0.49 (.5)	.356 (.479)	0.14*** (0.03)
<i>Panel C: January Test Rounds (Persistent)</i>			
Absenteeism (absent day of test=1)	0.31 (.463)	0.30 (.454)	-0.012 (.018)
Age of absentee	34.25 (11.67)	36.06 (12.61)	-0.94 (0.94)
Gender of absentee (female=1)	0.44 (.496)	.401 (.49)	0.03 (0.02)

Notes: Column 1 presents the mean for ABC villages, Column 2 presents the mean for non-ABC villages. Column 3 reports the coefficient from a regression of the dependent variable on an ABC indicator variable and sub-region fixed effects to account for randomization, and so does not exactly equal the difference between Columns 1 and 2. Huber-White standard errors clustered at the village level presented in parentheses. ***, **, * denote statistical significance at the 1, 5, 10 percent levels, respectively.

Table A2: Comparison of Teacher Characteristics by Year

	ABC	Non-ABC	Difference Coeff (s.e.)
	Mean (s.d.)	Mean (s.d.)	
	(1)	(2)	
Panel A: Teacher-Level Characteristics in 2009			
Education (number of years)	8.86 (1.315)	8.25 (2.286)	0.61 (0.39)
Age	32.25 (6.65)	33.07 (9.626)	-0.82 (1.82)
Gender (Female=1)	.345 (.479)	.254 (.439)	0.09 (0.09)
Local (Teacher from village=1)	.667 (.475)	.763 (.429)	-0.10 (0.11)
Number of observations	60	59	119
Panel B: Teacher-Level Characteristics in 2010			
Education (number of years)	8.431 (1.957)	8.362 (1.972)	-0.07 (0.26)
Age	32.94 (8.697)	33.048 (8.929)	-0.11 (1.32)
Gender (Female=1)	.379 (.487)	.352 (.48)	0.03 (0.05)
Local (Teacher from village=1)	.69 (.465)	.755 (.432)	-0.07 (0.07)
Number of observations	116	110	226

Notes: Column 1 presents the mean for ABC villages, Column 2 presents the mean for non-ABC villages. Column 3 reports the coefficient from a regression of the variable on an indicator variable for ABC, but does not include sub-region fixed effects to account for randomization due to a limited number of observations. Huber-White standard errors clustered at the village level presented in parentheses. ***, **, * denote statistical significance at the 1, 5, 10 percent levels, respectively.

Table A3: Impact of the ABC Program on Test Scores: Alternative Specifications

Panel A: Writing Z-Scores	Simple Difference		Value Added		Alternative Normalization	
	(1)	(2)	(3)	(4)	(5)	(6)
ABC	0.149*	0.132*	0.157*	0.142*	-0.020	-0.156
	(0.079)	(0.073)	(0.080)	(0.074)	(0.094)	(0.162)
Baseline Test Z-score			0.100***	0.087***	0.812***	
			(0.018)	(0.018)	(0.238)	
ABC*Post					0.819*	0.860*
					(0.439)	(0.435)
2009 Cohort	-0.058	0.000	-0.073	-0.013	0.812***	0.947***
	(0.085)	(0.077)	(0.085)	(0.078)	(0.238)	(0.214)
Female	-0.649***	-0.653***	-0.638***	-0.644***	-1.998***	-1.989***
	(0.044)	(0.045)	(0.043)	(0.043)	(0.142)	(0.141)
Age	-0.015***	-0.016***	-0.015***	-0.016***	-0.053***	-0.051***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)
Sub-region fixed effects	No	Yes	No	Yes	No	Yes
Number of observations	7,148	7,148	6,912	6,912	12,823	12,823
R ²	0.123	0.174	0.133	0.182	0.416	0.436
Panel B: Math Z-Scores						
ABC	0.172**	0.129*	0.185**	0.144**	-0.090	-0.199
	(0.086)	(0.069)	(0.085)	(0.068)	(0.092)	(0.127)
Baseline Test Z-score			0.076***	0.063***		
			(0.020)	(0.016)		
ABC*Post					0.696**	0.696**
					(0.316)	(0.309)
2009 Cohort	0.041	0.081	0.025	0.071	0.491***	0.529***
	(0.084)	(0.069)	(0.084)	(0.069)	(0.146)	(0.127)
Female	-0.501***	-0.506***	-0.490***	-0.500***	-1.004***	-1.001***
	(0.044)	(0.044)	(0.044)	(0.045)	(0.087)	(0.088)
Age	-0.013***	-0.015***	-0.013***	-0.015***	-0.028***	-0.028***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Sub-region fixed effects	No	Yes	No	Yes	No	Yes
Number of observations	7,165	7,165	6,928	6,928	12,840	12,840
R ²	0.085	0.156	0.092	0.161	0.646	0.658

Notes: Each column represents a separate regression. Panel A presents results with writing test scores as the dependent variable. Panel B present results for math. Test-scores in Columns 1 through 4 are normalized based on the contemporaneous non-ABC distribution. Test scores in Columns 5 and 6 are normalized based upon the baseline non-ABC distribution. The sub-region is the level at which the ABC program was randomized. Huber-White standard errors cluster at the village level presented in parentheses. ***, **, * denote statistical significance at the 1, 5 and 10 percent levels, respectively.

Table A4. Effects of the ABC Program by Year

	(1)	(2)
Panel A: Writing Z-Scores		
ABC*Post (1 year treatment)	0.222** (0.102)	0.232** (0.101)
ABC*Post (2 year treatment)	0.147 (0.111)	0.139 (0.110)
Post (1 year treatment)	-0.001 (0.070)	-0.005 (0.070)
Post (2 year treatment)	-0.009 (0.074)	-0.047 (0.079)
ABC	-0.051 (0.047)	-0.051 (0.048)
Gender, Age, Cohort	No	Yes
Sub-region fixed effects	Yes	Yes
Number of observations	13,402	12,823
R ²	0.033	0.086
Panel B: Math Z-Scores		
ABC*Post (1 year treatment)	0.228** (0.105)	0.244** (0.108)
ABC*Post (2 year treatment)	0.297** (0.134)	0.293** (0.133)
Post (1 year treatment)	-0.002 (0.0790)	-0.008 (0.0805)
Post (2 year treatment)	-0.010 (0.088)	-0.078 (0.093)
ABC	-0.095* (0.0548)	-0.096* (0.0545)
Gender, Age, Cohort	No	Yes
Sub-region fixed effects	Yes	Yes
Number of observations	13,420	12,840
R ²	0.039	0.088

Notes: Each column represents a separate regression. Panel A presents results with writing z-scores as the dependent variable. Panel B present results with math z-scores as the dependent variable. All test-scores are normalized to the contemporaneous non-ABC distribution. The sub-region is the level at which the ABC program was randomized. ***, **, * denote statistical significance at the 1, 5 and 10 percent levels, respectively. Huber-White standard errors clustered at the village level are in parentheses.

Table A5: Persistent Effects of the ABC Program: Bounding

Panel A: Writing Z-Scores	Lower Bound	Upper Bound
	(1)	(2)
ABC*Post (January round)	0.069 (0.078)	0.200** (0.077)
Gender, Age, Cohort	Yes	Yes
Sub-region fixed effects	Yes	Yes
Number of observations	18615	18626
R ²	0.11	0.122
Panel B: Math Z-Scores		
ABC*Post (January round)	0.129* (0.073)	0.272*** (0.073)
Gender, Age, Cohort	Yes	Yes
Sub-region fixed effects	Yes	Yes
Inverse Mills' Ratio	Yes	Yes
Number of observations	18660	18660
R ²	0.104	0.108

Notes: All test scores are normalized to the contemporaneous non-ABC distribution. Results include data collected 7 months after the end of classes for the 2009 and 2010 cohorts. The upper bound is constructed by dropping the highest test scores from the January round in the non-ABC villages. The lower bound is constructed by dropping lowest test scores from the January round in the ABC villages. All regressions include controls for the ABC program, the June test score round ("post"), the January test score round ("January post") and the interaction between the ABC program and the June test score round. The sub-region is the level at which the ABC program was randomized. Huber-White standard errors clustered at the village level in parentheses. ***, **, * denote statistical significance at 1, 5, 10 percent, respectively.

Table A6. Characteristics of Hotline Participants

	Mean (s.d.)	Min	Max
Region (0=Zinder, 1=Dosso)	.187(.39)	0	1
Gender (0=Male, 1=Female)	.167(.37)	0	1
Cohort (0=2010, 1=2009)	.575(.49)	0	1
Writing Test Score	3.88(2.10)	0	6
Math Test Score	3.40(1.37)	0.5	6

Notes: Regressions include data from the call-in hotline between January and March 2011.
