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# Aphasia Couples Therapy: A Case Study of Conversational Coaching for a Man with Conduction Aphasia

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APHASIA COUPLES THERAPY: A CASE STUDY OF CONVERSATIONAL COACHING  
FOR A MAN WITH CONDUCTION APHASIA

by

Adriana Joma

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University of the Pacific  
Stockton, CA

2018

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## Aphasia Couples Therapy: A Case Study of Conversational Coaching For A Man With Conduction Aphasia

### Abstract

By Adriana Joma

University of the Pacific  
2018

The purpose of this study was to contribute to the understanding of the effects of aphasia couples therapy (ACT) in a person with conduction aphasia. ACT is a social therapeutic approach that involves facilitating conversations between the person with aphasia (PWA) and their spouse, or caregiver. The participants in this study involved one pair. The dependent variables included conveyance of main concepts, use of intentional gestures, reflections and summary statements per conversation. Miscellaneous measures were also counted and analyzed including the PWA's frequency of paraphasias, fillers (e.g. *um, uh*), and disfluencies. Baseline sessions involved the PWA watching a video clip, and then providing a verbal summary of the main concept of the clip to his non-aphasic spouse within a 10-minute conversation. Therapy treatment sessions followed the same format as the baseline sessions, however, therapy sessions also included the aide of the researcher to coach the participants to use their pre-selected communication strategies to improve the balance in their conversations. The ability to accurately convey the main concept of a video clip in conversation served as the primary dependent variable in this study. Follow-up sessions were also conducted in similar fashion to baseline and probe sessions to determine maintenance and validity of results by dividing the total number of main concepts by the total number of utterances per conversation. Furthermore, ratings of the PWA's quality of life and confidence in his ability to communicate were gathered and compared. The results of this study indicated that ACT yielded improved effects for the couple with regards

to the communication of main concepts per conversation. A decrease in the use of all included miscellaneous measures were also observed. However, no significant changes were noted with regards to use of intentional gestures, reflections, and summary statements.

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## **Chapter 1: Introduction**

The purpose of this study was to contribute to the research and evidence supporting use of conversational coaching to effectively improve the communication between a person(s) with aphasia (PWA) and their non-aphasic communication partner. As is pertains to aphasia treatment, conversational coaching provides communication strategies for both communication partners to utilize to improve their conversations (Hinckley, 2009). Additionally, Boles (2011) applied aphasia couples therapy (ACT) to conversational coaching. The idea of ACT and conversational coaching is to have the PWA be “coached” by the speech-language pathologist (SLP) during conversation with their spouse or caregiver to improve their communication and conversational relationship overall (Boles, 2011). According to Boles (2011), current research on ACT and conversational coaching has continued to demonstrate an improvement in conversation, satisfaction, and well-being between the PWA and their communicative partner.

### **Background**

According to the American Speech, Language, and Hearing Association (ASHA, 2017), aphasia may result from brain tumors, traumatic brain injury (TBI), and brain disorders, however the most common cause of aphasia is stroke. A stroke, or cerebrovascular accident (CVA), can cause damage in either the left or right hemispheres of the brain, and affect the dominant language regions resulting in aphasia (i.e., loss of language) (Stein-Rubin & Fabus, 2012). A stroke is defined as an event where blood flow has been disrupted to the brain, thus depriving neural tissue of necessary oxygen that can only be obtained from blood circulation (Seikel, Drumright, & King, 2016). According to the Centers for Disease Control and Prevention (CDC, 2017), the three main types of strokes are ischemic (i.e., clot), hemorrhagic (i.e., bleed), and transient ischemic attacks (TIA’s). Strokes may be caused by multiple factors, such as high blood pressure, high cholesterol, and other vascular disorders (Hedge, 2010). The National

Aphasia Association (2017b), estimated that 750,000 strokes occur per year in the United States, and one third of strokes result in aphasia.

Aphasia is characterized by deficits in receptive or expressive language, and it is typically caused by damage to the dominant language regions of the brain (Brookshire, 2007). Brain lateralization explains this idea of dominance in that the two hemispheres of the brain have different functions or specializations which include speech and language abilities (Holder, 2005). Brain mapping is a popular procedure that has been used by neurosurgeons to decipher where the specific speech and language regions are in a person's brain (Seikel et al., 2016). Often, the dominant language regions of the brain can usually be determined by handedness. The left hemisphere houses the dominant speech and language regions of the brain for 70% of those who are right-handed; whereas, 30% of left-handed people maintain their language dominance in the right hemisphere of the brain, or is shared between the two hemispheres. The two hemispheres of the brain are asymmetrical in their functionality. Researchers who have studied brain anatomy have found that the area of primary auditory comprehension is greater in the left hemisphere, as well as the lateral fissure to be slightly longer in the left hemisphere when compared to the right. Compared to those who are right-handed, left-handed people with aphasia typically have less severe aphasia and recover better, which may be because left-handed people have better flexibility for language functions that develop between both hemispheres (Brookshire, 2007). Consequently, the part of the brain that has been damaged is imperative to note when diagnosing a person with aphasia.

A specific type of aphasia can usually be determined once the damage to language-specific areas of the brain have been identified (Stein-Rubin & Fabus, 2012). The Boston Classification System is a multidimensional approach that guides the diagnosis of the specific type of aphasia by associating function with the localization of the lesion(s) that affected the

brain (Sirven & Malamut, 2008). The Boston classification identifies various types of aphasia as non-fluent or fluent (Hedge, 2010). Non-fluent aphasia is characterized as choppy and effortful speech due to impaired word finding and sequencing of articulatory movements (Manasco, 2017). In comparison, fluent aphasia is often described as nonsensical speech production, however syntax and sequencing are usually preserved (Seikel et al., 2016). Non-fluent aphasias include Broca's, transcortical motor, and global aphasia. Fluent aphasias include Wernicke's, transcortical sensory, conduction, and anomic aphasia. Brookshire (2007) defines four primary characteristics of aphasia which include naming, fluency, comprehension, and repetition. These characteristics will be reviewed when defining and discussing each specific type of aphasia in the following subsections.

**Non-fluent aphasias.** According to (Seikel et al., 2016), the frontal lobe is generally responsible for cognition and motor initiation and planning. Broca's area is located in the frontal lobe. When Broca's area is damaged Broca's aphasia may result (Hedge, 2010). Broca's aphasia is typically characterized by non-fluent speech, a mild impairment in language comprehension, and poor repetition due to expressive impairments. Agrammatic speech is a typical trait of Broca's aphasia. This type of non-fluent speech is characterized by content words (i.e. nouns, verbs, adjectives, adverbs) and few function words (i.e. articles, auxiliaries, demonstratives, quantifiers, prepositions, pronouns, conjunctions) (Manasco, 2017). For example, "Uh...Doctor...Two...bad, um...Friday, yes." When grammatical components are absent, utterance length is reduced which produces agrammatic or telegraphic speech (Avrutin, 2001).

Transcortical motor aphasia is similar to Broca's aphasia. Lesions that have occurred to the supplementary motor cortex or anterior to Broca's area may result in transcortical motor aphasia (Manasco, 2017). Characteristically with transcortical motor aphasia, there is limited

speech output and a mild impairment in language comprehension, however, repetition skills remain intact (Hedge, 2010).

According to the National Aphasia Association (2017a), the severest form of aphasia is global aphasia. Occlusion of the primary branch of the middle cerebral artery which feeds into the left hemisphere of the brain compromises the language dominant regions, and, thus, may result in global aphasia (Manasco, 2017). Global aphasia is characterized as having deficits in all areas of language resulting in non-fluent speech, poor language comprehension, poor naming, and repetition abilities (Stein-Rubin & Fabus, 2012).

**Fluent aphasias.** The primary function of the temporal lobe is for auditory comprehension, therefore damage to this area may severely affect one's receptive language abilities (Seikel et al., 2016). Wernicke's area is located in the temporal lobe and when damaged causes Wernicke's aphasia (Hedge, 2010). Typically, a person diagnosed with Wernicke's aphasia has no problem using language fluently, however they may often use inaccurate or meaningless words in their speech (American Stroke Association, 2013). Furthermore, Wernicke's aphasia is typically characterized by fluent speech, poor auditory comprehension, and poor repetition skills (Hedge, 2010).

In comparison, transcortical sensory aphasia is characterized by fluent speech, poor language comprehension, and good repetition skills (Stein-Rubin & Fabus, 2012). Injury around the temporo-occipital-parietal junction may result in transcortical sensory aphasia (Manasco, 2017).

Conduction aphasia is characterized by fluent speech with paraphasias present and also some difficulty with language comprehension and repetition (Stein-Rubin & Fabus, 2012). Paraphasia refers to the substitution of syllables, words, or phrases (Goodglass & Kaplan, 1983). The types of paraphasia include literal or phonemic (e.g. "lat" for *cat*), verbal or semantic (e.g.

“bike” for *pencil*), and neologistic or nonsense words (Seikel et al., 2016). Conduction aphasia may result when damage to the fibers of the arcuate fasciculus, or the parietal lobe has occurred (Seikel et al., 2016). The arcuate fasciculus is classified under association fibers, which are fibers that connect different regions of the brain within the same hemisphere. These pathways include the connection between Broca’s and Wernicke’s areas (Fitzakerley, 2015).

Anomic aphasia is described as a difficulty recalling words, especially nouns and verbs (National Aphasia Association, 2017a). Anomia may result from damage to various structures of the brain, including the basal ganglia and thalamus (Seikel et al., 2016). Anomic aphasia is typically classified as a milder form of aphasia, and it may be displayed as a person recovers from a more severe type of aphasia (Manasco, 2017). Anomia may also appear as a symptom of other forms of aphasia, such as Broca’s or Wernicke’s aphasia (Goodglass & Wingfield, 1997).

### **Significance**

The National Institute on Deafness and Other Communication Disorders (2015) estimated that currently at least 1 million people in the United States have aphasia. The primary treatment for aphasia is speech-language rehabilitation, however, even with treatment, few PWA completely recover their language abilities (Mayo Clinic, 2017).

According to the National Aphasia Association (2017b), recovery is typically a slow process, and, thus, both the PWA and their family, or primary care providers should learn compensatory strategies for facilitating improved communication in the PWA’s daily life.

### **Literature Review**

**Models of disability.** The World Health Organization (WHO; 2001) identified in the *International Classification of Functioning, Disability and Health (ICIDH-2)* two models with regard to disability (i.e., the medical and social model). The medical model is described as, “view[ing] disability as a problem of the person, directly caused by disease, trauma or other

health condition” (WHO, 2001, p. 18). In comparison, the social model describes the disability as, “a socially created problem, and principally as a matter of the full integration of individuals into society” (WHO, 2001, p. 18). The ICDH-2, however, is a combination of these two models, and it assesses the biological, individual, and social components of a person’s health to provide a comprehensive view of the person with a disability. The ICDH-2 is used to assess and measure various levels of functioning and identify individual limitations that a person with a disability may have. The overall goal of the ICDH-2 is to more effectively address the specific limitations a person with a disability may have for the purpose of implementing practical solutions to utilize in their daily lives. The ICDH-2 has become a foundational model guiding researchers to use when conducting therapy and for creating new therapy approaches (Chapey et al., 2000).

**Traditional treatment approaches for aphasia.** In general, treatment approaches for aphasia can be restorative and/or compensatory (ASHA, 2017). A restorative treatment approach aims to restore impaired function, while a compensatory treatment approach aims to teach compensatory strategies for skills that cannot be restored. A variety of general and specific treatment options are available for PWA, and they are often chosen based on the level of impairment and the patient’s communicative needs.

Milder forms of aphasia may lead to the use of treatment therapies that target specific communication needs. For example, Gesture Facilitation of Naming (GES) is, “an approach that uses intact gesture abilities” to aide in word retrieval (ASHA, 2017). Similarly, Semantic Feature Analysis Treatment is a strategy that utilizes a semantic map to list various characteristics (i.e., appearance, group, function, action, location, association, material) that describe a word, or object in order to improve word retrieval (Curran, 2017).

Moderate types of aphasia may lead to treatment therapies that target the use and understanding of general language content. For instance, Oral Reading for Language in Aphasia (ORLA) is a treatment method that aims to improve reading comprehension in a PWA “through practice using phonological and semantic routes and associated feedback” (Hallowell, 2016). In comparison, Script Training utilizes the abilities of understanding and recalling event sequences to create a scripted speech to rehearse until the PWA is able to recite the script automatically and with little to no effort (Holland, Milman, Munoz, & Bays, 2002). Constraint Induced Language Therapy (CILT) is another approach that aims to increase spoken language output while suppressing, or constraining the use of other compensatory strategies such as using gestures or writing (ASHA, 2017).

Severe forms of aphasia may lead to the use of treatment therapies that aim to improve the PWA’s ability to be understood by others. For example, Melodic Intonation Therapy (MIT) is another treatment approach that focuses on improving language production through the use of melody, rhythm, and stress that is similar to the function of singing (ASHA, 2017).

Augmentative and Alternative Communication (AAC) are pre-determined modes of communication and strategies (e.g., direct selection, eye gaze, single or double switch use) that are used for those who are unable to speak have difficulty with producing natural intelligible speech (Grandbois, 2012).

**Social-based approaches for aphasia therapy.** Reciprocal Scaffolding Treatment (RST) is a partner-based treatment approach in which the PWA teaches a particular skill to their communicative partner, while the communicative partner “provides natural and complementary language models” (Avent & Austermann, 2003). The purpose of RST is to give the PWA an opportunity to use their prior knowledge and vocabulary to teach within a social context (ASHA, 2017). Avent, Patterson, Lu, and Small (2007) conducted a study on the effectiveness of RST in

a person with anomic aphasia. For this study, the PWA taught facilitative discourse techniques to novice graduate student clinicians. The results of the treatment demonstrated improvement in the PWA's naming ability and conversational content.

Community aphasia groups utilize a naturalistic setting to improve linguistic functioning through socialization, activities, and sharing ideas (ASHA, 2017). Elman and Bernstein-Ellis (1999) conducted a study that observed the effects that group treatment would have on the communicative abilities of persons with chronic aphasia. Four participant groups were broken down into two treatment and two deferred treatment groups. The participants in the two treatment groups were allotted five hours of group therapy weekly by a speech-language pathologist (SLP). The aim of the study was to increase initiation of conversation, and conversational turn taking. The results of the study showed that the participants in the treatment groups had significantly higher scores on communicative and linguistic measures when compared to the deferred treatment groups. Furthermore, no significant declines in communicative performance were noted in the participants who received group therapy during a follow-up session.

Chapey et al. (2000) defined a consumer-driven service delivery model known as the "Life Participation Approach to Aphasia" (LPAA). In the context of the ICIDH-2, the LPAA focuses on participation in daily life, rather than defining the deficits (Chapey et al., 2000). The purpose of the LPAA is for the SLP to collaborate intensively with the PWA in creating immediate and longer life-term goals. This model also requires a high level of family, or caregiver support in order to achieve the long-term goals of the PWA.

**Research in conversational-based therapy.** Kagan et al. (2001) designed an experimental study that focused on observing the effects of a social approach known as, "Supported Conversation for Adults with Aphasia" (SCA). This approach, "involves teaching

techniques to conversation partners that will help them better reveal the competence of those with aphasia” (Kagan et al., 2001). Volunteers (i.e., students without previous background with neurogenic populations or speech-language pathology) were recruited for this study to act as communication partners for the participants with aphasia. The qualifications of the participants with aphasia included moderate-to-severe aphasia, ability to engage in conversation with a communication partner, at least one-year post stroke, and competence in English. In this study, 80 participants which included the volunteers and PWA were paired to create 40 couples. Of the 40 couples, 20 were placed in an experimental group, and 20 were placed in a control group. Semi-structured interviews were used to guide conversations during therapy, and sessions were video recorded.

Volunteers in the experimental group were given formal training in SCA through training workshops and hands-on sessions. Measures of this study included a support measure, Measures of Skill in Providing Supported Conversation for Adults with Aphasia (M)SCA, and a participation measure, Measure of Participation in Conversation for Adults with Aphasia (M)PCA (Kagan et al., 2001). The (M)SCA components measured when the PWA demonstrated comprehension of the topic, the ability to express themselves, and the ability to maintain the topic of conversation. The (M)PCA measured the levels of participation in conversation with the conversation partner. During the pre- and post- assessments, the volunteers were rated on the components of the (M)SCA, and the PWA were rated on components of the (M)PCA. As a result of the study, volunteers in the experimental group scored higher on measures compared to those in the control group, and the PWA in the experimental group also scored higher on their dependent measures compared to the PWA in the control group.

Hopper, Holland, and Rewega (2002) focused on the analysis of the treatment outcomes of conversational coaching. Two couples participated in this study, and each participant chose

specific communication strategies to utilize during therapy. During baseline and treatment sessions, the PWA was required to view video clips of real-life events, and then describe the event (i.e. main concepts) to their communication partner. During therapy sessions, the clinician would coach the participants to utilize their specified communication strategies, and guide the conversation. As a result, both couples obtained positive outcomes, including an increase in accuracy of main concepts conveyed to the communicative partner. The *Communication Activities of Daily Living, 2<sup>nd</sup> Edition* (CADL-2) was also used in pre- and post- assessments for both participants. As a result, a positive increase in the number of main concepts communicated and positive social validation scores were recognized for both participants.

Boles and Lewis (2003) studied the effects of solution focused aphasia therapy (SFAT) on a single participant with Broca's aphasia. Prior to therapy, the PWA, their communicative partner (i.e., spouse), and the researchers discussed verbal and non-verbal communication strategies that the couple would use during therapy. Therapy sessions were conducted twice a week for four weeks. The researchers used video clips of real-life events to guide conversations between the PWA and their spouse. The PWA was required to view each video clip, and then discuss the main concepts of the clip to his spouse. During their discussion of the clips, they were both encouraged to use their pre-determined communication strategies. Post- therapy data revealed that the PWA improved in accuracy of communicating the main concepts to his spouse. Improvement was also observed in the couple's confidence to communicate with one another.

Van der Gaag et al. (2004) measured the effects of six months of therapy and support services for those with long-term stroke and aphasia and their primary caregivers. Therapy consisted of individual and group therapy among the couples once or twice a week for 20 weeks. Twenty-eight couples participated and completed the therapy regime. During their therapies, the couples participated in various communication based activities including discussions and

monitoring communication skills of the conversation partners. This study yielded positive results, including the finding that 86% of the participants with aphasia believed that their communication skills improved as a result of the therapy. Furthermore, the majority of the participants not only reported that their communication skills had improved, but their confidence in communicating increased as well.

Boles (2015) studied the effects of establishing alignment using ACT on a woman with Wernicke's aphasia. Alignment is the idea that communicative partners establish a "common ground" through the use of similar words or phrases during conversation (Boles, 2015). This is achieved when the communicative partner echoes the statement or message the PWA has communicated. The study included two participants, a 75 year old woman with Wernicke's aphasia and her husband who was a 75 year old, non-aphasic man. Group therapy sessions were conducted twice a week for one hour sessions across a 20-week period. During the baseline, probe, and therapy sessions, the participants were asked to have discussions about anything they wanted for one to three minutes, and in between discussions the researcher would intervene to provide feedback to the couple. The probe sessions were video recorded, and the couple was asked to converse for ten minutes without interruption from the researcher. The results of the study revealed that the PWA had significantly increased in her total number of utterances in a conversation, and her husband increased his number of reflective utterances within a conversation.

Wildermuth (2016) conducted a replication study based on the research of Hopper et al. (2002) to determine the effects that conversational coaching has on PWA and their communicative partners (i.e. spouses). Two couples participated in Wildermuth's (2016) study. All participants were required to choose communication strategies to utilize during therapy. During baseline and treatment sessions, the PWA viewed short video clip of a current event, and

then described the main concepts of the event to their communicative partners using their selected communication strategies (i.e. identify the main idea first, use gestures, write down important facts, summarize information frequently before moving on). The results of this study revealed that both participants with aphasia increased in accuracy of co-constructed main concepts and increased in quality of life scores. Their spouses also reported that they found the therapy helpful, and effective.

### **Research Questions**

The current study was conducted to contribute to the research studies of Hopper et al. (2002), Boles (2015), and Wildermuth (2016) using a social approach to partner training. The following research questions were the focus of this case study:

1. Does ACT increase the number of main concepts conveyed during conversation between a PWA and their communicative partner (i.e., spouse)?
2. Does the PWA increase use of intentional gestures in conversation?
3. Does the primary communicative partner (i.e., spouse) increase use of reflections, and summary statements?
4. Does ACT improve perceptions of quality of life for the PWA?
5. Does the primary communicative partner (i.e., spouse) find ACT beneficial?

## Chapter 2: Method

An ABA multiple baseline design was used to measure several behaviors. The dependent variable behaviors were: main concepts, intentional gestures, reflections, and summary statements. These measures will be defined later in this chapter. Three baseline sessions were conducted prior to beginning therapy sessions to measure each behavior. A total of 15 therapy sessions were provided with weekly probe sessions. In addition, three follow-up sessions were conducted post therapy to measure permanency of results. All sessions were conducted at University of the Pacific's Speech, Hearing, and Language Center in Stockton, CA.

### Participants

One couple, Mr. And Mrs. E, were recruited from an aphasia group that met weekly during the spring 2018 semester. In addition to ACT, Mr. E received physical therapy twice a week, and speech-language therapy three times a week at home.

At the time of the study, Mr. E was a 74 year old retired male, four months post stroke. In September 2017, he sustained a CVA and one month later had an additional hemorrhagic CVA. Upon the initial meeting, Mr. E presented with right-sided hemiparesis, poor language comprehension, and multiple paraphasias. He wore glasses, and his primary language was English. Mrs. E, the spouse, was a retired music teacher. The couple were married and had two adult children.

### Assessments

The *Western Aphasia Battery-Revised* (WAB-R) (Kertesz, 2009) Form One was used to assess Mr. E's type and severity of aphasia. Form One yields an aphasia quotient (AQ) including performance in spontaneous speech, auditory verbal comprehension, repetition, naming, and word finding tasks. The results of the assessment yielded an AQ score of 52.2, which indicated moderate conduction aphasia. Mr. E demonstrated the ability to communicate fluently during

conversation, however his speech was characterized by consistent paraphasias and word-finding difficulties. He also exhibited poor language comprehension and repetition skills. At the time of the initial assessment, Mr. E presented with moderate conduction aphasia.

The *Quality of Communication Life Scale* (QCL) (Holland et al., 2004) was used to assess Mr. E's perspective on his own ability to communicate socially and his quality of life. Each item in this assessment is given a rating by the participant on a scale of 1–5, with 5 being the most “favorable.” Table 1 illustrates his scores. The QCL indicated that Mr. E perceived that he had an overall good quality of life.

Table 1. QCL Scores for Mr. E, on a 5-point scale, with 5 being the most “favorable.”

Item	Mr. E Self-Rated Score
I like to talk with people.	4
It's easy for me to communicate.	4
My role in the family is the same.	4
I like myself.	4
I meet the communication needs of my job or school.	4
I stay in touch with family and friends.	4
People include me in conversations.	4
I follow news, sports, and stories on TV/movies.	4
I use the telephone.	2
I see the funny things in life.	4

People understand me when I talk.	4
I keep trying when people don't understand me.	4
I make my own decisions.	4
I am confident that I can communicate.	4
I get out of the house and do things.	4
I have household responsibilities.	4
I speak for myself.	2
In general, my quality of life is good.	4
Mean Score Overall	3.76

The spouse, Mrs. E, was given *The Boles and Lewis* (2003) questionnaire to gain her perspective of Mr. E's communication skills. The questionnaire is a five-point Likert rating scale, and it requires the rater to mark responses such as, "Not at all," "Somewhat," or "Yes, very much." The marks are translated into scores from one ('Not at all') to five ('Yes, very much'). Mrs. E was instructed to mark her ratings using the scale. Table 2 illustrates a sample scale. If a mark was made between the indicated lines then an additional half point was added to the score. Mrs. E also provided clarifying comments for the majority of her ratings. Table 3 shows her responses to each question listed on the questionnaire.



12. Is it difficult to interpret what your spouse is trying to communicate?	4.5	“Often – 20 questions!”
13. Do you use specific strategies or supports to help your spouse communicate with you?	4.5	“Gestures help, ask questions”
14. Does your spouse experience frustration when trying to communicate with you?	4.5	He may say, “‘Why can’t I talk?’ ‘Wait, I’ll get it.’ Waves arm in frustration”
15. Does your spouse enjoy communicating with unfamiliar people?	3.5	“He talks to anybody - all the time”
16. Does your spouse experience increased frustration when trying to communicate with unfamiliar people?	2.5	“Same as with people he knows”
17. Do you experience frustration when trying to communicate with your spouse?	4.5	--
18. Are you confident in your ability to help your spouse communicate?	5	“Much practiced in communication: Teacher (music), Singer, Speech, Theatre”
19. Are you aware of strategies to help your spouse communicate more easily?	4.5	“I know there are new things all the time”
20. Is there anything you would like to learn more about?	4.5	“I learn by watching all of you working with him”

Three baseline conversations were video recorded. Video clips were utilized to structure the topics of these conversations during baseline, probe, and follow-up sessions. Twenty-five video clips were pre-selected prior to the start of the study to control the topic of conversation, and to better judge the accuracy of concepts established during the conversations. These video clips showed real-life events or occurrences portrayed in news story clips (e.g., “Police cars making officers sick” or “The killer whale pursued a dog”). However, major national events

were not included on the list to ensure that no prior exposure to specific topics had been previously discussed between the couple. These video clips were viewed on a laptop.

Mr. E was instructed to watch a short video clip two to five minutes in length without his spouse in the room. Afterwards, Mrs. E was invited into the therapy room and the couple was instructed to have a 10-minute conversation about what Mr. E had seen on the video clip. The researcher left the room during these video recorded conversations, and only returned when the conversation had ended or was greater than 10 minutes in length. Paper and pencil were also provided, however no explicit instructions were given to use them. All baseline recordings were transcribed. Main concepts, intentional gestures, reflections, and summary statements were counted by the researcher and analyzed using the spreadsheet software Microsoft Excel.

### **Therapy Sessions**

Therapy sessions with the couple were scheduled twice a week for 50-minutes. A total of 15 therapy sessions were conducted. For each therapy session, the couple was instructed to sit across the table facing one another during conversation. The clinician sat at the end of the table to observe the conversation as it progressed, and she provided consistent feedback every few minutes.

At the beginning of each therapy session, the clinician reviewed the conversation techniques that were provided to the couple (see Table 4). Then the clinician instructed the couple to have a conversation about any topic they preferred, such as what happened over the weekend, or future events the couple had planned. Approximately every three minutes, the clinician would interrupt the conversation to review the strengths and/or weaknesses of the conversation before allowing the couple to proceed with their conversation. A good conversation was observed when both Mr. and Mrs. E were able to appropriately convey ideas, or concepts to one another. When necessary, they were given feedback regarding their use of the

communication techniques they were instructed to use (see Table 4) in order to better aide them in co-constructing concepts during conversation.

Table 4. Communication Techniques for Mr. and Mrs. E

<u>Mr. E</u>	<u>Mrs. E</u>
<ul style="list-style-type: none"> <li>• Describe the main idea/concept first</li> <li>• Use gestures (e.g. head nodding, act out the action, show the size, or function of what you're describing)</li> <li>• Tell your partner when they are close ("You're close"); Tell your partner when they are off track ("No, that's wrong")</li> <li>• Describe words that are difficult to recall (e.g. function/use; size; shape; color)</li> <li>• Draw</li> <li>• Provide more detail/expand on the concept/idea you want to express</li> </ul>	<ul style="list-style-type: none"> <li>• Repeat main ideas/concepts for clarification, and to establish the topic of discussion</li> <li>• Ask open-ended questions</li> <li>• Use short, simple sentences</li> <li>• Use gestures (e.g. head nodding, act out the action, demonstrate the size, or function of what you're describing) when appropriate</li> <li>• Clarify what he is describing (e.g. use yes/no questions) to confirm understanding</li> <li>• Frequently summarize, or rephrase the concept/idea Mr. E is communicating</li> <li>• Allow pause time to give Mr. E the opportunity to expand or clarify what he is communicating</li> <li>• Encourage Mr. E to use his alternative strategies like using gestures, drawing, or asking for more detail</li> </ul>

Weekly probe sessions were also conducted within the therapy sessions to monitor progress. Probe sessions were video recorded and followed the same format as the baseline sessions. Mr. E was shown a short video clip of a real-life event, and then the couple was asked to have a 10-minute conversation about the video. These videos were transcribed, and all observed behaviors were counted and analyzed by the researcher.

### **Post Therapy Follow-Ups**

Follow-up sessions were conducted using the same procedure from baseline and probe sessions, and these sessions were video recorded. One-week post therapy, the couple was asked to have a 10-minute conversation about a video Mr. E was shown. One-month post therapy, the couple had their second follow-up session, and another 10-minute conversational discourse sample was obtained about a video clip. In addition, Mr. E was re-evaluated using the WAB-R and QCL. Additionally, Mrs. E was given a post-treatment questionnaire to gain information about her perspectives at the completion of this treatment approach. Three-months post therapy, a third follow-up session was conducted.

### **Data Collection**

The primary dependent variable in this study was the number of main concepts conveyed in conversation about a video clip. Main concepts were understood as ideas conveyed in conversation that were central to the theme of the news clip. Other variables that were observed included number and type of intentional gestures, and Mrs. E's use of reflections and summary statements. Intentional gestures were counted as instances when Mr. E utilized purposeful facial gestures and body movements to illustrate an idea during the conversation. For example, Mr. E initiated a conversation about murals displayed in their local community. However, Mr. E was unable to recall the word *murals*, but compensated by describing its colorful characteristics and intentionally gesturing by spreading his arms out wide to show the dimension or large size. From this combination of description and use of intentional gestures, Mrs. E was able to gather enough information to understand that Mr. E wanted to talk about the murals they had seen earlier that week. Reflections (similar to the concept of alignment) were counted as statements made by Mrs. E that repeated or mimicked the utterances of Mr. E to clarify and establish a topic or idea. For instance, during one conversation about lions Mr. E began the conversation with the

number of lions, “Two...Lions. Ya know the men and the women type.” Mrs. E reflected, “Two women and two men?” Mr. E clarified, “Yes, they were tigers,” and Mrs. E reflected, “Oh, two lady tigers and two male tigers.” Mr. E confirmed, “Right.” This example illustrates how frequent reflection made by Mrs. E during conversation may contribute to establishing a concept. Summary statements were counted as statements made by Mrs. E that summarized or paraphrased Mr. E’s descriptions of main points or ideas during conversation. For example, during a conversation about graffiti on a public bridge Mr. E described the bridge, “Were doing uh painting on the...thought they said the...Twashington um...Bridge.” Mrs. E summarized Mr. E’s statements, “So, they were painting on a bridge.” In this example, Mrs. E complied Mr. E’s statements and summarizing the information given. This aided in directly establishing a main concept of conversation prior to proceeding with the conversation.

Miscellaneous measures were also taken which included Mr. E’s use of: paraphasias, fillers (e.g. *uh, um*), and disfluencies (e.g., part word repetitions, whole word repetitions, phrase repetitions, revisions). These measures were chosen to observe if there would be any change to the frequency Mr. E utilized these during the course of therapy as they predominantly characterized his conversational speech at baseline.

Baseline, probe, and follow-up sessions were all video recorded and transcribed by the researcher. Subsequently, each transcription was evaluated by the researcher to identify and record the number of main concepts, intentional gestures, reflections, and summary statements. Additionally, the researcher calculated the averages for all variables observed for each recorded conversation. The averages for the main concepts were calculated per conversation. Intentional gestures were averaged per Mr. E’s utterances in conversation. Reflections and summary statements were averaged per Mrs. E’s utterances in conversation. The miscellaneous measures (i.e. Mr. E’s use of paraphasias, fillers, and disfluencies) were conducted in a similar fashion

where the researcher evaluated each transcription during baseline and probe sessions to identify, record, and calculate the averages for all miscellaneous measures per Mr. E's utterances in conversation.

## Chapter 3: Results

### Baseline and Probe Sessions

Three baseline sessions were conducted, recorded, and evaluated by the researcher prior to conducting therapy. Averages were obtained during each session for the number of main concepts, gestures, reflections and summary statements produced. The total number of main concepts were divided by total number of utterances (Mr. and Mrs. E) per conversation. Mr. E's intentional gestures used during a conversation were totaled and divided by Mr. E's total utterances per conversation. Reflections and summary statements were divided by Mrs. E's total utterances per conversation. The total number of discussed main concepts discussed by Mr. and Mrs. E at baseline were averaged at 4.3% per conversation, and gestures utilized by Mr. E were averaged at 12.5%. Baseline measures for reflections and summary statements made by Mrs. E per conversation were averaged at 2.3% and 2.6%, respectively.

Mr. and Mrs. E were coached on communicative strategies to use during conversation including the use of gestures and providing more detailed descriptions, reflections, and summary statements. Seven probe sessions were conducted, recorded, and evaluated by the researcher. Main concepts produced improved on average from 4.3% to 9.4% as seen in Fig. 1. The number of gestures utilized during conversation demonstrated no significant change and were produced on average from 12.5% to 12.7% as seen in Fig. 2. During therapy sessions, it was observed that Mr. E's use of gestures varied depended on his motivation and level of fatigue. However, his gestures became more elaborate, often using both hands to show an object's function, or size. Drawing was another strategy that was sometimes used in substitution for gestures to illustrate an object, or item. It should also be noted that towards the beginning of therapy Mr. E underwent heart surgery, and, as a result, therapy was postponed for a week until he was well enough to continue participating in this study. Mrs. E's ability to use reflections and summary statements

demonstrated slight improvement on average from 2.3% to 8% and from 2.6% to 9.6%, respectively, but no significant change was noted as seen in Fig. 2. Reflections often helped clarify an idea during conversation. For example, during a conversation about lions raised in captivity, Mr. E noted there was, “just the one” trainer who worked with the lions. Subsequently, Mrs. E reflected back, “Just the one person,” to which Mr. E clarified, “that I remember one.” These reflections help bring awareness to what the speaker, Mr. E, has said and increases his ability to self-monitor. Summary statements also aided in solidifying main concepts during conversation. For instance, during a conversation about faulty mechanics in police cars, Mr. E took many conversational turns to expand and provide detail to the listener, Mrs. E. Mrs. E continued to summarize the information Mr. E provided until the main concept was appropriately established.

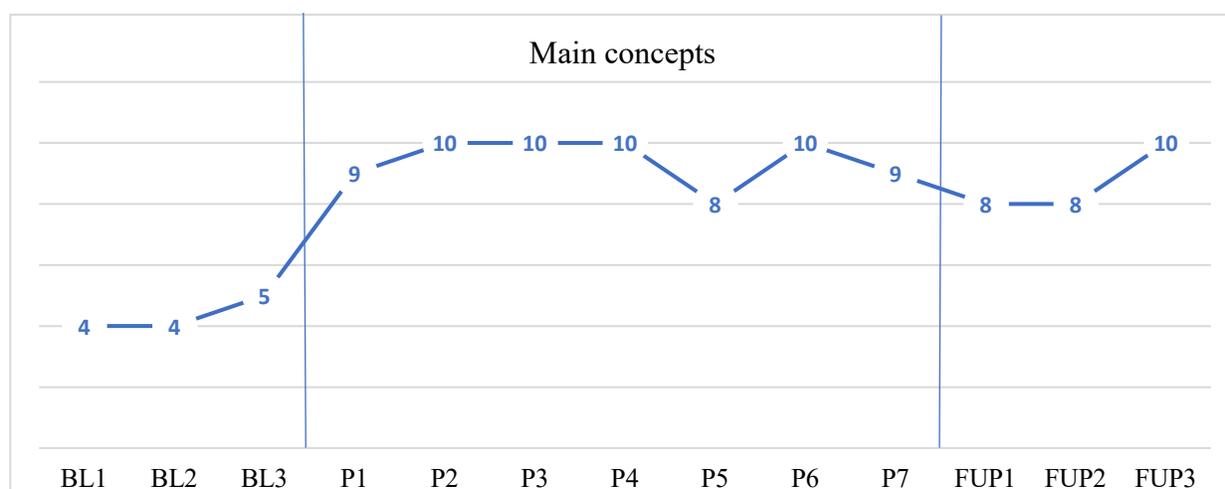


Figure 1. Main concepts conveyed per conversation

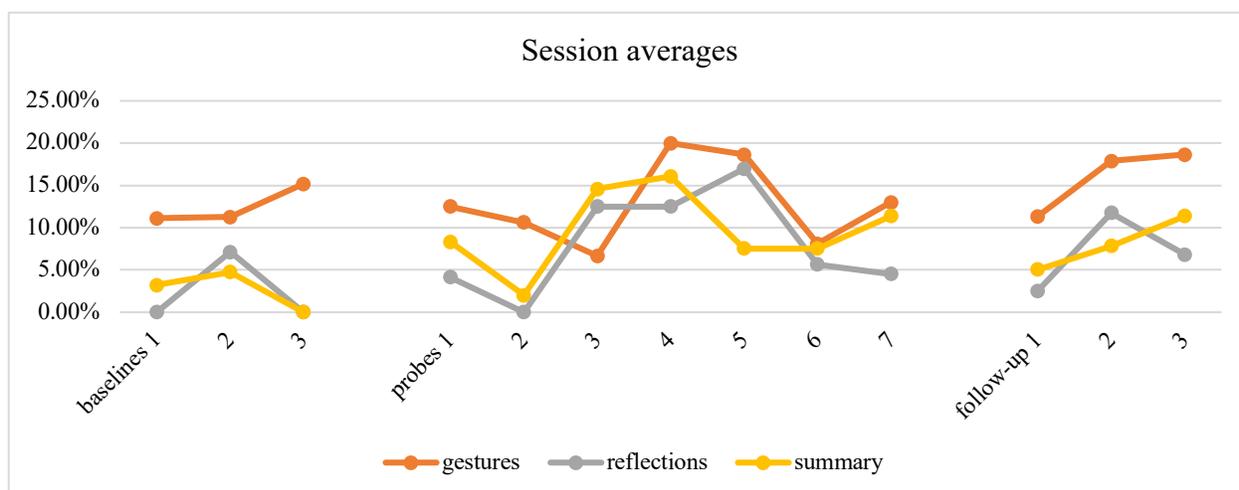


Figure 2. Baseline, probe, and follow-up session averages for Mr. and Mrs. E.

### Miscellaneous Measures

The researcher also observed and tracked Mr. E's paraphasias, use of fillers, and disfluencies during conversations. Prior to the start of therapy, Mr. E's total utterances across three baseline sessions averaged 56% of utterances containing paraphasias, 54.2% for fillers, and 38.3% of disfluencies per ten-minute conversation. These behaviors were monitored and observed to decrease in frequency during conversation as seen in Fig. 3. The average percentage of occurrence in Mr. E's total utterances across seven probe sessions were as follows: 19.3% of utterance contained paraphasias, 19% of utterances contained fillers, and 15% of utterances contained disfluencies.

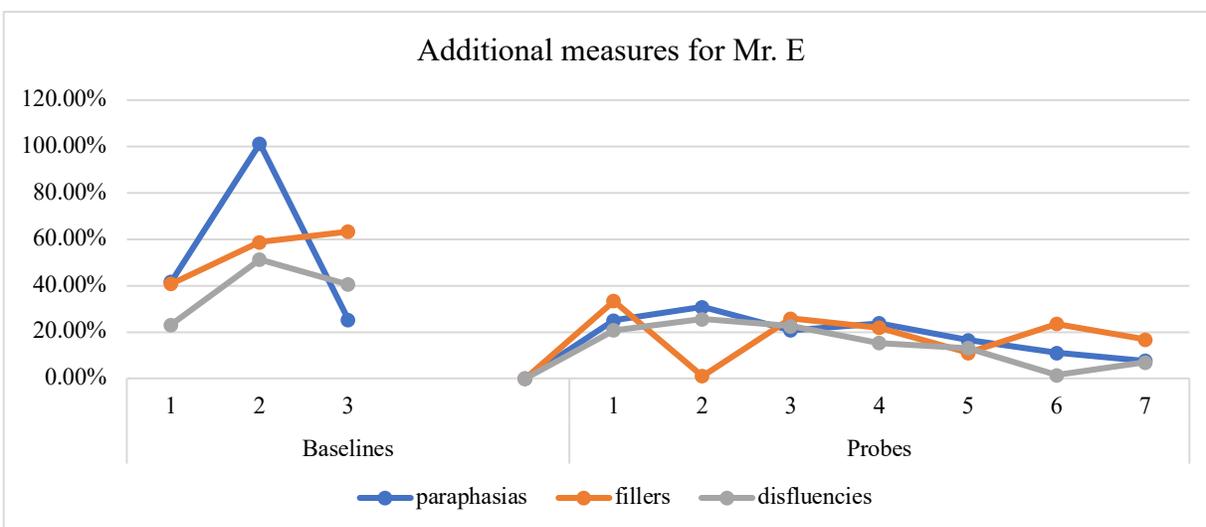


Figure 3. Averages of paraphasias, fillers, and disfluencies

### Follow-up Sessions

Three follow-up sessions were conducted one week, one month, and three months post therapy. Following the same format as the baseline and probe sessions, Mr. E was shown a video clip and then discussed the clip with Mrs. E during a 10-minute conversation.

Prior to therapy, Mr. and Mrs. E conveyed main concepts during conversation at an average rate of 4.3% across three baseline sessions. During therapy, the couple increased their overall production of main concepts on average to 9.4% across seven probe sessions. Post-therapy, Mr. and Mrs. E averaged 8.6% for main concepts during conversation across 3 follow-up sessions. Mr. E's average use of intentional gestures increased from 12.5% at baseline to 15.9% on average across three follow-up sessions. Mrs. E's use of reflections and summary statements post therapy increased on average from 2.3% and 2.6% to 7% and 8%, respectively, when compared to baseline sessions.

### Pre- and Post- Assessment Results

The WAB-R was administered to Mr. E pre- and post- therapy, and all results were consistent and classified Mr. E as having conduction aphasia. The QCL was also administered, and no significant change was observed in Mr. E's mean overall score from 3.76 to 3.94. This demonstrated that Mr. E's overall quality of life remained at a satisfactory level.

Mrs. E was given a post-therapy questionnaire (Boles & Lewis, 2003) to obtain her perspective of the aphasia couples therapy approach. The questionnaire utilized a five-point Likert rating scale. The rater was required to mark responses which were interpreted into scores from one ('Not at all') to five ('Yes, very much'). Mrs. E rated each item, and also provided additional comments.

Table 5. Mrs. E's post-therapy questionnaire

Item	Mrs. E Rated Score	Mrs. E's Comments
2. This therapy helped me better communicate with my spouse.	3.5	"Reinforced many things I already used in teaching"
2. I learned new ways to help me communicate.	3.5	--
3. I liked this therapy.	5.0	--
4. This therapy was effective.	5.0	"Helped [my spouse] learn and use different skills of communication"
5. I feel more confident communicating because of this therapy.	4.5	--
6. I would recommend this therapy to a friend.	5.0	--

## Chapter 4: Discussion

The following research questions were the focus of this case study:

1. Does ACT increase the number of main concepts conveyed during conversation between a PWA and their communicative partner (i.e., spouse)?
2. Does the PWA increase use of intentional gestures in conversation?
3. Does the primary communicative partner (i.e., spouse) increase use of reflections, and summary statements?
4. Does ACT improve perceptions of quality of life for the PWA?
5. Does the primary communicative partner (i.e., spouse) find ACT beneficial?

### Research Question 1: Main Concepts

The average number of main concepts conveyed in a ten-minute conversation was the primary dependent variable of this study. The number of main concepts improved during and post therapy when compared to baseline sessions. Additional communicative strategies were used to aid Mr. and Mrs. E to improve the exchange of main concepts in conversation such as use of gestures, reflections, and summary statements.

### Research Question 2: Gestures

Intentional gestures were one of the communicative strategies emphasized in therapy to improve Mr. E's participation and communication during conversations. The overall percentage of gestures used slightly increased when compared to baseline sessions from 12.5% to 12.7% during therapy, but no significant change in the frequency of use was noted. However, it was observed that Mr. E's use of intentional gestures evolved and became more distinct. For instance, he was able to show size, numbers, and function using his hands and arm movements during conversation. Mrs. E was able to interpret Mr. E's elaborate gestures and apply them to

her reflections and summary statements as they applied to the conversation. This allowed for an improved quality of conversation for the couple.

Mrs. E also implemented the use of gestures to her communicative strategies. Simplifying her statements and pairing her verbal descriptions with meaningful gestures appeared to help Mr. E to better comprehend the ideas she expressed to him during conversation.

### **Research Question 3: Reflections and Summary Statements**

Reflections and summary statements were two strategies used by Mrs. E to improve the quality of conversation. Reflections were statements that repeated or echoed what was said by the communicative partner (i.e., Mr. E) to provide clarification of ideas expressed during conversation. Summary statements helped to formally establish concepts discussed during the conversation. Overall, Mrs. E slightly increased her use of reflections and summary statements during from 2.3% to 8% and from 2.6% to 9.6%, however, as a result no significant change was noted.

### **Research Question 4: Quality of Life**

Quality of life was included in this study to observe if ACT affected the social-emotional attitudes of the couple. Mr. E was given the QCL to self-rate his quality of life pre- and post-therapy. The results remained consistent at a satisfactory level. The mean overall score increased from 3.76 to 3.94. The QCL utilized exclusive line drawings to improve or support comprehension with each question for the PWA. However, these results should be taken with caution as Mr. E required repetition of questions and instances of reinstruction when marking his responses.

Mr. and Mrs. E regularly attended therapy sessions, and agreeably applied all communicative strategies reviewed by the researcher. Mrs. E also improved in her role of coaching Mr. E to use his communicative strategies during conversation. Furthermore, the

couple had demonstrated positive attitudes and high motivation for the duration of the therapy program.

### **Research Question 5: ACT and its Usefulness**

Mrs. E was given pre- and post-therapy questionnaires to obtain her perspective towards ACT. These questionnaires utilized a five-point Likert scale with one being “No, not at all” and five being “Yes, very much.” Prior to the beginning of therapy, Mrs. E rated her experience with frustration when trying to communicate with her spouse as a 4.5. In comparison, following therapy Mrs. E rated her confidence in communicating to her spouse as a result of this therapy at 4.5.

Furthermore, Mrs. E expressed approval of this social-based therapeutic approach, and believed the therapy was effective. For instance, she commented, “It helped [my spouse] learn and use different skills of communication,” and this therapy, “reinforced many things [she] already used.”

### **Limitations**

**Sample size.** This study was based on two participants, thus yielding a small, specific sample size. The participants were volunteers from the local community in Stockton, CA. Mr. E was a retiree and presented with conduction aphasia. Mrs. E was a music teacher and the primary communicative partner for Mr. E. The results of this study have poor ecological validity and are not necessarily generalizable due to the limited sample size. However, Mr. E was the first participant who formally presented with conduction aphasia to participate in a social based partner training study to this researcher’s knowledge. Continued research with larger sample sizes on this topic is warranted to strengthen the validity of the results.

**Maintenance of effects.** The participants extended the therapy program to include follow-up sessions in order to determine the reliability and maintenance of effects as a result of this therapy. These follow-up session results further demonstrate the validity of the effects of ACT. The results for Mr. E's use of gestures, quality of life ratings, and Mrs. E's social perspectives demonstrated no significant improvements compared to this researcher's expectations. However, overall the findings were satisfactory as an improvement in conveyance of main concepts during conversation was observed.

## **Conclusion**

Similar research conducted on social based partner training approaches by Hopper et al. (2002), Boles (2015), and Wildermuth (2016) yielded positive results including improved measures of the average number of co-constructed or main concepts and quality of life ratings. As a result of this study, there was a measured increase in the number of main concepts communicated during 10-minute conversations. The frequency of miscellaneous measures (i.e. paraphasias, fillers, and disfluencies) utilized by Mr. E during conversation decreased. Other measures including reflections, summary statements, use of intentional gestures, social perspectives, and quality of life ratings from both participants demonstrated no significant change across the duration of therapy.

Some limitations were noted and discussed in this study including the sample size and maintenance of effects. However, some interesting findings have been brought forward as a result of this study and are worth exploring in-depth with regards to the measures taken (i.e. main concepts, reflections, and summary statements) as well as the contributing factors of ACT (e.g. seating arrangement and topic selection). More research is warranted to prove the effectiveness of ACT with a variety of PWA in a clinical, therapeutic setting.

A challenge posed to conducting future research in this area include the reliability and validity of discourse measures. The dependent variables measured in this studied may be subjective from person to person, or rater to rater. Kurland and Strokes (2018) discuss this and advocate for the development of a core outcome set for discourse (D-COS) as it pertains to aphasia research. D-COS would provide a standardized way of measuring and analyzing conversation. However, an obstacle for establishing and implementing D-COS would include reaching a consensus on constructs to be measured among aphasia researchers and stakeholders.

ACT is a social based approach for treatment for PWA. This research study further supplemented and illustrated the importance a spouse or primary communicative partner can play in effectively carrying over communicative goals outside of therapy sessions. Finally, the results of this research continue to endorse the merits of a partner-based treatment approach.

## References

- American Speech, Language, and Hearing Association. (2017). *Aphasia*. Retrieved from <https://www.asha.org/public/speech/disorders/Aphasia/>
- American Stroke Association. (2013). *Types of Aphasia*. Retrieved from [http://www.strokeassociation.org/STROKEORG/LifeAfterStroke/RegainingIndependence/CommunicationChallenges/Types-of-Aphasia\\_UCM\\_310096\\_Article.jsp#](http://www.strokeassociation.org/STROKEORG/LifeAfterStroke/RegainingIndependence/CommunicationChallenges/Types-of-Aphasia_UCM_310096_Article.jsp#)
- Avent, J. R., & Austermann, S. (2003). Reciprocal scaffolding: A context for communication treatment in aphasia. *Aphasiology*, 17 (4), 397-404. DOI:10.1080/02687030244000743
- Avent, J. R., Patterson, J., Lu, A., & Small, K. (2007, May). *The effectiveness of reciprocal scaffolding treatment in anomic aphasia*. Paper presented at the Clinical Aphasiology Conference, Scottsdale, AZ.
- Avrutin, S. (2001). Linguistics and agrammatism. *Glott International*, 5(3), 87-97.
- Boles, L. (2011). A review of aphasia couples therapy. *Asia Pacific Journal of Speech, Language, and Hearing*, 14(3), 159-163.
- Boles, L. (2015). Establishing alignment in aphasia couples therapy in a woman with Wernicke's aphasia: A case study. *Communication Disorders Quarterly*, 36(4), 219-230.
- Boles, L., & Lewis, M. (2003). Working with couples: Solution focused aphasia therapy. *Asia Pacific Journal of Speech, Language, and Hearing*, 8(3), 153-159.
- Brookshire, R. H. (2007). *Introduction to neurogenic communication disorders* (7<sup>th</sup> ed.). St. Louis, MO: Elsevier.
- Centers for Disease Control and Prevention. (2017). *Types of Strokes*. Retrieved from [https://www.cdc.gov/stroke/types\\_of\\_stroke.htm](https://www.cdc.gov/stroke/types_of_stroke.htm)

- Chapey, R., Duchan, J. F., Elman, R. J., Garcia, L. J., Kagan, A., Lyon, J.G., Simmons Mackie, N. (2000). Life participation approach to aphasia: A statement of values for the future. *The ASHA Leader*, 5(3), 4-6. Doi:10.1044/leader.FTR.0503200.4.
- Curran, L. (2017). Treatment of word-finding difficulties: Semantic feature analysis. *Aptus Speech and Language Therapy*. Retrieved from <http://aptus-slt.com/semantic-feature-analysis/>
- Elman & Bernstein-Ellis. (1999). The efficacy of group communication treatment in adults with chronic aphasia. *Journal of Speech, Language, and Hearing Research*, 42, 411-419. Doi:10.1044/jslhr.4202.411
- Fitzakerley, J. (2015). *Cortical language areas* [Online Lecture Notes]. Retrieved from [http://www.d.umn.edu/~jfitzake/Lectures/DMED/SpeechLanguage/CorticalS\\_LAreas/CorticalLanguageAreas.html](http://www.d.umn.edu/~jfitzake/Lectures/DMED/SpeechLanguage/CorticalS_LAreas/CorticalLanguageAreas.html)
- Goodglass, H. and Kaplan, E. (1983) *The Assessment of Aphasia and Other Neurological Disorders*. Baltimore, MD: Williams and Wilkins.
- Goodglass H. & Wingfield, A. (1997). *Anomia: Neuroanatomical and cognitive correlates*. San Diego, CA: Academic Press.
- Grandbois, K. (2012, November 14). Augmentative alternative communication [Webinar]. In *Autism Speaks Technology and Autism Webinar Series*. Retrieved from [https://www.autismspeaks.org/sites/default/files/augmentative\\_alternative\\_communication\\_webinar.pdf](https://www.autismspeaks.org/sites/default/files/augmentative_alternative_communication_webinar.pdf)
- Hallowell, B. (2016). *Aphasia and other acquired neurogenic language disorders: A guide for clinical excellence*. San Diego, CA: Plural Publishing.
- Hedge, M. N. (2010). *Introduction to communicative disorders* (4<sup>th</sup> ed.). Austin, TX: Pro-Ed.

- Hinckley, J. (2009). *Conversational treatments: Aphasia* [PDF document]. Retrieved from [http://www.asha.org/Events/convention/handouts/2009/1206\\_Hinkley\\_Jacqueline/](http://www.asha.org/Events/convention/handouts/2009/1206_Hinkley_Jacqueline/)
- Holder, M. K. (2005). What does handedness have to do with brain lateralization. Retrieved from <http://www.indiana.edu/~primate/brain.html>
- Holland, A., Frattali, C., Caperton, C. J., Thompson, C. K., Paul, D. R., & Slater, S. (2004). *Quality of communication life scale*. Rockville, MD: American Speech-Language-Hearing Association.
- Holland, A., Milman, L., Munoz, M., & Bays, G. (2002, June). *Scripts in the management of aphasia*. Paper presented at The World Federation of Neurology, Aphasia & Cognitive Disorders Section Meeting, Villefranche, France.
- Hopper, T., Holland, A., & Rewega, M. (2002). Conversational coaching: Treatment outcomes and future directions. *Aphasiology*, 16(7), 745-761.
- Kagan, A., Black, S. E., Duchan, J. F., Simmons-Mackie, N., & Square, P. (2001). Training volunteers as conversation partners using 'supported conversation for adults with aphasia' (SCA): A controlled trial. *Journal of Speech, Language, and Hearing Research*, 44(3), 624-638.
- Kertesz, A. (2009). *Western aphasia battery-Revised*. San Antonio, TX: Pearson.
- Kurland, J., & Strokes, P. (2018). Let's talk real talk: An argument to include conversation in a - COS for aphasia research with an acknowledgement of the challenges ahead. *Aphasiology*, 32(4), 475-478.
- Manasco, M. H. (2017). *Introduction to neurogenic disorders* (2<sup>nd</sup> ed.). Burlington, MA: Jones & Bartlett Learning.
- Mayo Clinic. (2017). *Aphasia*. Retrieved from <https://www.mayoclinic.org/diseases-conditions/aphasia/diagnosis-treatment/drc-20369523>

- National Aphasia Association (2017a). *Aphasia Definitions*. Retrieved from <https://www.aphasia.org/aphasia-definitions/>
- National Aphasia Association. (2017b). *Aphasia Statistics*. Retrieved from <https://www.aphasia.org/aphasia-resources/aphasia-statistics/>
- National Institute on Deafness and Other Communication Disorders. (2015). *Aphasia* [PDF document]. Retrieved from <https://www.nidcd.nih.gov/sites/default/files/Documents/health/voice/Aphasia6-1-16.pdf>
- Seikel, J. A., Drumright, D. G., & King, D. W. (2016). *Anatomy & physiology for speech, language, and hearing* (5<sup>th</sup> ed.). Clifton Park, NY: Cengage Learning.
- Sirven, J. L., & Malamut, B. L. (2008) *Clinical Neurology of the older adult* (2<sup>nd</sup> ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Stein-Rubin, C., & Fabus, R. (2012). *A guide to clinical assessment and professional report writing in speech-language pathology* (1<sup>st</sup> ed.). Clifton Park, NY: Cengage Learning.
- Van der Gaag, A., Smith, L., Davis, S., Moss, B., Cornelius, V., Laing, S., & Mowles, C. (2004). Therapy and support services for people with long-term stroke and aphasia and their relatives: a six-month follow-up study. *Clinical Rehabilitation*, 19(4), 372-380.
- World Health Organization. (2001). *International classification of functioning, disability and health*. Retrieved from <https://unstats.un.org/unsd/disability/pdfs/ac.81-b4.pdf>