

# The Communication Benefits of Participation in Camp Dream. Speak. Live.: An Extension and Replication

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## ABSTRACT

School-based guidelines often require that treatment focuses on minimizing or eliminating stuttered speech. The purpose of this study was to examine the benefits of explicit training in communication competencies to children who stutter without targeting stuttered speech. Thirty-seven children (ages 4–16) completed Camp Dream. Speak. Live., an intensive group treatment program which targets the psychosocial needs and communication of children who stutter. Outcome measures included the *Overall Assessment of the Speaker's Experience of Stuttering (OASES)*, the *Communication Attitude Test for Preschool and Kindergarten Children Who Stutter (KiddyCAT)*, and the *Patient Reported Measurement Information System (PROMIS) Pediatric Peer Relationships Short Form (PROMIS Peer Relationships)* and *Parent Proxy Peer Relationships Short Form (PROMIS Parent Proxy)*. Pre- and posttreatment public presentations were rated on nine core verbal and nonverbal communication competencies by a neutral observer. Similar to previous studies, participants demonstrated significant improvements in communication attitudes (*OASES*) and perceived ability to establish peer relationships (*PROMIS Peer Relationships*), particularly school-aged participants (ages 7–16). Participants also demonstrated significant improvement in eight of the nine communication competencies. Findings suggest that, in addition to the psychosocial gains of programs such as Camp Dream. Speak. Live., children who stutter benefit from explicit training in communication skills, and these gains are not dependent on the presence of stuttered speech.

**KEYWORDS:** stuttering, intensive treatment, attitudes, communication competence

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**Learning Outcomes:** As a result of this activity, the reader will be able to (1) describe the benefits of targeting communication rather than fluency during stuttering treatment; (2) explain the specific verbal and nonverbal skills targeted during intervention; and (3) summarize the elements of intensive programs such as Camp Dream. Speak. Live. designed to address communication and psychosocial needs of children who stutter.

On August 20, 2020, thirteen-year-old Brayden Harrington spoke on nationwide television at the Democratic National Convention. He stuttered—openly and unapologetically—and communicated effectively. The idea that a speaker could be a strong communicator while also stuttering is out-of-sync with decades of clinical research, which considers communication effectiveness and fluency to be closely linked, and, in part or in whole, focuses on eliminating stuttered speech. Brayden's openness with regard to his stuttered speech coupled with the overall effectiveness of his communication is consistent with modern views that fluency is not required to lead a fulfilling life—a welcome concept for the estimated 78 million adolescents and adults who stutter worldwide who continue to suffer devastating psychosocial,<sup>1–3</sup> academic,<sup>4</sup> vocational,<sup>5,6</sup> and financial<sup>7</sup> consequences based on perceived communication skills.

When assessing the need for therapy and measuring change in school settings, however, fluency is often not only the focus but also the expectation provided by district guidelines. In Spring 2019, the Michael and Tami Lang Stuttering Institute and the Stuttering Foundation of America<sup>8</sup> hosted a panel of school-based speech-language pathologists from the Austin Independent School District (AISD) of central Texas. The purpose of this panel was to discuss how they successfully reformed district guidelines to shift the focus of assessment and treatment from fluency to communication. Panelists noted that one of the primary barriers during this campaign was the lack of research demonstrating the benefit of improving communication rather than percentage of stuttering-like disfluencies. The purpose of this article, therefore, is to provide evidence that was used to support change in AISD and provide a foundation of data for other school districts who may wish to propose similar changes. Specifically, the present study further explores the efficacy of an intensive

treatment program—Camp Dream. Speak. Live.—purposefully designed to help children who stutter to become effective communicators without targeting stuttered speech.

The immediate and long-term effects of effective stuttering treatment during the school-age years are not trivial. A large amount of data indicate that preschool and school-age children who stutter report negative attitudes toward communication.<sup>9–13</sup> Persons whose childhood stuttering persists into adulthood often report higher levels of communication apprehension and/or social anxiety.<sup>14–17</sup> As a result, adults who stutter suffer increased isolation, lower levels of self-esteem, limited self-efficacy, and overall poorer quality of life, as well as reduced engagement and attainment in academic and vocational environments.<sup>6,18–20</sup> People who stutter often engage in coping strategies (e.g., social avoidance, rejection of social networks, reduced social activity) that exclude them from protective mechanisms known to improve quality of life (e.g., peer and familial support).<sup>14,21</sup> Many adults who stutter report that the negative consequences of stuttering began during their early school-age years, and were not dependent on the frequency and/or severity of stuttering.<sup>22–25</sup> These latter data suggest that any treatment approach should extend beyond the core behavior to include the affective and cognitive correlates of stuttering, and that these factors should be addressed in childhood.

Over the past decade, there has been a marked increase in the number of intensive programs for children and teens who stutter that address the cognitive and affective components of stuttering. Byrd et al<sup>26</sup> provided a summary of the common themes and findings of four week-long intensive programs (Camp Dream. Speak. Live., Camp Shout Out, Stuttering U., Camp TALKS) and one intensive 1-day camp (Fluency Friday Plus). All camps were designed for children aged 4 to 17 years, and each incorporated

some degree of parental involvement (e.g., assessing parental perspectives, parental training and education). Each program also provided varying combinations of individual and group therapy to facilitate learning among participants, and to individualize program content according to each child's specific personality and goals. Four of these five programs provided a variety of activities which addressed overt stuttering behaviors (i.e., moments of stuttered speech) as well as the cognitive and affective aspects of stuttering, such as communication confidence and overall communicative abilities. Only one program—Camp Dream. Speak. Live.—focused exclusively on affective and cognitive consequences of stuttering, and did *not* attempt to modify or minimize participants' overt stuttering behaviors.

Data collected over the past 5 years have established that children who participate in Camp Dream. Speak. Live. demonstrate a range of positive cognitive and affective outcomes immediately posttreatment. In the initial pilot study, Byrd et al<sup>26</sup> reported that adolescents who stutter (7–14 years of age,  $n = 14$ ) and who completed Camp Dream. Speak. Live. self-reported positive changes in attitudes toward communication (measured via *Overall Assessment of the Speaker's Experience of Stuttering [OASES]*<sup>27</sup>), and that all participants (4–17 years of age,  $n = 23$ ) demonstrated greater aptitude to establish peer relationships (measured via *Patient Reported Outcomes Measurement Information System (PROMIS)—Pediatric Peer Relationships Short Form 8a* or *PROMIS Peer*<sup>28</sup>). Byrd et al<sup>29</sup> surveyed parental satisfaction 1 month after each child completed the program. Parents reported continued satisfaction and a positive impact on their child, including improved overall attitudes toward speaking and positive change in peer-to-peer interactions, particularly for older participants. Byrd et al<sup>30</sup> replicated these positive outcomes in a second, separate cohort of school-age children who completed Camp Dream. Speak. Live. ( $n = 23$ ), again reporting significantly improved *OASES* and *PROMIS Peer Relationships* scores upon completion. Of particular importance to the mission of Camp Dream. Speak. Live., stuttering severity was not correlated with gains on the *PROMIS Peer Relationships* or any subsection of the *OASES*, suggesting that positive cognitive and affective

changes were achieved in the absence of purposeful, or incidental, gains in fluency.

One aspect of Camp Dream. Speak. Live. yet to be evaluated is changes in participants' communication competency beyond measures of fluency. Previous studies indicate that children who stutter may demonstrate greater awareness and poorer perceptions of their own communication competence, even from a young age. Bajaj and colleagues<sup>9</sup> found children who stutter were hesitant to self-identify as “good talkers” compared with their fluent peers. Furthermore, these children evaluated “good” talking along the constructs of articulation, grammar, pragmatic criteria, and fluency, indicating awareness that behaviors other than fluency support “good” communication. Adolescents who stutter have been documented to demonstrate lower self-perceived communication competence and increased communication apprehension<sup>31,32</sup> compared with fluent peers. Beyond acknowledging and addressing areas of self-perceived weakness, a clinical focus on improving specific aspects of communication effectiveness that, unlike fluency, are within the speaker's control may be particularly salient to the social and academic well-being of an adolescent who stutters.

In terms of social benefits, effective communication has been documented as a protective factor against bullying.<sup>33</sup> Bullies tend to select victims who demonstrate poor communication skills and appear less confident, and more anxious, cautious, and sensitive.<sup>33,34</sup> Intervention approaches that bolster effective communication skills might be particularly crucial for children who stutter and who have poor self-perceptions of their communication competence and increased vulnerability to bullying.<sup>35</sup>

In terms of academic benefits, effective oral communication as an educational objective has long been recommended in the K-12 environment by Morreale et al.<sup>36</sup> Morreale and colleagues set forth competencies and syllabi criteria related to the fundamentals of oral communication for each educational year from kindergarten through 12th grade. However, as noted by Morreale and colleagues in the same report, effective instruction of these vocationally critical skills has long been substandard; therefore, children who stutter may not be receiving the instruction they need to

overcome any deficits in effective communication. By targeting behaviors related to communication competence in the school-age years, children who stutter may not only receive immediate academic and social benefits but also long-term psychosocial and vocational gains.

Skills in oral communication are increasingly evaluated as students enter undergraduate education,<sup>37</sup> and these skills are sought by employers, as well.<sup>38–42</sup> Perhaps unsurprisingly, communication skills are a reported area of concern for adults who stutter in the workplace,<sup>18</sup> and a reported area of concern for employers when considering a person who stutters.<sup>43</sup> The basis of most stuttering treatment is that minimal disfluency is prerequisite for effective communication. Many clients who stutter, however, report that posttreatment fluency is obtained at the expense of natural, effective communication. Former clients interviewed by Cream et al<sup>44</sup> reported that maintaining fluency techniques after treatment compromised their innate ability or desire to communicate (e.g., unnatural, effortful, and/or incongruent with their identity). Of the 67 adults who stutter surveyed by Yaruss et al,<sup>45</sup> nearly one-third ( $n = 21$ ; 31%) reported that awkward or unnatural speaking patterns were the most troublesome aspect of previous (unsuccessful) treatment. In fact, a survey of 216 adults who stutter<sup>46</sup> indicated that, if given a choice, the margin of respondents that would prefer fluent speech to speaking freely was only 8%, with 46% opting for natural communication regardless of fluency. If this is the case, the few treatment programs that provide explicit training in a range of communicative behaviors other than fluency—such as Camp Dream. Speak. Live.—address the preferences of many people who stutter.

According to the National Communication Association (NCA), effective communication is a multidimensional construct. Discrete behaviors related to communication competence (e.g., eye contact, use of gestures, organization of content) are commonly measured within academic and vocational training environments using variations of evaluation protocols established by the NCA Criteria for the Assessment of Oral Communication. One such protocol is the eight-factor *Competent Speaker Speech Evaluation Form*.<sup>47</sup> It is important to note that among

the eight behavioral competencies in this form, one criterion does consider fluency as an integral skill—“speaker uses pronunciation, grammar, and articulation appropriate to the audience and occasion”—and considers fewer than two disfluencies to be “excellent” or “exceptional” fluency.<sup>47</sup> However, the remaining seven criteria do not depend on fluency, and are well within the control of the person who stutters; performance on these seven may be impacted by one’s negative experiences or attitudes toward communication due to lifelong stuttering.

In contrast to standard practice, and consistent with criteria outlined by the NCA, children who stutter at Camp Dream. Speak. Live. are taught that communication is not defined solely by fluency and that numerous verbal and nonverbal aspects of communication can be addressed to strengthen the quality and effectiveness of interpersonal exchanges and public speech. Children participate in a broad range of activities designed to address affective and cognitive consequences of stuttering, as well as activities designed to enhance communication skills including (but not limited to) content (language use, organization), vocal variety (rate, intonation, pitch), and nonverbal communication (gestures, body position, eye contact, facial expression). Special focus is also placed on the importance of a strategy unique to speakers who stutter—self-disclosure.<sup>48–52</sup> As described in greater detail in the “Methods” section, participants are provided multiple opportunities to practice, self-evaluate, and evaluate peers.

To date, outcomes for Camp Dream. Speak. Live. reported by Byrd et al<sup>29,30</sup> have not included data specific to communication effectiveness. Thus, one of the primary objectives of this study is to assess, for the first time, changes in communication competencies after completion of Camp Dream. Speak. Live. Given the relationship between communication attitudes and communication competencies, it is also possible significant posttreatment changes in attitude reported in previous studies<sup>29,30</sup> were influenced by explicit training in communication effectiveness. Replication and extension of previous findings to include measurement of overall communication is needed to determine the relationship between previous findings and any improvements in communication effectiveness.

In sum, the purpose of the present study is to replicate the previous findings related to outcomes following participation in Camp Dream. Speak. Live. and to extend the analysis to include communication effectiveness. Specifically, we asked the following questions:

1. Does focusing on the cognitive and affective components of stuttering and overall communication effectiveness, as experienced during Camp Dream. Speak. Live., yield positive gains in impact of stuttering on overall quality of life and communication attitude? (Replication)
2. Does focusing on the cognitive and affective components of stuttering and overall communication effectiveness, as experienced during Camp Dream. Speak. Live., yield positive gains in parent- and self-perceived ability to make friends? (Replication)
3. Does focusing on the cognitive and affective components of stuttering and overall communication effectiveness, as experienced during Camp Dream. Speak. Live., yield positive gains in communication competence? (Extension)
4. Does stuttering frequency at the beginning of the program predict the positive gains in communication competencies demonstrated in children who participate in Camp Dream. Speak. Live.? (Extension)

## METHODS

### Participants

Approval for completion of this study was provided by the first author's university Institutional Review Board. Written, informed consent and assent were obtained for each participant. Thirty-seven children who stutter ( $n = 6$  girls;  $n = 31$  boys) between the ages of 4 and 16 years (mean age: 9.5 years) participated as first-time attendees at Camp Dream. Speak. Live., an intensive therapy program at The University of Texas at Austin in June 2019. All participants previously received a formal diagnosis of stuttering by a certified speech-language pathologist. Twenty participants (54%) received speech-language treatment for stuttering during the preceding 2018–2019 school-year in school (32%), private practice (11%), or school and private practice

(11%) settings. These participants had reportedly received these services for 1 to 8 years (average length of current treatment: 2.6 years). Prior to the 2018–2019 school-year, parents reported past or previous speech-language treatment for stuttering for 25 participants (67.57%) across private practice (16.21%), school (13.51%), school and private practice (13.51%), university clinic (5.40%), and home health (5.40%) settings. Five participants (13.51%) did not designate a clinical setting for past speech-language treatment. These participants reportedly received these services for 1 to 10 years (average length of previous treatment: 3.5 years). Four participants (11%) reported no prior participation in any stuttering intervention.

Stuttering severity was determined by trained research assistants supervised by a certified speech-language pathologist based on three video-recorded speech samples (conversation, narrative, and either picture description or reading) collected the week immediately before the intervention. Each sample was analyzed using the *Stuttering Severity Instrument – 4th Edition (SSI-4)*.<sup>53</sup> The mean *SSI-4* frequency score was 10.15 (SD = 4.32; range = 3–17), duration score was 7.65 (SD = 3.32; range = 2–12), physical concomitants score was 3.48 (SD = 3.51; range = 0–11), and *SSI-4* total score was 20.94 (SD = 9.21; range = 4–40), with severity ratings ranging from very mild to very severe.

### Procedures

As summarized in prior studies by Byrd and colleagues<sup>29,30</sup> and further detailed by Byrd and Hampton,<sup>54</sup> the following targets, general themes, and activities comprise the daily schedule for Camp Dream. Speak. Live.:

1. *Improve communication attitudes and increase resiliency.* Activities designed to improve overall communication attitude were guided by the principle of speaking freely, rather than fluently, across communication exchanges which vary in difficulty. Such activities included open mic events, both in front of the camp participants and highly trafficked areas of campus. Perseverance and resiliency toward self-expression across a variety of environments were also targeted through

diverse performance activities, such as a magic show, breakdancing, and improvisation sessions.

2. *Facilitate mentorship and leadership.* To encourage mentorship and leadership, participants were assigned leadership roles, such as leading group activities. Participants were given opportunities to mentor others about stuttering by creating informative and educational messages for parents and peers about stuttering. Activities were designed and varied to offer participants distinct, age-appropriate opportunities for leadership and mentorship.
3. *Improve perception of their ability to establish friendships.* To improve perception of peer relationships, participants engaged in complex team problem-solving activities. Open mic activities were designed for reflective peer-to-peer feedback: participants were required to share thoughts and feelings of peers, or to provide feedback on peers' specific talents or traits that make them unique.
4. *Address bullying and teasing.* A motivational speaker and mascot pair were used to promote understanding and navigation of bullying. Participants engaged in activities with the speaker mascot pair designed to identify bullying moments, and brainstorm solutions to navigate different teasing situations.
5. *Desensitization toward stuttering.* To desensitize each child toward stuttering, participants learned about and engaged in daily activities such as self-disclosure and voluntary stuttering. Additionally, participants were required to reflect upon their speech, completing sentences such as "I love my speech because...."

### Outcome Measures

Participants and parents completed self- and parent-report measures 3 to 7 days before the intervention and again 3 to 14 days after the intervention. These measures, described later, assessed participant communication attitude, participant impact of stuttering on their overall quality of life, and participant and parent perceptions of peer relationships. Behavioral measures included participant performance on core communication competencies. These data were collected on the first and final days of the intervention and analyzed postintervention.

All outcome data were imported into RStudio for statistical analysis.<sup>55</sup>

### Self- and Parent-Report Measures

Older participants (7–16 years) completed the *OASES-S* (ages 7–12) and *OASES-T* (ages 13–17)<sup>27</sup> to assess change in communication attitudes and impact of stuttering on overall quality of life. Younger participants (4–6 years) completed the *Communication Attitude Test for Preschool and Kindergarten Children Who Stutter (KiddyCAT)*<sup>13</sup> to assess change in communication attitude. To assess change in perception of the ability to make friends, older participants (8–16 years) completed the *PROMIS Pediatric Peer Relationships – Short Form 8a (PROMIS Peer Relationships)*.<sup>28</sup> Parents of younger participants (4–7 years) completed the *PROMIS Parent Proxy Peer Relationships – Short Form 7a (PROMIS Parent Proxy)*.<sup>56</sup>

### Behavioral Measures

On the first and final days of the intervention, participants delivered pre- and postintervention speeches to an audience of approximately 60 people. For each speech, participants were instructed to introduce themselves by stating their name, where they are from, and their age and to share three aspects of the intervention they were most excited for (preintervention) or most enjoyed (postintervention). Participants were given approximately 5 minutes to prepare their impromptu speech by thinking about what they would like to say and writing or drawing their ideas in a journal. For each presentation, participants were directed to the front of the room facing the audience, where they were provided a handheld microphone. Participants were given the option to refer to their journal. These speeches were video recorded using a Canon XF100 Professional Camcorder for later data analysis.

The second author trained a certified speech-language pathologist who was unfamiliar with the intervention methodology and goals, primary research questions, and participants (i.e., neutral rater) to analyze all videos across each of the nine core communication competencies: language, organization, speech rate, intonation, volume, gesture, body position, eye contact, and affect. These

nine competencies were derived from the eight-factor communication competency rubric developed by Morreale et al<sup>47</sup> and modified to accommodate the mission and format of Camp Dream. Speak. Live. Training was composed of three distinct stages. First, the second author provided direct instruction and facilitated discussion with the neutral rater in the defining characteristics and observable behaviors indicative of lower and higher competence across each of the nine core communication competencies. For example, a participant demonstrating higher competence in gesture may move their hands to emphasize key messages or point to relevant materials, while a participant demonstrating lower competence may keep their hands in their pockets or use distracting movements that do not support their message such as fidgeting with their hands or crossing their arms. In the second stage, the second author introduced a rating form for the nine competencies. This rating form included two steps: circling “yes” or “no” to indicate if the speaker achieved the competency and drawing a line on a 100-mm visual analog scale depicting the participant’s accuracy completing the competency. Participants whose performance warranted a “no” on a particular competency received an accuracy score of 0. The neutral rater and second author rated example videos of school-age children who stutter delivering impromptu speeches and discussed differences in their ratings to come to a consensus. In the final stage, the neutral rater and second author rated new example videos independently to calculate inter-rater reliability. Stages 2 and 3 were repeated to establish an inter-rater reliability for each core competency of at least 80%.

The neutral rater viewed each pre- and postintervention speech video four times prior to rating across the nine core communication competencies. When rating videos, the neutral rater circled “yes” or “no” for each competency and drew a line on the visual analog scale. Visual analog ratings were measured with a ruler and the value was entered in a Microsoft Excel sheet by a trained research assistant to be verified by a second research assistant.

The neutral rater viewed all pre- and postintervention videos in a randomized order. The second author randomly assigned each participant into one of two groups. The first group of participants’ preintervention videos

were rated *before* their postintervention videos, and the second group of participants’ preintervention videos were rated *after* their postintervention videos. Videos were also randomized such that only one of each participant’s videos was rated in the first 50% of videos and no participant had both of their videos rated consecutively. The second author rated 20% of the pre- and postintervention videos, and the second author and neutral rater maintained an inter-rater reliability between 84 and 87% across each of the nine competencies.

### Statistical Analyses

To examine Questions 1 and 2, paired *t*-tests were conducted to compare pre- and postintervention ratings for the self- and parent-report measures. To examine Question 3, nine paired *t*-tests were conducted to compare pre- and postintervention mean core communication competency ratings for each of the nine competencies. Because of the multiple measurement nature of the nine communication competency ratings for our behavioral outcomes, we used a Bonferroni–Holm correction for these nine comparisons.<sup>57</sup> For Questions 1 to 3, all analyses used an  $\alpha$  level of 0.05 and significant results were confirmed using a non-parametric alternative (Wilcoxon’s signed-rank test) due to small sample size. Cohen’s *d* was calculated for all significant *t* values to obtain effect sizes. To examine Question 4, nine linear regression models, one for each core communication competency, were conducted with pre-post difference scores as the outcome and stuttering frequency (i.e., preintervention *SSI-4* frequency score) as the sole predictor.

## RESULTS

**Does focusing on the cognitive and affective components of stuttering and overall communication effectiveness, as experienced during Camp Dream. Speak. Live., yield positive gains in the reported impact of stuttering on overall quality of life and communication attitude?**

Table 1 reports descriptive statistics and paired *t*-test results for pre- and postintervention

**Table 1 Pre- and Postintervention OASES, KiddyCAT, and PROMIS Scores**

	Min	Max	Mean	SD	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
<i>OASES</i> ( <i>n</i> = 23)								
Total Impact								
Pre	1.63	3.92	2.43	0.52				
Post	1.68	3.60	2.26	0.50	7.25	22	<0.01 <sup>a</sup>	1.51
Section I: General Information								
Pre	1.97	3.73	2.68	0.48				
Post	2.00	3.47	2.46	0.38	2.74	22	0.01 <sup>b</sup>	0.57
Section II: Reactions to Stuttering								
Pre	1.25	3.60	2.46	0.61				
Post	1.3	3.8	2.23	0.67	2.86	22	<0.01 <sup>b</sup>	0.60
Section III: Communication in Daily Situations								
Pre	1.46	4.57	2.49	0.77				
Post	1.33	5.00	2.39	0.84	1.54	22	0.14	
Section IV: Quality of Life								
Pre	1.1	4.5	2.12	0.96				
Post	1	4.16	1.98	0.98	0.86	22	0.40	
<i>KiddyCAT</i> ( <i>n</i> = 12)								
Pre	0	6	2.5	1.93				
Post	0	7	3.17	2.33	-1.88	11	0.09	
<i>PROMIS Peer Relationships</i> ( <i>n</i> = 21)								
Pre	36.38	56.82	44.92	6.67				
Post	31.43	59.52	46.34	7.06	-2.80	20	<0.01 <sup>a</sup>	0.61
<i>PROMIS Parent Proxy</i> ( <i>n</i> = 11)								
Pre	33	62	49.82	9.14				
Post	37	62	50.73	8.75	-1.49	10	0.17	

<sup>a</sup>*p* < 0.01.<sup>b</sup>*p* < 0.05.

results for participants' *OASES*, *KiddyCAT*, *PROMIS Peer Relationships*, and *PROMIS Parent Proxy* scores. *OASES* impact rating scores are reported for 23 of the 25 participants due to missing data. Paired *t*-tests demonstrated a significant decrease in *OASES* Total Impact scores,  $t(22) = 7.25$ ,  $p < 0.01$ ,  $d = 1.51$  (very large effect); the *OASES* Reactions to Stuttering subtest scores,  $t(22) = 2.86$ ,  $p < 0.01$ ,  $d = 0.60$  (medium effect); and the *OASES* General Information subtest scores,  $t(22) = 2.73$ ,  $p < 0.05$ ,  $d = 0.57$  (medium effect). Wilcoxon's signed-rank tests confirmed pre- and postintervention ratings to be significantly different for *OASES* Total Impact scores ( $V = 239$ ,  $p < 0.01$ ), *OASES* Reactions to Stuttering subtest scores ( $V = 186.5$ ,  $p < 0.05$ ), and *OASES*

General Information subtest scores ( $V = 190.5$ ,  $p < 0.01$ ). These findings replicate our previous studies<sup>29,30</sup> that demonstrate participation in Camp Dream. Speak. Live. desensitizes children to their stuttering and lessens the negative impact of stuttering on their overall quality of life. As depicted in Table 1, the remaining subtests of the *OASES* (i.e., Communication in Daily Situations, Quality of Life) demonstrated change in impact rating no greater than 0.5 and differences did not reach statistical significance. Additionally, and consistent with previous studies, pre- and postintervention *KiddyCAT* scores did not demonstrate a significant improvement in communication attitude for younger participants, aged 4 to 6 years.



**Does focusing on the cognitive and affective components of stuttering and overall communication effectiveness, as experienced during Camp Dream. Speak. Live., yield positive gains in parent- and self-perceived ability to make friends?**

As depicted in Table 1, mean pre- and post-intervention self- and parent-reported perceptions of peer relationships demonstrated improved abilities to make friends across all participant age groups. *PROMIS* scores have a mean of 50 and a standard deviation of 10. *PROMIS* scores were reported for 32 of the 37 participants due to missing data. For older participants (ages  $\geq 8$  years), pre- and post-intervention self-ratings on the *PROMIS Peer Relationships* were found to be significantly different  $t(20) = -2.80, p < 0.01, d = 0.61$  (medium effect). A Wilcoxon's signed-rank test confirmed pre- and postintervention self-ratings to be significantly different for *PROMIS Peer Relationships* scores ( $V = 33, p < 0.05$ ). Similar to previous studies,<sup>29,30</sup> overall, older participants who stutter view themselves as being better able to make friends after participation in Camp Dream. Speak. Live. For younger participants (ages  $\leq 7$  years), however, pre- and postintervention parent-ratings on the *PROMIS Parent Proxy* were not found to be significantly different,  $t(10) = -1.49, p = 0.17$ .

**Does focusing on the cognitive and affective components of stuttering and overall communication effectiveness, as experienced during Camp Dream. Speak. Live., yield positive gains in communication?**

Participants' pre- and postintervention performance was rated across nine communication competencies: language use, language organization, speech rate, intonation, volume, gesture, body position, eye contact, and affect. Competency rating scores ranged from 0 to 100, with greater scores indicating superior competence. Participants' performances across individual competencies are reported in Table 2. All parametric (paired  $t$ -tests) and nonparametric (Wilcoxon's sig-

ned-rank tests) results report Bonferroni-Holm corrected  $p$ -values.

Results comparing pre- and postintervention mean core communication competency ratings demonstrated significantly positive gains across eight of the nine communication competencies (see Fig. 1). Specifically, participants demonstrated significant gains postintervention in the areas of content (language use, language organization), vocal variety (speech rate, intonation, volume), and nonverbal behaviors (body position, eye contact, affect). Although the mean postintervention competency rating for gesture (53.8) was greater than the mean preintervention competency rating (49.57), this difference did not reach statistical significance. Overall, results suggest significant pre-post intervention gains across eight communication competencies with small-to-very large effects.

**Does stuttering frequency at the beginning of the program predict the positive gains in communication competencies demonstrated in children who participate in Camp Dream. Speak. Live.?**

Nine linear regression models, one for each of the nine communication competencies, were conducted with pre-post communication competency difference score as the outcome variable and stuttering frequency (i.e., preintervention *SSI-4* frequency score) as the single predictor. As indicated in Table 3, stuttering frequency was not a significant predictor for pre-post communication competency difference scores for any of the nine competencies. Regardless of the child's stuttering frequency, there was measurable change in their communication skills upon completion of treatment.

## DISCUSSION

The purpose of this study was to replicate and extend research of previous treatment outcomes following participation in Camp Dream. Speak. Live., an intensive treatment program for children who stutter that focuses exclusively on the cognitive and affective components of

**Table 2 Pre- and Postintervention Communication Competency Scores**

	Min	Max	Mean	SD	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>	<i>V</i>	<i>p</i>
Language use										
Pre	0	62	33.92	16.28						
Post	0	93	64.68	21.51	7.70	34	<0.01 <sup>a</sup>	1.30 (very large)	577.5	<0.01 <sup>a</sup>
Language organization										
Pre	0	73	47.46	15.90						
Post	0	89	62.74	21.05	7.05	34	<0.01 <sup>a</sup>	1.19 (large)	573	<0.01 <sup>a</sup>
Speech rate										
Pre	0	67	48.41	12.06						
Post	0	78	53.49	16.11	3.60	34	<0.01 <sup>a</sup>	0.61 (medium)	440	<0.01 <sup>a</sup>
Intonation										
Pre	0	72	48.84	15.22						
Post	0	85	55.89	17.14	3.44	34	<0.01 <sup>a</sup>	0.58 (medium)	470	<0.05 <sup>b</sup>
Volume										
Pre	0	70	49.43	15.13						
Post	0	81	55	19.58	2.58	34	0.01 <sup>b</sup>	0.44 (small)	444.5	<0.01 <sup>a</sup>
Gesture										
Pre	30	80	49.57	9.29						
Post	0	82	53.8	12.46	1.65	34	0.11			
Body position										
Pre	29	72	48.84	10.08						
Post	20	91	59.61	13.48	4.33	34	<0.01 <sup>a</sup>	0.75 (medium)	546.5	<0.01 <sup>a</sup>
Eye contact										
Pre	0	83	44.16	21.74						
Post	0	85	62.63	20.71	5.08	34	<0.01 <sup>a</sup>	0.86 (large)	556.5	<0.01 <sup>a</sup>
Affect										
Pre	20	84	50	14.37						
Post	10	86	63.91	16.36	6.43	34	<0.01 <sup>a</sup>	1.09 (large)	598	<0.01 <sup>a</sup>

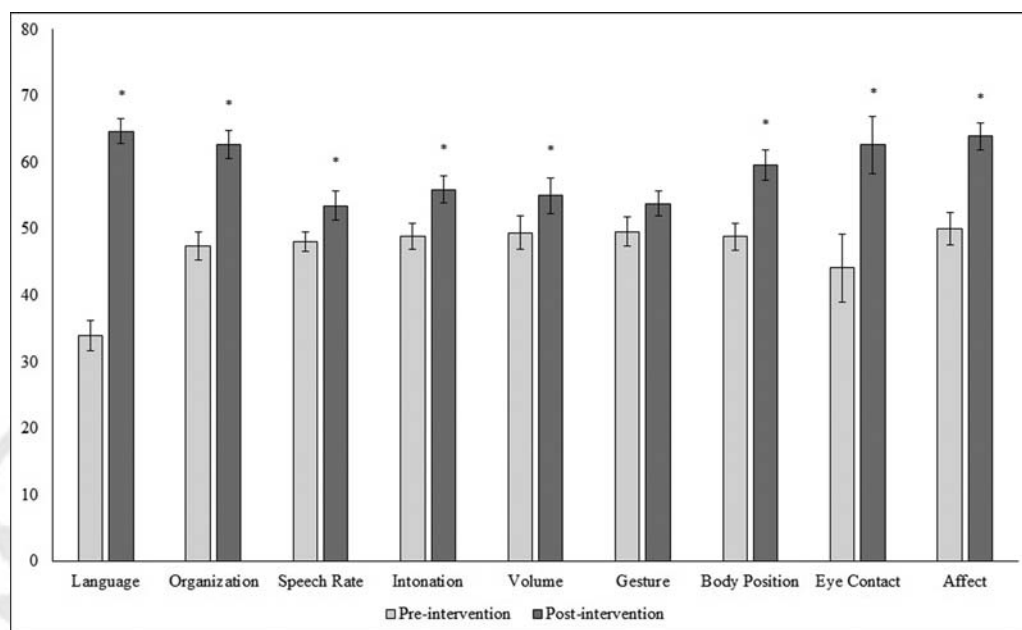
<sup>a</sup>*p* < 0.01.  
<sup>b</sup>*p* < 0.05.

stuttering. Results demonstrated a clear replication of outcomes from Byrd and colleagues,<sup>29,30</sup> suggesting participants improved communication attitudes and developed more positive perceptions of their ability to form peer-to-peer relationships after participation. Results extended previous findings by demonstrating improved communication competence across eight of nine distinct competencies after treatment, regardless of stuttering frequency. Findings suggest that intensive treatment programs such as Camp Dream. Speak. Live.—designed specifically to target the psychosocial consequences of childhood stuttering and bolster communication skills—positively impact participants’ communication attitudes, perceptions of peer relationships, and overall commu-

nication effectiveness in a relatively short timeframe. Additionally, findings provide additional support to reform school district guidelines to focus on overall communication competence rather than fluency.

**Impact of Stuttering on Overall Quality of Life and Peer Relationships**

Findings from the present study replicate results from Byrd et al.<sup>29,30</sup> After participating in Camp Dream. Speak. Live., participants in the present study reported reduced negative impact of stuttering, as evidenced by several lower *OASES* scores, and participants reported improved perceptions in their abilities to make friends, as evidenced by improved *PROMIS*



**Figure 1** Communication competency ratings for children who stutter pre- and postintervention at Camp Dream. Speak. Live.

**Table 3** Nine Simple Linear Regression Models, One Per Communication Competency, with Stuttering Frequency as the Sole Predictor Variable

Outcome variable: communication competency	B	$\beta$	SE	df	t	p
Language content	0.719	0.243	0.551	30	1.305	0.202
Language organization	0.536	0.189	0.529	30	1.012	0.320
Speech rate	0.644	0.298	0.391	30	1.650	0.109
Intonation	0.497	0.177	0.526	30	0.944	0.109
Volume	0.669	0.219	0.565	30	1.184	0.246
Gesture	0.537	0.175	0.580	30	0.926	0.326
Body position	-0.405	-0.118	0.629	31	-0.644	0.525
Eye contact	0.187	0.038	0.940	30	0.199	0.844
Affect	0.079	0.027	0.556	30	0.143	0.888

*Peer Relationships* scores. Comparing results across these three studies reveals patterns of stability and divergence. In terms of stability, significant improvement in participant *PROMIS Peer Relationships* ratings and *OASES* Total Impact ratings were observed across all three studies. Additionally, in both the present study and Byrd et al,<sup>29</sup> no significant differences were found in scores on the *KiddyCAT* following intervention for the 21 total participants (ages 4–6 years) across the two studies. As discussed in Byrd et al,<sup>29</sup> it is likely that significant differences were not found within the younger group due to low (i.e., positive)

pretreatment scores in the 2016 study; low pretreatment scores were observed in the present study, as well. Specific to this study, almost half (41.67%) of participants reported preintervention *KiddyCAT* scores of 0 or 1. However, this does not necessarily negate the potential benefits of younger children engaging in the intervention activities of Camp Dream. Speak. Live. Even with positive communication attitudes at the outset, participants in both studies experienced improved *PROMIS Peer Relationships* scores, and, in the present study, improvements in behaviors related to effective communication.

In terms of divergence, the significance of specific subsections of the *OASES* differed across studies. Two studies demonstrated improvements in the Quality of Life subtest,<sup>29,30</sup> one in improvements in Reactions to Stuttering,<sup>30</sup> and one in Communication in Daily Situations.<sup>30</sup> The present study demonstrated improvements in Reactions to Stuttering and General Information. Although all studies reported comparable ranges in pretreatment impact ratings, it is possible that individual differences among participants, including prior intervention experiences, influenced these results. For example, the present study is the first of the three to include participants up to age 16. Given the educational focus of the treatment program, and the fact that only first-time participants were included during analysis, it is possible that older participants were learning facts about stuttering for the first time and retaining them more efficiently due to their age, as reflected by improvement in the General Information subsection. Another possible explanation for gains specific to General Information is the inconsistent quality and nature of participants' prior speech-language treatment experience. Although the majority of the participants completed speech-language treatment for stuttering in the past, we did not collect data on the objectives or format of these prior interventions. Given the educational focus of the Camp Dream. Speak. Live. and the opportunity for participants to meet a larger group of children who stutter than one might encounter in a traditional therapy group, it is possible our participants gained new knowledge about stuttering and a new sense of support among their peers who stutter, as reflected by improvement in the General Information subsection. Although the General Information subsection did not result in statistically significant gains in our previous studies with smaller cohorts ( $n = 23$ ),<sup>30</sup> larger scale intervention studies may provide insight into whether trends on *OASES* subsections reach both statistical significance and meaningful clinical significance.

Another point of divergence was that in the present study, there were nonsignificant improvements in perceived peer relationship ability for younger participants. Unlike Byrd et al.,<sup>29,30</sup> we relied on *PROMIS Parent Proxy* ratings for the younger participants ( $n = 11$ ), rather than have younger participants complete a self-re-

port *PROMIS Peer Relationships* form. As such, parent reports were analyzed separately from self-reported *PROMIS Peer Relationships* forms for older participants ( $n = 21$ ). Although nonsignificant intervention effects suggest that posttreatment peer-relationship skills for younger participants may differ from older participants, it is important to note that mean pre- and postintervention ratings for the *PROMIS Parent Proxy* were higher (i.e., stronger) than self-reported *PROMIS Peer Relationships* provided by older participants. While it is encouraging that many parents rated their child's ability to form peer relationships near ceiling from the outset of treatment, future studies may benefit from direct comparison of parental perceptions and children's self-reported perceptions of peer-to-peer relationships at these younger ages.

### Improving Communication Competence

In addition to replication of previous findings, the present study was the first to examine whether participation in Camp Dream. Speak. Live. yielded improvement across nine core competencies critical to communication effectiveness. As indicated in Fig. 1, significant and measurable change was observed for eight of these nine nonfluency communication behaviors (large effect size: language content, language organization, eye contact, affect; medium effect size: speech rate, intonation, body position; small effect size: volume).

There are several possible reasons for the magnitude of improvements observed for language use, organization, eye contact, and affect. With regard to language use and organization, previous studies conducted with school-aged children cite these competencies as among the most amenable to improvement following training.<sup>58</sup> Throughout the week, Camp Dream. Speak. Live. participants were explicitly instructed to introduce themselves at the start of presentations and small talk exchanges and to conclude interactions with an appropriate closing remark. It is possible that these instructions were more concrete and thus easier to implement than instruction related to other competencies, such as body language and gestures,

which are more dependent on the selected topic, and susceptible to individual variation. Large improvements in language use ( $d = 1.30$ ) and organization ( $d = 1.19$ ) are particularly interesting given that participants were provided the same structure for each presentation (i.e., name, age, where you live, three anticipated or favorite parts of the week). Had the participants said the bare minimum during their public speech, as might be expected from children who stutter, variance in language content and organization would be minimal pre- and post-treatment, rather than displaying the significant gains that were observed posttreatment. This suggests that by the end of the week, many participants who stutter likely spoke *more* than was required in front of their audience, and with a level of audience awareness and linguistic variety sufficient to elicit enthusiasm from a neutral observer.

For some participants, improvement in language organization and content during their public speech included nonelicited self-disclosure. During the course of the intervention, participants learned both the value and practice of informative versus apologetic self-disclosure of stuttering and practiced it frequently throughout the week. Although the positive effect of self-disclosure on listener perception is well-documented,<sup>48–52</sup> it is not possible to ascertain whether the positive influence of disclosure may have impacted the evaluation of other perceived communication competencies. Because disclosure was not an obligatory part of every presentation, the relative, or additive, influence of disclosure onto other communication competencies may be a relevant topic for future investigation.

Similar to language use and organization, participants' significant and large ( $d = 0.86$ ) improvement in their eye contact could be due to the concrete nature of the task rather than, or in addition to, participants' increased confidence and reduced fear of stuttering. Previous studies suggest that people who stutter are significantly more likely to avert eye gaze compared with fluent controls to avoid potentially negative reactions and cope with the anticipation of stuttering.<sup>59–62</sup> It is possible that greater improvement in eye contact benefitted from its frequent inclusion as a clinical goal during

conventional stuttering therapy, unlike other nonverbal behaviors measured as core competencies (e.g., gestures, body position). Although almost all participants were currently receiving treatment or previously received treatment for stuttering, we cannot be certain whether eye contact was encountered as a prior clinical goal. That being said, improvement in affect (facial expression)—an arguably less frequent clinical goal—was also significant and similarly large in magnitude ( $d = 1.09$ ), suggesting that clinical familiarity with a goal cannot completely account for participants' overall improvements in nonverbal communicative behaviors.

It is also possible that participants' change in affect—thought to reflect both implicit emotional processes and voluntary control of the speaker<sup>63,64</sup>—improved not only through explicit practice but also through authentic changes in perceived negative evaluation and confidence over the course of the week. The significant improvement in affect may also reflect participants' experiences at Camp Dream. Speak. Live. that required children to adjust their nonverbal tone to fit the context of the communicative event. Activities such as improvisation and repeated opportunities for presentation with varied audiences and topics, for example, may have been effective in helping participants adjust their verbal and nonverbal behaviors to modify affect appropriately. Combined, the results from the present study highlight the value of focusing both on communication skill development and the cognitive and affective components of stuttering to achieve maximum communication effectiveness. Future research should further explore best practices for achieving competency across each communication skill, as well as the relationship between the speakers' communication competence and cognitive and affective states.

### Stuttering Frequency and Change in Communication Competence

The present study extended previous research by exploring whether stuttering frequency mitigated gains in postintervention communication competence. A series of linear regression models indicated that stuttering frequency did not predict significant change across any of the

nine communication competencies, indicating that participants at Camp Dream. Speak. Live. presenting with both high and low stuttering frequency were able to improve communication competence.

Byrd et al<sup>30</sup> found that stuttering severity did not predict posttreatment cognitive or affective gains. The present study suggests that stuttering frequency also played a nonsignificant role in posttreatment gains in communication competencies. Although observed communication competence does not necessarily reflect self-perceived communication competence, it is worth noting that the results of the present study are also in line with previous research which found stuttering frequency to be unrelated to (below average) self-perceived communication competence in adolescents who stutter.<sup>31</sup> Combined with the present data, these studies further confirm (1) the independence of speech fluency from communication competence as evidenced by the listeners' perspectives and the perspectives of children who stutter and (2) that perceived limitations in communicative skills (e.g., intonation, speech rate, vocal volume) can be targeted in isolation in a clinical environment.

The clinical significance of findings related to stuttering frequency must also be considered in the context of stuttering variability. The overt behaviors of stuttering can vary significantly across communication setting, context, and partner.<sup>65,66</sup> For many people who stutter, the unpredictable nature of stuttering can lead to feelings of frustration and lack of control.<sup>3</sup> By selecting communication competence as a clinical treatment goal and incorporating activities, such as those described here, to support participants' improvement across competencies, children who stutter can experience consistent, tangible progress despite variations in stuttering frequency.

### Clinical Implications

Results from this study have important clinical implications for effective treatment of stuttering for school-aged children. First, results from this study along with that of Byrd et al<sup>30</sup> demonstrate how activities targeting the cognitive and affective components of stut-

ring implemented in Camp Dream. Speak. Live. reliably improve participants' and their parents' perceptions of their ability to form meaningful relationships and diminish the impact of stuttering on their daily lives. As discussed by Byrd and colleagues,<sup>29,30</sup> minimizing the cognitive and affective consequences of stuttering is particularly impactful for school-aged children, as they navigate new peer relationships.<sup>23-25</sup> Results from the extension analysis in the present study provide insight into additional appropriate treatment goals for children who stutter.

From a broader perspective, we would like to reiterate that observed gains in communication effectiveness were obtained (1) regardless of the frequency of stuttering and (2) in the presence of positive communication attitudes. We highlight these two important findings because they provide counterevidence for several common misconceptions that underlie current stuttering intervention. First, as previously discussed, the results provide evidence that treatment need not focus on the elimination of stuttering to result in meaningful gains in psychosocial health and communicative effectiveness. Second, our findings and those of Byrd et al<sup>29</sup> revealed that young children who present with positive communication attitudes also benefit from cognitive, affective, and communication activities such as those implemented in Camp Dream. Speak. Live. For example, at pretreatment, five participants scored within the mildest impact score on one or more of the OASES subsections assessing reactions to their stuttering (subsection II), daily communication challenges (subsection III), and quality-of-life (subsection IV). Despite these positive pretreatment appraisals, gains were made in the domains of peer relationships (2 of 5) and communication effectiveness skills (5 of 5). Third, many parents and clinicians report hesitation to engage in therapeutic intervention for young children who stutter due to the outdated fear that talking about stuttering will result in negative psychosocial consequences or make the stuttering worse (see Ambrose and Yairi's<sup>67</sup> critical review of the Diagnosogenic Theory by Johnson et al<sup>68</sup>). More than 60 years later, as reported by Byrd et al,<sup>69</sup> speech-language pathologists remain significantly less

comfortable even saying the word “stuttering” to families compared with other speech-language diagnostic terms. To this point, our data demonstrate that intensive treatment in which stuttering is openly discussed in a positive and educational manner, even at very early ages and in the absence of parental presence, does *not* result in more negative communication attitudes or increased stuttering frequency and, instead, strengthens children’s agency, mitigates negative cognitions about stuttering, and improves communicative skills in a demonstrable manner.

Taken together, these data serve as a foundation for school districts to reform the assessment and treatment guidelines for children who stutter. As previously mentioned, AISD adopted changes that shifted the focus of stuttering assessment and treatment from fluency to overall communication effectiveness. Specifically, stuttering frequency is no longer the measure that qualifies children who stutter for services or for discharge; rather, clinical decisions are made based on communication competencies, attitude, and the impact of stuttering on quality of life. Clinicians assess and treat children who stutter not for their percentage of stuttered syllables, but for how they feel

about communication, how effectively they communicate the content of their message, and the degree to which stuttering interferes with their academic and social pursuits. Treatment activities that support these global communication goals might include intentional focus on techniques such as eye contact and body language, voluntary stuttering, and self-disclosure (see Table 4). School districts that are considering similar, proposed changes can consider the present study, which provides evidence to support the use of cognitive and affective treatment targets in the clinical setting for improving communication competence, communication attitude, peer relationships, and quality of life.

### Additional Considerations

A few factors should be considered when interpreting findings from the present study. First, given the holistic implementation of the activities at Camp Dream. Speak. Live., it is difficult to know which specific intervention activities are most effective for achieving specific outcomes. Future research should isolate and assess intervention components to determine optimal combinations and dosages. Additionally, while

**Table 4 Example Goals Targeting Effective Communication in School-Based Settings**

Communication competency	Goal
Language content	Student will demonstrate self-advocacy skills by using an informative self-disclosure statement that includes 3/3 of the following components: name, age, and description of stuttering at the beginning of a 2- to 3-min presentation without support from the clinician across three consecutive therapy sessions
Language organization	Student will demonstrate verbal organization skills by giving a 2- to 3-min presentation on a topic of interest that includes a clear introduction, self-disclosure statement, main idea, two to three supporting details, and a clear ending without support from the clinician across three consecutive therapy sessions
Speech rate, intonation, and volume	Student will demonstrate appropriate rate, intonation, and volume while giving a 2- to 3-min presentation on a preferred topic by achieving a 9 out of 10 clinician rating on the attached rubric measuring effective communication across three consecutive therapy sessions (for this goal, speech-language pathologists will create a detailed rubric outlining lower to higher communication competence to measure progress)
Gesture and affect	Student will demonstrate appropriate affect and gesture by smiling and using gestures at least three times, respectively, while presenting on a topic of choice for 2 to 3 min without clinician support across three consecutive therapy sessions
Body positioning and eye contact	Student will demonstrate appropriate eye contact and body positioning by standing tall, facing the listener, and not looking away during at least 80% of stuttering moments during a 2- to 3-min presentation without clinician support across three consecutive therapy sessions

participants reported previous treatment involvement, this information was not considered as a predictor of outcomes in the present study due to the heterogeneity of the length and type of treatment across participants. To determine the influence of previous treatment on gains following participation in Camp Dream. Speak. Live., future research should consider factors related to previous treatment as a variable.

## CONCLUSION

Camp Dream. Speak. Live. is an intensive treatment program for children who stutter that explicitly targets communication attitudes, peer relationships, and the child's ability to communicate—but does not attempt to modify or eliminate stuttered speech. Results from a series of investigations demonstrated that this intensive treatment program yields significant improvements in communication attitudes, perceptions of peer relationships, and quality of life in a relatively short period of time. Results extended previous studies by demonstrating positive gains in eight of nine core areas of communication competence other than fluency and, importantly, participants' stuttering frequency did not hinder these gains. Demonstrated dissociation between fluency and communication skills provides a fresh avenue for clinicians, who often feel eliminating stuttered speech is obligatory to achieve effective communication and treatment success for children who stutter. The primary outcome measures of intensive treatment programs such as Camp Dream. Speak. Live. can be replicated across treatment settings and may particularly benefit school-age children by addressing the potential impact of stuttering on establishing peer relationships, interpersonal communication, and public-speaking skills rather than focusing on modifying moments of stuttering.

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No relevant financial relationships exist for any of the authors.

## NONFINANCIAL DISCLOSURES

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## CONFLICT OF INTEREST

None declared.

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