

## Abstract Title Page

**Title:** Parent Beliefs and Student Absences: Large Absence-Reduction Field Experiment

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## Abstract Body

### Background / Context:

School attendance is a robust predictor of course performance (Allensworth & Easton, 2007), and it is consistently the strongest predictor of high school dropout, even more so than suspensions and test scores (Byrnes & Reyna, 2012). Focusing on getting students to school is an essential part of decreasing high school dropout rates (Balfanz & Byrnes, 2012). What is concerning is that up to 20% of students miss essentially a month or more of schooling in a year (Balfanz & Byrnes, 2012).

The important role that guardians play in supporting children's academic success in school is also widely recognized (Houtenville & Conway, 2008; Barnard, 2004; Fan & Chen, 2001). In fact, national task forces, federally-funded parent information resource centers, and federal legislation consistently identify increased parental involvement as a central goal of educational reform (National Education Goals Panel, 1999). Two recent small-scale randomized experiments designed to deliver a range of academic information to guardians of high school students have shown surprisingly large increases in student attendance (Kraft and Rogers, 2015; Bergman, 2012).

Recent work suggests that guardians are unaware of how their student's attendance compares to that of their classmates; moreover, they often are very miscalibrated in estimating how many days of school their own student has been absent (Rogers, in progress). This appears to be especially true for families of low-attending students. (Rogers, in progress; Svenson, 1981). Additionally, humans tend to conform to the behaviors that they believe others are performing (for review, see Schultz et al., 2007). Communicating descriptive social norm information has been shown to affect, for example, the stealing of petrified wood from the forest floor (Cialdini et al., 2006), littering (Cialdini, Reno, and Kallgren 1990), towel reuse in hotels (Goldstein, Cialdini, and Griskevicius, 2007), motivation to participate in elections (Gerber and Rogers, 2009), and persistent home energy usage studied over a six year period (Allcott and Rogers, 2014). While descriptive social norms have proven to influence a range of socially beneficial behaviors, research has not examined how they affect educational behaviors. This project illuminates the impact of this type of information on parent engagement and student attendance.

### Research Questions:

The project's objective is to motivate parents/guardians to improve student attendance through multiple communications during the school year. The project addresses the following research questions:

RQ1: Does contacting guardians and encouraging them to improve their students' attendance reduce absences?

RQ2: Does communicating to guardians the total number of days their student missed reduce absences?

RQ3: Does communicating to guardians the total number of days their student missed as compared to the absences of a typical student reduce absences?

We also address the exploratory research question:

RQ4: Do these interventions also impact the attendance of other students in the household not explicitly mentioned in the mailings?

**Setting:**

The study involves students and their guardians in all public elementary, middle, and high schools in a major metropolitan school district (about 200 schools total). The district we collaborated with has only ~60% of students graduating from high school in four years, which is typical of large urban school districts (Swanson, 2009). The district currently has a task force dedicated to re-thinking the current report cards that are sent to parents. The way student performance data (e.g., course grades and attendance) is currently presented to parents in report cards is often convoluted and confusing. By making absenteeism information more meaningful, relevant, and contextualized to parents, parents might be enabled to take on a more active role in improving their children's attendance and academic performance. This intervention is intended to suggest a low-cost, scalable innovation that could be widely used to improve student attendance.

**Participants:**

The study involves about 30,000 students enrolled in grades 1-12 in the 2014-15 school year. To ensure that the social comparison was salient and meaningful, only students who were absent more than 2 days than the modal student in their school and grade in the previous school year were selected for random assignment. We also excluded students with absence totals that were more than two SD above the mean for their class and grade, as they may be the results of data errors or represent students with undocumented, singular life circumstances (e.g., sudden hospitalization, homelessness).

At the start of the study, households were sent a consent form outlining the details of the project and the opt-out procedure if they did not want to participate. Households were excluded from the study if they opted out after receiving the informed consent form, during study implementation, if they had invalid addresses, or if the home language listed in the district data was different from the language in which the consent form was sent.

Students were excluded if they were part of the pilot study that was run in the 2013-14 school year (as were schools that participated in the pilot study) or if they were marked with the disability flag or homeless flag. Finally, only one student in each household was targeted for this project. If multiple students at an address met the above criteria, one student from that address was randomly selected into the sample universe and the treatments' messages focused on this student. This ensures that there is no cross-treatment contamination.

**Research Design:**

The three main research questions can be condensed into three behavioral-psychology-motivated components: (1) *Encourage* – reaching out to guardians and encouraging them to improve student attendance, (2) *Self* – informing guardians about their students' absences, and (3) *Norms* – comparing students' absences to what's "normal." There is no way of testing the effectiveness of the *Norms* component without also implicitly measuring the effectiveness of generic parental encouragement (i.e., *Encourage*) and giving guardians information about their students' attendance (i.e., *Self*). As such, we leverage an experimental design that tests the added impact of each of these three components.

Participating households are randomly assigned to one of four conditions: (1) a *Control* group that receives no additional outreach as part of this experiment, (2) an *Encourage* treatment group that receives mail stressing the importance of attendance, parental efficacy, and absence-reduction as part of parental role, (3) an *Encourage + Self* group that receives mail that has the

same content as the *Encourage* mail but also states the number of days of school the guardians' student missed, and (4) an *Encourage + Self + Norms* group that receives mail that contains all the same information as the *Encourage + Self* mail but also compares the student's attendance record to that of the typical student in their school and grade. Those assigned to the three treatment arms received 5 mailings over the course of the 2014-2015 school year. Table 1 depicts the breakdown of students by condition.

Mailing rounds 2, 3, 4, and 5 reflect up-to-date absence records from the 2014-2015 school year. While inclusion in the experiment required that students have been absent more days than their classmates in the 2013-2014 school year, in some cases, those same students were absent fewer days than their classmates in the 2014-2015 school year. When this was the case for any student assigned to the *Encourage + Self + Norms* condition, we sent their guardians the *Encourage + Self* mailing instead of the *Encourage + Self + Norms* mailing. Similarly, when a student had excellent attendance (less than 2 absences) and was assigned to the *Encourage + Self* condition, their guardians were sent the *Encourage* mail instead. As such, when we analyze the attendance impact of being assigned to the *Encourage + Self* condition, we are assessing the impact of being sent at least one *Encourage + Self* mailing. Similarly, when we analyze the attendance impact of being assigned to the *Encourage + Self + Norms* condition, we are assessing the impact of being sent at least one *Encourage + Self + Norms* mailing. Those assigned to *Encourage + Self* condition received an average of 3.9 mailings that included *Self* information, and 1.1 mailings that did not. Those assigned to *Encourage + Self + Norms* condition received an average of 3.6 mailings that included *Norms* information, and 1.4 mailings that did not.

### **Data Collection and Analysis:**

This study incorporated various data sets exported directly from the administrative records of the school district. The data sets included student demographics and enrollment data, guardian contact information, and attendance data. We also conducted a live phone survey of guardians in our experimental universes after Mailing 5 (between 6/20/2015-6/25/2015). The survey has two primary purposes: (1) internal validity – a set of questions address whether the guardians received, read, and understood the mail and (2) assessing impact on parental beliefs – how did the mail pieces impact parental beliefs about the importance of attendance and their role in ensuring their students get to school?

Data analyses were conducted using OLS regressions to generate treatment effect magnitudes and one-sided Fisher Randomization Tests to evaluate statistical significance (i.e. p-values). The primary outcome of interest was the mailings' impact on the number of recorded absences between the day immediately after mailing #1 was sent out and the end of the school year. Households with two students who were both eligible for inclusion in the experiment were also analyzed to evaluate the possibility of spillover effects.

### **Findings / Results:**

The guardian phone survey provided strong evidence of internal validity. There is indication that mail successfully reached guardians; guardians in any of the three treatment arms recalled receiving a mail piece about attendance at more than twice the rate of guardians in the control group (25% recall vs. 57% recall,  $p < .001$ ). We also see evidence that guardians read and comprehended the information about their students' absences. Namely, guardians who received mail with the *Norms* and/or *Self* component adjusted how miscalibrated they were about their

students' absences; accuracy improved by 18% ( $p=.01$ ). Guardians in the *Norms* condition also grew more accurate (by 14% [ $p<.01$ ]) in reporting that their student was absent more than the typical student in their student's school and grade. However, we saw no indication that guardian beliefs about the importance of attendance changed ( $p$ -values $>.4$ ).

We see strong evidence that the attendance mail reduced absences. All treatment mailings pooled reduce absences by 0.9 days (or a 5.3% decrease) as compared to the *Control* condition ( $p<.01$ ). We find that the *Encourage* component reduced absences by 0.6 days (or a 3.5% decrease) as compared to *Control* ( $p<0.01$ ). The *Self* component reduced absences by an additional 0.5 days as compared to *Encourage* ( $p<0.01$ ). In other words, the *Self* component reduced absences by a total of 6.2% as compared to receiving no mail at all (i.e. *Control*). However, there was no *additional* reduction in absences caused by the *Norms* component ( $p=0.24$ ), meaning that the *Encourage + Self* and the *Encourage + Self + Norms* mailings had statistically indistinguishable impacts on attendance. Raw absence means (i.e. unadjusted by covariates) are reported in Tables 2.

Additionally, there were indications that these mailings had spillover effects on other students in the household. Namely, in two student households, the *Self* and *Norms* mailings reduced the focal student's absences by approximately 1.3 days or 7.4% ( $p<.01$ ) as compared to focal students in the *Control* and *Encourage* groups. The non-focal student's absences in the *Self* and *Norms* groups were also reduced by 0.8 days or 4.8% ( $p<.01$ ) as compared to that of non-focal students in the *Control* and *Encourage* groups.

### **Conclusions:**

This study identifies an easy-to-implement, extremely cost-effective way to reduce absenteeism. This intervention cost around \$6 per incremental day of attendance it generated. Back-of-the-envelope estimates of the cost per incremental day of attendance from social workers and truancy officers is around \$50-\$100 (based on RCT evaluations of NYC's "Success Mentors"). Moreover, this intervention can be easily implemented by district leaders because it requires only administrative data rather than hiring, training, and managing attendance specialists. We view the current intervention as a way of eliminating easy-to-capture days of absence, freeing school resources to focus—in more personalized ways—on the challenges facing students and families.

This project also addressed two fundamentally psychological questions. First, how does directing parent attention to the total number of days of school their students have missed affect absences? We found that this tactic does reduce absences substantially. One mechanism through which this occurs is by correcting parents (downwardly biased) beliefs about how many days their students have been absent. Communicating this information to parents may also create a sense that their students' absences are being monitored, implying a sense of accountability.

The second psychological question this project addressed is how informing parents that their students miss more school than their classmates affects absences. We find that this information corrects parental beliefs about how their students' absences compare with their classmates, but has no effect on absences. This is surprising given the effects such social comparison information has been shown to have in other domains like water and energy consumption, motivation to vote, recycling, and school bullying. We are still trying to determine why this social comparison information has no effect in this context.

## Appendices

### Appendix A. References

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## Appendix B. Tables and Figures

**Table 1: Total Sample Sizes by Treatment Condition**

	Control	Encourage	Encourage + Self	Encourage + Self + Norms	Total
Total	7,664	7,679	7,670	7,666	30,679

**Table 2: Post-Treatment Mean Absences by Condition**

	Mean Absences
Control	16.9
Encourage	16.4
Encourage + Self	16.0
Encourage + Self + Norms	16.0