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Efficacy of Group Conversation Intervention in Individuals with Severe Profiles of Aphasia

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Abstract

An estimated 390,000 to 520,000 individuals with severe aphasia (IWSA) currently live in the United States. IWSA experience profound social isolation, which is associated with a wide range of negative health outcomes, including mortality. Treatments for severe aphasia frequently focus on compensatory communication approaches or a discrete communication act rather than on participation-based treatment. The purpose of this study was to determine whether IWSA demonstrated improved performance on standardized language measures, patient-reported outcome measures, and connected speech samples as a result of client-centered conversation group treatment. Results of assessments conducted at pretreatment, posttreatment, and maintenance intervals were variable across participants. All participants demonstrated improvement in at least one of the outcome measures considered. Importantly, none of these measures fully captured how IWSA were able to convey their thoughts in supported conversation. The results lend support for the use of conversation treatment for, and for further study in, this subpopulation of individuals with aphasia.

Keywords

severe aphasia; conversation treatment; discourse level treatment

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An estimated 2.6 million individuals in the United States are living with aphasia.[1] These individuals present with a range of different profiles, which range from mild word finding difficulty to severe impairments in speech production, writing, reading comprehension, and auditory comprehension. In this article, we focus on individuals with severe aphasia (IWSA), and in particular how they respond to conversation treatment.

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DISCLOSURES
Elizabeth Hoover is a salaried employee at Boston University and serves on the board of Aphasia Access. Gayle DeDe is a salaried employee of Temple University.

CONFLICT OF INTEREST
None declared.

It is unknown how many individuals are living with severe aphasia. One issue is that there is no standardized definition of severe aphasia. Thus, the classification of "severe" can encompass a variety of aphasia subtypes (e.g., "severe Broca's aphasia"), etiologies, and time post-onset. Within aphasia subtypes, people with a diagnosis of global aphasia by definition have severe impairments in both production and comprehension of verbal language. According to Kertesz,[2] global aphasia accounts for approximately 20 to 25% of all aphasia diagnoses. This percentage is consistent with that of Engelter and colleagues,[3] who reported that 26% of the 80 people with aphasia in their sample were classified with severe aphasia. Time post-onset is an important factor to consider, as the severity of aphasia evolves over time. For example, Pedersen et al[4] found that 45% of people with aphasia after one stroke had severe aphasia, defined as an aphasia quotient (AQ) less than 31.2 on the Western Aphasia Battery (WAB).[2] One year later, only 16.7% of their participants had AQs under 30. Ali et al[5] reported that 17.1% of a large sample of individuals with aphasia (IWA) initially presented with severe aphasia, but 25.5% of those individuals recovered 3 months later.

To further determine prevalence of severe profiles in chronic aphasia, WAB AQ scores were reviewed from a sample of 223 IWA from the Boston University Aphasia Research Laboratory (Kiran, Ph.D.; unpublished data, 2019). We used WAB-R criterion,[6] which was a WAB AQ less than or equal to 50. Of 223 IWA, 25.6% (57) presented with severe aphasia as defined by this criterion. Data were also reviewed from the database of IWA who have been seen in the Aphasia Resource Center at Boston University. Though there may be some overlap between the samples, 26 of the 97 individuals (26.8%) presented with severe aphasia (Hoover, Ph.D.; unpublished data, 2019). Comparing severity across studies is challenging given the myriad of classification factors. However, based on these numbers and previous studies, it seems that a conservative estimate would be that 15 to 25% of IWA continue to present with severe aphasia 3 months post–onset of stroke. This estimated percentage equates to approximately 390,000 to 650,000 individuals living with severe aphasia in the United States.

IWSA may be particularly vulnerable to the negative attitudes and social isolation associated with aphasia. Hilari and Byng[7] examined health-related quality of life in people with aphasia using the Stroke and Aphasia Quality of Life Scale-39 (SAQOL-39). Average SAQOL-39 scores were significantly lower for IWSA compared with those with mild or moderate aphasia. However, only the communication and physical ability domains showed a significant difference, and not the psychosocial or energy domains. In contrast, Parr et al[8] reported that IWSA experience significant social isolation, which may well influence psychosocial quality of life. Parr et al[8] found that IWSA had minimal access to vocational, avocational, and educational opportunities. They were also often excluded from health and social care because communication breakdowns made it difficult for service providers to fully engage the IWSA. Often, treatment was reportedly discontinued due to lack of gains in verbal language. Additionally, IWSA reported that they were patronized, talked about, and teased, and believed they had little to no control of their daily lives.[8] They[8] concluded that IWSA experienced profound social isolation. There are several reasons why the two studies may report different outcomes. First, Hilari and Byng used proxy reports from care-partners of those with aphasia, whereas Parr et al directly interacted with IWSA. Also, Hilari and Byng statistically compared groups, whereas Parr et al did not. Regardless, the results suggest that IWSA are at great risk for social isolation. In a follow-up study, Parr[9] observed 20 IWSA in three different environments (home and community). Analysis of ethnographic data revealed evidence of social exclusion for IWSA across three different participation levels: *infrastructural*, such as work, housing, services, and financial resources; *interpersonal*, such as close personal relationships and relationships with service providers; and *personal*, such as isolation, boredom, and depression. This social isolation is significant because it is associated with a wide range of negative health outcomes, including mortality.[10–12] For all of these reasons, it is vital to develop appropriate interventions for IWSA.

Treatments for IWSA typically rely on compensatory strategies, such as the sole use of augmentative and alternative communication (AAC) devices and compensatory communication techniques (e.g., gestures). These may include Visual Action Therapy,[13] use of Amer-Ind Code,[14] and drawing-based programs such as the Communicative Drawing Program, Lyon and Sims[15] interactive drawing, and Back to the Drawing Board.[16] Traditional computer-based AAC approaches include programs such as Computer-Assisted Visual Communication[17] and C-Speak Aphasia.[18] Now, individuals can use mobile devices such as iPads and cellular phones as alternate and augmentative means of communication (AAC). Examples of relevant apps include talking photo apps,[19] AAC apps (e.g., Proloquo2Go),[20] text to speech apps (e.g., Verbally),[21] and speech practice apps (e.g., Constant Therapy).[22] Other treatment approaches, such as Melodic Intonation Therapy[23] and Voluntary Control of Involuntary Utterances,[24] are more restorative in nature.

Although this is not an exhaustive list of treatment approaches for IWSA, the critical point is that none of these approaches encourage IWSA to integrate multiple modalities to communicate their thoughts. In multimodal communication, gesture, writing, drawing, and other means of communication can be combined with spoken language to maximize the participant's ability to convey their thoughts. One treatment approach that encourages use of multimodal communication is PACE (Promoting Aphasic Communicative Effectiveness).[25] In PACE, clinician and client take turns conveying information about picture cards preselected by the clinician. PACE treatment involves multimodal communication, as well as other aspects of naturalistic conversation such as taking turns and receiving feedback about communicative success. The effectiveness of PACE for IWSA has not been studied.

Another treatment that incorporates multimodal communication is conversation treatment. In contrast to PACE, conversation treatment occurs in the context of naturalistic conversation. That is, the clinician may introduce the topic, but the topic may spontaneously shift, there is a broader array of speech acts, and there is a social component that is not necessarily part of PACE.[26] Conversation treatment is associated with improved communication skills and quality of life for IWA (e.g.,[27–29]). Conversation treatment most often occurs in a group setting with at least two IWA (please see the article by Savage et al[30] for an example of individual conversation treatment). Conversation treatment focuses on communicative interaction rather than improvement of discrete skills such as naming words or producing gestures. Since the treatment occurs in a natural conversation context, intervention can build skills and confidence in a variety of naturally occurring communication genres.[31] Additionally, IWA benefit from the diversity of language models supplied by conversation partners and spontaneity of discourse. The group dynamic also fosters a sense of joint purpose and emphasizes meaningful interactions,[32] which may lead to increased confidence to build interpersonal connections and engage in social activities.

There is evidence that IWSA are able to participate in conversation groups, though they may require a greater deal of support from the facilitator.[33–35] One study examined whether people with moderate-severe aphasia benefit from conversation treatment.[28] In addition to reporting positive effects of group communication treatment on a variety of standardized tests, Elman and Bernstein-Ellis compared how individuals with mild-moderate and moderate-severe aphasia responded to treatment. Participants were classified into severity groups on the basis of the Shortened Porch Index of Communicative Abilities (SPICA).[36] The results showed that moderate-severely impaired participants showed greater changes on the Communication Activities of Daily Living (CADL)[37] than mild-moderately impaired participants.[28] Neither the SPICA nor WAB AQ showed significant interactions with severity, though the WAB AQ did improve as a function of treatment. These data suggest that individuals with moderate-severe aphasia may show greater improvement on functional tests that focus on communication rather than discrete language tasks. However, inspection of the data showed that only five of thirteen moderate-severe participants in Elman and Bernstein-Ellis's[28] study would be classified as severely impaired using an AQ cut-off of 50.[6] In addition, they did not report analyses of connected speech samples. Thus, it is still unknown how IWSA respond to discourse level treatment approaches.

DeDe et al[27] examined the effects of conversation group treatment in large groups (6–8 IWA) and dyads (2IWA) compared with a delay control group. IWA in the treatment groups showed significant changes on more outcome measures than the control group, providing preliminary efficacy data for conversation group. The purpose of this study was to examine the effects of conversation group treatment in IWSA. The data presented here are secondary analyses of group data in DeDe et al.[27] We identified participants from the larger study with severe aphasia. Our goal was to investigate whether IWSA demonstrated improved performance on standardized language measures, patient-reported outcome measures, and connected speech samples as a result of participation in client-centered conversational group treatment.

METHODS

Here, we summarize relevant methods from the larger study. For a complete description, please refer to the article by DeDe et al.[27]

Participants

IWSA were recruited from a larger set of 48 participants enrolled in a conversation group treatment study at Boston University and Temple University. All participants were native English speakers with no history of neurological disease (other than stroke), developmental speech, language or learning disabilities, or serious medical illness. The WAB was not administered as part of the larger study, so AQ scores could not be used to determine aphasia severity. We chose to use object naming scores on the comprehensive aphasia test (CT)[38] because difficulty with naming is the defining characteristic of aphasia.[13] A severe impairment was operationally defined as scores > 1 standard deviation below the mean of raw scores for individuals with chronic aphasia on the object naming portion of the CT during pretreatment assessment. This corresponded to scores less than 6.64 out of 32 possible points. Six participants who had been randomized to an immediate (rather than delayed) treatment condition met this inclusion criterion. One of the six was later excluded from this study due to a revised diagnosis of vascular dementia. Thus, data from five IWSA are reported here. All five of the participants were male. Additional information, including individualized goals for conversation treatment, is detailed in Table 1.

Treatment Conditions

Participants in the larger study were randomly assigned to one of three treatment conditions: dyads (two IWA and one clinician), large group (6–8 IWA and 1–2 clinicians), and delayed treatment (6–8 IWA and 1–2 clinicians). Randomization was completed using a random number generator. Data are reported from pretreatment, posttreatment, and 6-week maintenance testing.

Assessment Protocol

The CT[38] is a comprehensive psycholinguistic test battery that measures both receptive and expressive language in oral and written modalities. It was used to test discrete language skills, document the presence of aphasia, and serve as a measure of treatment effects.

The adaptive, 12-item version of the Aphasia Communication Outcome Measure (A-COM)[39] was used to determine the impact of IWSA's communication deficits on daily life. The A-COM is a psychometrically validated questionnaire, which provides a reliable and valid measure of communication in aphasia. The A-COM provides information regarding the participants' insight into their communication deficits and self-reported difficulty in daily communicative situations.

Three narrative speech samples were collected using (1) the Nicholas and Brookshire Cat Rescue scene (also known as "Cat in the Tree"), (2) the CT picture description task, and (3) the Cinderella story. The CT picture scene depicts a man sleeping in a chair, a cat knocking books off a bookshelf, and a small child pointing at the books. In addition, a conversation speech sample was collected in which the IWSA engaged in up to 5 minutes of unsupported, natural conversation with a naive conversation partner. Conversation topics surrounded goals for the upcoming group or a recent event from the previous weekend. All speech samples were recorded using AudioNote 2 LITE (Version 6.0)[40] and/or DVD-R and transcribed verbatim by the administering clinician.

All three narrative speech samples were coded using correct information units (CIUs).[41] CIU analysis provides information about the accuracy, relevance, and informativeness of connected speech samples of IWA.[38] Here we report %CIU, which was calculated by dividing number of CIUs by total number of words. Percent CIU was chosen because it reflects how many of the words produced convey new, relevant information, and reflects efficiency of communication.

The CT picture description was also coded using the standardized analyses described in the CT manual.[38] The CT Narrative Analysis is similar to CIUs in that it accounts for the presence of appropriate and inappropriate lexical items in the sample. However, the CT Narrative Analysis method provides a more complete view of the sample than %CIU because they incorporate ratings of speed, grammaticality, and syntax.

Finally, the conversation samples were analyzed using the Profile of Word Errors and Retrieval in Speech (POWERS) method.[42] The POWERS analysis provides detailed information regarding number, length, and type of conversational turns; number of content words; number of nouns; and number and type of speech errors. Given the relatively small sample size and variability in aphasia profiles, different measures were chosen from the POWERS for each IWSA based on their individualized treatment goals (see Table 1). Most measures (e.g., number of content words in the conversation samples) were divided by duration of the conversation (in minutes) to control for variability in length of the conversation sample across testing sessions.

Treatment

TREATMENT FREQUENCY AND CONDITIONS—Treatment was conducted twice per week for 60 minutes, for 10 weeks by trained graduate students supervised by licensed speech language pathologists (see the article by DeDe et al[27] for a full description). To maximize consistency across treatment sites and groups, conversation treatment sessions were structured around a predetermined set of topics. Each week, a new topic was introduced to the participants in addition to multimodal supports (e.g., PowerPoint slides with relevant images, iPads available for use of the participants, written models on paper and white boards, and paper printouts of communication supports). Sample topics included personal history, dining, travel, and current events. Clinicians modeled the use of multimodal supports and supplemented speech with key words and gestures to facilitate communication.

Data Analysis—Performance on the CT for each test item on each subtest was aggregated and analyzed using a McNemar test (a variation of a chi-squared distribution), separately for each participant. Delayed and self-corrected responses were coded as correct responses. McNemar's test was used to examine differences in test performance from pretreatment compared with posttreatment and pretreatment compared with maintenance. A p-value of 0.05 or lower was considered to be significant.

The A-COM data were analyzed by comparison to the clinically significant change score.[39] The A-COM provides a t-score and standard error (SE) for each participant. Change scores were calculated using t-scores from pre- to posttreatment and pretreatment to maintenance. The SE of the change score was calculated using the formula "(sqrt(SE1^2 + SE2^2))." The change scores were divided by the SE of the change score for each interval to calculate the standardized change scores (t). Standardized change scores greater than 1.64 were interpreted as reliable and clinically significant changes with 95% confidence.

Narrative speech samples (Cinderella retell, Nicholas and Brookshire Cat Rescue scene, and CT picture description) were analyzed using % CIU. Data were averaged across the three narrative samples from each time point because %CIU is more reliable when data from multiple narratives are averaged.[43] Effect sizes were calculated by pooling the standard deviation from all six speech samples from the relevant time periods (pre vs. posttreatment and pretreatment vs. maintenance). Effect sizes greater than 0.5 were interpreted as clinically meaningful, given that all participants had severe aphasia.

Conversational speech samples were analyzed using %CIU and POWERS analyses. Given that there was only one data point at each time interval and the small number of participants, CT Standardized Narrative Analyses and all analyses of the conversational speech samples were examined for numeric trends rather than using statistical analysis. For these analyses, scores that changed less than or equal to 1 unit were interpreted as relatively stable.

RESULTS

Comprehensive Aphasia Test

Individual performance on the CT can be found in Table 2. Two participants showed a statistically significant increase in performance on the CT from pretreatment to posttreatment (BU01: $\chi^2 = 8.9$, $p = 0.003$; BU23: $\chi^2 = 8.0$, $p = 0.005$). One participant (BU04) demonstrated a statistically significant decrease from pre- to posttreatment ($\chi^2 = 5.3$, $p = 0.022$). The remaining two participants showed nonsignificant changes from pre- to posttreatment ($\chi^2 < 1$). None of the comparisons were significant when comparing pretreatment to maintenance ($\chi^2 < 2.6$, $p > 0.10$), suggesting that effects were not maintained for 6 weeks after treatment.

The Aphasia Communication Outcome Measure

A-COM raw scores and SEs were calculated by the program contingent on the participants' responses (Table 2). Results of the calculations of clinically significant change scores across testing intervals revealed a significant increase in self-reported communication efficiency pre- to posttreatment for only one participant (TU35). Two additional participants demonstrated significant increases from pretreatment to maintenance testing. One participant (BU23) showed a significant decrease in scores pre- to posttreatment and pretreatment to maintenance.

Narrative Speech Samples

Percent CIU of Narrative Sample (Table 3): Two of the five IWSA showed effect sizes greater than 0.5 (BU23 for pre- to posttreatment and TU35 for pre- to posttreatment and pretreatment to maintenance). All other effect sizes were less than 0.1.

Information Carrying Words (CT Picture Description; see Table 4): BU01's performance was relatively stable from pre to posttreatment, and declined two points from pretreatment to maintenance. BU04 showed relatively stable performance from pretreatment to the other testing points. BU17 showed an increase from pretreatment to posttreatment, but then showed a large decrease from pretreatment to maintenance. Inspection of the data suggested that this was largely due to an increased number of inappropriate information carrying words. Both BU23 and TU35 showed an increase from pretreatment to posttreatment and pretreatment to maintenance testing.

Analysis of Conversational Speech

Data are summarized in Table 5. Here, we focus on POWERS outcome measures that were controlled for conversation length. These data are presented in parentheses in Table 5.

BU01: As Table 5 shows, there were minimal changes from pre- to posttreatment. From pretreatment to maintenance, the number of substantive conversational turns was reduced, but the number of content words increased, suggesting longer conversational turns. However, given that %CIU also decreased in this interval, it is likely that many of the content words were either repeated or irrelevant.

BU04: Due to technological difficulties, BU04's posttreatment speech samples were not available. From pretreatment to maintenance, BU04's relative number of total turns increased, while the number of substantive turns stayed relatively stable. Total turns refer to any contribution to the conversation, whereas substantive turns must contain at least one content word. This indicates a potential increase in multimodal communication because the number of turns increased but not the number of turns with content words. The number of content words per minute decreased. Percent CIUs increased by 3%.

BU17: Substantive turns per minute decreased over time. Content words produced per minute of conversation remained relatively stable from pre- to posttreatment and increased at maintenance testing. Circumlocutions, categorized as speech errors, decreased from pretreatment compared with posttreatment and maintenance testing. Percent CIU increased from pre- to posttreatment, but returned to baseline at maintenance testing.

BU23 demonstrated an increase in total conversational turns and number of content words per minute from pre- to posttreatment and pretreatment to maintenance testing. Percent CIU declined from pretreatment to posttreatment and maintenance testing. Taken together, these results suggest that the increase in content words may reflect more repetitions or irrelevant comments.

TU35: TU35's substantive turns remained relatively stable over time. Number of content words was relatively stable from pre- to posttreatment but showed an increase from pretreatment to maintenance testing. Percent CIUs increased from pretreatment to posttreatment but decreased from pretreatment to maintenance. Taken together, the results suggest that more of his content words were relevant at posttreatment than pretreatment testing (because number of content words per minute was stable but %CIU increased). However, the conversation at posttreatment was much longer, suggesting that the time to communicate the ideas was relatively slow.

DISCUSSION

The purpose of this study was to consider whether IWSA benefit from conversation treatment and if so, how best to capture treatment effects. The results were complex. All of the IWSA showed improvement on at least one metric, but no one measure captured change in all IWSA. Importantly, none of these measures fully captured how IWSA were able to convey their thoughts in supported conversation.

Elman and Bernstein-Ellis[28] suggested that people with more severe aphasia may show greater treatment gains because they have more room for improvement. However, most of their participants did not have severe aphasia as defined by WAB AQs.[6] The results of this study suggest that IWSA may show limited improvement on typical outcome measures, such as standardized tests or CIUs. There is more than one way to interpret this result. One interpretation is that IWSA are not responsive to conversation treatment, but another possibility is that these measures are not sensitive to the treatment changes. Based on our observations of IWSA in conversation treatment, we would argue that conversation treatment is appropriate for this population. Anecdotally, all clinicians and observing family members reported that IWSA showed increased engagement, adoption of multimodal communication methods, and sharing of new information during conversation treatment sessions. In addition, previous work has suggested that IWSA are able to participate in conversation groups, particularly when the facilitator provides sufficient support.[41,42] Conversation treatment for IWSA therefore merits further study because it targets discourse production using multimodal communication.

One question is which outcome measures are likely to capture the effects of conversation treatment in IWSA. Most standardized measures focus on spoken language rather than capturing how well IWSA convey ideas using multiple modalities. We examined use of standardized tests (CT), discourse analyses such as percent CIU and CT Narrative Analysis, and POWERS analysis of conversational speech. All participants showed positive changes on at least one measure, and all four participants whose data were analyzed posttreatment demonstrated progress toward at least one targeted outcome measure based on individualized goals. Many of the changes were also relatively small. It may be that there is no one measure that will reflect changes for IWSA as a group. Instead, it may be necessary to tailor outcome measures more specifically to each individual's goals.

It is also possible that some aspects of conversation treatment need to be adapted for IWSA. Both participants (BU01 and BU23) who made significant improvements from pre- to posttreatment on discrete linguistic measures showed decreased performance from posttreatment to maintenance testing, suggesting that treatment effects were not maintained. Both of these participants were randomly assigned to dyads, though not the same one. Two individuals who showed stable, but slightly decreased performance from pre- to posttreatment on the CT (BU17 and TU35) were also randomly assigned to dyads. The only individual who performed significantly worse on the CT following conversation treatment was assigned to the large group, though this individual had returned to baseline at maintenance testing. IWSA may require more treatment, either in intensity or duration, than those with more mild or moderate impairments. On this account, IWSA may benefit from dyads to a greater extent than groups because dyads offer increased opportunities to take conversational turns,[27] or perhaps a stepped approach in which IWA participate in dyadic conversation treatment followed by large group conversation treatment. Further study with a larger sample size for each condition is necessary to determine whether severity of aphasia interacts with group size.

Another question is whether some IWSA are more likely to benefit from conversation treatment than others. Having some, although minimal, naming abilities at baseline may be predictive of the participant's success with this treatment program. At baseline, BU17 and TU35 both obtained a 0 for the raw object naming score on the CT, while BU01 and BU23 scored a 2 or above. Participants BU01 and BU23 also showed significant gains on the CT, whereas BU17 and TU35 did not. Thus, individuals with more severe naming deficits at baseline may also benefit from a longer treatment duration or an increased dosage of conversation treatment to maximize maintenance of treatment effects. Baseline auditory comprehension scores did not appear to impact or predict outcomes on the CT, as BU01, BU17, and TU35 presented with similar baseline scores yet differed significantly in performance posttreatment. BU04 had the highest auditory comprehension at baseline, yet scores significantly decreased at posttreatment testing. BU23 demonstrated the lowest raw auditory comprehension score at baseline, yet made the largest gains pretreatment to posttreatment.

In terms of the impact of the conversation treatment on self-reported measures of communicative effectiveness (A-COM), four of the five participants showed an increase at maintenance testing (though this was only clinically significant in three of the four). However, large differences in performance between testing sessions have been observed in IWA on the A-COM, and have been attributed to differences in mood or several other factors (W.D. Hula, personal communication, April 11, 2018). Thus, these single-case analyses should be interpreted cautiously.

This study provides preliminary data regarding the benefits of conversation therapy for individuals with severe profiles of aphasia. The scope of the results is limited by the small sample size, complexity and severity of client profiles, and varying length of conversation samples. Our analyses collapsed across all subtests of the CT, meaning that gains in particular subtests (e.g., object naming or repetition) could be missed. Another issue is the lack of appropriate measures for IWSA. For example, there are not standardized discourse measures that explicitly include use of multimodal supports. The A-COM normative sample excluded or underrepresented IWSA, which may have contributed to the exclusion of more simple communicative tasks in the questionnaire. As a result, the A-COM might not be sensitive to changes in communicative effectiveness for IWSA. Further studies might code for themes of importance to IWA (e.g., agency, control, actively hoping) rather than specific communication events, to better qualify functional communication for this population.[35,44]

CONCLUSION

IWSA represent a significant percentage of people living with aphasia. IWSA comprised 18.5% of the sample (5/27) considered for the present study, which was consistent with our estimate of 15 to 20% based on previous studies. Furthermore, IWSA have significant communication deficits that have the potential to marginalize and isolate them from participating in society and which negatively impact quality of life. In seeking treatment for these severe deficits in communication, IWSA often present with similar goals with regard to conversation and inclusion in social environments as those with less severe profiles, yet often receive therapy that is focused on more discrete communication tasks or solely on compensatory approaches.

This study explored whether IWSA benefit from functional conversational group treatment. Results were variable across participants, but all participants demonstrated improvement in at least one area of conversational speech production across the three intervals of testing, and the majority of individuals showed an improvement in self-reported communicative effectiveness per the A-COM at posttreatment or maintenance testing. These results should be cautiously interpreted, but they do lend support for further study of conversation treatment for this subpopulation of aphasia.

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Learning Outcomes:

As a result of this activity, the reader will be able to (1) estimate the number of people with chronic, severe aphasia in the United States; (2) describe conversation treatment; (3) list and evaluate three methods to analyze discourse; and (4) discuss the benefits of conversation treatment for individuals with severe aphasia.

Table 1

Demographic Information and Treatment Condition

IWSA	Age	Edu	Treatment condition	Aphasia profile	CT raw naming	CT aud. comp.	Individualized conversation goals
BU01	76	18	Dyad	Transcortical sensory	2	28	Produce personally relevant main ideas using supported speech (cued use of writing, gestures, AAC), increase awareness, and self-correction of paraphasias
BU04	71	16	Large group	Broca	5	41	Produce complete simple active sentences, produce personally relevant main ideas using supported speech (independent use of writing, gestures, AAC)
BU17	76	20	Dyad	Wernicke	0	29	Increase production of key words in discourse with the aid of supported speech (use of gestures, pictures, tablet), increase the clarity of his utterances
BU23	79	13	Dyad	Global	4	19	Increase independent use of supported speech devices (tablet), increase the frequency of communication attempts
TU35	50	14	Dyad	Severe mixed Nonfluent	0	29	Produce personally relevant main ideas using multimodal communication/supported speech (gestures, AAC, pointing, and repeating), answer simple wh-questions given one repetition and visual cue

Abbreviations: aud. comp., auditory comprehension; CT, comprehensive aphasia test; Edu, education; IWSA, individuals with severe aphasia.

Table 2

Standardized Test Results

Participant	Percent items correct on the CT			A-COM *t*-scores (standard errors)		
	Pre	Post	Maintenance	Pre	Post	Maintenance
BU01	29.9%	41.2%[a]	36.2%	43.7 (2.4)	45.8 (2.3)	50.3 (2.8)[b]
BU04	32.2%	24.1%[a]	34.5%	44.4 (2.8)	45.1 (2.5)	52.4 (3.0)[b]
BU17	25.3%	23.0%	20.0%	36.8 (2.8)	42.4 (2.7)	37.8 (3.0)
BU23	6.3%	15.5%[a]	5.8%	60.0 (3.1)	29.2 (3.5)[b]	53.0 (2.6)[b]
TU35	21.3%	20.7%	16.1%	24.1 (4.0)	44.2 (2.5)[b]	42.5 (2.7)
Mean	23.0%	24.9%	22.5%	41.8	41.3	47.2

Abbreviations: A-COM, aphasia communication outcome measure; CT, comprehensive aphasia test.

Note: $N = 174$ test items on the CT.

[a]Significant at $p < 0.05$ on McNemar's test.

[b]Clinically significant change score on A-COM $\geq t = 1.64$.

Table 3

Percent CIU in Narrative Samples (Average of Cinderella Story, CT Picture, and Cat Rescue Scene)

Participant	Pretreatment	Posttreatment	Maintenance	Pre vs. post *d*	Pre vs. maintenance *d*
BU01	4.9%	6.4%	5.8%	0.01 (1.45)	0.01 (1.45)
BU04	9.8%	8.2%	6.5%	−0.03 (0.564)	−0.06 (0.568)
BU17	2.0%	6.4%	3.2%	0.26 (0.173)	0.07 (0.178)
BU23	0.0%	2.2%	n/a	0.82 (0.027)	n/a
TU35	0.0%	1.9%	5.4%	1.00 (0.019)	1.00 (0.054)

Abbreviations: CIU, correct information unit; CT, comprehensive aphasia test.

Note: *d'* was calculated using pooled standard deviations (in parenthesis) across all three speech samples at both time points.

Table 4

CT Narrative Analysis for Picture Description

Participant	Pretreatment	Posttreatment	Maintenance
BU01	5	4	3
BU04	2	3	1
BU17	4	11	−23
BU23	−2	3	1
TU35	−1	3	2

Note: Note that negative scores indicate that there was a greater number of inappropriate than appropriate information carrying words (lexical items).

Table 5

POWERS and %CIU in Natural Conversation

Participant	Outcome measure	Pretreatment	Posttreatment	Maintenance
BU01	Substantive turns	49 (9.8)	27 (8.0)	14 (4.6)
	Content words	112 (22.4)	73 (21.7)	189 (62.3)
	Semantic paraphasias	6 (1.2)	3 (0.89)	5 (1.7)
	%CIU	77%	48%	65%
	Duration (min)	5:00	3.36	3.03
BU04	Total turns	14 (2.8)	–	9 (5.6)
	Substantive turns	10 (2.0)	–	4 (2.5)
	Content words	115 (23)	–	8 (5)
	%CIU	56%	–	59%
	Duration (min)	5.00	–	1.60
BU17	Substantive turns	44 (8.8)	14 (3.2)	3 (1.5)
	Content words	276 (55.2)	243 (55.9)	122 (61.9)
	Circumlocutions	28 (5.6)	8 (1.8)	4 (2.0)
	%CIU	55%	61%	54%
	Duration	5.00	4.35	1.97
BU23	Total turns	31 (6.2)	37 (7.4)	39 (7.9)
	Content words	21 (4.2)	79 (15.8)	72 (14.6)
	%CIU	59%	45%	45%
	Duration	5.00	5.00	4.92
TU35	Substantive turns	5 (1.5)	9 (1.8)	4 (1.4)
	Content words	4 (1.2)	5 (1)	10 (3.4)
	%CIU	70%	94%	63%
	Duration	3.28	5.0	2.90

Abbreviations: CIU, correct information unit; POWERS, Profile of Word Errors and Retrieval in Speech.

Note: Data in parentheses are normalized by the duration of the speech sample (e.g., substantive turns per minute).