It's too annoying: Who drops out of educational text messaging programs and why

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HIGHLIGHTS

- We study opt out of text messaging programs aimed at improving school readiness.
- Racial/ethnic minority parents are less likely to opt out.
- Programs that provide context and encouragement have lower opt out.
- A high quantity of texts and more complex texts lead recipients to opt out more.

ARTICLE INFO

ABSTRACT

Text-message programs are increasingly popular as low-cost interventions aimed at improving a variety of health and education outcomes. This study analyzes participant opt out decisions from a set of text messaging programs aimed at fostering parent–child interactions and improving school readiness. Exploiting random assignment of parents of young children to programs and rich data on text messages and recipients, we examine how program design and text and recipient characteristics predict program opt out. The results provide evidence that the text messaging programs reach the parents of traditionally less-resourced children and show that program design affects parent opt out. Programs that provide context and encouragement along with activities reduce opt out compared to programs that send activities alone. A high quantity of texts and more complex texts lead recipients to opt out at greater rates.

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1. Introduction

Due to their low cost, widespread use, and ease of scalability, text messaging interventions are increasingly popular. These interventions can affect children's early literacy skills (Doss et al., 2018; York et al., 2018), school and class attendance of students (Bergman and Chan, 2017; Groot et al., 2017), the number of course credits earned in high school (Kraft and Rogers, 2015), FASFA completion, and college enrollment rates (Castleman and Page, 2015, 2016). Moreover, these programs may narrow educational gaps as they have proven to be particularly effective for less-advantaged students (York et al., 2018; Bergman, 2015; Castleman and Page, 2015, 2016; Bergman and Chan, 2017).

Text-messaging is a promising tool for reaching less connected families, however, participants can easily opt out, and those who do can no longer gain program benefits. While opt out is often low, it can be substantial (Castleman and Page, 2016; Cortes et al.,

2018; Bergman and Chan, 2017). Simply typing "STOP" removes participants from programs, and programs cannot reach back out to participants through texts. A single annoying text may thus cause opt-outs even if the program as a whole is both beneficial and welcomed by the participants. As such, understanding who opts out and what types of texts lead to opting out can support the design of effective interventions.

This study investigates opt out in two sets of experimental text messaging interventions, asking: Which types of recipients opt out, which programs increase opt out, and, which text characteristics predict opt out? We estimate recipient-level models partially leveraging random assignment to programs to answer the first two questions, and recipient-by-text level discrete-time hazard models to answer the third. Our specific goals are to test whether less-resourced recipients opt out more, whether programs that scaffold activity recommendations with reasons for the activities as well as encouragement lead to differential opt out, whether more or less varied programs in terms of topic lead to differential opt out, whether a greater number of texts causes greater opt out, and whether recipients are more likely to opt out when texts are more complex.

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Table 1
Description of treatment groups.

Site	Subject	Program	Texts per week	Label in Table 3
Dallas	Literacy	Tips only	1	Omitted
Dallas	Literacy	Fact, Tip, Growth	3	TX1
Dallas	Literacy	Fact, Tip, Tip,Tip, Growth	5	TX2
Miami	Literacy	Fact, Tip, Growth	3	TX1
Miami	Literacy,Math, SEL	Fact, Tip, Growth	3	TX2
Miami	Literacy,Math, SEL	Tips only	3	TX3/TX4
Miami	SEL	Fact, Tip, Growth	3	TX5
Miami	General	Control	1 per 2 weeks	Omitted

Table 2
Characteristics of texts.

	Characteristics of all students			Characteristics of studentsthat opt out		
	All	Dallas	Miami	All	Dallas	Miami
Requires any type of prop	0.42	0.47	0.40	0.35	0.36	0.35
Requires kitchen or restaurant	0.06	0.05	0.07	0.07	0.05	0.07
Builds on prior texts	0.06	0.08	0.04	0.03	0.03	0.03
From a group of messages	0.67	0.85	0.57	0.53	0.70	0.47
Assumes prior knowledge	0.13	0.08	0.16	0.13	0.08	0.15
Assumes a routine	0.26	0.34	0.22	0.21	0.28	0.19
Presents a choice	0.26	0.18	0.30	0.25	0.14	0.30
Repeatable	0.83	0.80	0.85	0.77	0.72	0.79
Activity	0.77	0.77	0.76	0.70	0.69	0.70
Number of words per sentence (English)	10.42	10.07	10.62	10.34	9.50	10.65
Number of words per sentence (Spanish)	10.53	10.00	10.83	10.68	9.46	11.12
Number of long words (English)	3.28	3.18	3.34	3.27	2.98	3.38
Number of long words (Spanish)	3.84	4.09	3.70	3.83	4.34	3.64
Flesch complexity score (for English Texts)	85.39	87.26	84.35	81.78	86.22	80.19
Huerta complexity score (for Spanish Texts)	78.31	77.78	78.60	75.48	75.84	75.35
Number of texts	813	290	523	252	94	188

The Flesch complexity score for English texts is calculated as: 206.835-1.015(words/sentence)-84.6(syllables/word). The Huerta complexity score for Spanish translations of the text is calculated as 206.835-1.015(words/sentence)-60(syllables/word).

Table 3A
Student-level linear probability models predicting opt out.

	All sites		Miami		Dallas	
Race (white omitted)						
Black	−0.051	***	−0.055	***	0.002	
	(0.006)		(0.006)		(0.026)	
Hispanic	−0.039	***	−0.041	***	0.010	
	(0.005)		(0.005)		(0.025)	
Asian	−0.040	**	−0.032	*	−0.042	
	(0.013)		(0.014)		(0.038)	
Female	0.001		0.002		−0.009	
	(0.003)		(0.003)		(0.008)	
Language (English omitted)						
Spanish language	−0.028	***	−0.023	***	−0.056	***
	(0.003)		(0.003)		(0.009)	
Haitian language	−0.079	***	−0.080	***		
	(0.016)		(0.016)			
Age (lt 4 or gt 5 omitted)						
Age = 4–5	0.008		0.006		0.016	+
	(0.005)		(0.006)		(0.009)	
Site (Miami omitted)						
Site: Dallas	0.025	***				
	(0.004)					
Treatment (control omitted)						
Treatment group (Pooled)	0.028	***	0.027	***	0.038	***
	(0.003)		(0.003)		(0.008)	
Literacy pre-test (standardized)					0.009	+
					(0.005)	
Constant	0.058	***	0.060	***	0.046	+
	(0.007)		(0.008)		(0.026)	
N	20 975		17 502		3255	

Note:$^{+}$p ≤ .10,*** p ≤ .001,** p ≤ .01,* p ≤ .05.

2. Experiments

This study analyzes opt out from eight text-messaging programs for the parents of four-year-old preschoolers in the Dallas Independent School District (DISD) and in the Early Learning Coalition in the Miami-Dade school district (ELCMD). We designed the programs to help parents support their children's academic development in literacy, math, and socio-emotional learning (SEL). Parents participated in the programs during the 2015/16 school year. The Dallas program started in mid-November and the Miami program started in mid-October 2015. Both programs ran through June 2016.

The programs are variations of a program that we first developed and introduced during the 2013–14 school year (York et al., 2018). For this program, parents received three text messages per week about a literacy skill or activity. Monday a "FACT" text gave information about the importance of a given skill or general parent–child interaction; Wednesday a "TIP" text suggested a specific easy-to-operationalize parent–child literacy activity; and Friday a "GROWTH" text gave encouragement and reinforcement of the topics introduced earlier in the week. We will refer to this as the ***FTG*** program. See York et al. (2018) for a description of the original text development and program effects, which were positive for both parenting practices and child development.

The programs in Dallas and Miami expand and extend ***FTG*** by varying both content – whether they include literacy, math, and/or SEL – and format—the number of fact, tip and growth texts: T, FTG, FTTTG or TTT (see Table 1). The individual texts vary across multiple dimensions of topic and complexity, which we code using multiple raters. We used blocked randomization to assign parents that consented to the study to the different programs. The randomization was successful as suggested by balancing checks, available upon request.

3. Data

We use three data sources. Two texting platforms provide opt out information. Four percent of parents in our study opted out. Administrative student records from DISD and ELCMD include gender, ethnicity, age, home language, treatment site, text-language,