

Targeting Communication Effectiveness in Adults Who Stutter

A Preliminary Study

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The purpose of this study was to examine the benefits of a treatment approach for adults who stutter that focuses on core communication competencies rather than attempt to modify speech fluency. Eleven adults who stutter completed a 12-week treatment program at The Arthur M. Blank Center for Stuttering Education and Research. Pre- and posttreatment measures included (a) self-reported cognitive and affective aspects of stuttering (Overall Assessment of the Speaker's Experience of Stuttering [OASES], Self-Perceived Communication Competence [SPCC], Devereux Adult Resilience Survey [DARS], and Self-Compassion Scale [SCS]) and (b) ratings of 9 core communication competencies by an unfamiliar clinician blind to pre/posttreatment status. Participants reported significant mitigation of the adverse impact of stuttering (OASES) and greater resilience (DARS) after treatment. Participants also demonstrated significant gains in 8 of the 9 clinician-perceived communication competencies. Lower pretreatment stuttering frequencies were not significantly associated with posttreatment gains in clinician-perceived communication competencies. Preliminary findings suggest that, similar to findings for children and adolescents who stutter in previous studies, significant psychosocial and communicative benefit can be obtained for adults who stutter following treatment designed to focus on communication effectiveness rather than fluency, and that these gains are not contingent on the participants' stuttering frequency prior to enrollment. **Key words:** *adults, communication effectiveness, stuttering, treatment*

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other similar or related services for individuals who stutter.

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MODERN VIEWS of stuttering define it not as a disorder but as a unique identity on the growing neuro- and linguistic-diversity spectrum (e.g., Constantino, 2018; Singer, 2019; Sisskin, 2021; Watermeyer & Kathard, 2016)—one for which stuttered speech need not be repaired for a fulfilling life, and fluency is not requisite to effective communication. This contemporary view of stuttering served as the central theme of the 2019 National Stuttering Association (NSA) Research Symposium (“Stuttering: Perspectives on Disability, Diversity, and Culture”) and provides hope for adults who stutter who continue to endure the psychosocial (e.g., Boyle, 2015), academic (e.g., Butler, 2013), vocational (e.g., Plexico et al., 2019), and financial (e.g., Gerlach et al., 2018) consequences and discrimination due to perceived difficulties (characterized only by overt stuttering) with how effectively they convey their messages or demonstrate *communication competence*.

The recent separation of communication competence from achievement of fluency that is gaining acceptance within the stuttering community is at odds with much of the available clinical trial research, in which fluency and communication competence are considered synonymous, and therefore focuses on eliminating or reducing stuttered speech, without attention to affective and cognitive variables or communication as a whole. This lack of distinction between effective communication and fluency may account for the uninspiring results demonstrated in clinical practice. Posttreatment fluency is difficult for clients to maintain (~70% relapse rate; Craig, 1995) and, if obtained, often does not have the intended effects. Specifically, clients have long reported that posttreatment fluency (a) is not necessary to improve their quality of life (e.g., Menzies et al., 2016; Menzies, Packman, et al., 2019 [12-month follow-up]), (b) feels too unnatural to use (e.g., Cream et al., 2003; Yaruss et al., 2002), and (c) compromises their natural abilities to communicate more than the presence of stuttered speech (e.g., Cream

et al., 2003; Venkatagiri, 2009). Listeners frequently rate fluency-enhancing techniques to be just as unnatural as moderate levels of stuttered speech (Healey, 2010; Von Tiling, 2011). These long-standing and overwhelming results of fluency-focused practices for addressing stuttering may contribute, at least in part, to clinicians’ long-standing and overwhelming dissatisfaction with their professional preparation and treatment abilities (e.g., Kelly et al., 1997, 2020; St. Louis & Lass, 1981), as their efforts to increase fluency fail to achieve the desired gains in communication competence and lessening of personal, social, academic, and vocational impacts. This also may contribute to clinicians’ reluctance to represent themselves as competent service providers for individuals who stutter (0.88% of certified speech-language pathologists [SLPs]; Coalson et al., 2016).

A growing body of evidence over the past decade demonstrates the benefits of treatment programs that target the cognitive and affective aspects of stuttering rather than targeting only fluency. Byrd, Chmela, et al. (2016) reviewed activities and preliminary data from five separate intensive treatment programs for children and adolescents who stutter with this expanded focus. Although duration and parental involvement varied between programs, preliminary data demonstrated significant improvements in quality of life and parent-reported peer relationships. Of the five programs, however, all but one program—Camp Dream. Speak. Live.—included goals related to minimizing stuttered speech. The explicit *exclusion* of activities designed to reduce frequency or any physical characteristic of the child’s stuttered speech yielded similarly impressive posttreatment quality-of-life outcomes, as measured by the Overall Assessment of the Speaker’s Experience of Stuttering (OASES; Yaruss & Quesal, 2010) and Kiddy-CAT (Vanryckeghem & Brutten, 2007), and parent-perceived abilities to establish peer relationships, as measured by the PROMIS Pediatric Peer-Relationship Scale (DeWalt et al., 2013; for further detail, see Byrd, Hampton,

et al., 2016). Positive cognitive and affective outcomes in the absence of fluency-focused treatment goals have been replicated twice in follow-up studies with additional cohorts of children and adolescents who stutter as the program continues to expand worldwide (Byrd et al., 2018, 2021).

In addition to mitigating the adverse cognitive and affective impacts of stuttering, an equally important outcome of Camp Dream. Speak. Live., offered by the Arthur M. Blank Center for Stuttering Education and Research (hereafter “the Blank Center”), is fostering communication excellence that is not contingent on targeting fluency. The ability to effectively communicate is critical for a child to successfully navigate academic environments (e.g., Davis et al., 2002) and early interpersonal relationships (e.g., Erickson & Block, 2013). As described in Byrd, Hampton, et al. (2016), a number of treatment activities included in Camp Dream. Speak. Live. were designed explicitly to improve communication in a wide range of contexts, such as large group presentations, impromptu speeches, spontaneous one-on-one interactions with strangers, and campus-wide open mic events. Each of these events was followed by explicit feedback, both positive and constructive, from peers and clinicians about the effectiveness of participants’ communication in terms of content (i.e., language use, language organization), paralinguistics (i.e., rate, intonation, volume), and nonverbal behaviors (i.e., gestures, body position, eye contact, facial expressions). Preliminary data provided by Byrd et al. (2021) demonstrate the positive influence of Camp Dream. Speak. Live. on overall communication effectiveness for children who stutter, indicating significant gains across all nine individual communication competencies after completion of the program as rated by unfamiliar listeners. Critically, none of the gains observed in the children’s communication competence in these studies were significantly predicted by their pretreatment stuttering severity, which ranged from very mild to very severe (Byrd, Hampton, et al., 2016; Byrd et al., 2018, 2021).

Achieving positive clinical outcomes when targeting communication competencies in children who stutter also holds promise for adults who stutter. The role of communication effectiveness is no less consequential for adults with the introduction of major life events that may be impacted by self- and listener-perceived communication competence, such as success during post-secondary education (e.g., Werle & Byrd, 2021), employment and promotion within the workforce (e.g., Bricker-Katz et al., 2013; Plexico et al., 2019), and managing romantic relationships (e.g., Zeigler-Hill et al., 2020), nor do adult clients view former treatment focused exclusively on fluency as particularly satisfying (see Yaruss et al., 2002). Of the 686 former adult clients surveyed by the NSA, approximately half rated treatment focused on eliminating stuttered speech or minimizing stuttered speech as only “somewhat successful” (55.0% and 57.5%, respectively), with up to one third rating these treatment approaches as “not at all successful” (34.3% and 23.7%, respectively; NSA, 2009). More to the point, less than 19% of former clients rated treatment approaches that included fluency goals as “very successful” (elimination: 10.7%; minimizing: 18.8%). Previous studies have also found stuttering frequency and severity in adults to be unrelated to self-perceived communication competence (e.g., Werle et al., 2021) or quality of life (e.g., Beilby et al., 2012a; Hugh-Jones & Smith, 1999), calling into question the assumption that targeting fluent speech during treatment will positively impact the lives of those who stutter. To date, no study has examined the potential benefits of targeting communication competencies in adults who stutter to the exclusion of goal(s) that directly target speech fluency.

The purpose of the present study, therefore, was to provide preliminary clinical outcome data from adults who completed a treatment program designed to explicitly target communication competencies as well as cognitive and affective aspects of stuttering, with no direct attempts to modify

stuttered speech. The 12-week “Targeting Communication Excellence” treatment program at the Blank Center is based on the same foundational principles as Camp Dream. Speak. Live. (described in further detail in the “Methods” section). Given the positive outcomes for children and adolescents who stutter who participated in Camp Dream. Speak. Live. (Byrd, Hampton, et al., 2016; Byrd et al., 2018, 2021), we predicted adults who stutter would also demonstrate significant improvement in their cognitive, affective, and communication profiles after the 12-week treatment program and that these changes would be unrelated to pretreatment stuttering frequency. Specifically, we examined the following three research questions:

- RQ1: Does focusing treatment on cognitive and affective aspects of stuttering without targeting overt fluency improve overall quality of life and attitudes toward communication for adults who stutter?
- RQ2: Does focusing treatment on communicative effectiveness without targeting overt fluency improve listener-perceived communicative competencies of adults who stutter?
- RQ3: Does pretreatment stuttering frequency predict communicative competency ratings?

METHODS

Participants

Eleven adults who stutter (age range: 19–67 years; $M = 34.3$ years; male: $n = 9$; female: $n = 2$) participated in the 12-week treatment program at the Blank Center during the fall 2019 semester. All participants were (1) 18 years or older, (2) self-identified as a person who stutters, (3) demonstrated functional mono- or bilingual proficiency in English, and (4) reported no known concomitant speech, language, hearing, or cognitive concerns. Four of the 11 participants were new clients, and the remaining seven were

returning clients who had received treatment at the Blank Center for at least one semester (one semester: $n = 5$; two semesters: $n = 1$; four semesters: $n = 1$). Approval for this study was obtained by the institutional review board at The University of Texas at Austin. All participants provided written informed consent prior to participation in treatment.

During an initial diagnostic session 1 week prior to the first treatment session, participants completed (a) a general demographic intake questionnaire, (b) a semistructured case history interview with the clinician discussing their personal and clinical history with stuttering, and (c) a battery of formal and informal measures assessing fluency, communication, cognition, affect, and overall quality of life. To assess fluency during this initial diagnostic session, participants provided three speech samples (conversational, narrative, and reading) that included at least 300 words. Stuttering severity for 100% of the participants was calculated offline by a trained graduate research assistant using the Stuttering Severity Instrument–Fourth Edition (SSI-4, Riley, 2009; “very mild”: $n = 4$; “mild”: $n = 4$; “moderate”: $n = 3$). A licensed, certified SLP independently reviewed the data from 80% of the participants, achieving high interrater reliability ($p < .001$, $r = .91$, intraclass coefficient [ICC] = .934).

Procedures

The Blank Center’s “Targeting Communication Excellence” program focuses on empowering persons who stutter to speak confidently, communicate effectively, and advocate meaningfully such that the overall quality of their lives and the extent of their future aspirations are not defined by whether or not they stutter when they speak. Participants learn core communication competencies across a variety of functional, yet challenging, environments as well as communication strategies that are of unique benefit to persons who stutter. Treatment consists of two 60-min sessions per week for 12 weeks, including one group session and one individual session, which provided opportunities to

practice goals outside the group setting as well as individualized treatment goals. A brief summary of the treatment program is provided in Table 1.

All clinical sessions were conducted by speech-language pathology students supervised by certified SLPs. Each client received individual treatment from one dedicated student clinician who also participated in their client's group sessions. Each student clinician completed approximately 10 hr of training for 2 weeks prior to treatment onset, comprised of in-person training with structured feedback, reviewing videos from previous semesters, completing training modules to practice communication competency rating, learning data management, in-person calibration sessions, viewing video exemplars of structured sessions, and reviewing lesson plan rubrics from previous semesters.

Cognitive and affective aspects of the Blank Center programming were targeted during the second half of weekly group sessions and then personalized during weekly individual sessions to elaborate each concept within the context of the clients' life. Topics included client education about stuttering, dispelling myths about stuttering, and discussing the cause of stuttering (e.g., heritability [Frigerio-Domingues & Drayna, 2017]; atypical sensory-motor processing [Chang et al., 2019]; vulnerable linguistic-phonological processing [Byrd et al., 2015; Coalson & Byrd, 2017]), as well as the personal utility of self-disclosure (Byrd, Croft, et al., 2017; Byrd, Gkalitsiou, McGill, et al., 2016; Byrd, McGill, et al., 2017; Croft & Byrd, 2021), voluntary stuttering (Byrd, Gkalitsiou, Donaher, et al., 2016), self-advocacy (Boyle et al., 2016, 2017), and participation in mindfulness activities (Boyle, 2011; De Veer et al., 2009). As illustrated in Table 1, these topics served as the natural basis for many of the group communication competence activities (Week 4 [*Community Surveys*], Week 5 [*Open Mic*], Week 7 [*Persuasive Speech*], Week 8 [*Mock Interview Panel*]; Weeks 9-11 [*Inspirational Speeches*]).

Communication competency measures

Communication competency was measured using a modified composite instrument based on two evaluation rubrics originally developed by the National Communication Association (NCA) for use with adults including the Competent Speaker Speech Evaluation Form (CSSEF; Morreale et al., 2007) and the Conversational Skills Rating Scale (CSRS; Spitzberg, 2007). The original CSSEF includes eight criteria designed to evaluate oral presentations using a 3-point Likert scale. Based on Rasch analysis of 8,945 rating forms and 583 public speech samples by Morreale et al. (2007), the CSSEF demonstrated high construct validity (9.19-10.67 logits), content validity (point biserial correlations: .43-.48; mean square = 0.60-1.2), and interitem reliability (α : .96). The original CSRS includes 25 criteria (grouped into five subscales) for evaluation of dyadic conversational exchanges using 5- or 6-point Likert scales. Previous studies report high interitem reliability (mean α = .83), interrater reliability (mean r = .79), test-posttest reliability (r = .78), and sufficient reports of convergent and divergent validity (see Spitzberg, 2007, Sections 7-8, Appendix 3 [n = 24 studies]).

For our purposes, elements from the CSSEF were combined with the CSRS and modified for use with adults who stutter to evaluate communication abilities across the range of speaking scenarios in the treatment program. First, items specifically related to "articulation," "disfluencies," or "pronunciation" were removed, consistent with the recommendations of NCA (Morreale et al., 2007; General Assessment Criteria 4 [Appendix D]) and the mission of the Blank Center. Second, to ensure the rating form could be applied across speaking contexts, items related to context-specific criteria such as *topic selection* and *thesis statement* (during public speaking) and listener attentiveness/turn-taking (during conversation) were removed. Third, the construct of *vocal variety* on the CSSEF was elaborated into three additional components as defined in the CSRS (i.e., volume, intonation,

Table 1. Description and sequence of treatment

Week	Sessions	Description
1	1 and 2	<i>Overview, Goal-Setting, Impromptu Communication:</i> Participants provided with a program overview, set personal treatment goals, complete training in rating self- and peer communication competencies, and provide an impromptu mock interview ^a and/or icebreaker presentation.
2	3 and 4	<i>Improv Training:</i> Participants focus on learning to initiate and respond to others' communication spontaneously, without fear or even the opportunity to contemplate whether they will or will not stutter before speaking.
3	5 and 6	<i>Informative Presentation:</i> Participants prepare and present informative speeches about a topic of interest to them with the goal of teaching specific facts to a group in an organized manner.
4	7 and 8	<i>Community Surveys:</i> Participants generate surveys based on what they have learned and want people to know about stuttering. They administer their surveys in person to at least 30 people on campus to generate multiple opportunities to practice introductions and present novel information.
5	9 and 10	<i>Open Mic:</i> Participants complete open mic sessions where they advocate, educate, and share the data about stuttering collected in public forums across campus.
6	11 and 12	<i>Mindfulness:</i> Participants learn the practice of mindfulness and engage in applied practice of mindfulness during impromptu communication.
7	13 and 14	<i>Persuasive Speech:</i> Participants present a persuasive speech on a variety of topics including "What's your advice for individuals who stutter and why is it effective?" and begin to prepare for their upcoming mock interview panels.
8	15 and 16	<i>Mock Interview Panel:</i> Participants complete a series of one-on-one mock interviews conducted by a panel of clinicians as well as professionals from across the community. Between interviews, participants wait in a room with other unfamiliar people also waiting for interviews, which provided additional opportunities to practice introductions and engage in "small talk."
9	17 and 18	<i>Preparation for Inspirational Speech:</i> Participants begin to practice their semester-final inspirational speeches centering around their personal journeys with stuttering. To do so, participants engage in a variety of speaking activities previously completed in the program, including improv, mindfulness, impromptu speeches, persuasive speeches, and informative speeches.
10	19 and 20	<i>Practice for Inspirational Speeches:</i> Participants practice their inspirational speeches.
11	21 and 22	<i>Inspirational Speeches:</i> Participants complete their final presentation, an inspirational speech to at least 300 people.
12	23	<i>Program Review and Posttreatment Measures:</i> Participants return to review their inspirational speech performances, reflect on their progress over the course of the program, complete their posttreatment one-on-one mock interview , ^a and complete all posttreatment measures.

^aDenotes pre- and posttreatment mock interviews rated in the present study.

and rate), as each paralinguistic property can be independently affected in adults who stutter and independently manipulated to improve communication effectiveness. Fourth, the construct of *nonverbal behavior* on the CSSEF was subdivided into four specific targets defined in the CSRS (i.e., gestures, body position, eye contact, and facial affect). Finally, the original Likert-response scales developed for both measures were replaced with a visual analog scale (0–100) due to its superior measurement qualities (Flynn et al., 2004). These five modifications resulted in a single, nine-factor evaluation rubric of communication effectiveness suitable for adults who stutter and applicable across contexts and raters (e.g., self, peer, student clinician, SLP).

Communication competencies were judged for a mock interview completed as part of Session 1 during the first week of treatment (pretreatment) and a second mock interview completed as part of Session 23 in the 12th week of treatment (posttreatment). During each, participants completed the one-on-one interviews with an unfamiliar examiner, lasting approximately 5–7 min. Examiners were provided standard interview prompts (e.g., “Tell me about yourself”; “What do you consider your strengths and weaknesses?”; “Describe a work-related issue from previous experiences and how you addressed it”) and instructed not to provide performance feedback. Examiners comprised three doctoral speech-language pathology students and four faculty members associated with the Blank Center. None of the doctoral students supervised or provided services to the clients at the time of the interviews. All interviews were conducted in person, with the exception of two pretreatment interviews conducted remotely via Zoom due to participant scheduling conflicts. In-person interviews took place in a closed office space at The University of Texas at Austin with the participant seated across a desk from the examiner. Each interview was video-recorded and coded offline.

The second author—a certified SLP—served as the primary rater for all 22 videos (11 participants × two videos [pretreatment: $n = 1$; posttreatment: $n = 1$]) for each of the

nine competencies: (1) *language use* (e.g., expected opening/closing remarks? formal language appropriate for interview?); (2) *organization* (e.g., open with small talk? on topic or wandering? succinct?); (3) *speech rate* (e.g., rate easily understood and varied for emphasis? rate slowed to highlight key points?); (4) *intonation* (e.g., pitch varied and not monotone? pitch heightened to highlight key points?); (5) *volume* (e.g., volume varied and strong enough to be heard? elevated to highlight key points?); (6) *gestures* (e.g., hand movements to emphasize key points? hands visible? gripped hands or crossed arms? hands rubbing legs or in pocket?); (7) *body position* (e.g., appropriate body posture for interview? closed or restricted posture? did they “own the space”? were there distracting movements?); (8) *eye contact* (e.g., looked at listener? only looked in one direction or avoided eye contact?); and (9) *facial affect* (e.g., face visibly comfortable and interested? smiled occasionally to demonstrate interest in topic?). The primary rater was selected because he was familiar with the treatment goals but unfamiliar with the clients depicted in the videos and had not experienced training in rating methodology. The primary rater viewed each of the 22 videos. Each video was rated immediately after viewing for all nine competencies using a Qualtrics-based rating questionnaire. Each competency rating scale was preceded by a Yes/No question asking whether the interviewee achieved the specific competency (e.g., “Did the person being interviewed use appropriate eye contact for the communication format?”). If “Yes” was selected, accuracy of the competency was rated using a 0–100 visual analog scale (0 = low; 100 = high). Videos were presented in a fixed, prerandomized order wherein no single participant’s two videos were scored consecutively and no pattern of pre- and posttreatment video order was detectable.

Cognitive and affective measures

All participants completed four cognitive and affective measures during their initial diagnostic session prior to the first week of

treatment (pretreatment) and during the final 12th week of treatment (posttreatment). The four self-report measures of cognitive and affective well-being included the following:

- The Overall Assessment of the Speaker's Experience of Stuttering (Yaruss & Quesal, 2010): The OASES is a 100-item Likert-response scale subdivided into four sections (General Information About Stuttering, Your Reactions to Stuttering, Communication in Daily Situations, and Quality of Life). As noted by Constantino et al. (2016), the experience of stuttering, as measured by the OASES, is generally dissociated with stuttering severity and, unlike stuttering severity, remains relatively stable across time. Yaruss and Quesal (2006) report high internal reliability (interitem, $C\alpha = .92$; test-retest, $C\alpha = .90-.97$; see Franic & Bothe, 2009, for detailed account of psychometric properties) and convergent reliability of .63-.83 with related established measures that assess quality-of-life measures for adults who stutter (e.g., Erickson, 1964).
- The Self-Perceived Communication Competence (SPCC; McCroskey & McCroskey, 1988). The SPCC is a brief 12-item 100-point Likert-response scale designed to assess *apprehension* toward four specific communicative contexts (dyad, small group, large meeting, and presentation) and three interlocutors (stranger, friend, and acquaintance). The SPCC demonstrates sufficient interitem ($C\alpha = .92$) and test-retest reliability ($C\alpha = .77-.89$) and sufficient convergent reliability with the known measures of self-esteem ($r = .59$; Roberson, 1986). A recent investigation by Werle et al. (2021) found adults who stutter rate themselves significantly lower in communicative competence (and higher in communicative apprehension) than nonstuttering adults using the SPCC.
- The Devereux Adult Resilience Survey (DARS; Mackrain, 2008). The DARS is a 23-item 3-point Likert-response survey that focuses on the rater's responses to adversity in specific situations. Resilience has been associated with mediating long-term adverse effects of stuttering (Craig et al., 2011), self-acceptance (Plexico et al., 2019), and overall quality of life (Freud & Amir, 2020) in adults who stutter. The DARS demonstrates sufficient interitem reliability ($C\alpha = .76-.88$) and sufficient convergent reliability ($r = .58$) with the Connor-Davidson Resilience Scale (Connor & Davidson, 2003).
- The Self-Compassion Scale (SCS; Neff, 2003). The SCS is a 26-item 5-point Likert-response scale that focuses on the respondent's opinions of self-worth, thought to be a function of emotional regulation. Self-compassion is a core component of cognitive and affective therapies for adults who stutter and included as part of the Blank Center treatment approach (see Croft & Byrd, 2020, for correlation with the OASES). The SCS demonstrates impressive internal reliability and temporal stability (interitem, $C\alpha = .92$; test-retest, $C\alpha = .93$), and outcomes converge with measures of conceptually related measures (e.g., self-criticism, $r = -.65$; interpersonal closeness, $r = .41$; emotional intelligence, $r = .43$; perfectionism, $r = -.57$; see Neff, 2003) but low correlation with legacy measures of social desirability ($p > .10$, $r = .05$) and mental health diagnoses (depression, $r = -.21$; anxiety, $r = -.33$).

Reliability and data processing

A second rater (the primary rater used to assess communication competencies of children who stutter in Byrd et al., 2021) provided interrater reliability. Similar to Byrd et al. (2021), the primary rater and the second rater completed training before viewing the 22 participant videos. Both viewed and rated two sample videos of clients not used in the present study and subsequently discussed rating differences (± 10 points) to achieve consensus. This process was repeated until

interrater reliability for the independently rated sample videos reached at least 80% across each core competency. After initial interrater reliability was determined, the primary rater rated all 22 videos as previously described. To further ensure interrater reliability, the secondary rater independently rated 100% of the 22 videos. Discrepancies greater than 12 points between primary and second raters were resolved via consensus discussion after the initial independent scoring. High interrater reliability was achieved across all nine competencies for each of the 11 pretreatment samples (language use: ICC = .80, $p = .01$, $r = .66$; language organization: ICC = .83, $p < .01$, $r = .70$; speech rate: ICC = .80, $p = .01$, $r = .82$; intonation: ICC = .79, $p < .01$, $r = .67$; volume: ICC = .80, $p < .01$, $r = .71$; gestures: ICC = .84, $p < .01$, $r = .74$; body position: ICC = .78, $p < .01$, $r = .78$; eye contact: ICC = .85, $p < .01$, $r = .79$; facial affect: ICC = .82, $p < .01$, $r = .71$) and 11 posttreatment samples (language use: ICC = .82, $p < .01$, $r = .68$; language organization: ICC = .75, $p = .02$, $r = .62$; speech rate: ICC = .76, $p < .001$, $r = .84$; intonation: ICC = .78, $p < .01$, $r = .73$; volume: ICC = .77, $p < .001$, $r = .87$; gestures: ICC = .86, $p < .001$, $r = .87$; body position: ICC = .76, $p < .001$, $r = .83$; eye contact: ICC = .78, $p = .01$, $r = .63$; facial affect: ICC = .79, $p = .01$, $r = .71$).

Self-report data (OASES, SPCC, DARS, and SCS) from both pre- and posttreatment scores were missing for one participant due to clerical oversight and therefore absent from final analyses. One additional participant did not complete the pretreatment SPCC due to a software malfunction and therefore did not contribute data to analyses of pre- and posttreatment SPCC scores.

Statistical analyses

To examine RQ1, paired t tests were conducted to compare self-reported pre- and posttreatment changes in quality of life and communication attitudes. To examine RQ2, nine paired t tests were conducted to assess posttreatment gains in the nine individ-

ual communication competencies. Because of multiple behavioral measurements across the nine communication competency ratings, Holm-Bonferroni corrections were applied to these nine comparisons (Holm, 1979). Because of small sample size and the preliminary nature of the data, all significant paired t tests were verified by nonparametric analyses (Wilcoxon's signed-rank test, exact two-tailed significance [$\alpha = .05$]). Effect sizes were obtained using Cohen's d . To examine RQ3, nine bivariate correlations were calculated for each of the nine communication competencies in relation to stuttering frequency from pretreatment interviews and differences between pre-/posttreatment measures in each communication competency as independent variables.

RESULTS

RQ1: Does focusing treatment on cognitive and affective aspects of stuttering without targeting overt fluency improve overall quality of life and attitudes toward communication for adults who stutter?

Descriptive statistics for all self-reported pre- and posttreatment measures are provided in Table 2. Paired t tests detected significant decreases from pre- to posttreatment measures in OASES Total Impact score, $t(9) = 3.72$, $p < .01$, $d = 1.18$ (large effect), the OASES General Information subsection, $t(9) = 3.26$, $p < .01$, $d = 1.03$ (large effect), the OASES Reactions to Stuttering subsection, $t(9) = 4.46$, $p < .01$, $d = 1.41$ (large effect), the OASES Communication in Daily Situations subsection, $t(9) = 2.64$, $p = .03$, $d = 0.83$ (large effect), and the OASES Quality of Life subsection, $t(9) = 3.20$, $p < .01$, $d = 1.01$ (large effect). Nonparametric Wilcoxon's signed-rank tests confirmed significant posttreatment change for OASES scores (p value range: $<.01-.02$), with the exception of the Communication in Daily Situations subsection ($Z = -2.54$, $p = .11$). Paired t tests also detected significant posttreatment increases in self-reported resilience as measured by the DARS, $t(9) = -3.58$, $p < .01$,

Table 2. Pre- and posttreatment OASES, DARS, SPCC, and SCS scores

	Min	Max	M	SD	t	df	p ^a	d	Nonparametric	
									Z	p ^b
<i>OASES</i>										
Total Impact										
Pre	1.78	3.29	2.62	0.55	3.72	9	<.01**	1.18	2.80	<.01**
Post	1.44	3.01	2.01	0.50						
Section 1: General Information										
Pre	1.85	3.89	2.68	0.62	3.26	9	<.01**	1.03	2.70	.02*
Post	1.40	2.80	2.06	0.46						
Section 2: Reactions to Stuttering										
Pre	1.96	3.37	2.79	0.54	4.46	9	<.01**	1.41	2.80	<.01**
Post	1.60	3.20	2.09	0.55						
Section 3: Communication in Daily Situations										
Pre	1.93	3.27	2.70	0.48	2.64	9	.03*	0.83	2.24	.11
Post	1.24	3.04	2.13	0.62						
Section 4: Quality of Life										
Pre	1.08	3.48	2.28	0.76	3.20	9	.01*	1.01	2.67	<.01**
Post	0.92	2.88	1.71	0.61						
<i>SPCC</i>										
Pre	68.75	95.00	81.48	7.43	-1.09	8	.31			
Post	79.58	94.58	86.87	5.34						
<i>DARS</i>										
Pre	3.00	21.00	14.80	5.07	-3.58	9	<.01**	1.13	2.54	<.01**
Post	3.00	21.00	17.20	5.57						
<i>SCS</i>										
Pre	2.15	4.12	3.37	0.59	-1.73	9	.12			
Post	2.12	4.62	3.59	0.68						

Note. DARS = Devereux Adult Resilience Survey; OASES = Overall Assessment of the Speaker's Experience of Stuttering; SCS = Self-Compassion Scale; SPCC = Self-Perceived Communication Competence.

^aHolm-Bonferroni adjusted *p* values.

^bWilcoxon's signed-rank test (exact two-tailed sig).

p* < .05. *p* < .01.

d = 1.13 (large effect), and confirmed via Wilcoxon signed-rank test, *Z* = -2.54, *p* < .01. Although improved scores were observed for both self-perceived communication competence (SPCC) and self-compassion (SCS), posttreatment gains did not reach significance (*p* = .31 and *p* = .12, respectively).

RQ2: Does focusing treatment on communicative effectiveness without targeting overt fluency improve listener-perceived communicative competencies of adults who stutter?

Pre- and posttreatment communication competency ratings are detailed in Table 3 and Figure 1. Paired *t* tests detected significant gains in eight of the nine commu-

nication competencies in comparisons of pre- to posttreatment scores (language use: *t*(10) = 2.85, *p* = .03, *d* = 0.86 [large effect size]; language organization: *t*(10) = 3.51, *p* = .02, *d* = 1.05 [large effect size]; speech rate: *t*(10) = 3.51, *p* = .02, *d* = 1.15 [very large effect size]; intonation: *t*(10) = 3.17, *p* = .03, *d* = 0.96 [large effect size]; volume: *t*(10) = 4.32, *p* < .01, *d* = 1.30 [very large effect size]; gestures: *t*(10) = 4.64, *p* < .01, *d* = 1.40 [very large effect size]; body position: *t*(10) = 5.48, *p* < .01, *d* = 1.65 [very large effect size]; and eye contact: *t*(10) = 6.87, *p* < .001, *d* = 2.07 [very large effect size]). Facial affect was rated higher posttreatment, but changes

Table 3. Pre- and posttreatment communication competency scores

	Min	Max	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i> ^a	<i>d</i>	<i>Nonparametric</i>	
									<i>Z</i>	<i>p</i> ^b
Language use										
Pre	60	90	75.64	8.43	2.85	10	.03*	0.86	2.29	.02*
Post	76	95	85.18	6.48						
Language organization										
Pre	58	85	74.91	7.83	3.69	10	.02*	1.06	2.65	.02*
Post	77	94	85.00	4.73						
Speech rate										
Pre	51	80	65.91	10.15	3.80	10	.02*	1.15	2.63	.01*
Post	70	89	79.09	5.94						
Intonation										
Pre	70	72	65.09	4.30	3.17	10	.03*	0.96	2.40	.01*
Post	59	92	74.82	8.59						
Volume										
Pre	60	75	66.82	4.90	4.32	10	<.01**	1.30	2.62	.01*
Post	68	85	74.45	5.05						
Gestures										
Pre	70	92	65.54	10.92	4.64	10	<.01**	1.40	2.85	.01*
Post	41	87	81.82	6.77						
Body position										
Pre	40	87	62.55	15.32	5.48	10	<.01**	1.65	2.93	<.01**
Post	67	93	81.82	8.82						
Eye contact										
Pre	52	85	67.45	12.03	6.87	10	<.001***	2.07	2.94	<.01**
Post	66	96	84.55	10.34						
Facial affect										
Pre	50	88	72.27	10.59	2.21	10	.51			
Post	65	89	79.18	7.72						

^aHolm-Bonferroni adjusted *p* values.

^bWilcoxon's signed-rank test (exact two-tailed sig).

p* < .05. *p* < .01. ****p* < .001.

did not reach significance (*p* = .51). All significant posttreatment gains were confirmed via nonparametric Wilcoxon's signed-rank test at $\alpha = .05$.

RQ3: Does pretreatment stuttering severity predict communicative competency ratings?

Posttreatment gains in communication competencies with respect to pretreatment stuttering frequency are depicted in Table 4. Stuttering frequency did not significantly predict gains in eight of the nine communicative competencies (*p* value range: .05–.98; *r* range: –.01 to .60). A significant, positive correlation was detected between language use

and stuttering frequency (*p* = .03, *r* = .66), indicating *greater* gains in language use were associated with *greater* pretreatment stuttering frequency.

DISCUSSION

The purpose of this study was to examine "Targeting Communication Excellence," a treatment approach for adults who stutter developed at the Blank Center that targets cognitive and affective aspects of stuttering and overall communicative competence, rather than focusing on reducing stuttered speech.

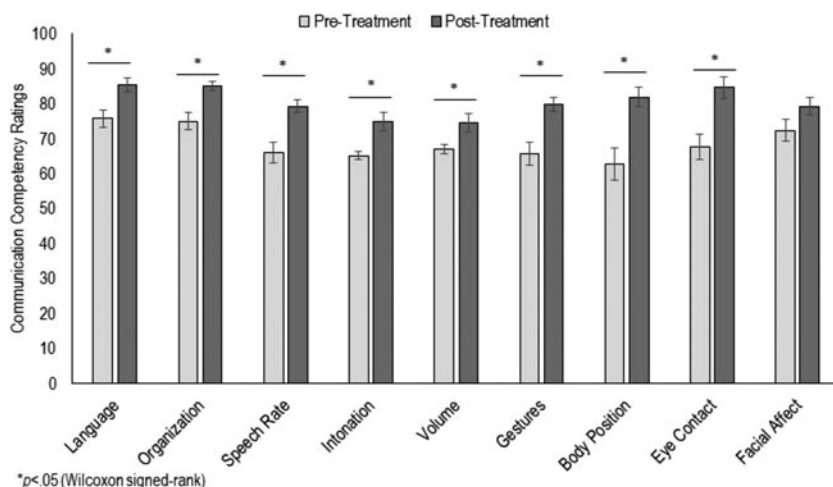


Figure 1. Communication competency ratings for adults who stutter pre/posttreatment.

Preliminary findings indicate a significant reduction in self-reported adverse impact of stuttering following intervention. Clients also demonstrated significant positive gains in eight of the nine communication competencies during posttreatment mock interviews, as rated by an unfamiliar clinician. Critically, gains in communication competencies were not predicted by pretreatment stuttering frequency, with the exception that those who stuttered more pretreatment increased their language use most after participating in treatment focused on communication excellence and cognitive and affective aspects of stuttering.

Table 4. Bivariate correlations between pretreatment stuttering frequency and gains in communication competencies

	<i>df</i>	<i>r</i>	<i>p</i>
Language use	11	.66	.03*
Language organization	11	.60	.05
Speech rate	11	-.08	.81
Intonation	11	.24	.49
Volume	11	.35	.29
Gestures	11	.47	.14
Body position	11	-.01	.98
Eye contact	11	.21	.55
Facial affect	11	.08	.81

**p* < .05.

Cognitive and affective impact of stuttering

Adults who stutter reported a significant reduction in the overall adverse impact of stuttering, as measured by the OASES, after 12 weeks of treatment at the Blank Center. These findings replicate improved posttreatment OASES scores of children and adolescents who stutter as reported in previous studies by Byrd et al. (Byrd, Hampton, et al., 2016; Byrd et al., 2018, 2021). Significant improvements were also observed for three of the four subsections of the OASES (General Information, Reactions to Stuttering, and Quality of Life). Consistent reductions of Total Impact scores across all four studies, combined with “large” or “very large” effect sizes across studies, demonstrate that posttreatment gains observed in the preliminary data were not incidental to the age or size of the cohort but may reflect a treatment outcome that is reliable across the life span. Continued investigation with larger cohorts of adults is warranted to corroborate this emerging pattern.

Unlike measures utilized in previous studies by Byrd et al. (Byrd, Hampton, et al., 2016; Byrd et al., 2018, 2021), the present study also included pre- and posttreatment measures of self-reported resilience (DARS), self-perceived communication competence

(SPCC), and self-compassion (SCS). Although significant posttreatment gains were observed indicating greater resilience after 12 weeks of treatment, no posttreatment change was observed for self-compassion or self-perceived communication competence. It should be noted that data are preliminary and that descriptive gains were observed for all three measures. Nevertheless, one possible reason for nonsignificant treatment effects is the relatively high self-assessments of communication competence by the 11 adult clients before treatment. As noted by Werle et al. (2021), scores of more than 87 on the SPCC are thought to reflect high communication competence whereas scores of less than 59 are thought to reflect low communication competence. On average, participants rated themselves near the higher end of communication competence across situations ($M = 81.48$) prior to treatment, with only two of the nine participants who completed the SPCC rating themselves below an 80 (i.e., 68.75, 73.33).

Significant improvement in listener-rated communication competence, coupled with the nonsignificant change in self-perceived communication competency (as measured by the SPCC), could be viewed as problematic or perhaps taken to suggest that treatment effects did not generalize to the speaker. Intuitively, speakers' and listeners' opinions of communication abilities should not necessarily be expected to converge. A speaker's evaluation of their own communication skills certainly can exceed those of the listener's, and vice versa. A post hoc correlational analysis verified that, indeed, no significant correlation between listener ratings and SPCC scores were detected before or after treatment (p values: .22 and .87; $\Delta p = .33$), indicating that these two perspectives changed independently. We interpret this independence of perceptions as a particularly encouraging outcome for adults who stutter. The fact that listener perception improved whereas self-perception remained relatively unchanged (and in this case relatively positive self-perception) suggests that

this treatment holds considerable promise for clients who wish to seek to improve perceived communication skills but, unlike our current cohort, may possess a negative self-perception as a communicator (see Werle et al., 2021). Our present data are not equipped to examine this alternate scenario. The logical next step of our clinical investigation, therefore, will be to further explore the (in)dependence between posttreatment speaker perceptions and a variety of listener perceptions, including participants with the full range of self-perceived communication abilities.

Although posttreatment gains on measures such as the OASES are encouraging, it is not our intent to suggest that these cognitive and affective benefits are unique to our clinical approach. Posttreatment gains on the OASES have also been reported for treatments that target stuttered speech (e.g., speech restructuring; Carey et al., 2014; speech restructuring, followed by cognitive behavioral therapy; Menzies, O'Brian, et al., 2019), as well as psychological interventions that do not target stuttered speech (e.g., cognitive behavioral therapy; Menzies, Packman, et al., 2019; acceptance and commitment therapy; Beilby et al., 2012b). Our preliminary data suggest that, in addition to similar posttreatment gains in psychosocial well-being, participants demonstrated distinct significant improvements in their communication effectiveness—an area of practical concern for adults who stutter that has been either excluded from previous clinical research or characterized, in part or in whole, by the speakers' ability to remain fluent.

Communication competence

Communication effectiveness was rated significantly higher for adults who stutter by an unfamiliar listener after treatment of all but one of the competencies (i.e., facial affect). Posttreatment gains in communication competence are similar to those reported by Byrd et al. (2021) for children and adolescents who stutter after Camp Dream. Speak. Live. Byrd et al. (2021) reported gains in eight

of nine competencies, with the exception of gestures. The precise reasons certain competencies fall short of significance across studies are speculative, but it could reflect individualized strengths and weaknesses of each client, resulting in 11 individual participants focusing their efforts on disparate aspects of communication. Another potential factor is the dyadic speaking context. During mock interviews, it is conceivable that professional language use will naturally be prioritized, whereas facial affect may receive less implicit attention by the interviewee. This possibility warrants exploration in future studies comparing treatment outcomes across speaking conditions. From a broader perspective, significant gains were replicated in seven of the nine competencies in both studies (language use, organization, speech rate, intonation, volume, body position, and eye contact). Significant results were also found for all eight individual competencies through non-parametric testing suggesting that, despite the small sample size, findings warrant further exploration (e.g., within larger, clinical trials).

Stuttering frequency and communication competencies

Findings from the present study do not support the notion that communication competence is contingent on, or predicted by, a speaker's pretreatment frequency of stuttered speech. Of the nine correlational analyses, only one detected a significant association between stuttering and communication competence gains, specifically language use. Contrary to the assumption that mild stuttering would be associated with greater gains in communication competence, however, gains in this single aspect of communication were predicted by *higher* frequency of stuttered speech. These findings in adults who stutter broadly replicate those reported by Byrd et al. (2021) for children and adolescents who stutter and suggest that positive treatment effects are independent of age or history with stuttering. These preliminary data also provide support for the

notion that stuttering and communication effectiveness are not inextricably linked—an outcome consistent with the mission of the Blank Center and contemporary views of stuttered speech as one aspect, but not the only aspect, of communication for children and adults.

Limitations and future considerations

Although findings were highlighted as preliminary in nature, a few limitations should be noted. First, the extent to which perceived gains in communication competence can be generalized to other raters is currently limited. The primary rater was unfamiliar with the clients and, unlike Byrd et al. (2021), did not receive guided training on the rating protocol, which provides greater confidence that ratings were less influenced by specialized knowledge of the task. That being said, the rater was a certified SLP who was familiar with the nature of the treatment program. Although we consider the observed gains to be an encouraging first step, further investigation is needed to determine how speakers will be rated by persons completely unfamiliar with the treatment, or topic, of stuttering. Second, it would have been ideal to have a 12-week cohort large enough to allow us to restrict participants to first-time clients. Although future investigations will strive to achieve this, as was achieved for children who stutter in Camp Dream. Speak. Live. in successive replication studies (Byrd, Hampton, et al., 2016; Byrd et al., 2018, 2021), we remain encouraged by the descriptive gains observed for all 11 clients, both first-time and returning clients, in the present study. Third, communication context was limited to dyadic interactions during a mock interview. Although this format allowed the investigators to control for a variety of factors (e.g., privacy, environmental distraction, content), we acknowledge that certain communicative patterns inherent to interviews may have benefitted the speaker (e.g., question-answer format, one-on-one turn-taking, potentially predictable prompts). These variables and others will be

incorporated in future investigations. Fourth, although Morreale et al. (2007) and Spitzberg (2007) provided the psychometric properties for both the CSSEF and the CSRS, assessment of the validity and reliability of the modified rating protocol used at the Blank Center warrants exploration with respect to people who stutter and in relation to the original established measures. We also acknowledge that the term “appropriate” used on listener rating scales and based on the original NCA rubrics may imply, at least to some extent, that certain communicative behaviors are universally desirable or undesirable. To be clear, scoring rubrics and treatment goals should always be modified in relation to clients’ language, culture, comorbid diagnoses, and personal beliefs about neuro-majority standards of communication. Finally, we would like to emphasize that although the outcomes

of this initial trial are encouraging, longitudinal and controlled trial investigations are necessary to fully assess the long-term stability of gains that were observed immediately posttreatment for this initial cohort.

CONCLUSION

The purpose of this study was to provide preliminary data examining a treatment approach for adults who stutter that focuses on communication competence rather than attempting to eliminate or minimize stuttered speech. Treatment yielded significant gains in psychosocial well-being as well as communication effectiveness. These preliminary data provide a foundation for future clinical trials to continue to explore the cognitive, affective, and communicative benefits of similar treatment approaches for adults who stutter.

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