

## **Abstract**

Title of Thesis: A COMMUNICATION PARTNER TRAINING PROGRAM:  
ASSESSING CONVERSATIONAL BEHAVIORS AND  
ATTITUDES TOWARDS COMMUNICATION IN  
PERSONS WITH APHASIA AND THEIR  
COMMUNICATION PARTNERS

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This study examined the conversational behaviors of eleven dyads consisting of a person with aphasia (PWA) and their familiar communication partner (CP), and investigated changes in behaviors as a result of attending a communication partner-training program (CPT). Attitudes about communication were examined and related to conversational behaviors observed pre- and post-training. Results indicated that CPs and PWA used significantly more facilitating behaviors than barrier behaviors, although most dyads experienced some barriers. A comparison of pre- and post-CPT conversations revealed a significant interaction between time and type of behavior, with the increase in the number of facilitators approaching significance. Overall, persons with aphasia and their conversational partners expressed positive attitudes about communication. There were no significant correlations between scores on attitude surveys and behaviors pre or post-training. This study demonstrated that these dyads employed facilitative conversational behaviors even before CPT, and that facilitative behaviors can increase after a one-day training workshop.

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COMMUNICATION IN PERSONS WITH APHASIA AND THEIR  
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by

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## Introduction

Aphasia is an acquired language disorder resulting from an injury to the brain, such as from a stroke or traumatic brain injury (TBI). According to the American Speech and Hearing Association (n.d.) there are 80,000 new cases every year, affecting a total of one million Americans. Symptoms include difficulty in finding words, using sentences, and communicating with others. Therapy for aphasia has often focused on what the person with aphasia (PWA) can change in him or herself to improve communication. Examples of these kinds of therapy include semantic association treatment and treatments for reading (Lott, Sperling, Watson & Friedman, 2009; Martin, Finak, Renvall, & Laine, 2006; Wilssens, Vanderborre, van Dun & Visch-Brink, 2015).

Despite the many and varied therapies for aphasia, many persons with aphasia continue to experience language difficulties long after their stroke, and communication with others remains a life-long challenge. Often, as a result of these communication challenges, familial relationships change, and persons with aphasia (PsWA) and their families experience tension and struggle as they attempt to communicate with one another (Parr, 2007). Additionally, PsWA are at risk for loss of friends and social isolation due to loss of shared activities, unhelpful responses of others, being mocked for language difficulties, difficulties using phone or writing, and communication partners not understanding how to communicate with the PWA (Cruice, Worrall & Hickson, 2006; Northcott & Hilary, 2011; Parr, 2007). In turn, social isolation places increased risk for follow-up post-stroke events such as a second stroke, myocardial infarction and mortality (Boden-Alba, Litwak, Elkind,

Rundek, & Sacco, 2005). Additionally, PsWA themselves have reported desires to maintain their social contacts (Cruice et al., 2006). It is critical to address these social communication difficulties in order to help PsWA maintain their social functioning with their family and friends.

As communication is not just dependent on one person, but rather a give and take interaction between two or more people, one approach in aphasia therapy has been to focus on the communication strategies used by the communication partner (CP) of the PWA (Cunningham & Ward, 2003; Kagan, 2001). The goal of these interventions is to try to help both the CP and the PWA develop strategies for communicating with each other, rather than the burden of communication placed solely on the person with the communication impairment.

There are several different approaches to communication partner training. Briefly, Kagan (2001) proposed Supported Conversations for People with Aphasia (SCA), which focuses on acknowledging the competence of the person who has aphasia. Other researchers have focused on conversational analysis, which examines the structures of conversation and how each party interacts within the conversation, taking into account the number of conversational turns and communication breakdowns and repair strategies (Cunningham & Ward, 2003). Hopper, Holland and Rewega (2002) discussed conversational coaching, using an 'online' approach to conversation where the person with aphasia and the communication partner have a conversation, and the clinician helps them identify and effectively use conversational strategies. While each of these strategies have some empirical support, mostly in the form of case studies, more research is warranted to determine if such approaches help

partners achieve better communication. Furthermore, very few studies have measured the attitudes of CPs and PsWA regarding their communication skills. Attitudes towards communication may impact a person's motivation to work for effective communication and resilience to communication barriers, thereby contributing to overall increased or decreased effective communication.

The current study addressed these gaps in knowledge by measuring changes in conversational behaviors as well as attitudes towards communication following a one-day workshop for communication partner training, the *Communication Partner Training at the University of Maryland (COPTUM)* (Faroqi-Shah & Slawson, 2014). The workshop focuses on reviewing the typical conversational patterns of each conversational participant, strategies for facilitating conversation (i.e., the communication partner gives the PWA choices, as opposed to asking open-ended questions), strategies for repair when communication breakdown occurs (i.e., using drawing or writing) and ways by which the communication partner can encourage the person with aphasia to feel confident and competent when trying to communicate (i.e., allowing enough time for the PWA to answer, or giving reassurance through nodding or touch).

### **Review of Literature**

The following sections examine the literature on behaviors that affect communication, current methods of examining conversations, conversational training programs, and the need for more research on the attitudes of communication partners and PsWA towards communication.

### **Behaviors in Conversations: Facilitators, Barriers and Repairs**

Conversations between two people who do not have a communication impairment often follow a basic structure beginning with a greeting, an act of introduction of the main topic, conversational turn taking where each partner gives and receives the floor as needed and then a closing (Sacks, Schegloff & Jefferson, 1974; Stokoe, 2013). When one partner experiences a communication impairment such as aphasia, this exchange becomes difficult, yet the behaviors by both the PWA and their conversational partner (CP) can influence the course of the conversation. Several authors have discussed various *conversational facilitators*, defined as behaviors that move the conversation forward, and *barriers*, which are behaviors that halt information exchange (Bauer & Kulke, 2004; Perkins, 2014; Simmons-Mackie & Kagan, 1999; Stokoe, 2013). When communicating partners encounter a breakdown in communication, they often attempt to engage in *repairs*. Repairs could be behaviors such as starting the conversation over, repeating questions in a simplified manner or otherwise repeating the use of facilitating behaviors in order to repair the miscommunication.

*Facilitating behaviors* is a general term that covers a variety of behaviors that conversational partners use to keep the conversation moving forward. Examples include the CP and PWA using *acknowledgement tokens* such as *uh-hum*, *yeah right*, and *I see* to let the other person know that they are still listening, the CP giving the PWA time to answer, and use of gestures and writing for alternate communication (Simmons-Mackie & Kagan; 1999, Kagan, 2001). Perkins (2014) discussed the concept of *linguistic recycling*, which he described as the strategic use of prior



linguistic material for communication purposes. Essentially, the PWA is able to capitalize on the words and structure of the language that the CP uses in order to facilitate communicating the message. An example of this would be if the CP asks the PWA, “Do you want to call Mary?” and the PWA responds “Call Mary”. In this way, the conversation was facilitated by the PWA using the structure and language of the CP.

Simmons-Mackie and Kagan (1999) highlighted the importance of facilitating behaviors by identifying a number of strategies demonstrated by communication partners (CPs) that separated successful communication exchanges from unsuccessful exchanges. Acknowledgement tokens, as mentioned earlier, informed the PWA that the CP was listening and engaged in the conversation. Successful CPs also used *congruent overlap*, such as head nodding during a conversation with the PWA, indicating to the PWA that the CP was following the conversation. They also accepted the use of alternate communication methods such as gestures, drawing, and writing, as opposed to remaining fixated on verbal communication (Simmons-Mackie & Kagan, 1999).

These facilitating behaviors could also be used when the need for communication repair arises. If a CP were to use acknowledgement tokens while the PWA struggled to formulate their thought, the PWA may feel less pressure and be more confident when attempting to answer because they know that regardless of what they said, the CP was still engaged in the conversation and willing to work on communication. Another facilitation strategy that has been frequently used in repair sequences is the CP’s use of multiple choice and yes/no question formats to clarify the PWA’s

intended message (Kagan, 2001). Instead of allowing the miscommunication to continue, a CP's request for additional information is considered a repair behavior. Training CPs and PsWA to identify and use these facilitating and repair behaviors may reduce the struggle and tension in communications between dyads and lead to more successful communication exchanges.

*Barrier behaviors* lead to unsuccessful communication and include behaviors such as *language exercising*, not acknowledging the contributions of the other person, or interrupting when the other person has the floor (Simmons-Mackie & Kagan, 1999; Bauer and Kulk, 2004; Simmons-Mackie, Kearns & Potechin, 2005). Simmons-Mackie and Kagan (1999) found that unsuccessful CPs tended to talk over the PWA when the PWA was attempting to communicate, and tended to remain fixated on the CP's agenda, rather than follow the natural flow of conversation as the PWA took it. *Language exercising* is the practicing of language at the expense of the intended communication. Simmons-Mackie and Kagan (1999) found that when one partner had a language impairment, the focus became on restoring the language ability, and the couple engaged in continual "practicing language" even when discussing mundane topics. In these situations, the CP became the teacher and the PWA the student, instead of partners in communication. While scheduled language practice has its place in the recovery of language abilities, continual and impromptu language exercising can cause stress and tension for both partners because it forces the PWA to display difficulties in an ongoing basis (Bauer and Kulk, 2004).

### **Measuring Behaviors in Conversations**

Conversational behaviors have been measured in a variety of ways, both quantitative and qualitative. Qualitative measures have consisted of descriptions of behaviors (such as illustrations of how a CP acknowledges communication intent or written analysis of a repair exchange). Quantitative measures of behavior include counting the number of observed occurrences of a behavior and charting the change over time.

An example of a qualitative measurement system is the Conversation Analysis Profile for People with Aphasia (CAPPA) (Whitworth, Perkins, & Lesser, 1997), which is a method for analyzing changes in ten-minute conversations pre and post-intervention and providing a qualitative description of the changes that resulted from therapy. This descriptive analysis allows the speech-language pathologist to gain insight into what behaviors are occurring, how the CP and PWA interact with each other and assists the speech-language pathologist with treatment planning (Booth & Swabey, 1999). However, qualitative analysis does not illustrate how frequently behaviors occur, nor does it measure changes over time. Additionally, when working with multiple participants and comparing effects of conversational training, it does not allow for group comparisons.

Quantitative approaches to measuring behaviors have ranged from measures of the length of repair sequences by counting conversational turns (Booth & Swabey, 1999), calculating the change in frequency counts for selected behaviors (Wilkinson, 2010; Cunningham and Ward, 2003) and calculating the change in percentage of utterances that contained the targeted behavior over the total number of behaviors (Simmons-Mackie et al., 2005). The benefits of quantitative analysis are that

behaviors can be more easily tracked across time and patterns within- and across participants can be observed, allowing for better generalization of the effects of treatment. The disadvantage to quantitative analysis is that it could miss the more nuanced changes in interactions that did not fit within the calculation parameters.

While several studies have qualitatively described conversational behaviors, to our knowledge, only one study has examined the frequency of occurrence of these behaviors when one person in the conversation dyad has aphasia (Simmons-Mackie & Kagan, 1999). In this study, ten dyads of a PWA and an unfamiliar CP were video taped having conversations, and the CPs were ranked by two experienced speech-language pathologists and a graduate student from 'best' communication partner (meaning they facilitated a successful and comfortable exchange) to the worst communication partner. The investigators chose the two highest and two lowest ranked communication partners for a more detailed analysis of the conversations. In this way, the authors were able to clearly identify specific behaviors demonstrated by the CPs that were facilitative towards communication, such as the use of acknowledgement tokens, as well as common barrier behaviors, such as refusal to accept alternative methods of communication. However, in using only the four examples that represent the extremes, it is very unclear what the 'typical' behaviors are for communication partners, and it is yet unknown how prevalent facilitating, barrier and repair behaviors are in the average communication exchange between CPs and PsWA.

As few large studies exist that describe behaviors across many participants, it was imperative to first document natural conversational behaviors of the CPs and the

PsWA. Hence, the current study combined quantitative and qualitative analysis methods to examine the current conversational behaviors of PsWA and their familiar CPs. From a rehabilitation perspective, many CPs and PsWA may not be aware that certain behaviors (e.g., language exercising) impede communication. Therefore, training them to identify those behaviors, as well as facilitating behaviors, may help them avoid frustration and communication breakdown. The CoPTUM training highlights important facilitating, barrier and repair behaviors for participants to identify and use (Faroqi-Shah & Slawson, 2014). Conversational training programs will be discussed next.

### **Methods of Communication Partner Training**

**Overview.** Several methods of communication partner training have been proposed. The most well-described are Supported Conversations for Persons with Aphasia (SCA), Conversational Analysis (CA), and Conversational Coaching (CC). Each of these conversational training approaches have their strengths and weaknesses, and elements from each have been integrated into the current study. CA, a systematic method for examining conversations, has been used by a number of researchers to assess and describe conversational behaviors (Turner & Whitworth, 2006, Wilkinson, 2014), while CC has focused on an in-the-moment approach with the conversational dyad (Hopper, Holland & Rewega, 2002). SCA has named specific strategies for helping PsWA communicate (Kagan, 2001). In terms of measuring outcomes of the training, not all studies measured the same conversational behaviors or even used the terminology used in this paper (facilitators, barriers and repairs). This makes it somewhat challenging to directly compare the relative efficacy of training approaches.

The three main approaches and their empirical investigations are described next, followed by an overview of the CoPTUM training program used in the current study.

**Supporting Conversations with People with Aphasia.** Kagan (2001)

developed Supportive Communication for Adults with Aphasia (SCA) to train communication partners to support a PWA in conversation using facilitative strategies that help reveal and acknowledge a PWA's conversational competence. *Revealing competence* means that the CP ensures that the PWA has understood the message, has a means to respond, and has verified the PWA's message through strategies such as use of multiple choice and yes/no question formats. It also includes allowing the PWA enough time to answer and encouraging both partners to use alternate means of communication, such as gestures and writing (Kagan, 2001). *Acknowledging competence* means that the CP lets the PWA know that their competence is not in question. Trained areas of acknowledging the PWA's competence includes instructing the CP to keep a natural voice, using adult conversational topics, avoiding sounding patronizing, and explicitly telling the PWA their competence is not in question (Kagan, 2001).

In the only known single-blind, randomized controlled study for communication partner training programs, Kagan (2001) compared conversations of forty dyads of a PWA and an unfamiliar CP, in which half of the CPs received SCA training and half of the CPs did not receive the training. All dyads engaged in two videotaped conversations, pre-training and post-training for the experimental group, and two conversations with similar time elapsed for the control group. Researchers

used a rating scale to judge the CPs on their ability to: 1) ensure that the PWA understood the message, 2) ensure the PWA had a way of responding and 3) verify the PWA's responses (Kagan, 2001). They found that CPs with the SCA training scored significantly higher on the rating scale post-training than pre-training, and that CPs without the training did not show a difference between the two tapings. The researchers also rated the PsWA on their participation level in conversations and found that PsWA who had conversations with the trained volunteers had a higher level of participation than those that had not (Kagan, 2001). Several of the individual strategies Kagan (2001) used for encouraging the PWA's participation in conversation were good examples of facilitation strategies, although they did not examine barrier behaviors in communication.

**Conversational Analysis.** Conversational Analysis (CA) is a systematic method of examining conversations through the analysis of interactions of natural conversations between partners (Turner & Whitworth, 2006; Wilkinson, 2014). Based on the principle that conversation is a structured and collaborative effort between two people, conversations between two partners are recorded and examined for internal structure. Numerous researchers have used CA for aphasia therapy to examine structural changes, such as number of turns in a conversation, evidence of conversation breakdown, and communication repairs (Wilkinson, 2010; Boles, 1998; Cunningham & Ward, 2003; and Simmons-Mackie, 2005). Researchers' methods and purposes in using CA have varied across studies, although all of them have followed the basic outline of recording a baseline conversation, analyzing it for various

behaviors, initiating therapy to target behaviors and recording follow-up conversation for analysis of change in behaviors (Cunningham & Ward, 2003; Wilkinson, 2010; Simmons-Mackie et al., 2005; Boles, 1998). Targeted interventions have focused on a range of behaviors, such as asking the CP to paraphrase what the PWA said in order to ensure comprehension, use of specific question formats such as multiple choice or yes/no questions, reducing interruptions, and increasing the use of props/gestures/writing (Wilkinson, 2010; Simmons-Mackie et al., 2005; Cunningham & Ward, 2003).

Wilkinson (2010) and Simmons-Mackie et al. (2005) analyzed baseline conversations in order to choose specific behavioral targets for therapy, whereas Boles (1998) did not use baseline behaviors to choose therapy targets. Rather, Boles examined structural changes related to efficiency of language and rate of speech for both the CP and the PWA before and after therapy. Following baseline analysis, researchers have initiated therapy in a variety of ways, with some focused on behaviors of both conversational partners (Wilkinson, 2010; Cunningham & Ward, 2003), and others focused on specific behaviors of one partner (Simmons-Mackie et al., 2005). Simmons-Mackie et al.'s (2005) approach focused on behaviors of the CP, teaching the CP to recognize targeted behaviors and change them in subsequently recorded conversations. In contrast, Wilkinson (2010) and Cunningham and Ward (2003) targeted behaviors of both the CP and the PWA. However, Wilkinson (2010) and Cunningham and Ward (2003) differ in that Wilkinson (2010) targeted specific barrier behaviors observed for the individual couple, whereas Cunningham and Ward



(2003) had pre-chosen a set of general behaviors they labeled as *trouble sources*, *repairs*, *initiation of ideas* and *interruptions* for the four cases that they examined.

Thus far, the CA approach to examining therapy outcomes has been used primarily in single case studies. Boles (1998) reported that the communication partner in his study demonstrated a 13% decreased speaking rate and that the PWA experienced a 31% increase in utterance length. Cunningham and Ward (2003) used CA in four couples, and following intervention, found a higher percentage of initiated repairs and successful repairs in communication and a lower number of communication barriers. It is not mentioned if these changes were statistically significant. In his single-case study, Wilkinson (2010) found a decrease in the barrier behavior from 78% to 22%, that is, asking questions of the PWA. Further, the number of turns in which the PWA attempted to verbalize at least one sentence rose from 41% to 59%, suggesting an overall increase in facilitating behaviors.

**Conversational Coaching.** Conversational Coaching (CC) has some similar elements to Conversational Analysis (CA), although there are a few key differences. In CA, conversations are systematically analyzed for very specific structural elements to be targeted and the clinician or researcher chooses the therapy targets and builds a systematized therapy plan around the targets. Often, practice of therapy targets occurs in the context of role-playing (Cunningham & Ward, 2003). Hopper, Holland and Rewega (2002) differentiated CC from CA as a conversationally-based therapy, where the therapy centered on the couple engaged in natural conversation. There was still a pre-training baseline for analysis of current communication behaviors, but the

therapy itself was implemented in the context of everyday conversation (as opposed to role-playing and using artificial scenarios to practice communication strategies). Additionally, the couple themselves decided which strategies to target in therapy from a list of proposed strategies, instead of the researcher or clinician deciding for them. Strategies for the PsWA included getting the main idea first, drawing, gesturing and writing, and some strategies for the CPs included writing down information, confirming yes/no, cueing alternative strategies, using gestures and summarizing frequently (Hopper et al., 2002).

In Hopper et al.'s (2002) study, two couples were presented with possible strategies that might best improve their communication and the couple themselves chose which strategies to focus on. Treatment sessions included conversations during which the clinician would make suggestions on how repair communication breakdowns using the strategies. This "online" coaching allowed participants to understand how the strategies could be used in a real conversation. Results indicated that during the treatment phase of the study, the PsWA were able to communicate a higher percentage of main ideas from a video to the CP than during the baseline sessions (Hopper et al., 2002). While the study suggested that coaching could be useful for partners, the researchers only examined conversations for the number of main ideas presented during their conversations. They did not specially analyze conversational behaviors such as facilitators or barriers. It would have been prudent to analyze behaviors to give a more in-depth perspective on how the online conversational training could make more substantial changes in the structure of conversations. Additionally, Hopper et al. (2002) appears to be the only study to have

tested the efficacy of conversational coaching as a therapeutic strategy. More research is required to understand the full benefits and limitations of online-conversational coaching.

Overall, researchers examining conversational training programs have employed substantial qualitative analyses outlining detailed descriptions of behaviors at the individual level, as well as some quantitative analyses, such as charting the change in percentages of behaviors over time (Boles, 1998; Wilkinson, 2010). However, there is not enough data to understand how couples behave at the group level, because to date, many of the researchers in conversational training have discussed highly individualized case studies of single or a few participant dyads (Cunningham & Ward, 2003; Booth and Swabey, 1999; Hopper et al., 2002). There remain unanswered questions regarding the prevalence of specific behaviors in communication exchanges. Understanding couples' behaviors would better inform the design of training programs aimed at improving communication. Additionally, with the exception of Kagan (2001) who used a single training instance, most of these studies examined therapy programs that lasted for days or weeks at a time (Boles, 1998; Simmons-Mackie et al., 2005; Cunningham & Ward, 2003; Booth & Swabey, 1999; Hopper et al., 2002). While the above authors found their therapies to have generally positive outcomes, weeks-long therapy can be burdensome for families. It is imperative to know if short programs, such as a single day workshop would be beneficial for PsWA and their CPs. The current study added to the corpus of research on conversational training programs by investigating a training program that

incorporated aspects of conversational analysis and conversational coaching in the context of a one-day, group oriented training workshop.

**Communication Partner Training at the University of Maryland.** The *Communication Partner Training at the University of Maryland (COPTUM)* (Faroqi-Shah & Slawson, 2014), which has been offered at the University of Maryland since 2014, was developed using some elements of SCA, CA and CC, as well as research patterns of conversational behaviors in CPs and PsWA. The program is designed to give classroom training on facilitating, barrier and repair behaviors, and identifying those behaviors in conversations. The dyads are then given an opportunity to practice using the facilitating behaviors, while avoiding barrier behaviors in a natural, real-time conversation with the assistance of a conversational coach, much like the conversational coaching in Hopper et al. (2002). Additionally, similar to SCA, COPTUM emphasizes certain facilitating behaviors, such as the use of yes/no questions and asking one question at time. While both SCA and COPTUM are one-day trainings, COPTUM focuses on familiar CP and PWA dyads, whereas SCA used unfamiliar communication dyads. As stated previously, typical conversational patterns between CPs and PsWA have not been well established, and thus CA was used to analyze conversations prior to training for facilitating, barrier and repair behaviors (see Appendix A for full list of behaviors analyzed). COPTUM has yet to be investigated for its ability to change behavior patterns, and thus post-training videos were also analyzed to determine COPTUM's efficacy. COPTUM is unique in that it allowed analysis of a larger sample size, rather than analyzing the behaviors of

the extremes in conversational partners as examined by Simmons-Mackie and Kagan (1999).

Although the primary focus of the current study was on observable behaviors, another aspect to communication that was of interest was the attitudes towards communication by the PsWA and CPs. It has been established that generally, behaviors are often influenced by peoples' attitudes and emotions (Turner & Whitworth, 2006b; Wang, Peng & Peng, 2015). However, the attitudes towards communication of CPs and PsWA have been relatively overlooked in the literature and therefore cannot yet be connected to behaviors. The following section outlines the importance of attitudes and the possible connection of attitudes to behaviors among communicating dyads.

### **Attitudes of Persons with aphasia and their CP**

As previously mentioned, attitudes are important because they may influence how partners approach communication. If one partner does not feel that communication is accessible or worthwhile, they may be less likely to engage in facilitating behaviors and more likely to cease communication attempts when experiencing barriers. Turner and Whitworth (2006b) postulated that attitudes were likely important in how partners approached communication and developed the *Profile of Partner Candidacy for Conversation Training (PPCCT)* checklist to determine whether CPs were likely to be good candidates for conversation therapy. Their attitude questions targeted the CPs' motivation to change, their views on conversation as collaborative act, acceptance of their PWA's communication situation and their acceptance of multi-modal communication over speech. However, Turner

and Whitworth's (2006b) use of the PPCCT was only discussed as a single case study and there is only one other known study that has utilized their method of interviewing communication partners for their attitudes prior to therapy (Saldert, Backman, & Hartelius, 2013). Saldert et al. (2013) administered Turner and Whitworth's (2006b) PPCCT to three CPs to attempt to understand therapy outcomes as they related to the PPCCT. They used the *Measure of Interaction Scale*, or MIC (Saldert et al., 2013) to determine how well the CP was able to support the PWA in conversation before and after training. Of the three CPs in the study, the only communication partner who did not improve his scores on the MIC was the CP who did not meet criteria for having a positive attitude towards communication on the PPCCT (Saldert et al., 2013).

A few authors have examined other aspects of attitudes about communication. Lyon, Cariski, Keisler, Rosenbek, Levine, Kumpula, J., and Blanc, M. (1997) developed and used the *Communication Readiness and Use Index* (CRUI) to examine perceived changes in communication by the PWA (see Appendix B). The CRUI is a 12 item questionnaire that examines how a PWA feels about communicating with familiar others and strangers. PsWA who were in the treatment group for communication strategies training demonstrated significant improvement on their CRUI scores (Lyon et al., 1997). The authors noted that the control group also demonstrated a slight, though non-significant, increase in CRUI scores and suggested that overall the increase in CRUI scores may not have been directly related to therapy itself, but to the idea of receiving therapy. Thus, the interaction between attitudes and therapy outcomes is yet to be determined and warrants further examination. Additionally, the authors did not measure the CPs' personal attitudes regarding

frustrations about communicating, or whether communicating is worthwhile or possible.

A survey by Johansson, Carlsson, Osteberg, and Sonnander (2012) probed perceived functional changes in communication between the CP and PWA after stroke, with a few questions targeting the CPs' opinion on the meaningfulness of conversations. Though the survey was not tied to a therapy program, it offered some insights into the experiences of CPs after their loved ones' language abilities changed. The study found that 77% of respondents said communication with the PWA was enjoyable and meaningful before the PWA had aphasia, whereas only 28% of respondents reported conversations with the PWA to be enjoyable after aphasia. At the time of this writing, this was the only known study that actively sought a CP's feelings and opinions on communicating with PsWA rather than asking them about their perceptions of the behaviors of the PWA.

It is evident that more research is required to understand the current attitudes of CPs and how their attitudes might affect therapy outcomes. The CoPTUM study examined PsWA and CPs' attitudes through the use of two surveys, the CRUI (Lyon et al., 1997) to measure PsWA attitudes and the *Caregiver Attitude Survey* (CAS) (Yutesler, Evans, and Faroqi-Shah, unpublished) for the CPs. As no measures existed that addressed the CPs' attitudes towards communication, the CAS was developed for CoPTUM (see Appendix C). The CAS differs from the Johansson (2012) and Turner and Whitworth (2006b) in that it specifically targets the CP's levels of frustration with communication, and feelings of whether communication is worthwhile and possible, whereas Johansson (2012) only targeted the meaningfulness of

communication, and Turner and Whitworth (2006b) mainly examined the CP's motivation for change and acceptance of their PWA's communication situation.

### **Summary**

The evidence thus far from research using conversational analysis, conversational coaching and SCA has suggested that training a communication partner along with the PWA could have a beneficial effect for PsWA and their CPs, though there is clear need for additional study. With a few exceptions, previous studies examining behaviors of CPs and PsWA have relied mostly on single and multiple case study reports. While these case studies have given insights into behaviors of individual dyads, there is still a lack of understanding of the kinds of behaviors that are "typical" of PsWA and their CPs. Research is needed to examine these behaviors in a larger scale to understand how conversational behaviors are exhibited among PsWA and CPs as a group and to determine if the current trainings are effecting changes in those behaviors in order to design better workshops in the future.

Similarly, there is a lack of understanding of the CPs and PsWA attitudes towards communication, and whether their attitudes affect their conversational behaviors, as well as whether their attitudes affect their ability to change conversational behaviors. While Turner and Whitworth (2006b) and Saldert (2013) attempted to connect some aspects of attitudes to behaviors through the PPCCT, they fell short in that there is no understanding of how CPs generally feel towards communicating, the limited scope of attitudes explored and their sole use of case studies. Additionally, there is currently no well-established survey for examining CPs



attitudes, and for PsWA, Lyon et al.'s (1997) CRUI is the only known survey to probe PsWA about their communication attitudes.

To address the above gaps in knowledge, the current study examined conversational behaviors in relation to the CoPTUM workshop, and the workshop's efficacy in assisting dyads in changing their conversational behaviors to facilitate communication. Additionally, the study examined the communication attitudes of both PsWA and CPs to determine whether attitudes were associated with behavioral changes.

### **Research questions and hypotheses**

1. What are the typical conversational behaviors of PsWA and CPs? This question was addressed through proportion of frequency counts of facilitating, barrier and repair behaviors over turns for both the CP and PWA prior to participation in CoPTUM. We hypothesized that dyads would display a relatively even number of facilitators and barriers prior to the training. It was expected that participants who choose to attend a seminar dedicated to improved communication likely would have spent time thinking about communication and had already developed some strategies for improved communication. However, these participants were also likely to continue to experience many barriers to communication and thus wished to improve their skills with communication by attending the seminar. It was expected that there would be individual variability in these numbers.

2. Will CoPTUM produce measurable changes in conversational behaviors between communication partners and persons with aphasia? This question was addressed through conversational analysis by analyzing three categories of behaviors: facilitators, barriers and repairs. Frequency counts of the conversational facilitators, barriers and repairs of the PsWA and CPs were calculated and proportioned over the number of turns. Pre-training and post-training measures of each behavior were compared. As participants would have had the opportunity to practice and utilize the strategies discussed in the training during their individualized coaching session, it was hypothesized that there would be an increase in conversational facilitators and repairs and a decrease in barriers from pre-training to post training.
  
3. What are the attitudes of PsWA and their CPs towards communication? To assess attitudes of the PWA and the CP the *Communication and Readiness Index* (CRUI) (Lyons et al. 1997) and the *Caregiver Attitude Survey* (CAS) (Yutesler, et al., unpublished) respectively were used. In both surveys, higher numbers refer to more positive attitudes.
  - a. Are attitudes related to initial behaviors? This question was addressed through the following correlational analyses: 1) The PsWA scores on CRUI (Lyons et al., 1997) with the frequency counts of PsWA conversational behaviors/over turns; and 2) the CPs' scores on the CAS (Yutesler et al., unpublished) with the CPs' conversational

behaviors. It was expected that that there would be a positive correlation between scores on attitude scales and number of facilitating and repair behaviors and a negative correlation between survey scores and number of barrier behaviors. The basis of the above prediction is that people who had more positive attitudes about communication likely had used strategies that had yielded successful communication in the past, and people who experienced many barriers to communication likely had poorer attitudes about communication.

- b. Are attitudes related to change in behaviors? This question was addressed through correlational analysis of: 1) the CRUI (Lyons et al., 1997) with pre- to post-training changes in the PsWA conversational behaviors and 2) the CAS (Yutesler et al., unpublished) survey scores with the CPs' pre- to post-training change in conversational behaviors. It was expected that there would be a positive correlation between survey scores and increases in facilitation and repair behaviors and a negative correlation between survey scores and the decrease in barrier behaviors because people who had more positive attitudes about communication would be more likely to 'buy-in' to the strategies covered in the training and attempt to utilize and practice them in the post-training video conversation.

## Methods

### Participants

Participants were recruited from the list of registrants for the University of Maryland's CoPTUM training program between June 2015 and February 2016. Advertising for the training workshop consisted of networking through a listserv of approximately two hundred speech-language pathologists, neurologists, current and former clients and research participants of the University of Maryland's Aphasia Research Center.

Inclusion criteria for the PWA were being at least 18 years of age, at least one month past stroke, a diagnosis of aphasia and ability to communicate at least with single words and gestures (as per caregivers' report), no more than minimal hearing loss or use of hearing aids, and willingness to commit to videotaping of two ten-minute conversations (prior to training and immediately post-training). Although the behaviors of the PWA were examined along with the CP, the primary focus on behavior changes was on the CP, and therefore concomitant conditions such as dementia and apraxia were not exclusionary criterion for this study. Eleven paired dyads consisting of one PWA and their familiar CP attending the workshop, and willing to partake in the research study, were recruited for the study (see Table 1 for participant characteristics). Of the eleven PsWA, one was diagnosed with Primary Progressive Aphasia (PPA), one had stroke-induced aphasia co-morbid with dementia and nine had post-stroke aphasia.

PsWA were administered the *Aphasia Rapid Test* (ART) (Azuar, Leger, Arbizu, Henry-Amar, Chomel-Guillaume, and Samson, 2013), a brief, standardized screening tool to measure the PWA's aphasia severity. Inclusion criteria for the

communication partner consisted of persons who were at least 18 years of age, and able and willing to participate in the training program and the associated testing.

Table 1

*Participant characteristics*

	<b>Communication Partners</b>	<b>Persons with Aphasia</b>
	N=11	N=11
<b>Age</b>		
Mean(SD)	62.27(11.1)	67.455(8.1)
<b>Gender</b>		
Female N(%)	8 (72.7)	4(36.4)
Male N(%)	3 (27.3)	7(63.6)
<b>*Aphasia Rapid Test (ART)</b>		
Mean(SD)		13.72(7.4)
Mild= <13, N (%)		3(27.3)
Moderate=13-18 N(%)		5(45.5)
Severe = >19 N(%)		3(27.3)
<b>Months since aphasia onset</b>		
Mean(SD)		19.45(14.52)
Range		7-48

\*ART maximum score=26

**Procedures**

**Overview.** This study used a within-subjects, repeated measures design.

Informed consent was obtained from all participants (including caregivers and PsWA).

For the PsWA, aphasia-friendly consent forms were used to ensure that the nature of the research and their role in participation was unambiguously conveyed to the participants. After obtaining informed consent, participants completed the attitude surveys, the CRUI (Lyons et al., 1997) for the PWA, and for the CP, CAS (Yutesler et al., unpublished). Following completion of the attitude surveys, the dyad was escorted to a private room for administration of the ART to the PWA and a ten-minute video recording of a natural conversation. Paper, pens, white board, dry erase

marker and magazines were present on the table but were not directly brought to the attention of the couple. Following the conversation video-recording, the dyads participated in a 4-hour CoPTUM workshop, which included classroom training as well as an individualized personal coaching session by a graduate student clinician.

Prior to participating in the training, graduate student clinicians were trained in identifying conversational behaviors and in coaching participants to utilize the trained behaviors. Each graduate clinician was assigned a PWA-CP dyad and used the behaviors observed in the pre-training conversation to assist the dyad in identifying which strategies discussed in the classroom would most benefit them during the real-time face-to-face coaching session (see Appendix A). Immediately following the classroom training and real-time coaching, the participants engaged in another ten-minute video recording of a conversation topic of their choice, the post-training conversation.

**Classroom training and online coaching.** The workshop was designed and led by faculty at the University of Maryland with ten-plus years experience working with people who have aphasia. The workshop consisted of three parts: 1) An overview on the nature of aphasia and its impact on social isolation, 2) identifying the structure of successful conversations and facilitating/barrier behaviors with a person with aphasia, and 3) strategies for conversational repair. The main content of the workshop focused on being able to identify facilitating, barrier and repair behaviors in communication. An interactive, self-evaluation of conversational behaviors was

built into the workshop for participants to reflect on their own behaviors and how they might improve and change behaviors to assist in more successful communication.

The coaching with the graduate student clinician consisted of individual feedback on their communicative behaviors, suggestions to facilitate successful communication, limit behaviors that disrupt communication, and how to repair communication breakdowns. Within this coaching, the dyad began a new conversation in order to practice the skills addressed in workshop, while the student clinician observed and gave immediate, real-time feedback on behaviors as they arose.

### **Data Analysis**

The pre- and post-training video recordings were clipped and analyzed in eight to ten-minute segments and were studied for each dyad's use of facilitating, barrier and repair behaviors emphasized in the workshop (see Appendix A for list of behaviors and sample transcript). As some behaviors could be counted multiple times for different facilitating or barrier behaviors (e.g., a yes/no question may be counted both as a yes/no and as one question at a time, if there were no questions immediately following it), individual behaviors (e.g., gestures, asking yes/no questions) were tallied and then collapsed into the categories of facilitating, barrier and repair behaviors. In order to control for varying lengths of conversations across participants, the total number of facilitating, barrier and repair behaviors were each proportioned over the number of conversational turns. Since some behaviors could be coded for more than one type of facilitator, barrier or repair, the totals could equal more than the number of conversational turns, and thus some proportions were greater than 1. The primary coder for the data was a graduate student, and an undergraduate research

assistant coded thirty percent of randomly selected data to check for inter-rater reliability. Transcripts were analyzed at each conversational turn for behavior agreement between the two coders. A Cohen's kappa was run to determine the amount of agreement between the coders, which revealed a moderate amount of agreement between the raters' judgments,  $\kappa = .597, p < .01$ .

To answer the first and second research questions regarding the observed pre-training conversational behaviors and changes in behaviors as a result of the CoPTUM training, an Analysis of Variance (ANOVA) was run to determine if there was a significant difference in the number of facilitators, barriers and repairs observed prior to training and whether behaviors changed from pre-training to post-training. Significant findings from the ANOVA were followed up with t-tests to determine where the differences occurred. Subsequent to running the ANOVAs, it became apparent that the data did not follow a normal distribution, and non-parametric tests were performed on all of the data for research questions 1 and 2. The parametric and non-parametric results are reported for CPs and PsWA for both research questions.

The third research question (regarding PWA and CP's attitudes towards communication) was addressed through the analysis of the attitude surveys, *The Communication and Readiness Index* (CRUI, Lyons, 1999) and, *Caregiver Attitude Survey* (CAS, Yutesler et al., unpublished), which are self-report surveys based on a Likert scale. Ten questions were extracted from the CRUI (Lyon et al., 1997) that best represent the PWA's attitudes towards communicating. These questions were summed and a higher score equaled more positive attitudes about communication (see



Appendix B). Likewise, five questions were extracted from the CAS (Yutesler et al., unpublished) that specifically targeted the emotions of the caregiver (see Appendix C). The ratings of these five questions were summed and a total score for each participant was calculated, with higher scores representing more positive attitudes towards communication. The CAS (Yutesler et al., unpublished) had some questions written in reverse on the Likert scale, so that a score of 1 equaled a more positive answer (as opposed to 9 equaling a more positive answer) and thus required responses to be flipped (e.g., 1=9 and vice versus) in order for a higher summed score to equal overall better outcomes. Non-parametric tests were used in the statistical analyses of the surveys due to the fact they are based on the Likert scale.

To determine if attitudes were related to initial behaviors, a Spearman rank-order correlation was conducted for each of the surveys against the proportion of frequency counts over number of turns for the facilitating, barrier and repair behaviors. To address research question 3b about the relation between attitudes and changes in behaviors, a Spearman rank-order correlation was used for each of the surveys against the change in proportion of behaviors over turns from pre-training to post-training.

## **Results**

The occurrence of facilitators, barriers and repairs for pre-training and post-training conversations is given in Table 2. Conversations ranged from 14 conversational turns to 166, with 70 as the average. Overall, the most common topics

of conversation were concrete, information exchanges or well known and rehearsed information such as weekend and holiday plans, family, and what is happening in therapy. More complicated or open-ended topics such as politics or discussion of TV shows tended to occur only when the PWA had more mild aphasia as opposed to more severe aphasia.

Table 2: Proportion of facilitators, barriers and repairs at each time point and for each participant, and difference scores between pre and post-training conversations.

	<b>CP</b>		<b>PWA</b>	
	Pre Mean(SD)	Post Mean(SD)	Pre Mean(SD)	Post Mean(SD)
<b>Facilitators</b>	.79(.38)	1.01(.53)	.31(.210)	.35(.23)
<b>Barriers</b>	.14(.12)	.08(.09)	.02(.05)	.08(.19)
<b>Repairs</b>	.16(.10)	.23(.16)	.02(.03)	.02(.02)

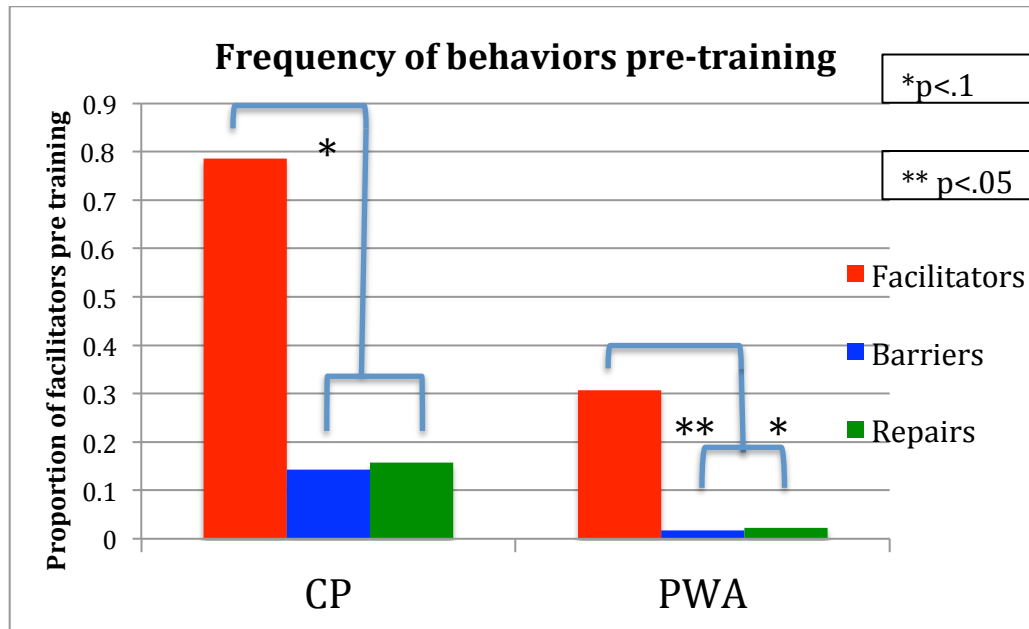
### **Occurrence of conversational behaviors**

For the CPs, a repeated measures ANOVA with a Huynh-Feldt correction determined that there was a significant effect for type of behaviors ( $F(1.2, 12.25) = 35.8, p < .01$ ). Post hoc T-tests using a Bonferroni correction revealed that facilitating behaviors ( $M = .79, SD = .38$ ) were significantly more prevalent than either barriers ( $M = .14, SD = .12, p < .01$ ) or repairs ( $M = .16, SD = .10, p < .01$ ). There was no significant difference between the number of barriers and repairs. A Friedman's test revealed that there was a statistically significant difference between facilitators, barriers and repairs,  $\chi^2(2) = 16.5, p < .01$ . Post hoc analyses with Wilcoxon signed-rank tests were conducted using a Bonferroni correction, which resulted in a significance level set at  $p = 0.017$ . There was a significant difference between facilitators and barriers ( $Z = -$

2.9,  $p < 0.01$ ) and between facilitators and repairs ( $Z = -2.9, p < 0.01$ ), however there was not a significant difference between barriers and repairs ( $Z = -0.09, p = 0.92$ ).

An ANOVA run for the PsWA also demonstrated a significant effect for type of behaviors ( $F(1.3, 13.40) = 16.3, p < .01$ ). Post-hoc T-tests with a Bonferroni correction revealed that the PsWA demonstrated significantly more facilitating behaviors ( $M = .31, SD = .21$ ), than barrier ( $M = .02, SD = .05$ ),  $t(10) = 4.2, p < .02$  or repair behaviors ( $M = .03, SD = .03$ ),  $t(10) = 4.4, p < .01$ . Again, there was no significant difference between number of barrier and repair behaviors. The Friedman's test determined  $\chi^2(2) = 14.9, p < .01$ . Post hoc analysis with Wilcoxon signed-rank tests was conducted with a Bonferroni correction applied, resulting in a significance level set at  $p = 0.017$ . There was a significant difference between the facilitators and barriers ( $Z = -2.7, p < 0.01$ ) and between facilitators and repairs ( $Z = -2.8, p < 0.01$ ). However, there were no significant differences between the barriers and repairs ( $Z = -0.94, p = 0.35$ ).

Figure 1. Frequency of CPs and PsWA pre-training behaviors



Further examination of the pre-training facilitators, barriers and repairs revealed some trends in the behaviors demonstrated by the CPs and PsWA. While the CPs demonstrated significantly more facilitators overall than barriers and repairs, they tended to extensively utilize just a few types of facilitating behaviors, mainly the use of yes/no questions and asking one question at a time. The total number of yes/no questions and occurrences of asking one question at a time were 238 and 251, respectively, whereas the total number of occurrences for using writing/drawing was 10, use of props was 5, and use of feed-forward topic introductions was 17, to name a few examples. Likewise, the PsWA also tended to over-utilize certain behaviors to stay engaged in the conversation. PsWA tended to stay engaged in the conversation through the use of gestures such as head nodding and repeated use of key words and phrases such as *yes, no, I know* and *Oh my goodness*. Most of their gestures were

head nodding, as opposed gestures such as pointing, or miming an action. PsWA with more severe aphasia rarely initiated topics of conversation and often appeared to rely on the CP to initiate and direct conversations. At times, there was the impression that the CPs bore the burden of deciding on and directing the conversation topics. Example 1 demonstrates a CP attempting to begin a conversation by choosing the topic. In this exchange, the PWA did not attempt to give her opinion on the conversational topic choice, she merely agreed and the conversation commenced.

Example 1: Dyad 100

\*Line 9: PWA: okay.  
 Line 10: CP: lets talk about.  
 Line 11: CP: what would you like to talk about?  
 Line 12: CP: let me see.  
 Line 13: CP: let's talk about our clothes!  
 Line 14: PWA: okay. (nodding head)  
 \*Line number in the original transcript

While none of the dyads fit the hypothesis that some CPs would have an equal number of facilitators and barriers, individual variability was noted in that some CPs used relatively few barriers whereas others engaged in considerably more barrier behaviors. This was especially true of the barrier *language exercising*. Language exercising appeared to be quite prevalent among a few families whereas other families did not experience any language exercising. One dyad totaled 25 barrier behaviors in their pre-training video, 19 of which were examples of language exercising. An illustration of how language exercising was incorporated into their conversation of *breakfast* is presented in example 2. In the excerpt, it is apparent that

even when talking about mundane topics such as what was eaten for breakfast, the CP requests the PWA to practice saying specific words.

Example 2: Dyad 105

\*Line 26: CP: you enjoy your breakfast this morning?  
 Line 27: PWA: you man (inaudible/neologism).  
 Line 28: CP: what did you have?  
 Line 29: CP: pancakes?  
 Line 30: PWA: yeah.  
 Line: 31 CP: say pancakes.  
 Line: 32 PWA: pancakes.  
 Line: 33 CP: and did you have juice?  
 Line: 34 PWA: well had some juice.  
 Line: 35 CP: and you had cranberry juice.  
 Line: 36 CP: say cranberry juice.  
 Line: 37 PWA: cranberry juice.  
 \*Line number in the original transcript

Repair behaviors were noted mostly in the form of clarification questions.

Often, CPs would ask yes/no questions as a form of clarification, verifying the responses of the PWA. Example 3 demonstrates a CP clarifying that the PWA's gesture of shrugging his shoulders indicates that he does not care how many nights they spend at their friend's house over the holiday. These kinds of clarification questions were used extensively throughout many dyads' conversations. Other repairs such as requesting additional information or beginning a conversation over again were rarely observed.

Example 3: Dyad 95

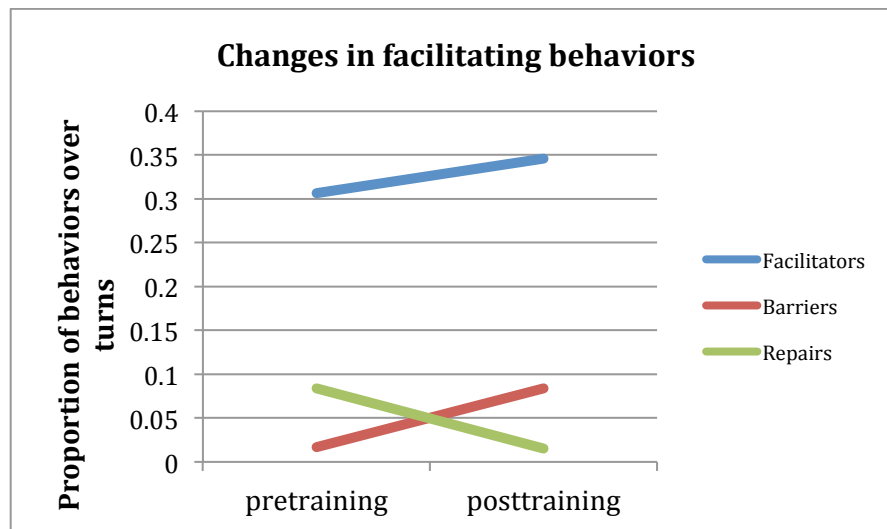
\*Line 50: CPC: Do you want to spend one night or two nights at her house?  
 Line 51: PWA: (Arms spread out, palms up, shaking head side to side shrugging.)  
 Line 52: CPC: It doesn't matter to you; you don't have a preference?  
 Line 54: PWA: yes (shaking head side to side)  
 Line 55: CPC: All right, so I'll call her.  
 \*Line number in the original transcript

It was also noted that the incidence of facilitators was highly correlated between partners within a dyad both pre-training ( $r=.55, p=.08$ ), and post-training, ( $r=.50, p=.12$ ). Though not statistically significant, this suggested that when one partner was using a lot of facilitating behaviors, the other partner was as well. Correlations run between barrier behaviors and repair behaviors between CPs and PsWA pre-training and post training did not show strong correlations (all of them were  $r<.3$ ), and none were significant.

### **Conversational behaviors following CoPTUM**

The previously two ANOVAs run for the CPs and PsWA behaviors were also analyzed for the significance of the interaction between time and type of behaviors. For the CPs, it was noted that there was a significant interaction between time and type of behavior ( $F(1.5, 13.6) = 4.6, p = .04$ ). However, post-hoc T-tests run in order to determine which behaviors changed over time, determined that the differences were non-significant for facilitators ( $M=.23, SD=.36, t(10) = -2.1, p=.06$ ), barriers ( $M=.06, SD=.12, t(10) = 1.8, p = .11$ ) or repairs ( $M=-.07, SD=.15, t(10) = -1.7, p=.13$ ). Although the difference was not statistically significant, it is noteworthy that the CPs' increase in facilitating behaviors *approached* significance. Analyses with Wilcoxon signed-rank tests were conducted using a Bonferroni correction, resulting in a significance level set at  $p = 0.017$ . There were no significant differences between the changes in facilitators ( $Z = -1.9, p=0.05$ ), barriers ( $Z = -1.8, p = 0.08$ ), or repairs ( $Z = -1.5, p = 0.13$ ), although again, the difference in facilitating behaviors approached significance.

Figure 2. Changes in CPs' behaviors from pre-training to post-training



There was no significant interaction between time and changes in behavior ( $F(1.4, 13.7)=.65, p=.49$ ) for the PsWA. Wilcoxin Signed Ranks tests with a Bonferroni correction applied comparing pre-post behaviors for the PsWA also determined no significant differences in the changes in facilitators ( $Z = -0.44, p=0.66$ ), barriers ( $Z = -2.0, p = 0.04$ ), or repairs ( $Z = -0.42, p = 0.68$ )

An analysis of the type of behaviors observed post-training suggested that the largest changes in facilitators were an increase in the use of gestures and multiple choice questions. The number of multiple choice questions pre-training was 9, and post-training was 23, and gestures rose from 61 total instances to 88. As for barriers, there were 58 total occurrences of language exercising pre-training and 25 post-training than pre-training, the largest change in barrier behaviors. When attempting to incorporate facilitating behaviors into their conversations, dyads would often reference things they had just learned in the training, and at times stop themselves in



conversation in order to prepare to use a new facilitator. Example 4 demonstrates a CP attempting to use pictures to facilitate the conversation, a strategy she had not used during the pre-training video. This same CP also attempted to use writing and drawing in this conversation, another facilitating strategy not witnessed during the pre-training video. It was apparent that the CP was making a concentrated effort to apply the training to their post-training conversation.

#### Example 4: Dyad 99

\*Line 87: CPC: Can we talk about this picture right here ? (pointing to one of the pictures on the table.)

Line 88: PWA: Yeah.

Line 89: CPC: Okay, tell me something on this picture that you like to eat.

Line 90: PWA: Yes.

Line 91: PWA: Oh.

Line 92: PWA: Hamham. (Neologism. Pointing to the paper.)

Line 93: CPC: Okay you, those are tomatoes.

Line 94: PWA: Tomatoes. (Speaking in unison with CPC)

Line 95: PWA: Tomatoes.

Line 96: CPC: Tomatoes.

Line 97: CPC: So you like tomatoes, huh?

\*Line number in the original transcript

#### **Attitudes and Behaviors**

The correlations between attitude scales and conversational behaviors are given in Table 3. The CRUI was based on a Likert scale of one to nine, and scores ranged from 42-73, out of a total possible 90 points. The PsWA tended to rate their comfort with speaking with family and friends as higher, with questions averaging six to seven out of nine on the scale, while questions regarding their comfort with strangers averaged four to five. The CAS was based on a one to ten Likert scale, for a total of 50 points indicating very positive attitudes. The scores ranged from 36-49,

with the average at 41. Nearly all CPs rated the questions regarding communication as possible and worthwhile/beneficial at a level ten on the Likert scale, indicating strong positive feelings towards the idea that communication is possible and worthwhile. A number of CPs also indicated that they rarely or never give up trying to communicate a message, with the average score answered with a score of seven. Generally speaking, CPs rated their attitudes as being very positive towards communication, with reportedly low levels of frustration, infrequent incidences of giving up and strong belief that communication is possible and worthwhile.

Table 3. Mean difference in behaviors (post-training minus pre-training), and survey means and correlations between attitudes and behaviors pre-training and attitudes and differences in behaviors post-training. The significance level was set a  $p < .01$  to account for the multiple correlations.

	<b>CP Post-Pre</b>		<b>PWA Post-Pre</b>	
Facilitators, Mean (SD)	.23(.36)		.04(.17)	
Barriers, Mean (SD)	-.06(.12)		.07(.19)	
Repairs, Mean (SD)	.08(.15)		-.01(.03)	
	<b>CAS (Max=50)</b>		<b>CRUI (Max= 90)</b>	
	Pre	Difference in behaviors	Pre	Difference in behaviors
Mean (SD)	41(3.52)		59.4(13.18)	
Facilitators, Spearman r (2-tailed p value)	.42(.23)	-.19(.61)	.34(.33)	-.08(.83)
Barriers Spearman r (2-tailed p value)	.67(.03)	-.73(.017)	.06(.87)	-.45(.15)
Repairs Spearman r (2-tailed p value)	-.44(.20)	.30(.41)	-.28(.44)	-.19(.61)

In order to determine whether the CPs' attitudes were related to their initial behaviors, three separate Spearman rank-order correlations were conducted on the scores of the CAS against the proportion of facilitating, barrier and repair behaviors. Due to the high number of correlations, the risk for Type 1 errors was increased, thus significance was set at  $p = .01$  level. There were no significant relationships noted between scores on the CAS and proportion of facilitators ( $r_s = .42, p = .23$ ), barriers ( $r_s = .67, p = .03$ ), and repairs ( $r_s = -.44, p = .20$ ).

In order to determine whether initial attitudes towards communication were related to changes in communication behaviors, Spearman's rank-order correlations were computed on the scores of the CAS against changes in CPs' facilitating, barrier and repair behaviors with a significance set at  $p = .01$  level to limit Type 1 error. There were no statistically significant relationships between the CPs' scores on the CAS and the changes in their facilitating ( $r_s = -.19, p = .61$ ), barrier ( $r_s = -.73, p = .017$ ) or repair behaviors ( $r_s = .295, p = .407$ ). However, it is noteworthy that the attitudes correlation with changes in barrier behaviors approached significance at the  $p = .01$  level.

Three Spearman rank-order correlations were then conducted to determine if there was a relationship between the PsWA scores on the CRUI and their initial behaviors. There were no significant relationships for scores on CRUI and facilitators ( $r_s = .34, p = .33$ ), barriers ( $r_s = .06, p = .87$ ) and repairs ( $r_s = -.28, p = .44$ ).

Figure 3. Correlations between CPs' scores on CAS and their pre-training barriers

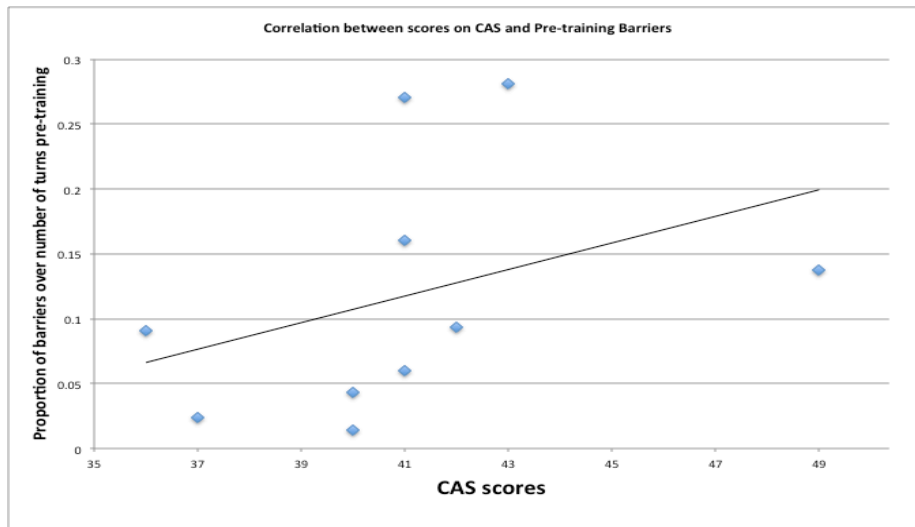
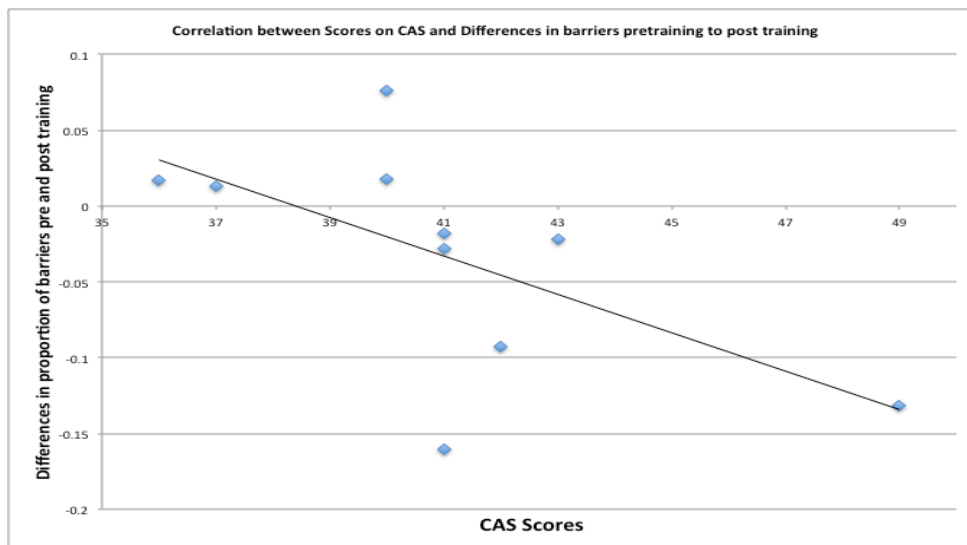


Figure 4. Correlation between CPs' scores on CAS and difference in barriers from pre-training to post-training



There were no significant correlations between PsWA scores on the CRUI and changes in facilitators ( $r_s = .08$ ,  $p = .82$ ), barriers ( $r_s = -.49$ ,  $p = .15$ ) and repairs ( $r_s = -.19$ ,  $p = .61$ ) (See Table 3).

### **Discussion**

This study examined several aspects of the behaviors and attitudes of PsWA and their familiar CPs. First, it analyzed the kinds and frequency of facilitating, barrier and repair behaviors exhibited by PsWA and their familiar CP. Second, it examined the effects of the CoPTUM training on behaviors. Finally, the attitudes of CPs and PsWA were explored as to how the participants currently feel about communication and whether there was a relationship between their attitudes and behaviors before and after training.

### **Behaviors**

It was hypothesized that PsWA and their familiar CPs who attend a seminar on improving communication would have an approximately equal number of facilitators and barriers as a result of previously experienced successful strategies, yet still struggle with some barrier behaviors. This study found that the participants who attended the seminar were already using a high number of facilitating behaviors, significantly greater than the number of barrier behaviors. Further analysis revealed that CPs tended to use many yes/no questions and asking one question one at a time. Yes/no questions frequently took the form of information clarifications, which was consistent with Simmons-Mackie and Kagan (1999) who found that CPs often used a of clarification questions during conversations. This tendency to use many yes/no questions could be a result of the CPs' prior experiences that one question at a time and using the yes/no format assisted with communication with the PWA. While the CPs themselves seldom initiated the use of alternative communication (i.e., writing/drawing, props and gestures), they also rarely dismissed the PWA's attempts

to use alternative communication when it was offered. This was in contrast to Simmons-Mackie and Kagan (1999) who wrote that some CPs in their study rejected the PsWA attempts at alternate communication methods in favor of speech. It could be that the participants in this study were not averse to using alternate modalities, but that it was simply not in their habit to use them.

There are some other notable differences in the behaviors of partners in this study and the study by Simmons-Mackie and Kagan (1999). Simmons-Mackie and Kagan (1999) found that some CPs use rapid-fire bombardment of questions when there was a communication breakdown. While the CPs in the CoPTUM study occasionally asked too many questions at once, this was a fairly rare occasion, and they naturally tended to wait after asking a question. It is possible that the difference between these two studies is that the CPs in the CoPTUM study were familiar with their PWA and with prior experience knew that too many questions at once would not be helpful, whereas in Simmons-Mackie and Kagan (1999), the CPs were unfamiliar communication partners to the PsWA.

While this study did not set out to examine the relationship of behaviors between dyads, it was noted that facilitating behaviors was highly correlated between CPs and PsWA. Although it was not statistically significant, this pattern does suggest that when one person in a conversation is engaging in positive, facilitating behavior, the other person is more likely to use facilitating behavior as well. This could have implications for therapy, meaning both partners could have higher success in utilizing facilitative behaviors as a result of therapy.

Much of the previous work in conversation therapy has indicated that CPs and PsWA are able to change behaviors to facilitate communication (Kagan, 2001; Cunningham & Ward 2003). The nearly significant ( $p = .06$ ) change in facilitative behaviors in this study is consistent with prior findings. Since the CPs were already using a high number of yes/no questions, it is possible that in order to help dyads further improve their communication, future trainings could have more emphasis on the facilitating behaviors not commonly observed, such as using multiple choice questions, writing/drawing, gestures, etc. Giving CPs a wider variety and comfort with facilitators to choose from when communicating could be the biggest benefit of CoPTUM.

While overall the proportion of barrier behaviors observed was less than facilitating behaviors, most families experienced at least a few barriers in their conversations. Language exercising (spontaneous language practicing at the expense of intended communication) was the most prominent barrier, though it tended to be most prevalent in just a few dyads, as opposed to widespread across all participants. This was consistent with previous research that found language exercising to be characteristic of just a few families (Bauer & Kulke, 2004). In the current study, there were three families out of eleven who demonstrated more than ten instances of language exercising in their pre-training conversation. Bauer and Kulke (2004) suggested that it is possible that the concept language exercising happens when families have a specific orientation to aphasia management, where “fixing” aphasia becomes the object of the family, thus putting the primary focus on teaching language.

Language exercising may also be more likely to occur when the PWA's aphasia severity is greater, as opposed to more mild. With greater impairment, the stress of difficult communication may lead family members to believe that perpetual language practicing will lead to quicker language recovery. Bauer and Kulke (2004) did not find evidence that aphasia severity played a role in the occurrence of language exercising; however, they also had a relatively small sample size with just a few participants in each aphasia severity category. Moreover, while a correlational analysis of barrier behaviors and ART scores pre and post-training did not reveal significant findings here ( $r_s = .21, p = .13$ ), and ( $r_s = -.43, p = .53$ ), it is interesting to note that excessive exercising (e.g., >10 instances of exercising) only occurred in families where the PWA's aphasia was more severe, with an ART score that was 15 or higher. In a larger sample, effects of aphasia severity on behaviors could emerge, and future research could examine barrier behaviors as they relate to severity, allowing therapists to understand who may be at greater risk for specific types of barrier behaviors.

There was no statistical significance in the change in the CPs' barrier behaviors, an interesting contrast to Beeke, Beckley, Johnson, Heilmann, Edwards, Maxim and Best (2015) who found the opposite of this study's results, meaning they found a significant change (reduction) in barrier behaviors, but not an increase in facilitating barriers. There are a number of possible reasons why this study did not experience a change in barriers. Reducing barrier behaviors means extinguishing a habit that is already formed. It requires recognizing that the behavior is happening, understanding the conversational patterns in which it appears, recognizing that a



conversation is following that pattern and then preventing oneself from engaging in the behavior at the right moment. As such, Beeke et al. (2015) evaluated a six-month long therapy program, so participants would have had ample time to work on those behaviors. Additionally, behaviors such as language exercising and interruptions of the other person are not tangible and observable in the same way that writing/drawing and using gestures is. Whereas in the post-recording the couples in our study may have been able to plan to use some specific facilitating behaviors (i.e., writing key words), a reduction in the barrier behaviors likely requires more time to practice awareness of those barrier behaviors. As Beeke et al. (2015) found the opposite to this study's finding, they argued that facilitating behaviors may be harder to incorporate and eliminating barriers easier to obtain. Perhaps then, it is not facilitator versus barrier behaviors per se that are harder or easier to change, but rather change is dependent on specific facilitators and barriers that influence how well dyads change communication behaviors. Larger sample sizes that allow for more nuanced analyses of individual behaviors could be beneficial for understanding how to target conversation therapy.

### **Attitudes**

Overall, CPs tended to report very positive attitudes towards communicating with their PWA and there are a number of possible reasons for this. One possibility is that CPs who chose to attend a seminar on communication had more hope and positive feelings about communication, which led them to believe that a seminar could help them in their communications. Another possibility was that although the PsWA were busy filling out their own surveys, the CPs were filling out the CAS with

the PWA sitting right next to them. They may have felt self-conscious about any negative feelings they have towards communicating and may have rated their feelings as slightly higher than they might have if they were filling it out without the PWA present. This possibility was supported anecdotally when several CPs queried the researchers as to whether the PWA would ever see the CPs' responses to the questionnaires. Future studies may improve methodology by ensuring there is more space or privacy between the CP and the PWA in order to assure both parties that their answers are private and will not be shared with their partner.

It was hypothesized that there would be positive correlations between the CPs' scores on the CAS and pre-training and post-training facilitators, and negative correlations between the CAS and pre-training and post-training barriers. It was believed that higher CAS scores might mean that those participants are: 1) already using a variety of facilitating behaviors and 2) are more likely to accept the training and incorporate more facilitating behaviors into their communications. This reasoning was consistent with Turner and Whitworth's (2006b) hypothesis that certain attitudes would facilitate or hinder behavior changes in therapy. However, in this study, the scores on the CAS were generally quite high, and if most of the scores are high, then there is little to correlate. As such, it was not surprising that there was no correlation between scores on the CAS and the number of facilitating behaviors pre-training and post-training. However, it was surprising that there were correlations between the CAS and barriers pre-training and post-training that neared significance. Moreover, barriers pre-training were positively correlated to scores on the CAS, instead of negatively correlated. It is unclear as to why the CAS scores would be positively

correlated with barrier behaviors prior to training, and why there would be a larger correlation with changes in barriers, when facilitators experienced a greater overall change from pre-training to post-training. It is possible that those families who were experiencing more barriers were in greater need of training to ease their communication difficulties, leading them to have higher hopes and expectations for the training, which was then reflected in their attitude surveys. As those families may have had the highest number of barriers, they may have worked harder to reduce barriers in the post-training. Thus, while barriers didn't significantly change for the group, perhaps individual families enacted greater change leading to the higher correlation of scores on the CAS and changes in barriers.

Improvements for future studies should incorporate additional questions to the CAS. This edition of the CAS used questions that specifically targeted the CPs' levels of frustration, frequency of abandoning the communication message, and whether communicating is possible and worthwhile. These questions were good starting points for understanding the attitudes of CPs, however, the CAS did not investigate other aspects of attitudes such as their experience with communicating deeper thoughts and feelings (as opposed to daily needs and wants) and emotional satisfaction with communication. Future versions of the survey should incorporate questions on how *meaningful* the CPs find communication and conversation with the PWA, the CP's motivation to change behaviors, their attitudes on who bears the burden of communication, and their acceptance of alternative communication modalities. These kinds of questions integrate elements of both Turner and Whitworth (2006b) and Johansson's (2013) questionnaires, and when combined with questions of the CAS,

would provide a more robust view of attitudes. Turner and Whitworth (2006b) asserted that an attitude questionnaire could inform clinicians as to which CPs might be good candidates for therapy. While they used the expertise of several clinicians to create the survey, it was apparently not tested beyond a few case studies. In the current study, since the majority of respondents rated their attitudes so positively, it is unclear if their attitudes really affected their behaviors and willingness to change behaviors. The understanding of current attitudes is still emerging and will require further investigation from a more substantial participant base.

### **Limitations**

There are several limitations to this study that need to be addressed. As mentioned previously, this study had a small sample size of eleven dyads. Such a small sample size may not represent the population as a whole. Evidence that the study would benefit from a larger sample size can be seen in the fact that the T-test for changes in facilitating behaviors was nearing significance at  $p=.065$ . With a larger cohort, it is possible that significance may be achieved. The sample size for this study was largely due to time constraints and number of participants who attend each seminar. The seminar dates were established a year in advance, and the study was limited to the participants who chose to attend the seminar. It was not feasible to add additional seminar dates for more participants within the time period required to complete the project. As the seminars are on-going at the University of Maryland, future studies could incorporate more participants and add to the data already collected.

Another limitation was the lack of a control group of participants who do not receive the training, yet are video recorded for analysis of their behaviors at two separate time points. A control group of participants who wish to participate in the seminar, but have not yet, would be ideal for comparing changes in behaviors as a function of placebo effect. It would be expected that participants who are waiting to participate in the seminar would have similar characteristics to those who have already participated, thus changes in behaviors could be attributed to the seminar as opposed to the characteristics of the participants.

A final limitation of the study was that the type and severity of aphasia was not controlled for. PsWA participants were administered the ART to get an overall view of their aphasia severity, though there were too few participants in each severity group to determine if aphasia severity played a role in the conversational behaviors of the CPs. Additionally, PsWA with co-morbidities such as dementia were not excluded from this sample, because the primary concern in behavior changes was focused on the CP. However, as communication is a partnered activity, investigating how both the PWA and CP change their behaviors gives a more robust insight to how trainings might benefit dyads. As such, future studies may want to exclude patients with dementia, as they would likely have difficulty remembering and incorporating the trained facilitating and repair behaviors.

This study contributed to the literature on conversation therapy by establishing that many CPs and PsWA are utilizing a high number of facilitating behaviors, though not necessarily a wide variety of behaviors. It also suggested that CPs do attempt to utilize trained strategies, though significance was not established in this

smaller sample size. Additionally, it sought to contribute to the literature by revealing some of the attitudes towards communication that CPs and PsWA experience and further research is required to more fully explore these aspects of communication. It is possible that with additional research and understanding into the attitudes of CPs and PsWA clinicians will be able to target and change behaviors more effectively.

## Appendices

### Appendix A: List of Facilitating, Barrier and Repair Behaviors and Sample Transcript

#### NOTES:

\*\*Behaviors can be counted twice, i.e. “Now we are going to talk about the Fourth of July,” could be Topic Initiation as well as Feed Forward.

#### Facilitators

- Topic initiation- any beginning of new topic
- Total Conversational Turns
  - Tally each time person has conversational turn- can include non-verbal turns- gestures with clear communicative intent, where listener is using information to continue conversation- i.e. shaking head yes or no in answer to a question, gesturing to indicate answer to a questions such as what is your favorite sport (looks like swinging a club for golf)
- Linguistic Recycling
  - Can include instances when PWA mispronounces a word, and CP repeats it correctly, though does not require/insist PWA repeats it correctly
  - When PWA uses words CP has used in their comment
- Feed Forward
  - Clearly introducing a topic- “I want to talk about..., I am going to change the topic, do you remember when we were talking about ....” Etc.
- Multiple choice options
  - Can be for answering a question or for clarification (would then count it both under facilitators as well as other repairs)
- Ask Yes/No questions
  - Can be for answering a question or for clarification
  - Doesn't count if question is technically a yes/no question but would expect another answer
    - Ex: Can you tell me what else we are going to do tomorrow? - is a yes/no question literally, but not functionally
    - Ex: So that's what we are going to do, Right? Not actually giving the person a choice of answers- they are expected to say "Right" or "yes"....
- Ask one question at a time
  - Need to wait at least 15-20 seconds before asking another one, which needs to be a clarification/ simplification of the first
- Gestures
  - Should have communicative intent- can be shaking head to indicate yes/no, I don't know, or I don't care or other content
- Writing/drawing
- Props such as communication books
  - Note cards, etc.

- Reassurance (touch, nodding, ummm)
- Acknowledge Feelings

#### Barriers

- Interruptions when the other has the floor/ talking over the other person
- Word/pronunciation corrections (any focus on error rather than message)/ language exercising
  - “say this word, what you do say when you do this...”, etc. If CP asks PWA if they want to practice the word and PWA appears to genuinely not mind practicing the word, don’t count it as a breakdown...count it when it appears PWA isn’t given much option to practice the word/communication or if are being put on the spot to perform.
- Unclear topic shifts
  - Not using feed forward
  - Going back to previous topics already discussed without reintroduction of the older topic
- Abandon message
  - Either PWA or CP quits attempting to communicate the message, CP ignores PWA attempt to communicate message and moves on without figuring it out, could lead to abrupt change in topic

#### Repairs

- Request for more information
  - Can include facial expressions or gestures that indicate misunderstanding (PWA or CP)
- Provide word assistance
  - When it appears PWA is looking to CP for word assistance or is not showing signs of frustration of CP providing assistance
- Other repair attempts (not associated with conversational aids & strategies below)
  - Could include clarification questions- which could also be multiple choice/ yes/no questions (can then double count as facilitating and repair)
  - Acknowledging that there is a breakdown and attempt to start the message over
  - Repetition of phrase by CP or PWA
  - PWA changing what they said trying to correct or make clearer

Sample transcript illustrating coding of behaviors. In this transcript, the PWA is describing his speech therapy homework.

<b>Line Number</b>	<b>Speaker</b>	<b>Transcription</b>	<b>Comments</b>	<b>Behavior code</b>
1.	CP	How are you doing with writing down the answers though? (Gesturing	Gesture	Facilitator



		writing)		
2.	PWA:	To have to be honest difficult too. with that too is also hard to do and difficult to do is to come up with the correct answer the other part of that the amone- amount of the stuff I have to do is also...		
3.	CP	A large amount.	Interrupting	Barrier
4.	PWA	Uh	Attempting to continue to talk	
5.	CP	I don't think she necessarily expects you to do it all in one sitting.	Continuing to talk over PWA	Barrier
6.	PWA	No she doesn't expect me to do it all in one sitting, but she expect they I don't know probably about any questions before and and there's twenty two uh forty questions now .		
7.	CP	Uh-huh (Nodding Head)	Acknowledgement token	Facilitator
8.	PWA	No she doesn't expect me to do it all in one sitting, but she expect they I don't know probably about any questions before and and there's twenty-two uh forty questions now.		
9.	CP	(Nodding Head)	Acknowledgement token	Facilitator
10.	PWA	But then answer the question of how many of those do the of three people have this in those boxes and those boxes	Gesture	Facilitator

## Appendix B: Communication Readiness and Use Index

(Lyons et al., 1997)

Questions 1-4 and 7-12 were used in the data analysis.

1. How comfortable are you when communicating with a family member or friend?

1 2 3 4 5 6 7 8 9  
Very uncomfortable Very comfortable



2. How comfortable are you when communicating with a stranger?

1 2 3 4 5 6 7 8 9  
Very uncomfortable Very comfortable



3. How confident are you that you'll be able to tell a family member/friend what you want?

1 2 3 4 5 6 7 8 9  
Not at all confident Very confident



4. How confident are you that you'll be able to tell a stranger what you want?

1 2 3 4 5 6 7 8 9  
Not at all confident Very confident





5. How well do family members or friends understand what they need to do to make communication work with you?



1 2 3 4 5 6 7 8 9  
Not very well at all Very well





6. How well do strangers understand what they need to do to make communication work with you?

1 2 3 4 5 6 7 8 9  
 Not very well at all Very well  
 



7. *How well do you let a family member/friend know the things you most want to say? Not just your needs or wants, but your thoughts, ideas, feelings, or opinions.*

1 2 3 4 5 6 7 8 9  
 Not very well at all Very well  
 



8. *How well do you let strangers know the things you most want to say? Again now, NOT just your needs or wants, but your thoughts, ideas, feelings, or opinions.*

1 2 3 4 5 6 7 8 9  
 Not very well at all Very well  
 


9. *How well do you start a conversation with a family member or friend?*

1 2 3 4 5 6 7 8 9  
 Not very well at all Very well  
 



10. *How well do you start a conversation with a stranger?*

1 2 3 4 5 6 7 8 9  
 Not very well at all Very well  
 

11. *How well do you maintain your part of a conversation with a family member or friend?*

1 2 3 4 5 6 7 8 9  
 Not very well at all Very well  
 

12. *How well do you maintain your part of a conversation with a stranger?*

1 2 3 4 5 6 7 8 9  
 Not very well at all Very well  
 

**Appendix C: Caregiver Attitude Survey**

(Yutesler, Evans and Faroqi-Shah unpublished) *Questions 1-3, and 8-9 were used in the data analysis.*

1. How often do you give up trying to understand what your PWA is trying to communicate?

1 = you NEVER give up; 10 = you give up almost EVERY time

1 2 3 4 5 6 7 8 9 10

2. How often does your PWA give up trying to communicate with you?

1 = he/she NEVER gives up; 10 = he/she seems to give up almost EVERY time

1 2 3 4 5 6 7 8 9 10

3. On an average day, how frustrated do you feel when trying to communicate with your PWA?

1 = not frustrated at all; 10 = so frustrated you feel like screaming or crying

1 2 3 4 5 6 7 8 9 10

4. How *knowledgeable* do you feel about the different ways of communicating with a person with aphasia, (examples: knowledge of using white boards and communication books, etc.)?

1 = not knowledgeable at all; 10 = Extremely Knowledgeable about the different ways of communicating with a PWA

1 2 3 4 5 6 7 8 9 10

5. How *comfortable* do you feel using different ways of communicating with a person with aphasia (examples: comfort with using white board or communication book, etc.)?

1 = not comfortable at all; 10 = extremely comfortable using these modes of communication

1 2 3 4 5 6 7 8 9 10

6. I feel that I need more knowledge on ways of communicating with my person with aphasia.

1 = I don't need any more knowledge on different ways of communicating; 10 = I need much more knowledge on ways of communicating.

1 2 3 4 5 6 7 8 9 10

7. I would benefit from more training and practice on communicating with my person with aphasia.

1 = I do not need any more training or practice; 10 = I need much more training on communicating with my person with aphasia.

1 2 3 4 5 6 7 8 9 10

8. *How much do you agree with the following statement? – I believe that communication is possible.*

1 = I don't believe communication is possible at all; 10 = I absolutely believe communication is possible

1 2 3 4 5 6 7 8 9 10

9. *How much do you agree with the following statement? – I believe that working hard to try to communicate with my PWA is worthwhile and beneficial.*

1 = I don't think it's worth trying to communicate at all; 10 = I always think it's worth trying communicate

1 2 3 4 5 6 7 8 9 10

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