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Background

- Attention-deficit/hyperactivity disorder (ADHD) is a neurobehavioral disorder estimated to afflict up to 11% of children in the United States.
- Numerous studies have documented a wide range of adverse outcomes, and thus, ADHD is recognized by the Center for Disease Control (CDC) as a major public health concern.
- Large datasets document that stimulants decrease the risk for many adverse outcomes, however stimulant compliance remains poor.
- This study examined the effectiveness of a novel text messaging intervention aimed to improve the poor rate of adherence to stimulant medications in children with ADHD.

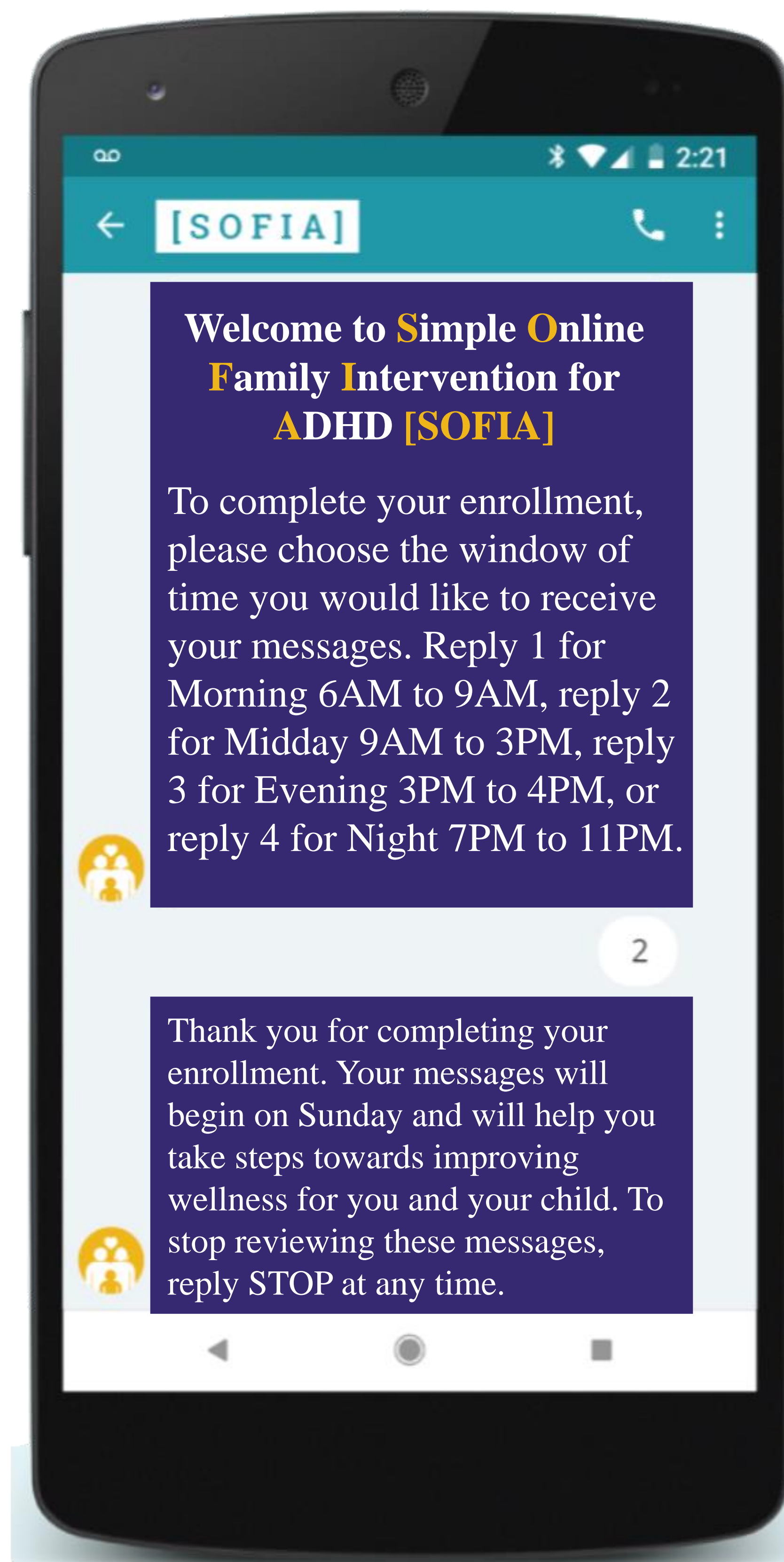
Methods

- 50 randomly selected children ages 6 to 12, who were prescribed a stimulant medication by a primary care physician or a psychiatrist for ADHD treatment, were recruited as text messaging intervention patients after receiving approval from their prescriber.
- 500 pediatric patients were identified as comparators at a 10-to-1 ratio (age and sex matched) from the Partners HealthCare electronic medical record (EMR).
- Comparators must have been prescribed stimulant medications over a 2-year period.

Adherence

- We determined whether patients had timely prescription refills using prescriptions documented in their EMR.
- We considered patients adherent to their treatment if a stimulant prescription was issued within 90 days of the start date of the text messages for the SMS group or within 90 days of the index prescription (defined as the first prescription for a stimulant during the study period) for the EMR group.

Simple Online Family Intervention for ADHD



[SOFIA]

- SMS based intervention that addresses:
 - Medication adherence
 - Support
 - Education
- Parents are encouraged to respond to messages to customize their personal experience and allow the program to address their specific needs.

Segmented Trigger Content

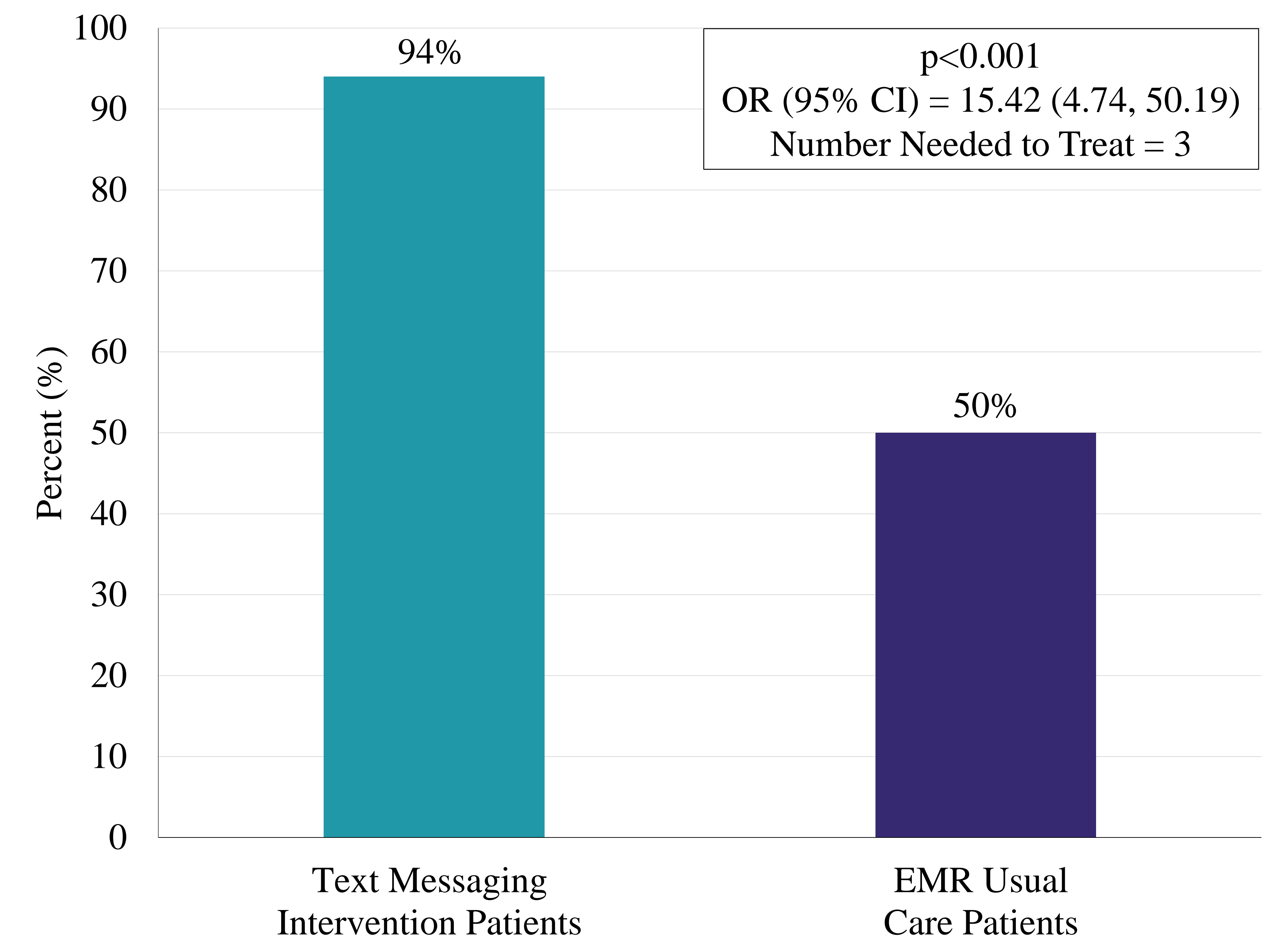
- Medication refill reminders
- Getting ready for school
- Issues with unrestricted time
- Parent/peer relationships
- Self-esteem
- Homework
- Stress
- Sleep

Demographic Characteristics

	Text Messaging Intervention Patients N=50	EMR Usual Care Patients N=500	Test Statistic	P-Value
	Mean ± SD	Mean ± SD		
Age	9.3 ± 2.1	9.4 ± 2.0	$t_{548}=0.30$	0.77
	N (%)	N (%)		
Male	36 (72)	360 (72)	N/A	N/A
Caucasian	39 (85)	317 (66)	$\chi^2=6.82$	0.009
Economic Status				
Lower	7 (14)	177 (35)	$\chi^2_2=12.54$	0.002
Middle	16 (32)	162 (32)		
Upper	27 (54)	161 (32)		

Results

Rate of Patient Adherence to Stimulant Treatment



- Results showed that 94% of the SMS intervention group refilled their prescriptions in a timely manner compared to only 50% of the EMR patients receiving treatment as usual.
- Based on an NNT=3, for every three patients who receive the SMS intervention, we can keep one engaged in their stimulant treatment.

Conclusions

- Our data indicates that a novel ADHD-centric text messaging intervention significantly improved patient engagement.
- Findings provide strong support for the utility of this readily accessible, inexpensive, and widely available technology to improve the poor rate of adherence to stimulant treatment in clinical practice.
- To the best of our knowledge, this study is the *first* digital health intervention aimed at improving adherence to stimulant medication for children with ADHD.

Contact Information

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Disclosures

Joseph Biederman is currently receiving research support : AACAP, Feinstein Institute for Medical Research, Food & Drug Administration, Genentech, Headspace Inc., Lundbeck AS, Neurocentria Inc., NIDA, Pfizer Pharmaceuticals, Roche TCRC Inc., Shire Pharmaceuticals Inc., Sunovion Pharmaceuticals Inc., and NIH. He has a financial interest in Avekshan LLC, a company that develops treatments for attention deficit hyperactivity disorder (ADHD). Dr. Biederman is a consultant for Akili and Shire. Through MGH corporate licensing, he has a US Patent (#14/027,676) for a non-stimulant treatment for ADHD, and a patent pending (#61/233,686) on a method to prevent stimulant abuse. He received departmental royalties from a copyrighted rating scale used for ADHD diagnoses, paid by Ingenix, Prophase, Shire, Bracket Global, Sunovion, and Theravance; these royalties were paid to the Department of Psychiatry at MGH.

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