



# Can incentives for parents and students change educational inputs? Experimental evidence from summer school



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## ABSTRACT

This paper examines whether incentives for parents and students can increase educational inputs, in this case, specifically, attendance. We evaluate the impact of randomly-assigned incentives for improving attendance at the summer program of a large metropolitan school district. Students were assigned to one of three experimental conditions: (1) financial incentives for parents combined with non-financial incentives for students, (2) non-financial incentives for students (no incentives for parents), and (3) control. We find that the combination of the parent and student incentives increased the daily attendance rate by 9% and the likelihood of having perfect attendance by 63%. The student-only incentives had a smaller and statistically insignificant effect on attendance. We find little evidence that these incentives affected attendance rates or standardized test scores during the regular school year following the summer program, but we do find that they increased the likelihood of re-enrolling in the district.

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## 1. Introduction

The question of whether external incentives can improve educational outcomes has received considerable attention in recent years.<sup>3</sup> Incentives for students are an important component of the offerings at charter schools

such as those managed by the Knowledge is Power Program (Angrist et al., 2012). Similarly, numerous cities have adopted programs that tie teacher compensation to student outcomes (Fryer, 2011a). Determining the effect of these interventions has become an active research area with studies finding a wide range of results.<sup>4</sup>

Most studies on incentives focus on rewards to teachers or students for educational outcomes such as grades or

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<sup>3</sup> This study considers the impact of incentives designed to change the behaviors or outcomes of particular individuals (e.g., students, teachers, or parents). This is in contrast to incentives generated by policies (e.g., No Child Left Behind and other accountability systems) that create incentives for institutions such as schools or districts.

<sup>4</sup> There are now a large number of studies examining the impact of incentives for teachers and students. Examples of recent studies on teacher incentives include: Fryer (2011a), Fryer and Holden (2012), Goodman and Turner (2013), Imberman and Lovenheim (2013), Marsh et al. (2011), Muralidharan and Sundararaman (2011), and Springer et al. (2012). Studies on the impacts of incentives for students include Angrist and Lavy (2009), Angrist et al. (2009), Bettinger (2010), Kremer et al. (2009), Leuven et al. (2011), and Levitt et al., (2012).

standardized test scores.<sup>5</sup> However, there are several reasons to examine the impact of incentives that target educational inputs and that offer rewards to parents. For instance, targeting inputs might be effective when there is lack of information about how to produce outputs (Fryer, 2011b). Moreover, incentives for educational inputs may be politically easier to implement than schemes that pay students for good grades or test scores.<sup>6</sup> Likewise, understanding the impact of parental incentives is important because parental actions can affect student educational investments and outcomes (Bergman, 2012; Heckman, 2000, 2011).

This paper examines whether incentives can change educational inputs by evaluating the impact of randomly-assigned incentives for parents and students to increase attendance in a summer-school program. Summer-school attendance is an interesting educational input to examine given research showing that it improves academic achievement (Jacob & Lefgren, 2004; Matsudaira, 2008). At the same time, attendance in summer school is often much lower than attendance during the regular school year, and low attendance may impede the efficacy of summer school (Cooper, Charlton, Valentine, Muhlenbruck, & Borman, 2000; Mariano, Kirby, Crego, & Steodji, 2009). This suggests there may be scope for incentives to boost summer-school attendance, and that such an increase could improve the effectiveness of summer school. Furthermore, poor summer school attendance has been linked to inconsistent parental involvement in school-preparation routines (Ford & Sutphen, 1996). This, in turn, suggests an incentive program targeting parents might be especially important.

We examine the impact of two incentive treatments, one aimed at students who enrolled in a summer-school program and a second aimed at their parents. Students in the treatment group were given the chance to earn small prizes as a reward for attending four of five days in a given week. The parents of a subset of treated students had the chance to earn two gift cards to the largest supermarket chain in this metropolitan area. Receipt of the first card, worth \$50, was based on attendance during the first two weeks of the summer program, while the second card, worth \$70, was based on the last two and half weeks of the summer program. There were thus three experimental conditions: control, a “student-only” treatment, and a “combined” treatment that included both the student and parent incentives.

The results show that the combined incentives increased the daily attendance rate by 5 percentage points

(9% of the control group mean), while the student-only incentive had a smaller and statistically insignificant effect on attendance. The effects of the combined incentives were concentrated at the upper end of the attendance distribution. The incentives had small effects on the probability of attending at least one day of the program, but the combined incentives increased the likelihood of perfect attendance throughout the summer program by 5 percentage points (63% of the control group mean). The results also suggest that the incentives had stronger effects in the latter half of the summer, when attendance rates are lower and thus may be more responsive to external incentives.

Incentives may affect outcomes beyond those they targeted. For instance, the incentives might affect learning or student engagement, which in turn could affect academic outcomes. Alternatively, removal of incentives could reduce the motivation students have for engaging in the desired behavior relative to what it would have been had the incentives never been offered (Deci, Koestner, & Ryan, 2001). To examine these possibilities, we estimated the effects of the incentives on attendance and other outcomes in the regular school year. We found that the incentives increased re-enrollment in the district, although the effect was small (2% relative to the control group mean of 93%). Among students who were in the district the following year, we find little effect on regular-year attendance rates, suspensions, or standardized test scores, although they may have reduced the likelihood of regular-year perfect attendance by about 2 percentage points (relative to the control group mean of 14%).

These results are noteworthy for several reasons. This is some of the first U.S. research to demonstrate that parental incentives administered through schools can alter educational inputs. In particular, we are unaware of any studies that looked explicitly at programs to boost attendance in summer school and enrichment programs. This work complements a growing body of research emphasizing the importance of interventions that target parental behaviors. For instance Bergman (2012) finds that providing parents' detailed information about their child's academic performance can result in significant achievement gains. At the same time, the lack of effects on regular-year student-performance measures suggests that increased summer-school attendance resulting from the incentives may have been insufficient to improve academic outcomes. This demonstrates that input incentives will only affect outcomes if they have sufficiently large effects on inputs that are an important component of the educational production function.

## 2. Prior literature

There is a growing literature on the effect of incentives on student outcomes. Much of this work focuses on the effects of offering rewards to students if they meet certain output targets (e.g., gains on standardized test scores). Angrist and Lavy (2009) and Bettinger (2010) find positive effects of offering students incentives for improved test score performance, while Fryer (2011b) finds little effect of incentive programs targeting improved test scores or educational inputs. There is also evidence that the framing

<sup>5</sup> A small number of studies have examined impacts of incentives aimed at inputs and parents. These include Attanasio et al. (2005), Behrman and Hoddinott (2000), Dee (2011), Fryer (2011b), Fryer, Levitt and List (2015), Fryer and Holden (2012) and Greenberg et al. (2011). A large literature looks at the question of educational inputs more generally (e.g., Hanushek, 1997) and on specific programs such as Teach for America which has been shown to improve math but not reading scores (Decker, Mayer, & Glazerman, 2004) and Head Start, which a recent randomized evaluation has shown increases test scores initially but has effects that fade out over time (U.S. Department of Health and Human Services, 2010).

<sup>6</sup> Medina (2008) describes opposition to programs in New York City and Baltimore that offer incentives to students for standardized test performance.

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