



Motivation and incentives in education: Evidence from a summer reading experiment[☆]



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ARTICLE INFO

Article history:

Received 8 May 2015

Revised 3 August 2016

Accepted 3 August 2016

Available online 20 August 2016

JEL codes:

I2

I20

I21

Keywords:

Education

Incentives

Reading

Skills

ABSTRACT

Policymakers and economists have expressed support for the use of incentives in educational settings. In this paper, rather than asking whether incentives work, we focus on a different question: For whom and under what conditions do incentives work? This question is particularly important because incentives' promise relies on the idea that they might take the place of some cognitive failing or set of preferences that otherwise would have led students to make choices with large long-term benefits. In this paper, we explore whether that is the case. In the context of a summer reading program called Project READS, we test whether responsiveness to incentives is positively or negatively related to the student's baseline level of motivation to read. As a part of the program, elementary school students are mailed books weekly during the summer. We implemented this book-mailing program as a randomized experiment with three treatment arms. Students in the first treatment arm were mailed books as a part of the standard Project READS program. Students in the second treatment arm were mailed books as a part of Project READS, and were also offered an incentive to read the books they were mailed. Students in the third experimental group served as a control and were given books after posttesting occurred in the fall. We find that, if anything, more motivated readers are more responsive to incentives to read, suggesting that to the extent that incentives are effective, they may not effectively target the students whose behavior they are intended to change.

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[☆] The authors declare that they have no relevant or material financial interests that relate to the research described in this paper. This study was approved by the IRB's at Harvard University (F14689-101) and the University of Chicago (H07192). The authors thank the W.T. Grant foundation (180140) for generous support. The authors also thank Ijun Lai for excellent research assistance, and seminar participants at the University of Illinois-Chicago, Uppsala University, Northwestern University, the Labor Markets, Families and Children workshop at the University of Stavanger, and the New Developments in Human Capital conference at Hebrew University.

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1. Incentives in education

It has become increasingly common for economists and policymakers to suggest the use of incentives in educational settings. The draw to incentives for economists is clear. When faced with investment decisions by students that appear suboptimally low – low high school completion rates, low effort and low attendance at early grades, at a time when the returns to education are at historically high levels (see e.g. Goldin & Katz, 2008) – economists turn to a central idea of economics, that individuals respond to incentives.

Economic studies of the effectiveness of incentives in education have yielded mixed results (Gneezy, Meier, & Rey-Biel, 2011). While some show promising results (e.g. Jackson, 2010; Kremer, Miguel, & Thornton, 2009), many show positive results for some groups and no effects for others (Angrist & Lavy 2009; Fryer, 2011), or positive results for tests in some subject areas and not for others (Bettinger, 2012; Levitt, List, Neckermann, & Sadoff, 2012).¹ More recent evidence from field trials in school districts suggests that incentives can induce short-term behavioral changes that improve math performance (Levitt et al., 2012) but incentives alone are not sufficient to improve or sustain gains in reading performance (Fryer, 2011; Fryer & Holden, 2012). Each of these previous studies focuses primarily on the question of whether incentives work. In this paper, we focus on a different question: For whom and under what conditions do incentives work? This question is particularly important because of the underlying reasons economists have been drawn to incentives, and because of the problems incentives are intended to address. As we explain, incentives are a promising tool because they might take the place of some cognitive failing or set of preferences that otherwise would have led students to make choices with large long-term benefits. A tool like this, if it is effective, should be effective for students with those cognitive deficits or preferences.

It is well documented that investments in education have high returns (Card, 1999), and that those returns have risen dramatically over the past 30 years (Goldin & Katz, 2008). Given the high returns, however, why is it that students are not choosing to invest in building human capital through schooling? And, if students are not choosing to respond to the incentives embodied in the labor market returns to education, why should we expect them to respond to nominally smaller incentives of the sort that are typically offered in educational settings?

One possibility is that students are myopic. Suppose that the ability to consider the future consequences of one's actions is a skill that develops as people age. In this case, the discount rate of a young child is not the discount rate his 40-year-old self would want him to use to make decisions. Since the lion's share of the benefits of education occur far into the future, it might make the 40-year-old self better off to provide short-term incentives to encourage behavior that someone with a low discount rate might choose.

Another possibility is that students lack the self-control necessary to engage in schoolwork when other immediate

distractions draw their attention. Immediate and salient rewards may have a better chance at competing with other activities in their lives than investing in building human capital does on its own.

There are other similar possibilities, all of which have two things in common: 1) incentives take the place of some skill or trait of the student (e.g. forward-lookingness, self-control) that the policy maker deems to be in deficit relative to some optimal level; incentives act as substitutes for these drivers of behavior that some students have and others lack, and 2) these deficiencies are heterogeneous across students. Therefore, to generate more efficient allocation of effort and human capital investments, incentives must target the students who would not choose to engage in human capital building behavior on their own.

In this paper, we test whether incentives change behavior and learning for these students. Specifically, we test whether responsiveness to incentives is positively or negatively related to the student's level of reading motivation. We do so in the context of a summer reading program called Project READS. As a part of the program, which we describe in more detail in the next section, elementary school students are mailed books weekly during the summer. We implemented this book mailing program as a randomized experiment with three treatment arms. Students in the first treatment arm were mailed books as a part of the standard Project READS program. Students in the second treatment arm were mailed books as a part of Project READS, and were also offered an incentive to read the books they were mailed. Students in the third experimental group served as a control and were given books after posttesting occurred in the fall.

In the spring, as a part of pre-testing, we also collected baseline measures of students' reading motivation level. These measures allow us to distinguish students who enjoy reading and who are generally motivated to read from students who dislike reading and who are unmotivated. The former group of students is more likely to engage in behaviors, like reading and schoolwork, which have long-run returns. The latter group of students expresses an aversion to these behaviors and is precisely the group for whom incentives must be effective if they are to generate more efficient long-run allocations of student effort.

We find that, if anything, more motivated readers are more responsive to incentives to read. Students with greater motivation to read at baseline read more books in response to the incentives. In other words, incentives worked for the students who were more motivated to read before the incentives were introduced than they did for the students who were not already motivated to read.

While incentives induced students to read more over the summer, we did not find that the additional reading generated by the offer of incentives caused reading comprehension test scores to increase for the average student. However, when the most motivated students were incentivized to read books that were well-matched to their reading skill level, we found significant increases in reading comprehension scores. Moreover, these reading comprehension improvements were sustained through the school year; we found similar effects on reading comprehension measured on the Iowa Test of Basic Skills (ITBS)

¹ One prominent recent example is the large-scale field experiment reported in Fryer (2011). Fryer implemented field experiments testing the effectiveness of incentives in 200 schools in the Chicago, New York City, and Dallas public schools districts. Students were paid to read books in Dallas, for mid-year test score performance in New York City, and for end of year grades in Chicago. Fryer cannot statistically rule out a zero effect in each city, though the precision of the estimates also allow for the possibility that the incentives would pass a benefit-cost test. Based on the pattern of results across cities, Fryer suggests that incentives based on inputs into the human capital production function (e.g. attendance, book reading) may be more effective than incentives based on outputs (e.g. test scores), possibly because students paid based on outputs may not know how to translate the inputs they can control into the outcomes that are incentivized.

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