Online Appendix For

Information and Student Achievement:
Evidence from a Cellular Phone Experiment

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June 2013

Not for Publication

Online Appendix A: Implementation Manual (Not For Publication)

The experiment was implemented and managed by the Education Innovation Laboratory (EdLabs) at Harvard University.

SCHOOLS

EdLabs first presented the basics of the program to OKCPS district leaders on July 27, 2010, at which point it was decided to offer participation to schools with sixth and seventh grade students. District leaders informally provided schools with additional details as part of the recruitment process over the summer. On August 16, 2010, EdLabs presented the research design and program details to the OKCPS Board of Education, spurring further internal discussions about exactly which schools would be eligible to participate.

On August 25, 2010, the district identified all non-alternative district schools that served the 6th or 7th grade students. On September 27, 2010, the principals and library media specialists (LMS) from those schools were invited to an introductory meeting to review the basics of the program and to prepare the process of starting the experiment in the subsequent weeks. Schools were also able to "opt out" of participating; however, all twenty-two schools elected to participate and allow consenting students to be randomized into treatment and control groups.

STUDENTS

Sixth and seventh grade students attending twenty-two elementary and secondary schools in OKCPS were eligible to participate in the experiment. Students were required to obtain parental consent to be a part of the study. Students received information packets on September

28, 2010 and were required to return a signed parental consent form by October 1, 2010 in order to be eligible for the lottery to determine participation. We received 1,907 student consent forms and randomized students into one of three treatment groups and a control group: (1) 490 students received a cell phone and were required to read books and complete quizzes about those books in order to receive phone credits on a biweekly schedule; (2) 490 students received a cell phone and daily text messages and were required to read books and complete quizzes in order to receive credits; (3) 490 students received a cell phone with daily text messages and a fixed number (i.e. non-performance-based) of credits on a monthly schedule; and (C) 437 students did not receive a phone. Phones pre-loaded with 300 airtime credits were distributed to schools on the morning of October 8, 2010. Students in treatments (1) and (2) were eligible to earn credits by reading books starting on October 11, 2010. Students last received credits on May 18, 2011. Students or their parents could opt to return the phone or discontinue active participation in the program at any time.

TEXT MESSAGING

We worked closely with Droga5, an advertising firm based in New York City, to determine the messaging and branding components of the program. We met initially with Droga5 to discuss the types of text messages that would be written and sent to students on a daily basis. Writing text messages throughout the year was a collaborative and iterative process. Text messages were sent to students in the appropriate treatment groups on a daily basis, including weekends, at approximately 6:00 p.m. Messages were divided between “informative” and “persuasive” messages. Through the duration of the program, Droga5 drafted persuasive messages and sent to us for review; concurrently, we drafted informative messages based on our

understanding of the relationship between educational attainment and relevant life outcomes gleaned from national data sets and sent potential messages to Droga5 for review. Approved messages were sent to TracFone for distribution.

SOFTWARE AND INCENTIVE STRUCTURE

The *Accelerated Reader* platform allows students to select from a vast library of popular literature to demonstrate their knowledge of its plot. Upon finishing a book, each student took an *Accelerated Reader* (AR) computer-based comprehension quiz, which provided evidence as to whether the student read the book. Each book in AR is assigned a point value based on length and difficulty. Students were allowed to select and read books of their choice and at their leisure, not as a classroom assignment. The books came from the existing stock available at their school (in the library or in the classroom), though additional copies of books that proved to be particularly popular were ordered during the year.

For those students required to read books in order to receive credits, the incentive scheme was strictly linear: each point earned during each biweekly reward period translated to ten phone credits. Because phone credits could only be distributed (i.e. uploaded electronically) in increments of 200, point earnings of less than or greater than a multiple of 20 were banked and carried over to subsequent reward periods. Once a student reached or passed any 20 point interval, blocks of 200 credits were uploaded at the next scheduled "payday" according to the predetermined biweekly reward schedule.

REWARD PROCESS

For those students required to read books in order to receive credits, the incentive scheme was strictly linear: each point earned during each biweekly reward period translated to ten phone credits. Because phone credits could only be distributed (i.e. uploaded electronically) in increments of 200, point earnings of less than or greater than a multiple of 20 were banked and carried over to subsequent reward periods. Once a student reached or passed any 20 point interval, blocks of 200 credits were uploaded by EdLabs at the next scheduled "payday" according to the predetermined biweekly reward schedule. For students who received a fixed stipend of credits, 200 credits were uploaded to their account by EdLabs according to a pre-determined monthly schedule.

PHONE PROBLEMS

A spreadsheet was established to track all student phone issues throughout the program. Once per week, the Project Manager would update the spreadsheet and send it to Droga5. Droga5 would then communicate all phone issues to the Million TracFone representative. TracFone troubleshot phones, and remedies would be communicated back to Droga5, then the Project Manager, and then the LMS if appropriate.

The most common phone issue was blocked SIM cards, which occurred when students attempted to lock their phones with a four-digit passcode, then forgot the passcodes and entered incorrect passcodes three times. A blocked SIM would require a new SIM to be shipped from TracFone to the student's school, where LMS would have to replace the card. Typically the SIMS were pre-activated, so they required no further action from the LMS other than adding the new SIM to the correct students' phones. However, there were a few cases toward the end of the year in which it was possible to expedite fixing phones by shipping un-activated SIMs, and

having LMSs call TracFone to complete the activation. The first 10-15 students who reported their phones stolen had them replaced. Subsequently, students who reported their phone as lost or stolen had their SIM-card deactivated and no longer received informational text messages, monthly uploads of credits, or credits in exchange for accumulating Accelerate Reader points. All other issues were addressed remotely by TracFone, or via instructions emailed to the LMS to resolve the problem.

SITE VISITS AND PROGRAM MONITORING

In an effort to gather extensive qualitative data on the implementation of the experiment, EdLabs conducted brief site visits to all twenty-two experimental schools. EdLabs observed classrooms and interviewed students, teachers, and school leaders. These visits helped to ensure fidelity of implementation and allowed EdLabs to share best practices among LMS to improve program implementation. Starting in November and continuing into January, we visited schools and reviewed the basics of the program with treatment students to reinforce their understanding. To diagnose specific misunderstandings of the reward algorithm or distribution system, we also administered brief quizzes to check for student understanding. We revisited schools with particularly low quiz scores to target specific areas of misunderstanding. By the end of this cycle, students scored an average of 79 percent on the quiz, in response to questions about the basics of the program, including the incentive structure, reward schedule, and how to report phone

Online Appendix B: Data Appendix (Not For Publication)

OKC Public School Administrative Data

Attendance Rates

Individual attendance rates account for all presences and absences for each student, regardless of which school the student had enrolled in when the absence occurred, as long as the student was enrolled in OKCPS. The attendance rate is calculated by dividing the number of days present by the number of days a student was enrolled in the district during the 2010-2011 school year.

Free Lunch Status

Controlled regressions include a dummy variable equal to one if a student is eligible for free or reduced-price lunch and zero otherwise. Free lunch status is recorded in the district enrollment files.

Socioeconomic Status

Controlled regressions include a dummy variable equal to one if a student is identified as economically disadvantaged and zero otherwise. Socioeconomic status is recorded in the district enrollment files.

Special Education Services

Controlled regressions include a dummy variable equal to one if a student has an Individualized Education Program (IEP) and is eligible to receive special education services. IEP

status is recorded in the district enrollment files. Whether a student Whether a student is eligible to receive special education services as part of an IEP is determined by the OKCPS Special Services Office.

English Language Learner Status

Controlled regressions include a dummy variable equal to one if a student is designated as an English Language Learner. English Language Learner status is recorded in the district enrollment files. Whether a student is designated as an English Language Learner is determined by the OKCPS Language and Cultural Services Office.

Behavioral Incidents

Behavioral incidents are recorded in the district behavior file, counted, and summed for each student by student id. Behavioral incidents are recorded individually by date of infraction, as well as cumulatively, as a count of the total number of times a student was involved in a behavioral incident throughout the year, regardless of the length or nature of the incident.

Suspensions

Suspensions are recorded in the district behavior file, counted, and summed for each student by student id. Suspensions are recorded individually by date of infraction, as well as cumulatively, as a count of the total number of times a student was suspended throughout the year, regardless of the length or nature of the suspension.

Race/Ethnicity

We code the race variables such that the five categories -- white, black, Hispanic, Asian and other -- are collectively exhaustive and mutually exclusive. Hispanic ethnicity is an absorbing state. Hence "white" implies non-Hispanic white, "black" non-Hispanic black, and so on.

State Test Scores

We observe results from the Oklahoma Core Curriculum Criterion Referenced Tests (CRT) in math and ELA. For ease of interpretation, we normalize raw scores to have a mean of zero and a standard deviation of one within grades and subjects for 2010-2011 scores, when they are used as outcomes in our analysis and for 2009-2010 scores when they are reported in the summary statistics. Raw and controlled regressions control for non-normalized 2009-09 and 2009-2010 scale scores from district testing files as well as their squares.

Treatment

Our randomization files record which students were randomized into each treatment arm and the control group. Each treatment is recorded as a binary variable equal to one if the student was randomized into that arm of treatment and zero if a student was randomized into the control group. When regressions are run on multiple treatment groups, an additional binary variable was created that is equal to one if a student was randomized into any of the treatment arms being analyzed and zero if the student was randomized into the control group.

Teacher Value-Added

Teacher value-added scores are a measure of the independent impact of teachers on student growth. The construction of Teacher Value Added estimates follow Chetty, Friedman, and Rockoff (2011). We use the test data from OKCPS 6th, 7th, and 8th grade students from 2006-2010 to regress students test scores on lagged scores and observable characteristics to generate score residuals for each student. We then compute the mean of residuals for each student taught by a given teacher. We then use the empirical Bayes procedure outlined in Chetty, Friedman, and Rockoff (2011) to reduce noise by shrinking estimate towards mean based on number of students that are observed for each teacher. Students are linked to teachers using district course grade administrative files. The analysis code used to generate the estimates in Chetty, Friedman, and Rockoff (2011) that we base our estimates on is publicly available at http://obs.rc.fas.harvard.edu/chetty/va_bias_code.zip

Survey Data

Some of the indirect outcomes reported in the paper include survey responses from a student survey administered to all students in the experimental group. We include responses to several survey questions as outcome variables:

For the question "Since the Million Program started, do you think you are more focused on or excited about doing well in school?" we code student responses as a binary variable equal to one if the student responded "Definitely, I am much more focused/excited since the Million" or "Yes, I am more focused/excited since the Million" and zero if the student responded "Maybe, I am somewhat more focused since the Million" or "No, I was just as focused/excited before the Million."

For the question "What impact do you think the Million Program has had at your school? (check all that apply)" we coded each possible response as a separate binary variable equal to one if the student checked that response and zero if a student checked at least one other response but left that one blank. The outcomes include: "Students are working harder," "Students are studying more together," "Students are more competitive with each other in a good way," "Students are more competitive with each other in a bad way," "Students and teachers interact more," or "No difference." We code a binary variable equal to one if students respond "students are working harder" and zero otherwise.

The students were also asked quiz questions about the importance of educational attainment based upon text messages that students in the information treatment groups received. We use the following questions in our analysis (correct answers are in italics):

(1) "Are high school dropouts more likely to go to prison than high school graduates?"

A. Yes, much more likely

B. Yes, but it's really close

C. No, there's no difference

(2) "True or false: college graduates makes 54% more money than college dropouts."

A. True

B. False

(3) "15.5% of high school students are unemployed. What percentage of college graduates are unemployed?"

A. 1%

B. 4.8%

C. 20%

D. 25%

Student responses to each question are recorded as binary variable equal to one if their answer is correct and a zero if their answer is incorrect. In addition, we analyze a binary variable equal to one if a student answered questions (1) and (2) correctly and a zero if a student answered at least one incorrectly.

Question (3) was not referenced in any text message during the year; hence, we consider it a placebo question.

US Census Data

Black Dissimilarity Index

The Black Dissimilarity Index is a measure of neighborhood segregation relative to the full city (Jahn, Schmid, and Schrag 1947). The racial composition of each zip code of taken from the 2000 United States Census, available at http://www.census.gov/epcd/www/zipstats.html. The dissimilarity index is defined as follows:

$$Black\ Dissimilarity\ Index = \frac{1}{2}\left|\frac{black_{zip}}{black_{city}} - \frac{nonblack_{zip}}{nonblack_{city}}\right|$$

The Black Dissimilarity Index score for a given neighborhood is the absolute difference between the ratio of the percentage of black individuals who reside in a given zip code to the percentage of black individuals who live in the city and the ratio of the percentage of non-black individuals who reside in that zip code to the percentage of non-black individuals who live in the city.

Aggregating across zip codes, the dissimilarity index measures the percentage of the city's population that would have to change zip codes for each section to have the same percentage of black individuals as the city.

Poverty Rates

Poverty rate data by zip code was taken from the 2000 United States Census, available at http://www.census.gov/epcd/www/zipstats.html and merged to pre-treatment students address records from district enrollment administrative files.

Add Health

Wave 1 School Interview

Wave 1 was conducted during the 1994-1995 school year. From the school interview, we collect a variety of baseline information about student demographics, family background, and academic attitudes.

Each student's gender, race, and grade of enrollment at the survey date are provided in the Wave 1 data. We create dummy variables for female gender and each grade level. We also code a mutually exclusive and collectively exhaustive set of race dummies: black, white, Asian, American Indian, Hispanic, and other. Hispanic ethnicity is the absorbing state; that is, student's who respond "Yes" to question S4 "Are you of Hispanic or Spanish origin?" are categorized as Hispanic regardless of what they indicated on question S6 "What is your race?"

Question S11 [S17] asks "do you live with your biological mother [father], stepmother [stepfather], foster mother [father], or adoptive mother [father]?" If a student answers yes to one and only one of these questions, we enter a value of one for a single-parent-home indicator variable. If she answers yes to both, we enter a value of one in a two-parent-home indicator.

Question S12 [S18] asks "How far in school did she [he] go?" Based on these responses, we create indicator variables for having a mother who graduated from high school, father who graduated from high school, mother who graduated from college, and father who graduated from college. Responses that indicate graduating from college are: "graduated from a college or university" and "professional training beyond college." Responses that indicate graduating from high school include both college responses as well as: "went to college but did not graduate," "went to a business, trade, or vocational school after high school," "completed a GED," and "high school graduate." Students who respond "she went to school but I don't know what level" or "I don't know if she went to school" are coded as missing.

Our effort measure is calculated based on students' responses to question S48: "In general, how hard do you try to do your school work well?" Students select one of the following responses:

- I try very hard to do my best
- I try hard enough, but not as hard as I could
- I don't try very hard
- I don't try at all

We code responses on a 1-4 scale, with 4 indicating "I try very hard to do my best" and 1 corresponding to "I don't try at all." We then subtract the sample mean and divide by the standard deviation to express the index in standard deviation units.

Wave 1: Add Health Picture Vocabulary Test

During the first wave, students took the Add-Health Picture Vocabulary Test, a shortened version of the Peabody Picture Vocabulary Test. The test is structured as follows. For each question, the student is presented with a set of four illustrations. The administrator reads the student a word, and the student must select which illustration is best described by the word. There are 87 questions in all, and the raw scores in the data set have been standardized by age. To express scores in standard deviation units, we subtract the mean and divide by the standard deviation within each enrolled grade.

Wave 4: Adult Survey

The fourth and final survey wave was conducted in 2007 and 2008, when the original respondents were between 24 and 32 years old. We code a variety of outcome measures responses to this survey.

Respondents are considered employed if they answer "Yes" to the question H4LM11, "Are you currently working for pay at least 10 hours per week?" They are considered not to be employed if: they respond "No" to the question "Have you ever worked for 9 weeks or more at a paying job that was at least 10 hours a week? Do not include military service."; they respond "No" to the question "Are you currently working for pay at least 10 hours per week?"; or the respondent is in prison.

Income is derived from question H4EC2: "Now think about your personal earnings. In {2006/2007/2008}, how much income did you receive from personal earnings before taxes, that is, wages or salaries, including tips, bonuses, and overtime pay, and income from self-

employment?" Respondents who answer "don't know" are asked to provide their "best guess" by choosing from a series of intervals ranging from "less than $5,000" to "$150,000 or more." We impute the midpoint of each bounded interval, and impute $200,000 if the respondent answers "$150,000 or more."

Question H4RD6 asks "what is the current status of your marriage to {initials}?" We code a married indicator equal to one if the respondent answers "living together," "living apart due to separation," "living apart because of other reason such as career, military service, family illness, etc." or refused. We code the indicator as zero if the value is stored as "legitimate skip," indicating that the respondent is not married.

We use responses to question H4TR1 – "How many persons have you ever married? Be sure to include your current spouse if you are married now." – to create an indicator for having ever been married. A response of zero is coded as 0; all values greater than zero are coded as 1.

We use responses to question H4CJ1 – "Have you ever been arrested?" – to code an indicator variable for having ever been arrested. "Yes" responses are coded as one, and "No" as zero. If the interview took place in a prison (determined by the variable PRISON4) we also code the person to have been arrested.

We use responses to question H4CJ17 – "Have you ever spent time in a jail, prison, juvenile detention center or other correctional facility?" – to create indicators for having ever been incarcerated. "Yes" responses are coded as one, and "No" as zero. If the interview took place in a prison (determined by the variable PRISON4) we also code the person as incarcerated.

We use responses to question H4EC18 – "Between {1995/2002} and {2006/2007/2008}, did you or others in your household receive any public assistance, welfare payments, or food stamps?" – to code an indicator for having received public assistance (the first year in brackets is

the year the respondent turned 18; the second is the year the survey was administered). “Yes” responses are coded as one, and “No” as zero.

We use responses to question H4EC4 – “4. Is your house, apartment, or residence owned or being bought by {YOU AND/OR YOUR SPOUSE/PARTNER}?” – to code an indicator for owning a home. “Yes” responses are coded as one, and “No” as zero.

We use responses to question H4LM21A – “Does Does/Did your employer make the following available to you: health insurance?” – to code an indicator for receiving health insurance from one’s current or most recent position. “Yes” responses are coded as one, and “No” as zero.

Wave 4: Weights

In all regressions, we use the grand sample weights calculated for longitudinal analyses of students interviewed in Waves 1 and 4. The variable in the data is called GSWGT4 _2.

Appendix Figure 1: Samsung t401g Cell Phone

a) Closed View b) Open View

Appendix Table 1: Student Baseline Characteristics

Student Characteristics	Non Participating	Information Only	Information & Incentives	Non-Financial Incentives	Control	T vs. C. *p-value*
Male	0.521	0.453	0.504	0.453	0.538	0.022
	(0.500)	(0.498)	(0.500)	(0.498)	(0.499)	
White	0.200	0.149	0.167	0.163	0.172	0.799
	(0.400)	(0.356)	(0.374)	(0.370)	(0.377)	
Black	0.290	0.294	0.327	0.314	0.309	0.740
	(0.454)	(0.456)	(0.469)	(0.465)	(0.463)	
Hispanic	0.435	0.469	0.424	0.441	0.435	0.534
	(0.496)	(0.500)	(0.495)	(0.497)	(0.496)	
Asian	0.025	0.018	0.031	0.018	0.037	0.199
	(0.155)	(0.134)	(0.172)	(0.134)	(0.188)	
Other Race	0.051	0.069	0.051	0.063	0.048	0.453
	(0.220)	(0.254)	(0.220)	(0.244)	(0.214)	
Special Education Services	0.149	0.131	0.141	0.147	0.137	0.903
	(0.356)	(0.337)	(0.348)	(0.354)	(0.345)	
English Language Learner	0.154	0.165	0.153	0.159	0.160	0.964
	(0.361)	(0.372)	(0.360)	(0.366)	(0.367)	
Free Lunch	0.857	0.922	0.920	0.908	0.918	0.857
	(0.351)	(0.268)	(0.271)	(0.289)	(0.275)	
Economically Disadvantaged	0.741	0.922	0.914	0.908	0.915	0.886
	(0.438)	(0.268)	(0.280)	(0.289)	(0.279)	
Baseline Math	0.010	-0.009	0.028	0.006	0.108	0.400
	(1.022)	(0.978)	(1.035)	(0.993)	(0.916)	
Baseline Reading	0.037	-0.086	0.007	-0.053	0.062	0.204
	(1.015)	(1.071)	(1.049)	(0.989)	(0.905)	
Missing: Baseline Math	0.319	0.169	0.224	0.237	0.233	0.036
	(0.466)	(0.375)	(0.418)	(0.426)	(0.423)	
Missing: Baseline Reading	0.326	0.176	0.231	0.231	0.243	0.055
	(0.469)	(0.381)	(0.422)	(0.422)	(0.429)	
p-value from joint F-test						0.651
Observations	2903	490	490	490	437	1907

Notes: This table reports summary statistics for the field experiment. The first 5 columns represent the sample means of the variable indicated in each row for the group indicated in each column The first column, labeled OKCPS, represents the mean for 6th and 7th grade students in Oklahoma City Public Schools who are not a part of the experimental group. The treatment groups are restricted to randomly selected 6th & 7th grade students in Oklahoma City Public Schools experimental schools who opted into the randomization for the field experiment. The final column represents the p-value from a test of equality across treatment indicators from a regression of the variable in each row on indicators for each treatment group and the control group. The joint F-test reports the p-value from a test of equality across treatment indicators from a multi-variate regression testing the overall quality of the lottery.

Appendix Table 2 - Mean Effect Size (2SLS Estimates) on Direct and Indirect Outcomes

	First Stage (1)	Reduced Form (2)	2SLS (3)
A. Direct Outcomes			
Knows Wage Gap btw BA and Dropouts - Information	0.937***	0.049*	0.052*
	(0.007)	(0.027)	(0.029)
	902	902	902
Knows Prison Rates - Information	0.937***	0.179***	0.191***
	(0.007)	(0.038)	(0.040)
	891	891	891
Both Quiz Questions Correct - Information	0.937***	0.178***	0.190***
	(0.007)	(0.038)	(0.040)
	880	880	880
Knows Wage Gap btw BA and Dropouts - Incentives	0.927***	0.017	0.018
	(0.010)	(0.033)	(0.036)
	589	589	589
Knows Prison Rates - Incentives	0.924***	-0.046	-0.050
	(0.010)	(0.043)	(0.047)
	585	585	585
Both Quiz Questions Correct - Incentives	0.926***	-0.023	-0.024
	(0.010)	(0.043)	(0.046)
	576	576	576
B. Indirect Survey Outcomes			
More Focused Since Million - Information	0.939***	0.151***	0.161***
	(0.007)	(0.037)	(0.039)
	910	910	910
Million Makes Students Work Harder - Information	0.938***	0.070*	0.075*
	(0.007)	(0.037)	(0.040)
	916	916	916
More Focused Since Million - Incentives	0.925***	0.152***	0.165***
	(0.009)	(0.043)	(0.046)
	592	592	592
Million Makes Students Work Harder - Incentives	0.930***	0.077*	0.083*
	(0.009)	(0.044)	(0.047)
	599	599	599
C. Indirect Administrative Data Outcomes			
OK State Math Test Post-Treatment - Information	0.941***	-0.027	-0.029
	(0.005)	(0.039)	(0.042)
	1211	1211	1211
OK State Reading Test Post-Treatment - Information	0.939***	0.040	0.043
	(0.006)	(0.041)	(0.044)
	1202	1202	1202
OK State Math Test Post-Treatment - Incentives	0.934***	-0.023	-0.025
	(0.008)	(0.047)	(0.050)
	782	782	782
OK State Reading Test Post-Treatment - Incentives	0.933***	0.023	0.025
	(0.008)	(0.050)	(0.053)
	780	780	780

Notes: This table reports first stage, reduced form, and 2SLS estimates for participation on a variety of outcomes. First stage estimates report the causal effect of treatment on the percentage of the year each student had access to a functioning Million cellular phone (number of days without a reported phone problem divided by 225), controlling for our full set of covariates. Reduced form estimates mirror the ITT estimates presented in earlier tables. 2SLS estimates use randomized assignment to a treatment group to instrument for time spent with access to a functioning phone; the estimates can be interpreted as the effect of spending a full year with phone access for treated individuals in each treatment group. Heteroskedasticity-robust errors are reported in parentheses below each estimate. The number of observations in each regression is reported directly below the standard errors. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table 3 - Mean Effect Sizes (Intent-to-Treat) on Direct and Indirect Outcomes

	Information Only	Incentives & Information	Non-Financial Incentives	p-value
A. Treatment Questions				
Knows Wage Gap btw BA and Dropouts	0.056*	0.043	0.017	0.686
	(0.032)	(0.031)	(0.033)	
	569	592	589	
Knows Prison Rates	0.177***	0.172***	-0.046	0.000
	(0.045)	(0.042)	(0.043)	
	561	587	585	
Both Quiz Questions Correct	0.172***	0.175***	-0.023	0.001
	(0.044)	(0.043)	(0.043)	
	554	580	576	
B. Placebo Question				
Knows Unemployment Rate of College Grads	0.035	-0.011	0.047	0.578
	(0.042)	(0.041)	(0.043)	
	573	590	590	
C. Survey Questions				
More Focused Since Million	0.165***	0.132***	0.152***	0.861
	(0.044)	(0.042)	(0.043)	
	571	594	592	
Million Makes Students Work Harder	0.018	0.113***	0.077*	0.299
	(0.044)	(0.043)	(0.044)	
	579	599	599	
D. Administrative Data Outcomes				
OK State Math Test Post-Treatment	0.014	-0.057	-0.023	0.351
	(0.046)	(0.045)	(0.047)	
	794	790	782	
OK State Reading Test Post-Treatment	0.071	0.013	0.023	0.623
	(0.047)	(0.047)	(0.050)	
	786	790	780	
Attendance Rate	0.004	-0.007	0.034	0.892
	(0.063)	(0.064)	(0.063)	
	856	863	861	
Number of Suspensions	0.028	0.031	0.025	0.998
	(0.069)	(0.074)	(0.073)	
	927	927	927	

Notes: This table reports ITT estimates for the effect of being offered a chance to participate in the field experiment on students' ability to correctly answer questions about human capital development. Questions are coded as a 1 if the student answered the question correctly and a 0 otherwise. All regressions include school fixed effects and controls for student grade, gender, race, SES, special education status, and English language learner status, as well as 2009 state test scorse, 2010 state test scores, and their squares. The sample is restricted to randomly selected 6th and 7th grade students in Oklahoma City Public Schools. Randomization was done at the student level. Treatment is defined as returning a signed consent form to participate and being lotteried into the specified treatment group. Heteroskedasticity-robust errors are reported in parentheses below each estimate. The number of observations in each regression is reported directly below the standard errors. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table 4 - Mean Effect Sizes (Intent-to-Treat) without Demographic Controls

	Information	Non-Financial Incentives	*p-value*
A. Treatment Questions			
Knows Wage Gap btw BA and Dropouts	0.046*	0.013	0.448
	(0.028)	(0.033)	
	902	589	
Knows Prison Rates	0.172***	-0.044	0.000
	(0.038)	(0.043)	
	891	585	
Both Quiz Questions Correct	0.171***	-0.021	0.001
	(0.037)	(0.042)	
	880	576	
B. Placebo Question			
Knows Unemployment Rate of College Grads	0.017	0.040	0.683
	(0.036)	(0.042)	
	903	590	
C. Survey Questions			
More Focused Since Million	0.148***	0.153***	0.934
	(0.037)	(0.042)	
	910	592	
Million Makes Students Work Harder	0.069*	0.080*	0.847
	(0.037)	(0.043)	
	916	599	
D. Administrative Data Outcomes			
OK State Math Test Post-Treatment	-0.031	-0.008	0.717
	(0.042)	(0.048)	
	1211	782	
OK State Reading Test Post-Treatment	0.047	0.046	0.987
	(0.043)	(0.051)	
	1202	780	
Attendance Rate	-0.012	0.022	0.696
	(0.058)	(0.064)	
	1310	861	
Number of Suspensions	0.024	0.024	0.998
	(0.063)	(0.074)	
	1417	927	

Notes: This table reports ITT estimates for the effect of being offered a chance to participate in the field experiment on a variety of outcomes. All regressions include school fixed effects and controls for 2009 state test scores, 2010 state test scores, and their squares. The sample is restricted to randomly selected 6th and 7th grade students in Oklahoma City Public Schools. Randomization was done at the student level. Treatment is defined as returning a signed consent form to participate and being lotteried into the specified treatment group. Heteroskedasticity-robust errors are reported in parentheses below each estimate. The number of observations in each regression is reported directly below the standard errors. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table A5 - Differences in Outcomes by Message Dosage

	Information Dose (1)	Persuasion Dose (2)	*p-value* (1)=(2) (3)
A. Treatment Questions			
Knows Wage Gap btw BA and Dropouts	0.338	-0.086	0.503
	(0.309)	(0.344)	
	171	171	
Knows Prison Rates	0.416	-0.368	0.234
	(0.318)	(0.369)	
	168	168	
Both Quiz Questions Correct	0.595*	-0.325	0.163
	(0.312)	(0.369)	
	166	166	
B. Placebo Question			
Knows Unemployment Rate of College Grads	-0.441	0.448	0.200
	(0.335)	(0.381)	
	172	172	
C. Survey Questions			
More Focused Since Million	0.359	-0.316	0.362
	(0.343)	(0.419)	
	173	173	
Million Makes Students Work Harder	-0.235	0.398	0.410
	(0.375)	(0.418)	
	173	173	
D. Administrative Data Outcomes			
OK State Math Test Post-Treatment	0.538	-0.348	0.388
	(0.491)	(0.558)	
	206	206	
OK State Reading Test Post-Treatment	0.058	0.397	0.722
	(0.478)	(0.511)	
	205	205	

Notes: This table reports OLS estimates for the effect of receiving a full dose of informational and persuasive informational texts for individuals in the informational treatment groups who experienced some period of time without access to a functioning phone. Columns (1) and (2) respectively report the coefficient on the proportion of informational and persuasive texts a student received. A student is considered to have received a given informational or persuasive text if he or she was randomly assigned to an informational treatment group and did not report a problem with his or her phone (e.g., technical problems, stolen phone, lost phone, etc. Column (3) All regressions include school fixed effects and controls for 2009 state test scores, 2010 state test scores, and their squares. The sample is restricted to individuals in the informational treatment groups who experienced some period of time without access to a functioning phone. Heteroskedasticity-robust errors are reported in parentheses below each estimate. The number of observations in each regression is reported directly below the standard errors. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table 6: Correlation of Self-Reported Effort With Adult Outcomes in Add Health

	Sample Mean	Raw Correlation	Controlled Correlation
Employed	0.801	0.008*	0.013***
		(0.005)	(0.005)
		10889	10889
Earnings (Annual)	34021	244.096	1131.129**
		(513.538)	(511.680)
		10709	10709
Job Provides Health Insurance	0.699	0.008	0.008
		(0.006)	(0.006)
		10910	10910
Receives Public Assistance	0.247	-0.010*	-0.016***
		(0.005)	(0.005)
		10918	10918
Married	0.446	0.020***	0.017**
		(0.007)	(0.007)
		10616	10616
Ever Arrested	0.300	-0.068***	-0.052***
		(0.007)	(0.006)
		10904	10904
Ever Incarcerated	0.162	-0.042***	-0.032***
		(0.006)	(0.006)
		10858	10858
Homeowner	0.413	0.002	0.000
		(0.007)	(0.007)
		10915	10915

NOTES: This table reports raw and controlled correlations between self-reported effort and various adult outcomes in the National Longitudinal Survey of Adolescent Health (Add Health). The dependent variable is a standardized index based on the student's response to the question "In general, how hard to you try to do your school work well?" See the Online Appendix for definitions and sources of all other variables. All regressions include fixed effects for the student's school and enrolled grade at the time of the baseline survey. Controlled regressions also control for race, gender, mother's education, father's education, number of biological parents living with the student, and the student's score on the Add Health Picture Vocabulary Test (AHPVT), taken during the baseline interview. All estimates use the post-stratification grand sample weights provided in the dataset. Robust standard errors are reported in parentheses.

Appendix Table 7a: Student Baseline Characteristics for Black Dissimilarity Index Subgroups

	Above Median Black Dissimilarity Index				Below Median Black Dissimilarity Index			
	Pooled Information	Non-Financial Incentives	Control	*p-value* (1)=(2)=(3)	Pooled Information	Non-Financial Incentives	Control	*p-value* (5)=(6)=(7)
Student Characteristics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Male	0.475	0.480	0.502	0.790	0.483	0.419	0.574	0.005
	(0.500)	(0.501)	(0.501)		(0.500)	(0.494)	(0.496)	
White	0.104	0.138	0.122	0.358	0.219	0.195	0.222	0.745
	(0.306)	(0.346)	(0.328)		(0.414)	(0.397)	(0.417)	
Black	0.342	0.327	0.308	0.662	0.275	0.298	0.310	0.608
	(0.475)	(0.470)	(0.463)		(0.447)	(0.458)	(0.464)	
Hispanic	0.504	0.458	0.516	0.362	0.383	0.419	0.352	0.363
	(0.500)	(0.499)	(0.501)		(0.487)	(0.494)	(0.479)	
Asian	0.006	0.007	0.009	0.884	0.045	0.033	0.065	0.279
	(0.076)	(0.085)	(0.095)		(0.209)	(0.178)	(0.247)	
Other Race	0.044	0.069	0.045	0.293	0.078	0.056	0.051	0.330
	(0.206)	(0.254)	(0.208)		(0.268)	(0.230)	(0.220)	
Special Education	0.122	0.138	0.140	0.709	0.152	0.158	0.134	0.766
	(0.327)	(0.346)	(0.348)		(0.359)	(0.366)	(0.342)	
ELL	0.178	0.185	0.208	0.621	0.139	0.126	0.111	0.604
	(0.383)	(0.389)	(0.407)		(0.346)	(0.332)	(0.315)	
Free Lunch	0.969	0.935	0.964	0.061	0.868	0.874	0.870	0.973
	(0.173)	(0.248)	(0.187)		(0.339)	(0.332)	(0.337)	
Low SES	0.965	0.949	0.977	0.238	0.866	0.856	0.852	0.870
	(0.183)	(0.220)	(0.149)		(0.341)	(0.352)	(0.356)	
Baseline Math	-0.108	-0.110	-0.023	0.544	0.147	0.164	0.272	0.447
	(0.924)	(0.981)	(0.886)		(1.080)	(0.991)	(0.930)	
Baseline Reading	-0.137	-0.148	-0.108	0.905	0.074	0.076	0.270	0.161
	(0.955)	(0.906)	(0.823)		(1.165)	(1.082)	(0.958)	
Missing: Math	0.176	0.215	0.154	0.195	0.221	0.265	0.315	0.029
	(0.381)	(0.411)	(0.362)		(0.415)	(0.442)	(0.466)	
Missing: Reading	0.181	0.207	0.176	0.605	0.227	0.260	0.310	0.069
	(0.386)	(0.406)	(0.382)		(0.420)	(0.440)	(0.464)	
p-value from joint F-test				0.571				0.085
Observations	518	275	221	1014	462	215	216	893

Notes: This table reports summary statistics for students in each Black Dissimilarity Index subgroup. Columns (1), (2), (3), (5), (6), and (7) represent the sample means of the variable indicated in each row for the group indicated in each column The treatment groups are restricted to randomly selected 6th and 7th grade students in Oklahoma City Public Schools experimental schools who opted into the randomization for the field experiment. Columns (4) and (8) reports the p-value from a test of equality across treatment indicators from a regression of the variable in each row on indicators for each treatment group and the control group within each subgroup. The joint F-tests report the p-value from a test of equality across treatment indicators from a multi-variate regression testing the overall quality of the lottery within each subgroup.

Appendix Table 7b: Student Baseline Characteristics for Zip Code Poverty Rate Subgroups

	Above Median Zip Code Poverty Rate				Below Median Zip Code Poverty Rate			
	Pooled Information	Non-Financial Incentives	Control	*p-value* (1)=(2)=(3)	Pooled Information	Non-Financial Incentives	Control	*p-value* (5)=(6)=(7)
Student Characteristics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Male	0.469	0.423	0.531	0.115	0.485	0.477	0.542	0.221
	(0.500)	(0.495)	(0.501)		(0.500)	(0.500)	(0.499)	
White	0.090	0.131	0.117	0.257	0.203	0.188	0.204	0.850
	(0.286)	(0.339)	(0.323)		(0.403)	(0.391)	(0.403)	
Black	0.336	0.291	0.278	0.309	0.293	0.332	0.327	0.410
	(0.473)	(0.455)	(0.449)		(0.456)	(0.472)	(0.470)	
Hispanic	0.500	0.512	0.525	0.865	0.412	0.386	0.382	0.628
	(0.501)	(0.501)	(0.501)		(0.493)	(0.488)	(0.487)	
Asian	0.008	0.019	0.019	0.411	0.036	0.018	0.047	0.162
	(0.087)	(0.136)	(0.135)		(0.185)	(0.133)	(0.213)	
Other Race	0.067	0.047	0.062	0.621	0.056	0.076	0.040	0.191
	(0.250)	(0.212)	(0.241)		(0.230)	(0.265)	(0.196)	
Special Education	0.115	0.117	0.160	0.318	0.149	0.170	0.124	0.312
	(0.320)	(0.323)	(0.368)		(0.357)	(0.376)	(0.330)	
ELL	0.162	0.155	0.185	0.716	0.158	0.162	0.145	0.847
	(0.368)	(0.363)	(0.390)		(0.365)	(0.370)	(0.353)	
Free Lunch	0.959	0.939	0.969	0.335	0.897	0.884	0.887	0.839
	(0.199)	(0.240)	(0.173)		(0.305)	(0.320)	(0.317)	
Low SES	0.951	0.944	0.969	0.503	0.897	0.881	0.884	0.738
	(0.216)	(0.231)	(0.173)		(0.305)	(0.325)	(0.321)	
Baseline Math	-0.106	-0.098	0.199	0.008	0.078	0.079	0.056	0.960
	(0.949)	(0.953)	(0.918)		(1.033)	(1.016)	(0.914)	
Baseline Reading	-0.192	-0.158	0.141	0.005	0.053	0.020	0.019	0.886
	(1.006)	(0.853)	(0.951)		(1.083)	(1.070)	(0.878)	
Missing: Math	0.238	0.277	0.259	0.574	0.169	0.206	0.218	0.176
	(0.427)	(0.449)	(0.440)		(0.376)	(0.405)	(0.414)	
Missing: Reading	0.233	0.272	0.278	0.420	0.183	0.199	0.222	0.407
	(0.423)	(0.446)	(0.449)		(0.387)	(0.400)	(0.416)	
p-value from joint F-test				0.123				0.437
Observations	390	213	162	765	590	277	275	1142

Notes: This table reports summary statistics for students in each Zip Code Poverty Rate subgroup. Columns (1), (2), (3), (5), (6), and (7) represent the sample means of the variable indicated in each row for the group indicated in each column The treatment groups are restricted to randomly selected 6th and 7th grade students in Oklahoma City Public Schools experimental schools who opted into the randomization for the field experiment. Columns (4) and (8) reports the p-value from a test of equality across treatment indicators from a regression of the variable in each row on indicators for each treatment group and the control group within each subgroup. The joint F-tests report the p-value from a test of equality across treatment indicators from a multi-variate regression testing the overall quality of the lottery within each subgroup.

Appendix Table 7c: Student Baseline Characteristics for TVA Subgroups

	Above Median TVA				Below Median TVA			
	Pooled Information	Non-Financial Incentives	Control	*p-value* (1)=(2)=(3)	Pooled Information	Non-Financial Incentives	Control	*p-value* (5)=(6)=(7)
Student Characteristics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Male	0.490	0.489	0.541	0.482	0.474	0.438	0.541	0.124
	(0.501)	(0.501)	(0.500)		(0.500)	(0.497)	(0.500)	
White	0.219	0.226	0.213	0.953	0.117	0.146	0.138	0.560
	(0.414)	(0.420)	(0.411)		(0.322)	(0.354)	(0.346)	
Black	0.219	0.253	0.284	0.216	0.399	0.349	0.343	0.305
	(0.414)	(0.436)	(0.452)		(0.490)	(0.478)	(0.476)	
Hispanic	0.462	0.416	0.383	0.173	0.411	0.438	0.453	0.605
	(0.499)	(0.494)	(0.487)		(0.493)	(0.497)	(0.499)	
Asian	0.045	0.037	0.066	0.403	0.010	0.005	0.017	0.547
	(0.208)	(0.189)	(0.248)		(0.098)	(0.072)	(0.128)	
Other Race	0.055	0.068	0.055	0.793	0.063	0.063	0.050	0.804
	(0.229)	(0.253)	(0.228)		(0.244)	(0.243)	(0.218)	
Special Education	0.108	0.084	0.120	0.507	0.122	0.146	0.122	0.683
	(0.311)	(0.278)	(0.326)		(0.327)	(0.354)	(0.328)	
ELL	0.166	0.132	0.126	0.345	0.134	0.151	0.155	0.747
	(0.372)	(0.339)	(0.332)		(0.341)	(0.359)	(0.363)	
Free Lunch	0.849	0.816	0.874	0.288	0.971	0.958	0.945	0.302
	(0.358)	(0.389)	(0.332)		(0.169)	(0.200)	(0.229)	
Low SES	0.852	0.832	0.863	0.682	0.964	0.964	0.950	0.726
	(0.356)	(0.375)	(0.344)		(0.188)	(0.188)	(0.218)	
Baseline Math	0.289	0.301	0.276	0.977	-0.175	-0.121	-0.040	0.334
	(0.998)	(0.952)	(0.935)		(0.918)	(0.946)	(0.860)	
Baseline Reading	0.261	0.323	0.262	0.808	-0.239	-0.212	-0.112	0.397
	(1.076)	(1.007)	(0.893)		(0.967)	(0.832)	(0.884)	
Missing: Math	0.148	0.189	0.180	0.381	0.187	0.193	0.227	0.535
	(0.356)	(0.393)	(0.386)		(0.391)	(0.395)	(0.420)	
Missing: Reading	0.161	0.189	0.186	0.615	0.192	0.188	0.243	0.305
	(0.368)	(0.393)	(0.390)		(0.395)	(0.391)	(0.430)	
p-value from joint F-test				0.815				0.642
Observations	398	190	183	771	411	192	181	784

Notes: This table reports summary statistics for students in each TVA subgroup. Columns (1), (2), (3), (5), (6), and (7) represent the sample means of the variable indicated in each row for the group indicated in each column The treatment groups are restricted to randomly selected 6th and 7th grade students in Oklahoma City Public Schools experimental schools who opted into the randomization for the field experiment. Columns (4) and (8) reports the p-value from a test of equality across treatment indicators from a regression of the variable in each row on indicators for each treatment group and the control group within each subgroup. The joint F-tests report the p-value from a test of equality across treatment indicators from a multi-variate regression testing the overall quality of the lottery within each subgroup.