

EFFECTS OF CONVERSATIONAL GROUP TREATMENT ON PATIENT-
REPORTED OUTCOME MEASURES OF COMMUNICATION
AND SOCIAL ISOLATION

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ABSTRACT

Individuals with aphasia experience deficits in language and communication as well as loss of social networks and decreased social participation. The purpose of the present study was to build on previous research and design a randomized control study that measures the direct effects of conversational group treatment on language and social isolation from the perspective of the individual with aphasia (IWA). Conversational group treatment was administered for one hour, twice weekly for ten weeks. Thirty-two IWAs were randomly assigned to a treatment group or delay control group. All participants were administered a battery of standardized measures of language and communication and two patient-reported outcome measures (PROs). The Lubben Social Network Scale-6 (Lubben) and the adaptive Aphasia Communication Outcome Measure (ACOM) were administered at pre-treatment, post-treatment, and six-weeks post-treatment. The ACOM specifically measured the effects of aphasia on everyday communication tasks. The Lubben determined outcomes related to social isolation and perceived social support from family and friends. Significant changes were found on the ACOM for IWAs in the treatment group from pre-treatment to post-treatment and pre-treatment to maintenance. No significant changes were found for the control group on the ACOM. For the Lubben, no significant changes were found for IWAs in the treatment group or control group from pre-treatment to post-treatment or pre-treatment to maintenance. The results from this study showed that conversational group treatment was effective in increasing self-perceived language and communication abilities in IWAs. As IWAs feel they can effectively communicate, it can increase group participation, communication with friends/family, and facilitate return to pre-stroke activities

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LIST OF ABBREVIATIONS

ACOM.....	adaptive Aphasia Communication Outcome Measure
ASHA.....	American Speech-Language-Hearing Association
ASHA-FACS.....	American Speech-Language-Hearing Association Functional Assessment of Communication Skills for Adults
BDAE.....	Boston Diagnostic Aphasia Examination
BOSS.....	The Burden of Stroke Scale
CADL.....	Communicative Abilities in Daily Living
CAPPA.....	Conversational Analysis Profile for People with Aphasia
CAT.....	Comprehensive Aphasia Test
CDP.....	Communication Disability Profile
CIU.....	Correct information unit
COAST.....	Communication Outcome After Stroke
CRG.....	Communication Recovery Group
FDA.....	The Food and Drug Administration
HADS.....	The Hospital Anxiety and Depression Scale
IWA.....	Individual with aphasia
LPAA.....	Life Participation Approach to Aphasia
Lubben.....	The Lubben Social Network Scale-6
NAVS.....	Northwestern Assessment of Verbs and Sentences
NIDCD.....	National Institute of Deafness and Other Communication Disorder
PICA.....	Porch Index of Communicative Ability
PNT.....	Philadelphia Naming Test

PRO.....Patient-reported outcome
SAQOL.....Stroke and Aphasia Quality of Life Scale-39
SLP.....speech-language pathologist
SPICA.....Shortened Porch Index of Communicative Abilities
SSPT.....Sentence Production Priming Test
VASES.....The Visual Analogue Self-Esteem Scale
VNT..... Verb Naming Test
WAB.....Western Aphasia Battery-Aphasia Quotient
WHO.....World Health Organization

CHAPTER 1

INTRODUCTION

The American Heart Association (2017) reports that stroke is the fifth leading cause of death and that roughly 800,000 people have a stroke every year in the United States. Stroke is also the leading cause of long term disability in the U.S. (American Heart Association, 2017). According to the 2016 National Aphasia Awareness Survey, about 33% of strokes result in aphasia. Aphasia is an acquired language disorder that results from damage to the brain, typically secondary to stroke (ASHA, 2017). The National Institute of Deafness and Other Communication Disorders (NIDCD; 2015) found there are roughly 180,000 new cases of aphasia per year in the United States and approximately one million people are living with aphasia. Depending on the severity or location of an individual's stroke, communication (expressive and receptive), reading, writing, and cognition can be affected (ASHA, 2017; Threats & Worrall, 2004). Research by Hilari and Northcott (2017) indicated that individuals who are affected by both stroke and aphasia experience greater psychological distress, worse quality of life, and prolonged recovery as compared to individuals without aphasia. The focus of this study is to investigate whether conversational treatment is associated with changes in how individuals with aphasia (IWAs) perceive their own impairments.

Conversation and social interaction is the basis of how individuals form and maintain relationships (Armstrong & Mortensen 2006; Savage et al., 2014). However, individuals with aphasia (IWAs) experience difficulty effectively communicating and maintaining relationships which also affects their psychological well-being, self-image, and personal identity (Lock, Wilkinson, & Bryant, 2001). IWAs who lose their ability to

communicate experience depression (Astrom, Adolfsson, & Asplund, 1993; Kauhanen et al., 2000), social isolation (Fotiadou, Northcott, Chatzidaki, & Hilari, 2014; Cruice, Worrall, & Hickson, 2006) and decreased participation and enjoyment from social networks (Northcott, Marshall, & Hilari, 2016). A systematic review of 70 research articles by Northcott, Moss, Harrison, and Hilari (2015) found that social support following a stroke was negatively impacted by decreased interactions with friends and involvement in social activities. Results also indicated that in 13 of 14 studies there was a strong correlation between poor social support and feelings of depression. Based on results from Astrom, Adolfsson, and Asplund (1993), having few social interactions outside the home was the strongest predictor of depression at 12 months, two years, and three years post stroke for IWAs.

IWAs have reported that they wish to return to their previous communication abilities and continue to be active participants in society (Johansson et al., 2011). However, many IWAs do not resume pre-stroke activities (Labi et al., 1980). This evidence suggests that a majority of IWAs are socially isolated and tend to avoid social situations due to their communication deficits.

The Life Participation Approach to Aphasia (LPAA) (Chapey et al., 2000) is a framework that focuses on the quality of life and enhancement of life participation of the person affected by aphasia and their frequent communication partners (e.g. family and friends). Goals for intervention for individuals who are in the beginning stages of treatment for aphasia may be to establish efficient ways to communicate in their everyday environment, while the focus for individuals who are in the later stages of treatment may

be to return to a previous job or favorite pre-stroke activity. These goals are determined based on individual preferences and motivations.

The LPAA was developed based on the framework and values of the International Classification of Functioning, Disability, and Health (WHO, 2001) which describes functioning and disability as the interaction of a person's health condition, environmental factors, and personal factors (WHO, 2013). The LPAA model integrates four components: (1) language and related impairments, (2) personal identity, attitudes, and feelings, (3) participation in life situations, and (4) communication and language environment (Chapey et al., 2000; Elman, 2000; Boles & Lewis, 2004).

Language and related impairments encompass the type and severity of the language impairment and additional deficits (cognition, memory, reading, and writing). Personal identity, attitudes, and feelings include individual perspectives and motivations regarding the desire to reestablish efficient communication and accept language and related deficits. Participation in life situations refers to the individual's overall engagement and communication with friends/community members and reengagement in desired activities. Lastly, communication and language environment is based largely on support from family members and friends in terms of creating a facilitative and comfortable environment for effective communication. When friends and family are supportive, understanding, patient, and educated on the best ways to communicate with an individual with aphasia (IWA), the IWA will feel understood and more willing to communicate. Additionally, in aphasia groups or aphasia communities IWAs will find individuals they can relate to, meet other IWAs who have similar deficits, and have an increased quality of life (Elman, 2016; Chapey et al., 2000). Within the context of group

conversational treatment, IWAs can be supported and encouraged by other group members when communicating. IWAs may feel they have the space and time to communicate their message. However, a non-supportive environment will make it more challenging for IWAs to communicate and participate in daily communicative acts. If an IWA does not have a community or other individuals they can relate to and communicate with, they may find communication a frustrating task and have a decreased quality of life (Northcott et al., 2015; Astrom et al.,1993). Understanding the level of support an IWA needs will increase their communicative experience and create positive interactions.

Conversational group treatment fits within the framework of the LPAA as it is a means through which individual goals for increasing overall communicative effectiveness, participation in everyday communication tasks (e.g., talking with friends, family, individuals in the community), and improved quality of life can be targeted. Conversational group therapy is a communication based treatment that focuses on improving conversational skills and confidence in individuals with aphasia (Simmons-Mackie Elman, Holland, & Damico, 2007; Simmons-Mackie, 2014). Conversational group therapy targets individualized goals based on motivations and purposes for communication (Williamson, Richman, & Redmond, 2011; Vickers, 2010). As opposed to a strictly impairment-based approach which targets microlinguistic aspects of language (semantics, syntax, morphology) in a structured environment, conversational group therapy focuses on the macrolinguistic aspects of language, is less structured, and targets underlying language deficits through communicative experiences that resemble natural and everyday social interactions (Bernstein-Ellis & Elman, 2007; Graham & Avent, 2004). Outcomes of conversational group treatment will vary depending on both

individual goals and what aspect or aspects of the LPAA model are targeted during treatment.

The goals of conversational group treatment are to increase both communication ability and overall confidence in IWAs. Depending on the type and severity of deficits, goals are addressed at the individual level and additional support is provided as needed. Conversational group treatment promotes effective communication and social participation regardless of the type and degree of impairment. Benefits of conversational group treatment include interactions with multiple group members, improving turn taking skills, learning to repair communication breakdowns and observing and using strategies by other individuals in the group (e.g. gesture, writing, drawing) (Davis, 1986; Green 1982; Simmons-Mackie et al., 2007). During these interactions, the group facilitator (speech-language pathologist (SLP)) helps mediate the conversation, expands and clarifies unintelligible messages using total communication, and encourages group support during conversation (e.g., allowing time for messages to be communicated and helping establish support among the IWAs).

A systematic literature review of conversational group treatment indicated that there is a lack of research and standardization of conversational group treatment, and more qualitative than quantitative research (Simmons-Mackie, Savage & Worrall, 2014). Additionally, previous studies do not provide sufficient evidence on the effects of conversational group treatment from the perspective of the IWA.

Earlier research on conversational group therapy has shown improvements on standardized measures of language and communication (Aten, Caligiuri, & Holland, 1982; Bolinger, Musson, & Holland, 1993). However, these studies did not include

control groups and there was a small number of participants. Wertz et al. (1981) conducted a randomized control study in which individuals were randomly assigned to either individual or group treatment. Focus of group treatment was general discussion of current events and other topics, while focus of individual treatment was impairment based. Results showed similar outcomes for both treatment conditions. Both treatment conditions showed improvement on standardized tests such as the Porch Index of Communicative Ability (PICA). However, these results do not provide sufficient evidence for benefits of group conversation as the individual treatment condition and group treatment condition received different interventions. Both treatment conditions showed improvement in language and communication abilities. The individual treatment group showed larger gains on standardized tests such as the Porch Index of Communicative Ability (PICA). However, ratings scales were also used to measure changes in functional language skills from a surrogate perspective, but not from the perspective of the IWA.

Elman and Bernstein-Ellis (1999a, 1999b) conducted a randomized control study with 24 individuals with aphasia. Participants were randomly assigned to an immediate treatment group or a deferred treatment group. Participants were further assigned to a mild-moderate or moderate-severe aphasia group. The total length of treatment was four months. The focus of treatment was to improve overall communication, foster initiation in conversation, and promote confidence. As part of the five hours of weekly treatment (two and one-half hours, two times per week), the first 90 minutes was spent discussing current events and personal events and the final hour was spent recapping the first 90-minute discussion or playing board games. Once weekly, during the final hour, group was

co-lead by a performing artist who introduced activities such as art or mime. Individuals in the deferred treatment group attended three or more hours of social groups (e.g., movement classes, art groups, church activities) prior to beginning treatment.

All participants in Elman and Bernstein-Ellis's study completed a testing battery at pre-assessment, after two and four months of treatment, and four to six-weeks post-treatment. The test battery comprised the Shortened Porch Index of Communicative Abilities (SPICA), Western Aphasia Battery-Aphasia Quotient (WAB AQ), and the Communicative Abilities in Daily Living (CADL).

According to results from Elman and Bernstein-Ellis (1999a, 1999b), participants who received group treatment scored higher on communicative and linguistic measures than participants who did not receive treatment. Elman and Bernstein-Ellis (1999b) found that positive aspects of conversational group treatment were that IWAs felt more confident, enjoyed the support of others with aphasia, and enjoyed participation in conversations and talking more. However, these results need to be interpreted with caution because the treatment protocol was not clearly outlined and the five hours of weekly treatment were not focused solely on conversational group treatment. Further, improvements in quality of life and self-esteem were documented through descriptive research, rather than quantitatively from the perspective of the IWA. These results provided insight into how IWAs perceived the effects of conversational group treatment but need to be quantitatively measured.

Ross, Winslow, Marchant, and Brumfitt (2006) conducted a conversational group treatment study with seven individuals with moderate aphasia. IWAs were assessed using communication measures (Conversational Analysis Profile for People with Aphasia

(CAPPA)) and measures of psychological wellbeing (The Hospital Anxiety and Depression Scale (HADS); The Visual Analogue Self-Esteem Scale (VASES)) at pre-treatment, post-treatment, and three months following treatment. Group treatment was provided two hours per week for eleven weeks and focused on total (multi-modality) communication and conversation skills, education about disability and rights of IWAs, and engagement in social participation. Ross et al. (2006) found conversational group treatment to be effective in improving life participation and changes in conversational experiences (e.g., increased enjoyment in conversation and increased range of people spoken to). However, they reported fewer changes in specific communication abilities (e.g., ability to repair communication breakdowns, topic management, initiation and turn taking). Some individuals showed improvement in psychological well-being, but their changes were limited. A limitation of this study was the lack of a control group, which makes it difficult to attribute the changes directly to the treatment. It is possible that there were other confounding variables that affected the results, such as increased comfort with the examiners.

Vickers (2010) also demonstrated evidence of increased social and life participation following conversational group treatment. IWAs who attended groups had significantly less perceived social isolation and greater social connection. However, these results need to be interpreted with caution due to the non-randomized group design. The participants in the treatment group were already attending a bi-weekly aphasia group program at the Communication Recovery Group (CRG). In contrast, individuals in the control group were not members of the CRG. Therefore, individuals who participated in

the group may not be representative of the overall population (IWAs), limiting the generalizability of the results.

Simmons-Mackie, Elman, Holland, and Damico (2007) identified patterns across therapists and settings that represent well-managed versus poorly-managed groups. Simmons-Mackie et al. (2007) found that well-managed groups engaged a variety of behaviors and techniques including establishing discourse equality (e.g. everyone in the group had an opportunity to talk), focusing on everyday communicative topics (e.g. discussed topics that can be generalized outside the therapy room), employing multiple modal communication (e.g., communicated using spoken language, written language, and gestures), mediating communication (e.g., repaired communication breakdowns), and aiding in turn taking (e.g., supported transitions between conversational turns). These results provided important information for developing and conducting a well-managed conversational group treatment. However, this evidence did not provide quantitative data on the effects of conversational group treatment.

Simmons-Mackie and Elman (2011) also conducted a study analyzing the content of conversational group therapy and patterns of discourse that are associated with positive identity. Sociolinguistic microanalysis of discourse during a conversational group therapy session which included eight IWAs, a speech-language pathologist (SLP), and an assistant was analyzed. Results indicated several characteristics of group treatment that conveyed positive group identity including discourse demonstrating inclusion of all group members, that group members were “being heard,” and that competence of all group members was assumed. This study provided evidence for the crucial role the group

facilitator plays in increasing positive group identity and creating an equal and supportive environment for IWAs.

The purpose of the present study was to build on previous research on conversational group therapy and design a randomized control study that measures the direct effects of conversational group treatment on language and social participation from the perspective of the individual with aphasia. As described above, previous research does not directly show the effects of conversational group treatment on language, life participation and quality of life from the perspective of the IWA. This study will help guide further research and establish direct effects of conversational group treatment on linguistic measures and social participation from the perspective of the IWA.

For IWAs, there is a lack of reliable and validated patient-reported functional communication measures (Cella et al., 2010; Haley et al., 2004). Functional in this context is referring to an individual's ability to use learned skills outside of the treatment setting (Aten, Caligiuri, & Holland, 1982; Frattali, Thompson, Wohl, & Ferketic, 1995). As defined by The Food and Drug Administration (FDA; 2009), patient-reported outcomes (PROs) are a measurement of health status provided directly by the patient without interpretation from a caregiver or health care provider. These measurements are important for determining the functional impact a disorder may have on an individual and the efficacy of treatment from the perspective of the patient (Acquardo et al., 2003). Doyle et al. (2013) found that surrogate reports (e.g., caregivers and therapists) of communicative functioning are not reliable substitutes for self-reported outcomes by IWAs. Surrogates did not systematically overestimate or underestimate scores compared to IWAs (i.e., scores were not reliably higher or lower). In two domains, talking and

writing, surrogates assigned more extreme scores as compared to IWAs. These results demonstrate the importance of obtaining patient-reported outcomes, because surrogate reports are not reliable or predictable substitutes. Obtaining PROs can also help track self-reported progress over time and guide treatment.

Until recently, available PROs included the Burden of Stroke Scale (BOSS; Doyle et al., 2004), Stroke and Aphasia Quality of Life Scale-39 (SAQOL-39; Hilari et al., 2003), Assessment of Living with Aphasia (Simmons-Mackie et al., 2014), The Communication Confidence Rating Scale for Aphasia (Babbitt, Heinemann, Semik, & Cherney, 2011), the Communication Disability Profile (CDP; Swinburn & Byng, 2006), and the Communication Outcome After Stroke (COAST; Long et al., 2008). Only the COAST Total score and CDP Activity score showed the minimum internal consistency reliability coefficient ($>.90$), indicating that each specific set of items measures the general construct and that the results are reliable and consistent (Hula et al., 2015). However, these measures are limited by the reduced amount of questions measuring communication specifically. Instead, they measure larger constructs (e.g., overall quality of life). Additionally, internal consistency for both the CDP and COAST were reported based on average scores. As a result, individuals with very low or high scores are measured with less precision than individuals who score in the average range.

Overall, the available PRO measures are limited by inadequate psychometric validity, lack of empirical support, and practical limitations. Other issues with current PRO measures include lengthy administration time, which was found to be the most frequent barrier to assessments for IWAs (Simmons-Mackie, Threats, & Kagan, 2005).

Based on the limited number of available reliable measures, the adaptive Aphasia Communication Outcome Measure (ACOM) was developed to specifically measure the effect of aphasia on everyday communication tasks and changes in language and communication. For the current treatment study, the ACOM was administered to measure self-reported language and communication abilities pre-treatment and post-treatment. The adaptive ACOM is a shortened 12-item questionnaire which showed reliability consistent with the full 56-item ACOM (Hula, Kellough, Doyle, 2015). Validity evidence showed that ACOM scores are moderately correlated ($>.63$) with results on the American Speech-Language-Hearing Association Functional Assessment of Communication Skills for Adults (ASHA-FACS), Porch Index of Communicative Ability (PICA), and Boston Diagnostic Aphasia Examination (BDAE) severity rating scale. Thus, the ACOM measures a construct that is related to but distinct from surrogate-reported measures (Hula, Kellough, & Doyle, 2015).

The Lubben Social Network Scale-6 (Lubben) is a PRO that determines outcomes related to social isolation and perceived social support from family and friends in older adults. It was developed to screen for social isolation and identify presence or lack of social support in elderly individuals, as there is a strong correlation between social support and mental health outcomes (Lubben et al., 2006). The Lubben has been established as a reliable and valid measure and is used in both research and clinical settings (Lubben et al., 2006). Results from Lubben et al. (2006) indicated that the Lubben-6, an abbreviated 6-item version of the full Lubben, provides quantitative information on participant's ties with family and friends and is successful at identifying individuals at risk for social isolation. A score of 12 or lower denotes that an individual is

“at-risk” for social isolation. Additionally, low scores on the Lubben are correlated with mortality, hospitalizations, and depression (Lubben & Gironde, 2004). The Lubben Social Network Scale-6 (Lubben) was administered to assess the extent of social isolation that an individual with aphasia may feel and determine if there is decreased feelings of social isolation after conversational group treatment.

The aim of this study is to investigate the effects of conversational group treatment on patient-reported outcomes as measured by the adaptive Aphasia Communication Outcome Measure (ACOM) and Lubben Social Network Scale-6 (Lubben). Further description of reliability and validity of these measures is provided in the methods section. It is predicted that for the treatment group there will be a significant change from pre-treatment to post-treatment on both the adaptive ACOM and Lubben as compared to the control group. It is also predicted that these changes will be maintained for at least six-weeks post-treatment. A control group was included to confirm that changes in language and communication abilities in the treatment group were due to the treatment rather than time or other extraneous factors. Interpreting results from the perspective of the IWA will further identify direct benefits of conversational group treatment that are perceived by the IWA, which can help further develop individual goals and increase overall communication abilities and life participation.

CHAPTER 2

METHODS

The current study is part of a larger study that aims to determine if smaller or larger groups are associated with better outcomes after conversational group treatment. The present study focused on a subset of the data, specifically on the effects of conversational group treatment on patient-reported outcomes as measured by the Lubben Social Network Scale-6 (Lubben) and adaptive Aphasia Communication Outcome Measure (ACOM) at pre-treatment, post-treatment, and maintenance (six-weeks post-treatment).

Participants

Thirty-two total individuals (9 females; 23 males; average age 62.8; average years of education 14.7) were recruited from Temple University and Boston University to participate in a conversational group treatment study. Inclusion criteria were the following: (1) at least 5-months post-onset of a single stroke in the language dominant hemisphere, (2) native English speaker, (3) no history of neurological disease other than stroke, developmental speech, language or learning disability, or serious medical illness, (4) did not receive other treatment while participating in the study. Table 1 shows demographic information for participants included in the study.

Table 1: Demographic Data

Gender	Age	Years of Education
Female: 9	Average: 62.8	Average: 14.7
Male: 23	Range: 35.5 - 94.1	Range: 7 - 20

Procedures

Participants were randomly assigned to either a treatment group (16 IWAs) or a delay control group (16 IWAs). Five participants declined to participate after initial testing and one participant passed away during the treatment phase due to an unrelated illness. Data were reported for the remaining 26 participants. IWAs in the traditional treatment group completed a pre-treatment assessment at time point one (T1) and were evaluated post-treatment (T2) and six-weeks post-treatment (T3). The control group (delay treatment group) completed three pre-treatment (T1, T2, and T3) assessments before receiving treatment and were tested twice post-treatment. All evaluation and treatment sessions were audio recorded and videotaped. In the present study, performance of the treatment group (n=11) was compared to delay control group (n= 15) at pre-treatment (T1), post-treatment (T2), and six-weeks post-treatment (T3).

Measures

Measures used in pre-treatment, post-treatment and maintenance included the following: **Standardized measures** (1) Philadelphia Naming Test (PNT) -Short Form, (2) Comprehensive Aphasia Test (CAT), (3) Northwestern Assessment of Verbs and Sentences (NAVS), Sentence Production Priming Test (SPPT), Verb Naming Test (VNT), **5 Speech samples** (4) Comprehensive Aphasia Test (CAT) picture description, Stroke Story, Cat rescue, Cinderella story, naïve conversation, and **Standardized patient-reported outcomes** (5) adaptive Aphasia Communication Outcome Measure (ACOM) (6) Lubben Social Network Scale-6 (Lubben). The entire protocol took between one and two hours to administer. For the purposes of the present study, the standardized measures served to characterize IWAs and the PROs were treated as the dependent

variable for treatment effects. See results for individual participants and group means in Table 2.

The Philadelphia Naming Test (PNT) - Short Form was administered to assess the client's confrontation naming skills. In the larger study, the PNT was also used to determine improvements in naming effects pre-treatment and post-treatment.

The Comprehensive Aphasia Test (CAT) assessed a wide range of language functions, including cognitive abilities, expressive and receptive language skills. Subtests of the CAT administered included the cognitive screen, comprehension of written and spoken words, sentences and paragraphs, repetition, naming, and oral reading. The writing portion of the CAT was not administered. The CAT does not classify the type of aphasia but does measure presence and severity of aphasia.

The Northwestern Assessment of Verbs and Sentences (NAVS) was used to assess production of verbs and sentences of different argument structures and syntactic complexity. Two subtests were administered, the Sentence Production Priming Test (SPPT) and Verb Naming Test (VNT). On the Sentence Production Priming Task (SPPT), IWAs were shown two pictures and the clinician modeled a sentence for the first picture ("the dog is chasing the cat"). IWAs were then required to produce a sentence using the same syntactic structure about the other picture. The task began with simple active sentences and then progressed to more complex and longer sentence structures (e.g., passives and subject relatives). During the Verb Naming Test (VNT), IWAs named actions portrayed in pictures. Verbs varied based on argument structure, including one-place verbs (bark), two-place verbs (cut), and three-place verbs (send). This standardized

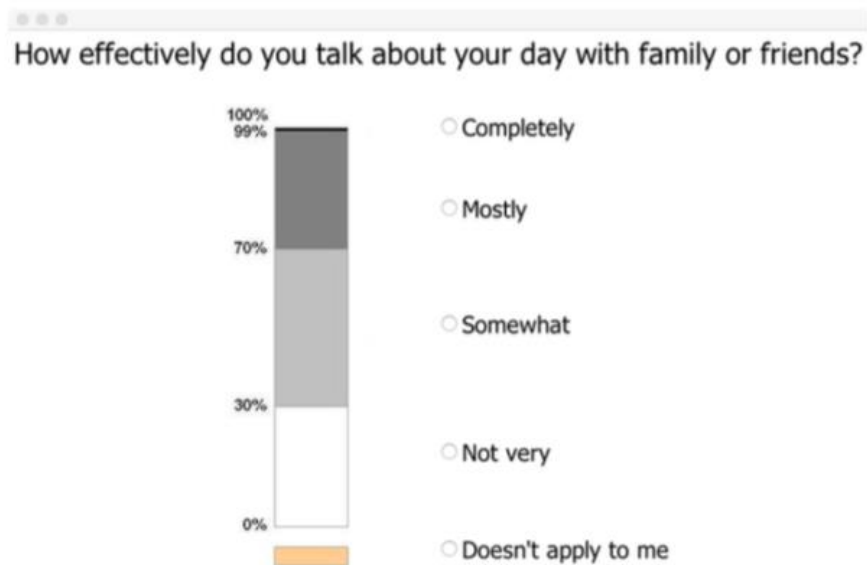
measure was used to determine if the treatment also led to improvements in sentence production.

Five speech samples were collected to accurately and reliably measure lexical retrieval and language performance in IWA. Speech samples were analyzed to determine Correct Information Units (CIU's), which is a measure of the informativeness (degree to which the intended message is communicated) and efficiency (rate at which the message is produced) (Nicholas and Brookshire, 1993). The stroke story was elicited by asking IWAs to "describe how you think your talking is" and, in addition, follow-up questions were asked including "do you remember when you had your stroke?" and "can you tell me your first memory after your stroke?" Conversations with naïve partners were five-minute conversations discussing personal events and current events. The Comprehensive Aphasia Test (CAT) picture description and Cat Rescue picture were picture description tasks prompted by "Look at everything that's happening and then tell me a story about what you see." Lastly, the Cinderella story elicited a narrative. IWAs were provided with a picture flip book without any words to help refresh their memory. IWAs were asked to provide a retell after looking through the picture book. The clinician did not provide any additional cues to aid in word retrieval or production when eliciting language samples. Prompts (e.g. "what else can you tell me" or "what else is happening") were only provided to obtain a larger language sample.

The adaptive Aphasia Communication Outcome Measure (ACOM) is a patient-reported measure for community-dwelling individuals with aphasia. IWAs rated 12 questions on a four-point scale on how effectively they perform each task. Effectively was defined as "performing the activity without taking too much time or effort and

without receiving help.” The instructions and questions were presented on a laptop and read aloud by the administrator. The selection of questions was determined by how individuals rated their communication ability on previous items. If the IWA answered, “does not apply to me” they were asked to clarify “because of my communication difficulties” or “do not have the opportunity to do so.” See figure 1 below for an example question. Results are reported as standardized t-scores, which were computed based on performance of other IWAs (mean=50, SD=10) (Hula et al., 2015).

Figure 1: Sample ACOM question



Evidence from item bank selection and validation of the ACOM found that it is a reliable and valid measurement of patient-reported communicative functioning (Doyle et al., 2008). An exploratory bifactor analysis conducted on the ACOM revealed sample

reliability to be high at .97 indicating that questions correlated strongly with one general factor (Hula et al., 2015). Additionally, the adaptive ACOM showed reliability consistent with the full 56-item ACOM (Hula, Kellough, Doyle, 2015). Sample reliability for the adaptive version was found to be high .93 and test re-test reliability was found to be reasonably high at .87 (Hula, Kellough, Doyle, 2015). Results also indicated that items functioned similarly across demographic groups. Validity evidence suggested that results on the ACOM are moderately correlated ($>.63$) with results on the American Speech-Language-Hearing Association Functional Assessment of Communication Skills for Adults (ASHA-FACS), Porch Index of Communicative Ability (PICA), and Boston Diagnostic Aphasia Examination (BDAE) severity rating scale demonstrating that the ACOM measures a construct that is related but distinct from surrogate-reported measures (Hula et al., 2015).

The Lubben Social Network Scale-6 (Lubben) is an instrument used to measure social isolation in older adults through perceived social support from family and friends. The Lubben Social Network Scale-6 (Lubben) was administered to assess the extent of social isolation that an individual with aphasia may feel and to determine if there is decreased social isolation immediately after treatment and six-weeks post-treatment. The shortened six question Lubben was administered. Individuals answered six questions regarding the number of family members or friends with whom they interact with and how often (see sample question below in figure 2). The total score was calculated by adding numerical responses from each of the six questions. The higher the score (max= 30) the more social engagement and less social isolation an IWA experienced and vice versa. Internal reliability for the six-item scale was found to be high at .83 (Lubben,

2006). Validity evidence suggested that total scores correlated with health behaviors and depressive symptoms (Lubben, 1988; Lubben, 2006; Lubben & Gironde, 2004). Results from Lubben et al. (2006) revealed that the Lubben Social Network Scale-6 (Lubben) provided quantitative information on participants ties with family and friends and was successful at identifying individuals at risk for social isolation. A clinical cut point of a score less than 12 was determined to be correlated with identifying individuals who are at risk of social isolation.

Figure 2: Sample Lubben question

Family: Considering the people to whom you are related by birth, marriage, adoption, etc.....

How many relatives do you see or hear from at least once a month

0= none 1=one 2=two 3=three or four 4=five thru eight 5= Nine or more

Table 2: Results for CAT, NAVS, and PNT

StudyID	Comprehensive Aphasia Test (CAT)				Northwestern Assessment of Verbs and Sentences (NAVS)				Philadelphia Naming Test (PNT)	
	Comprehension of Spoken Language	Comprehension of Written Language	Repetition	Naming	Reading	Sentence Production Printing Task (SPTT)	Verb Naming Test (VNT)	Number Correct	Percentile (%)	
BU04	46*	46*	44*	43*	42*	0*	3*	5	9	
BU06	55*	65	50*	55*	66	7*	21*	24	52	
BU08	45*	46*	57*	51*	52*	6*	8*	22	44	
BU11	62	59	57*	64*	66	24*	22	30	99	
BU13	54*	54	52*	63*	53*	0*	17*	27	71	
BU24	60	61	48*	56*	48*	22*	22	23	47	
TU42	53*	53*	57*	61*	54*	17*	20*	30	99	
TU44	59	65	66	62*	55*	29*	20*	30	99	
TU45	51*	49*	52*	49*	49*	1*	8*	15	21	
TU46	43*	49*	53*	49*	50*	0*	-	14	19	
TU47	39*	42*	52*	52*	49*	0*	14*	21	40	
Mean	51.5	53.5	53.5	55.0	53.1	10.6	15.5	21.9	54.5	
SD	7.5	8.0	5.8	6.9	7.3	11.3	6.9	7.9	33.2	

StudyID	Comprehensive Aphasia Test (CAT)				Northwestern Assessment of Verbs and Sentences (NAVS)				Philadelphia Naming Test (PNT)	
	Comprehension of Spoken Language	Comprehension of Written Language	Repetition	Naming	Reading	Sentence Production Printing Task (SPTT)	Verb Naming Test (VNT)	Number Correct	Percentile (%)	
BU07	45*	48*	44*	51*	47*	2*	11*	20	36	
BU09	52*	58	55*	57*	56*	27*	18*	21	40	
BU12	62	58	58*	58*	56*	30	20*	18	29	
BU14	54*	50*	57*	54*	59*	7*	14*	27	71	
BU16	53*	63	60*	65	62	23*	16*	22	44	
BU18	46*	47*	48*	11*	47*	12*	08*	20	36	
BU20	43*	47*	42*	40*	45*	0*	4*	4	7	
BU25	65	65	53*	62	53*	28*	22	21	40	
TU25	46*	49*	47*	61	50*	1*	19*	29	92	
TU27	59	59	51*	61	51*	4*	15*	30	99	
TU28	55*	58	62*	69	62	21*	22	30	99	
TU29	52*	50*	59*	61	60*	30	20*	28	82	
TU30	59	49*	57*	52*	46*	25*	19*	23	47	
TU31	39*	46*	53*	52*	46*	-	8	24	52	
TU32	46*	53*	44*	58*	54*	3*	15*	25	58	
Mean	51.7	53.3	52.7	54.1	53.0	13.2	15.4	22.8	55.5	
SD	7.5	6.3	6.4	13.8	5.9	12.1	5.5	6.5	27.5	

*Denotes that the score is below the 5th percentile as compared to non-aphasic controls

†Denotes scores greater than 1 SD as compared to non-aphasic controls

Note: All values for the CAT are reported as t-scores (standardized scores that place all subtests on the same scale)

CHAPTER 3

TREATMENT

Treatment was administered twice weekly for 60 minutes by trained graduate student clinicians under supervision of a licensed speech-language pathologist (SLP). Graduate clinicians received a treatment manual and participated in a two-hour training program to review treatment protocol and goals. The total length of the treatment was ten weeks which included five predetermined weekly treatment topics used twice throughout the treatment period. Topics included personal history, dining, travel, news and events, and entertainment. Weekly supports (e.g., agendas, pictures and Powerpoints) were created on a biweekly rotation by clinicians at Temple University and Boston University.

Each session began with the opportunity for each IWA to share how she/he was feeling. Next, the clinician introduced the topic (e.g., “today we will be talking about sports, what are some sports you like?”) and the discussion would be led by the individuals in the group. The clinician acted as a facilitator (e.g., asked follow-up questions) and cued the individual participants throughout the session. Based on pre-treatment assessment results and personal goals, each client had individualized goals that were targeted throughout the session. Based on these goals and the severity of deficits, the clinician used a cueing hierarchy to help the client express his/her thoughts and ideas. A sample goal for individuals with word finding difficulties would be written as, “X will respond to direct questions with key/target words using supported speech”. If participants required cueing, the clinician might suggest that the client draw, describe, or gesture to express themselves. Another example of a goal for an individual with non-verbal aphasia

and telegraphic speech would be “X will produce active SVO grammatical sentences in discourse given a visual cue.”

During group treatment sessions, pen and paper, picture dictionaries, picture supports relevant to the topic, and a laptop or computer were available. Throughout the session, the clinician modeled the use of multimodal communication (e.g., gestures, drawing, and circumlocutions). Additionally, the clinician would use a laptop/computer to provide information about a specific topic or show pictures not available on the supports. Individuals were encouraged to independently use the laptop/computer or personal devices such as smart phones to search for information. As the treatment progressed, the goal was for IWAs to facilitate conversation with increased independence, generalize learned strategies, and encourage each other.

During each treatment session, an undergraduate student recorded the following: (1) the number of times the clinician modeled or encouraged multimodal communication strategies, (2) the time spent on the planned topic, (3) number of individuals in the group or dyad, (4) total number of turns, (5) number of turns of each individual with aphasia and clinician took. At the end of the treatment session, the clinician used a five point Likert scale to rate each participant’s communicative effectiveness index, communicative attempt index, and personal goal 1, and personal goal 2 (see figure 3).

Figure 3: Likert rating scale for treatment session

Communicative Effectiveness:

- 5= Independently communicates a clear message.
- 4= Speech required minimal interpretation and support on behalf of listener (less than 25%).
- 3= Speech required moderate interpretation and support on behalf of the listener (25-50%).
- 2= Speech required maximal interpretation and support on behalf of the listener (50-75%).
- 1= Speech was not understood by the listener.

Communicative Attempt Index:

- 5= **Frequently** initiated communication and/or responded to questions
- 4= **Often** initiated communication and/or responded to questions
- 3= **Sometimes** initiated communication and/or responded to questions
- 2= **Rarely** initiated communication and/or responded to questions
- 1= Responded to questions but made **few or no attempts** at initiating communication.

Personal Goal Scale:

- 5= **Frequently** demonstrated goal behavior
- 4= **Often** demonstrated goal behavior
- 3= **Sometimes** demonstrated goal behavior
- 2= **Rarely** demonstrated goal behavior
- 1= **Never** demonstrated goal behavior

CHAPTER 4

ANALYSIS

The aim of this study is to explore the effects of conversational group treatment on patient-reported outcomes as measured by the adaptive ACOM and Lubben.

Within the study, there were two independent variables, **group** (treatment vs. delayed control) and **time** (T1 (pre-treatment), T2 (post-treatment), T3 (six-weeks post-treatment)). Data were analyzed using Wilcoxon Signed Ranks tests separately for the ACOM and Lubben to compare pre-treatment (T1) to post-treatment (T2) and pre-treatment (T1) to maintenance (T3). The Wilcoxon Signed Ranks Test was used due to uneven group sizes and reduced group size as a result of attrition and other issues noted above. Effect size was also calculated to quantify the degree of change for the Lubben and ACOM between pre-treatment (T1) to post-treatment (T2) and pre-treatment (T1) to maintenance (T3) for the treatment and control group (Corder, 2104). The formula used to calculate effect size was $ES = \frac{|z|}{\sqrt{n}}$ (Corder, 2014). Effect sizes were evaluated based on Cohen's *d* (1998) as cited in Beeson and Robey (2006). This provided a standardized approach to evaluate the strength of treatment effects. Effect sizes of .2, .5, and .8 were interpreted as small, medium, and large effect sizes, respectively (Cohen, 1998).

At time point one (pre-treatment (T1)), there should be little to no difference between the control and treatment group results on the ACOM and Lubben. However, scores on the ACOM and Lubben were expected to be higher for the treatment group as compared to controls at time point two (post-treatment (T2)). Additionally, these effects were predicted to be maintained six-weeks post-treatment (T3).

It was predicted that there would be significant change ($p < .05$) and a medium to large effect size for the treatment group between pre-treatment (T1) to post-treatment (T2) and pre-treatment (T1) to maintenance (T3) on both the ACOM and Lubben. However, no significant changes were predicted from pre-treatment (T1) to post-treatment (T2) and pre-treatment (T1) to maintenance (T3) for the control group.

CHAPTER 5

RESULTS

The Wilcoxon Signed Ranked test (R studio version 1.1. 383) nonparametric statistical procedure was run independently for both the ACOM and Lubben (see table 3 for individual participant scores and group means).

Results from pre-treatment (T1) data indicated no significant difference on the Lubben between the treatment group (mean=17.09, SD= 6.46) and control group (mean=16.27, SD= 7.83). Similarly, results from pre-treatment (T1) data also indicated no significant difference on the ACOM between the treatment group (mean= 48.29, SD= 8.84) and control group (mean=51.33; SD=8.32). Based on the mean for the treatment group and control group, results for the Lubben at pre-treatment (T1) indicated IWAs as a group were not at risk for social isolation (total score > 12). Results for the ACOM showed that IWAs in both the treatment group and control group were functioning in the average range (mean= 50; SD= 10) as compared to other IWAs.

Results for the Lubben indicated no significant change for the control group from pre-treatment to post-treatment (N=15, V=65, ES=.07, p=.45) or pre-treatment to maintenance (N=15, V=58, ES= .03, p=0.40). Results for the Lubben also indicated no significant change for the treatment group from pre-treatment to post-treatment (N=11, V=36.5, ES=.09, p=.38) or pre-treatment to maintenance (N=11, V= 21, ES=.32, p=0.27). Effect sizes for both the control group and treatment group were found to be small.

For the treatment group, results for the ACOM revealed a significant change from pre-treatment to post-treatment (N=11, V=2, ES=.83, p= 0.01) and from pre-treatment to maintenance (N=11, V=7, ES=.70 , p=0.02). Effects sizes were high from pre-treatment

to post-treatment (ES=.83) and moderate-high from pre-treatment to maintenance (.70). The differences in scores on the ACOM from pre-treatment to post-treatment and pre-treatment to maintenance were 4.66 and 4.37, respectively. According to Hula et al. (2015) these values were outside the window of the standard error of measurement, indicating a clinically significant change. No significant results were found for the control group from pre-treatment to post-treatment (T2) (N=15, V=38, ES=.32, p=0.62) and pre-treatment to maintenance (N=15, V=34, ES=.38, p=.15). Effect sizes for the control group were found to be small.

Results demonstrated that conversational group treatment was effective in increasing IWAs ability to participate in everyday communication tasks and determined changes in language and communication. These abilities were also maintained six-weeks post-treatment.

Table 3: Results for Lubben and ACOM

Treatment Group (n = 11)						
StudyID	Lubben (Pre-Treatment)	Lubben (Post-treatment)	Lubben (Maintenance - 6 months)	ACOM (Pre-treatment)	ACOM (Post-Treatment)	ACOM (Maintenance- 6 months)
BU04	22	12*	14	44.4	45.06	52.39
BU06	17	16	18	58.92	65.24	56.9
BU08	20	23	18	42.81	48.71	45.3
BU11	19	15	19	54.57	68.52	69.23
BU13	28	28	29	60.68	62.29	62.61
BU24	11*	10*	-	47.54	51.57	51.41
TU42	13	12*	7*	33.66*	35.17*	31.85*
TU44	12*	7*	12*	42.54	47.07	44.66
TU45	26	21	21	47.52	47.52	45.68
TU46	11*	21	-	39.78*	53.28	53.28
TU47	9*	11*	12*	58.79	58.04	66.57
Mean:	17.09	16.00	16.67	48.29	52.95	52.72
SD:	6.46	6.47	6.36	8.84	9.84	10.89
Delay Group (n = 15)						
StudyID	Lubben (Pre-Treatment)	Lubben (Post-treatment)	Lubben (Maintenance- 6 months)	ACOM (Pre-treatment)	ACOM (Post-Treatment)	ACOM (Maintenance- 6 months)
BU07	5*	6*	-	35.91*	33.42*	46.47
BU09	17	12*	15	47.8	49.27	49.27
BU12	19	15	15	52.33	44.13	47.09
BU14	6*	14	10*	32.81	42.3	42.52
BU16	22	20	23	50.5	53.86	62.85
BU18	27	29	25	55.56	53.71	59.53
BU20	21	11*	20	48.58	45.45	55.16
BU25	15	15	14	57.74	57.74	53.65
TU25	10*	7*	10*	49.29	53.32	43.4
TU27	14	15	13	51.14	57.65	51.76
TU28	22	20	21	61.76	51.36	64.9
TU29	14	16	17	53.01	52.11	51.59
TU30	27	23	22	54.73	52.24	53.94
TU31	2*	8*	4*	64.45	69.93	68.39
TU32	23	22	22	54.29	62.78	58.64
Mean	16.27	15.33	16.50	51.33	52.14	53.94
SD	7.83	6.41	6.02	8.32	9.01	7.74

*score of 12 or lower delimitates "at-risk" for social isolation

† indicates a score greater than 1 SD deviation below the mean (m=50, SD=10)

Note: All scores for ACOM reported as standardized t-scores

CHAPTER 6

DISCUSSION

The results of the study indicated that conversational group treatment was effective in improving self-perceived language and communication abilities as measured by the ACOM. This assessment was specifically developed for community-dwelling individuals with aphasia and measured how effectively individuals with aphasia were able to communicate in specific situations. These results showed that conversational group treatment improved IWA's perception of their abilities to communicate more effectively as compared to pre-treatment baselines. These effects were also maintained six-weeks post-treatment, demonstrating maintenance of treatment effects. These results demonstrated clinical significance as supported by large effects sizes of treatment and change in scores greater than the standard error of measurement. There were no significant changes for the control group. The significant changes for the treatment group can be attributed to the treatment rather than time, as the participants did not participate in any other treatment during this time period.

The Lubben Social Network Scale-6 (Lubben) is an instrument used to measure social isolation in older adults through perceived social support from family and friends. The results of the Lubben showed that there was no significant effect for either the control group or treatment group from pre-treatment (T1) to post-treatment (T2) and pre-treatment (T1) to maintenance (T3). These results showed that conversational group treatment was not effective in improving participant's perception of social isolation. These results were unexpected, as it was predicted that there would be significant effects

on social isolation due to IWAs perceiving other group members as their friends and increasing overall communication with family and friends.

One possibility is that change was not observed on the Lubben because scores were high at baseline. The mean for both the treatment (T1= 17.09, T2= 16.00, T3= 16.67) and delay group (T1= 16.27, T2=15.53, T3=16.50) were both greater than 12, indicating that on average participants in both the treatment group and delay group were not at risk for social isolation. To address this question, changes in perceived social isolation from pre-treatment (T1) to post-treatment (T2) and pre-treatment (T1) to maintenance (T3) were examined for individuals who were at risk for social isolation in the treatment group (BU24, TU44, TU46, TU47). The results did not reveal a clear pattern. Only one individual (TU47) showed an improvement by two points from pre-treatment (T1) to post-treatment (T2) and improvement by three points from pre-treatment (T1) to maintenance (T3). Another individual (TU44) showed an increase in social isolation of five points from pre-treatment (T1) to post-treatment (T2), however perception of social isolation from pre-treatment (T1) to maintenance (T3) remained stable.

The Lubben was not designed to measure social isolation specifically in IWAs. Therefore, this measure may not have been an appropriate or sensitive enough to measure decreased social isolation in IWAs. Another possible explanation for these effects is that these changes may take longer to emerge, meaning these changes may not be seen immediately after treatment or even six-weeks post-treatment.

These results do not prove that IWAs do not experience social isolation. Previous research has shown that IWAs experience social isolation (Fotiadou, Northcott,

Chatzidaki, & Hilari, 2014; Cruice, Worrall, and Hickson, 2006) and decreased social networks and enjoyment from them (Northcott, Marshall, & Hilari, 2016). Although Vickers (2010) reported decreased social isolation and greater social connection following weekly group conversational treatment for 28 IWAs, these results are not generalizable as the individuals in the treatment group had already been attending bi-weekly group sessions at the aphasia center where the treatment was administered and the IWAs in the control group had no exposure to group treatment. These results further indicate that a more sensitive, reliable, and valid measure is needed to evaluate social isolation from the perspective of the IWA.

The results of this study further clarified previous research that showed conversational group treatment is associated with improved language and communication abilities (Aten et al., 1982; Bolinger et al., 1993, Wertz et al., 1981; Elman and Berstein-Ellis, 1999a, Ross et al., 2006). However, the present results extended previous work by demonstrating that conversational group treatment had significant effects on language and communication as perceived by IWAs. These results are important for understanding the perceived effects of group conversational treatment from the perspective of the IWA, providing guidance for future treatment, and placing conversational group treatment within the framework of the Life Participation Approach to Aphasia (LPAA).

Research by Worrall, Sherratt, Rogers, Howe, Hersh, Ferguson & Davidson (2010) found that IWAs identified treatment goals that were strongly linked to the category of activity and participation. Goals included return to pre-stroke activities and the ability to communicate not only basic needs but opinions as well. Worrall et al.'s (2010) results offer qualitative and descriptive data for desired goals of IWAs and the

current study suggest that conversational group treatment is a means through which IWAs can achieve these goals. The hope is that improved self-perception of communication abilities will motivate IWAs to communicate with others in their community, increase self-confidence, and help IWAs return to pre-stroke activities. If these results were only measured by standardized measures of language and communication, they would not necessarily translate directly to confidence and increased self-perceived language and communication abilities in IWAs. However, additional research is also needed on effects of conversational group treatment as measured by standardized measures.

One question is whether time post-onset or membership in community-based aphasia programs affected the results of the study. Individuals who received a diagnosis of aphasia within a year of participating in the study may report increased social isolation and difficulty with language and communication. Alternatively, IWAs who were recently diagnosed (e.g., within one year) may not have yet experienced withdrawal of friends and family. Further, IWAs who have been living with aphasia for a longer period of time and have joined aphasia communities may report decreased social isolation and increased language abilities. These variables are unlikely to influence the group results, since individuals in the present study were randomly assigned to either a treatment group or a control group. However, this sort of analysis could shed light on individual patterns of change and determine if greater degrees of change are present for individuals with a shorter time post-onset as compared to individuals with a longer time post-onset. Future research should investigate this possibility.

A limitation of the study is the small sample size. Due to the intensive two times per week, ten-week treatment some individuals were unable to commit to attend the full treatment study. As a result of the decreased sample size ($n < 30$), non-parametric statistics were used to analyze the data. However, this statistical approach does not permit analysis of interaction effects.

The results from this study showed that conversational group treatment was effective in increasing self-perceived language and communication abilities in IWAs. As IWAs feel they can effectively communicate, it can increase group participation, communication with friends/family, and facilitate return to pre-stroke activities. Group conversational treatment is a natural and unstructured environment that emulates real-world conversations. IWAs can take skills and strategies learned in group and apply them to their everyday communication tasks. Although individual's self-perception of social isolation did not decrease, conversational group treatment has implications that IWAs may join more groups and become more active in their aphasia community.

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