

Information, non-financial incentives, and student achievement

Evidence from a text messaging experiment

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Motivation

- education is important (Grossman, 2006; Lance, 2011; Psacharopoulos and Patrinos, 2004)
- students face many "behavioral barriers" and are prone to underinvest in their human capital (Akerlof and Kranton, 2002; Bursztyn and Jensen, 2015; Harackiewicz and Priniski, 2018; Jensen, 2010; Lavecchia et al., 2016; Nguyen, 2013)
- in particular:
 - underestimation of returns to schooling
 - present bias
- Fryer, Jr. (2016) targets both of these channels
 - information about returns to schooling via daily text messages
 - incentives for reading books

Structure

1. Study design

- treatments
- data
- identification and estimation

2. Results

3. Discussion

Treatments

1. Information only

- students receive cell phone
- monthly credit
- daily text message about returns to schooling
 - “Each year H.S. dropouts make \$21,023. College graduates make \$58,613. Do the math.”
 - “Graduates never regret staying in school, but dropouts often regret leaving it.”

2. Incentives only

- students receive cell phone
- no monthly credit
- instead: credit for reading books

3. Information and incentives

- as treatment (2) + daily text messages

4. Control

- neither cell phone, messages, nor incentives

6 months treatment duration

Sample and data

Roughly 2,000 students from the Oklahoma City school district (OKCPS); data collection in 2010 and 2011.

- **Intermediate outcomes**
 - perceived returns to schooling
 - self-reported books read
- **Short-term outcomes**
 - CRT scores
 - attendance, suspension
 - effort and motivation index
- **Long-term outcomes**
 - student took ACT
 - ACT score

Identification and Estimation

- randomization in treatments within schools
- identifies ITT effect
- estimated by

$$\text{outcome}_{i,s} = \alpha + \beta X_i + \gamma_s + \pi Z_i + \epsilon_{i,s}$$

Results: Intermediate Outcomes

	(1) Control mean	(2) Information	(3) Incentives	(4) Information and incentives
Intermediate outcomes				
Knowledge of returns to schooling: Number of treatments questions correct	1.774	0.228*** (0.073) 544	−0.005 (0.072) 564	0.195*** (0.070) 563
Self-reported amount of books read	15.5	−0.722	−1.89*** (0.622)	−1.555*** (0.603)

Results: Short-term outcomes

	(1) Control mean	(2) Information	(3) Incentives	(4) Information and incentives
Short-term outcomes				
Effort index (survey)	−0.009	0.009 (0.048) 582	−0.033 (0.046) 607	−0.016 (0.046) 604
CRT math (nationally normed)	−0.275	0.009 (0.033) 796	−0.025 (0.033) 782	−0.044 (0.032) 790
CRT ELA (nationally normed)	−0.378	0.049 (0.032) 789	0.018 (0.034) 780	0.008 (0.033) 790
Attendance rate (std.)	0.110	0.010 (0.059) 856	0.052 (0.059) 861	0.020 (0.061) 863
Number of suspensions	0.471	0.020 (0.069) 927	0.023 (0.074) 927	0.019 (0.074) 927

Results: Long-term outcomes

	(1) Control mean	(2) Information	(3) Incentives	(4) Information and incentives
Long-term outcomes				
Took the ACT	0.352	−0.031 (0.030) 927	−0.004 (0.030) 927	0.009 (0.030) 927
First ACT comprehensive score (nationally normed)	−0.774	0.143** (0.063) 308	0.091 (0.058) 320	0.069 (0.060) 327
Max ACT comprehensive score (nationally normed)	−0.711	0.132** (0.064) 308	0.101* (0.060) 320	0.090 (0.062) 327

Discussion

- no clean control group
- no reliable measure for whether or not students receive messages
- spill-over effects across treatments
- interaction treatment creates artificial dependency between the two interventions

Summary

- clear theoretical motivation and policy relevance of designing project to mitigate behavioral barriers
- Fryer (2016) designs interventions to target
 - underestimation of returns to schooling
 - present bias
- mostly non-significant results, though positive long-term impact of information only treatment is puzzling
- serious shortcomings in design