CONVERSATIONAL REPETITION AND APHASIA: A CASE STUDY

BY

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Repetition in Conversation

Repetition is a phenomenon that is pervasive in the world around us. In biology repetition can be seen in the asexual reproduction of some animals, where an animal reproduces an identical version of itself. Biologically repetition is also seen in twins where one zygote splits into two, producing genetically identical repetitions of the same organism. In culture repetition can be seen in artwork. Andy Warhol is one example of an artist who utilized repetition in his works. Repetition is also a fundamental aspect of language and communication. Repetition can be found in poetry, literature, gestures, and spoken language. Repetitions do not need to be exact. Repetitions also include partial repetitions and paraphrases. Concentrating on the spoken language aspect, interactional sociolinguists describe repetition as a fundamental building block of everyday language use (Tannen, 2007; Hengst, Duff, & Dettmer, 2010). The interactional sociolinguistic approach contrasts with those who take a deficit model approach. In the deficit model approach repetition is viewed as an unwanted disruption in speech production (Denes & Pinson, 1993; Hengst et al., 2010). The approach to repetition as being fundamental to language use and conversational repetition as an important aspect of language use is the approach that I will take in this study of conversational repetition and aphasia.

Conversational Repetition

Conversational repetition is the way a person repeats sounds, words, phrases, and gestures and other signs in the flow of conversation. As a fundamental aspect of language use repetition is prevalent in every day interactions, and conversational partners draw on and deploy repetition to support and sustain both conversational discourse and the interpersonal involvement of the conversational partners (Tannen, 2007; Hengst et al., 2010). Tannen pointed specifically

to some of the key ways that repetition may support the production, comprehension, connection, interaction, and establishment of coherence and interpersonal involvement in conversation. Using repetition to draw on the contributions of others may allow speakers to produce language more efficiently and fluently. For some individuals and cultures that place importance on verbosity and wish to avoid silence repetition of sounds, words, phrases and other discourse patterns may help support speakers in producing a lot of talk, providing ample material for talk, and enabling talk through automaticity (Tannen, 2007, p. 58).

Weaving repetition into conversation supports conversational comprehension by providing less semantically dense discourse, making it easier for the listener to keep up with the amount of information they are receiving from the speaker. To highlight the way repetition supports conversational comprehension Tannen used the example of a scholarly article being read aloud at a professional conference. Deprived of the redundancy offered by repetition in the flow of conversation, the audience has trouble understanding the text because they are receiving new information at a much higher rate than when the author compiled it and thus must carefully attend to every word (Tannen, 2007, p.59).

Repetition also supports comprehension and meaning making among conversational partners by displaying the connections that speakers are making across words, phrases, and turns. Such connection displays how new utterances are linked to past utterances and how ideas relate to one another (Tannen, 2007; Hengst et al., 2010). Using repetition to display connection also allows speakers to display their attitudes and judgments about what is being said: "repetition evidences a speaker's attitude, showing how it contributes to the meaning of discourse" (Tannen, 2007, pp. 60).

In addition to supporting meaning making in conversation, Tannen (2007) also argues that conversational repetition supports the interactional or social levels of conversations that keep conversational partners engaged in the conversation and interacting with each other. In her own research, Tannen has observed that repetition is often used to help speakers manage "the business of conversation" such as managing who gets to talk and when (e.g., getting or keeping the floor), bringing others into the conversation who are not physically present (e.g., reported speech), and joking or teasing one another. Conversational repetition can also help bind speakers to their own discourse. Interpersonal involvement in conversation helps tie the previous functions together. Repetition allows for accomplished conversations, it shows in speaker's responses to other speakers, shows acceptance of others utterances and their participation, and it demonstrates one speaker's involvement in the conversation.

Conversational repetition is complex, dynamic and variable. To help recognize patterns or forms of repetition, researchers (e.g., Tannen, 2007; Erickson 2007; Hengst et al 2010) have attended broadly to three dimensions of conversational repetitions. The first dimension attends to how distant in time a repetition is from the original utterance. An utterance can be immediate (e.g., seconds to minutes) or delayed (e.g., days, weeks, months, or even years), or patterns of repetition can be so complex and pervasive that the awareness of the original utterance is lost (e.g., idioms). The second dimension focuses on the source of the repetition, who or what is being repeated. Speakers can repeat themselves (self-repetition) or repeat others (allo-repetition). The third dimension focuses on what is being repeated and how closely the repetition matches the original. Conversational repetition involves all levels of language (e.g., sound, syllable, word phrase, discourse patterns) as well as paralinguistic resources (e.g., affect, tone, laughter). Conversational repetitions also vary based on how exact the repetition is

compared to the original utterance. A repetition may be verbatim (the same words uttered in the same rhythmic pattern) or paraphrased (similar idea in different words). The boundaries that surround these categories can be fuzzy because when identifying repetitions at a certain point an arbitrary line must be drawn for how far away in a transcript an utterance must be to be considered a repetition of the first. These concerns aside Tannen's (2007) discussion of the forms of conversational repetition provided a useful framework for Hengst and her colleagues (Erickson, 2007; Hengst et al., 2010) to develop coding systems that systematically and reliably identified specific instances of conversational repetition.

Conversational Repetition and Aphasia

Aphasia and other communication disorders caused by brain damage can affect a person's understanding and expressions of language (National Institute on Deafness and Other Communication Disorders, 2008). Grounded in a deficit model of communication disorders, researchers and clinicians have, for over a century, recognized that the ability or inability of patients to easily complete verbal repetition tasks differentiates among different types of aphasia (see Hengst et al., 2010; Goodglass & Kaplan, 1982) and some have argued that this dissociation between repetition and spontaneous speech is one of the most striking features of aphasia (Ardila & Rosselli, 1992). Ardila and Rosselli analyzed repetition in 41 individuals with aphasia. They used the Boston Diagnostic Aphasia Examination-Spanish version and the Token Test-shortened version to categorize their participants into seven categories of aphasia: Broca's, Wernicke's, transcortical motor, conduction, anomic, alexia without agraphia, and global. For their analysis the researchers used three subtests (words, high-probability, and low-probability sentences) of the Repetition section of the Boston Diagnostic Aphasia Examination. The researchers judged each group based on how they compared to age and education matched normative scores.

Quantitative and qualitative differences were found between the groups. Those with Broca's aphasia and those with global aphasia had the lowest scores. They found that those with Broca's aphasia had difficulties with repetition because of literal paraphasias (anticipation, substitutions, and deletions) in word repetition, and word-omissions in sentence repetition. Those with Broca's aphasia also had the most severe defect for word repetition of all groups.

While repetition deficits are present in people with aphasia, from an interactional sociolinguistic approach, repetition can also be a resource that allows people with aphasia to stay involved and show competency in a conversation (Oelschlaeger & Damico, 1998; Ulatowska, Olness, Hill, Roberts, & Keebler, 2000; Leiwo & Klippi, 2000; Beeke, 2003). Leiwo and Klippi (2000) examined the abilities of speakers with aphasia to use conversational repetition in order to stay involved in a group discussion. The two participants in the study both had chronic Broca's aphasia with agrammatism and word finding difficulties. The researchers hoped that by placing the participants in a group discussion differences in both the quantity and strategic uses of repetition would be revealed. In an effort to uncover any differences the researchers examined the repetition of lexical items. The lexical items were coded based on their relation to the previous context. Based on this framework the researcher coded for self-repetitions, allo-repetitions, modified self-repetitions, modified allo-repetitions, non-repeated items, and fillers such as "yes" and "um." The researchers found qualitative and quantitative differences in the repetitions of their participants. Participant M used less repetition than the other participant. M was more reactive, tried to make utterances grammatical and comprehensible, and stayed quiet if she was unable to meet these goals. Participant J, in contrast, used a lot of repetition. J was active in the group discussion, less grammatical, more elliptical, and relied on conversational partners to interpret his meaning. The findings in this paper show how participants are able to

successfully use repetition in conversation. These participants are a great example of the interpersonal involvement function because they use repetition to make themselves a part of the conversation. This is true for J more than M but both were involved.

Repetitions do not need to be long or varied in form, a single phrase can carry a lot of meaning. Beeke (2003) examined the case of a man, Roy, with aphasia who repeated the phrase "I suppose" and how it allowed him to stay involved in a conversation with his adult daughter. Roy had very limited output and could not say main verbs, pronouns, or auxiliary verbs which made the unchanging lexical and grammatical form of "I suppose" stand out in comparison to his other utterances. Beeke used conversation analysis, which views language as "a tool for interactions in real-life situations, the characteristics of which occur as a direct result of the demands of constructing a turn at talk", to analyze Roy's speech (Beeke, 2002, pp. 292). Using conversational analysis it was found that at different times Roy used "I suppose" to inform his daughter that he had more to say and at other times that he was presenting an opinion and that his turn was not complete until he gave that opinion. For Roy "I suppose" may represent an adaptation to the demands of manipulating syntax and morphology and accessing verbs in everyday interactions. Roy deployed "I suppose" at different times in the conversation to convey his understanding of previous utterances and as a way to show involvement in the conversation. "I suppose" shows Roy's use of the interaction function because he is contributing to the conversation and his daughter is able to interpret his meaning and work off his utterances in order to continue the conversation. "I suppose" also shows Roy's interpersonal involvement in the conversation as he repeatedly uses this utterance throughout the conversation to display his thoughts on topics being discussed.

Erickson (2007) examined the pervasiveness of conversational repetition in persons with amnesia. To collect data the study used the *Mediated Discourse Elicitation Protocol* (MDEP) developed by Hengst and Duff (2007). The MDEP was designed to elicit discourse from clients by focusing the clinician on being an active collaborator in the interaction, on all communication resources being relevant, and having a goal-directed activity as the motive for the interaction. Erickson's coding procedures were based heavily on the work of Tannen (2007). In coding Erickson examined the temporal relationship between an utterance and a repetition, the source of the repetition, the exactness of each repetition, and the form of the repetition. Analysis found that conversational repetition was prevalent in the data (2.48-2.92 repetition per spoken turn). There were also no differences found in the frequency or pattern of repetition between participants with amnesia and those without amnesia (Erickson, Hengst, & Duff, 2008 as cited in Hengst et al., 2010).

Hengst et al., (2010) examined the use of conversational repetition between a participant with aphasia and a clinician-partner when playing a barrier task game. The study had fifteen sessions and each session was made up of six trials. During the study participants sat across from each other, separated by a 12-inch high barrier. The barrier prevented players from seeing each other's boards but allowed the players to see each other. Each player had a game board with 12 spaces for twelve cards. Each card had a target with images of familiar people, places, and things to the aphasic participant. One player, the director, had their cards prearranged on their board and the other participant, the matcher, had their cards set off to the side of the game board. The object of the game was for the matcher and director to collaborate so that the players had their cards in the same places. The pair completed six trials of the game per session, and at the end of each session the clinician-moderator would enter the room and ask the pair for the

label that they found most salient for that card, and their response was recorded as the agreed-upon-target label (ATL).

The barrier task used by Hengst and her colleagues was adapted from a barrier task originally designed by Herbert Clark, whose goal was to make the collaborative process of conversation visible. Clark (1992) found a lot of collaboration in the task, much more than even he was expecting. Clark and collaborator Deanna Wilkes-Gibbs created a model to explain the collaborative referencing they viewed in the design (Clark & Wilkes-Gibbs, 1986). The model encompassed the initiation, refashioning, and evaluation/acceptance phases of referencing found in collaboration (Hengst, 2003). These collaborative processes are elaborate and involve the use of many turns/words in early trials but over the course of several trials participants start using more covert means to collaborate. Hengst, drawing on sociocultural theories, redesigned the barrier task used by Clark. Hengst turned the full barrier used by Clark into a partial barrier to allow for the multiple modalities of communication (e.g., spoken language and gesture) to be drawn on. There was also the addition of familiar communication partners to work with aphasic participants, the addition of more trials, and the removal of Clark's emphasis on speed.

Grounded in an interactional sociolinguistic framework that views repetition as a fundamental aspect of language use, Hengst et al., (2010) designed the barrier treatment protocol to marshal the repetition already present in everyday communication around a meaningful goal-directed activity, in this case the barrier task game. To discover any conversational repetitions that may be present the researchers analyzed the conversational repetitions used in support of the pair's development of card labels during sessions (Hengst et al., 2010). The first step in analysis was splitting each trial into discrete card placement sequences (CPS) that reflected the participant's discussion about a specific card. Each reference to the card was then underlined

and coded based on its relation to the ATL. The first reference to the ATL in that CPS was coded ATL and subsequent repetitions of that ATL were coded as repetition-ATL (R-ATL). Each reference to the card that was not an ATL was coded as non-ATL (NATL) and subsequent repetitions of that NATL were coded as repetition-NATL (R-NATL). The analysis found that repetition was pervasive in the design. The pair routinely repeated their own and their partners referencing expressions during the task. The pair collaborated and developed specific, meaningful, and increasingly succinct labels for the target cards. Importantly all of the repetitions occurred without the clinician directing the client to repeat a fixed target. Hengst and colleagues argue that, at least in part, it is the effective marshaling of conversational repetition around a meaningful goal directed activity that accounts for the robust learning found in this and previous studies that used the barrier task protocol.

The Current Study

The first goal of the current study is to replicate the 15-session barrier task treatment protocol developed by Hengst et al. (2010) with novice clinicians and a client with severe aphasia. The second goal of this study is to examine the quantity and quality of conversational repetition used by the clinician-client pair as they identify and label target cards during game play. The third goal of this study is to compare the results found in this study to the results of Hengst et al. (2010).

Methods

This treatment protocol spanned fifteen sessions with each session having six trials. For the first ten trials the client worked with one clinician-partner to complete the game. For the remaining five trials a new clinician-partner worked with the client.

Participants

This treatment study involved four different participant roles. The primary or target participant was the client, who was receiving the treatment. The research team involved three participant roles: the clinician-partner who was paired with the client to complete the barrier task trials; the clinician-moderator who managed the sessions, provided instructions, set up the cards, kept score, and conducted the interviews; and the primary investigator who supervised the study and often assisted the clinician-moderator. Each of these roles and the participants who filled them are described below.

Client: At the time of treatment the client, Butch, was 64-year-old woman who was retired and lived in an apartment with her husband. Butch was over 4 years post a left hemisphere stroke and still had a severe Broca's aphasia and hemipariesis (greater impairment in her arm than her leg).

Clinician-partner: There were fifteen sessions in this study. For the first ten sessions Elena was the clinician-partner. For the remaining five sessions Mary acted as the clinician-partner. Elena and Mary are both in their second year of graduate school at the University of Illinois where they are pursuing their Masters of Arts degree in speech-language pathology. Prior to this study Elena and Mary both had limited exposure to persons with aphasia.

Clinician-moderator: The clinician-moderator explained the rules and would give the scores from the previous session at the beginning of the following session. During trials the clinician-moderator would leave the room and observe the sessions. Between trials the clinician-moderator would check the accuracy of the participant's boards and help to reset a player's cards

when needed. The clinician-moderator also scheduled trials and setup the room before each session. Kyle, the author, was a senior majoring in speech and hearing science and was the clinician-moderator for thirteen sessions. Anna, a junior majoring in speech and hearing, was clinician-moderator for the two trials Kyle was unable to attend. Before the study Kyle and Anna both had only brief exposure to persons with aphasia.

Primary investigator: The primary investigator for this study was Dr. Julie Hengst. Dr. Hengst was present at a majority of sessions. Dr. Hengst assisted the clinician-moderator at the beginning of several sessions and would often speak with participants at the end of the session. Dr. Hengst is associate professor in the Speech and Hearing Science Department at the University of Illinois. Prior to receiving her Ph.D. Dr. Hengst worked as a speech-language pathologist for sixteen years. As a speech-language pathologist Dr. Hengst had extensive interactions working with clients who had aphasia. Dr. Hengst was the designer of this protocol used in this study.

Materials

The few supplies in the barrier task game were a playing board, barrier, and cards. The clinician-moderator was in charge of the supplies and would setup the playing boards before each session and the barrier before the first trial. Before each session the clinician-moderator would present the control cards, as detailed in the *procedures* sections.

Playing boards and barrier. Each game board was two feet long, one foot wide, colored blue, with twelve numbered spaces (1-6 in the front, 7-12 in the rear). Each board had enough room to allow for the cards to be comfortably spaced. A barrier, 12 inches tall and four

feet long, was used to separate players during trials. The barrier was tall enough to prevent players from seeing each other's game boards but low enough to allow the players to see each other.

Playing cards. Based on interviews with the client thirty salient and meaningful referencing targets (familiar places, concepts, and people) were chosen. Two different photos were prepared for each target, yielding sixty photo cards. The sixty selected targets were divided into ten groups of five. The ten groups were further between into A (1-5) and B (1-5) groups to reflect the two views of each of the thirty targets originally selected. The design was setup so that the first card in sets A1 and B1, for example, is a picture of the same target, Butch's apartment, but each card represents a different view of the apartment.

Control targets and cards. The control cards had the same design as the playing cards. Sixty control cards were split into A (1-5) and B (1-5) groups with cards in the A group representing a different view of the same target contained in the B group. The targets were the difference between the control cards and the playing cards. The targets on the control cards were not specific to either participant and were of general people, places, and things giving both participants an equal level of familiarity with the target.

Procedures

Each of the 15 sessions lasted from 60-90 minutes and followed the same general format. At the start of each sessions the scores from the previous session were given, next came the control task, followed by the six trials of the barrier task game, and the session ended with a post-session interview. Each of these is described below.

Control task. Immediately preceding the start of the first trial the clinician-moderator would present the control cards. The participants were shown twelve control cards sequentially and asked to collaborate and create an appropriate reference for the card being presented. After recording their responses to the control cards the clinician-moderator would put the barrier in place and distribute the playing cards.

Barrier game trials. After giving each player their playing cards the clinician-moderator would designate the roles of matcher and director. The director would then arrange their cards on the numbered spaces how they liked. The matcher would place their cards around the edge of the game board. The object of the game was for the director and matcher to collaborate so that at the end of each trial the match would have their cards in the same spaces as the director. Only three rules needed to be followed to play the game and they were: players could not look over the barrier, players had to use accurate labels for each target card, and each player would be director and matcher three times. Between trials the clinician-moderator would come into the room to check the accuracy of the matcher's board and to tell the participants to switch roles for the next trial.

Post-session interview. After all six trials were completed the clinician-moderator would enter the room to collect the participant's playing cards and remove the barrier. The clinician-moderator would then sequentially place each playing card in front of the participants. The participants were asked to say the label they used the most or found most salient for that particular card. This label was the agreed-upon-target label (ATL) for that card that session.

Data Collection

Data collection included both on-site notes kept by the research team, including information provided by Butch and her husband during sessions, and videotapes of the sessions that supported detailed discourse analysis.

Video tapes. All sessions were videotaped using the recording system at the University of Illinois Speech and Language Pathology Clinic. The data was shot by camera and recorded onto a DVD. After the session the DVD(s) were collected and brought to the Discourse Analysis Lab where it would later be analyzed.

Researcher notes. While observing each trial the clinician-moderator would record the number of repetitions used by the participants in order to give them a rough estimate of their performance on the previous session before the start of the following session. Between trials the clinician-moderator would enter the room and record the number of cards placed correctly by the matcher.

Point system. A third method of collecting data was a point system. Points were given in three ways. One point per card was given for each card the matcher placed correctly. One point per card was given if the matcher repeated the director's label for a card. One point per card was given if the matcher or director used the ATL. This point system allowed for a total of two hundred sixteen points per session or seventy two points for the three point scoring methods. This point system allowed for a quick analysis of each session and allowed for the clinician-moderator to give feedback to the participants before the start of the following session.

Data Analysis

After the data was collected it was brought back to the Discourse Analysis Lab. The author and seven other undergraduate research assistants transcribed each session. Transcripts recorded both the linguistic and non-linguistic resources used by the pair as they managed the referencing task (see Hengst, 2003). Non-linguistic resources included gestures and the movement of playing cards. After the first transcriber completed the transcript a second transcriber went through the transcript with the first transcriber to check the validity of the transcript and come to an agreement on any disagreements that the transcribers may have. After this consensus transcription process was completed the transcript would then be ready for coding.

Coding categories. Before coding each transcript was marked for the beginning/end of each of the six barrier task trials per session, and each of the 12 card placement sequences (CPS) per trial, and any repair/repeat card placement sequences (RCPS; see Hengst, 2003). The categories were: Agreed-upon-target label (ATL), non-agreed-upon target label (NATL), repetition of an ATL (R-ATL), and repetition of an NATL (R-NATL). ATL was coded for the first of use of the ATL for that card during that CPS. NATL was coded for the first use of a specific referencing expression, other than the ATL, for that card during that CPS. R-ATL was coded for the repeated uses of the ATL for that card during that CPS. R-NATL was coded for the repeated use of a specific NATL for that target card during that CPS.

Following the coding rules described in Hengst et al., (2010, p. 892-893), the coding decisions used this study identified labels as repetitions that were exact matches (e.g. Famous Dave's; Famous Dave's), as well as those that were close approximations to the original. Close approximations were defined as changes in word order (e.g. Corner of Kirby; Kirby corner), the

inclusion/deletion of adjectives (e.g., Garden Inn Hotel; Garden Inn Hotel with four cars), and partial productions (e.g., Savoy movie theater; movie theater) or, expansions (e.g., the tractor; the tractor in the garden) that preserved key elements or at least half of the original expression. If coders did not agree the referencing expression would be coded as NATL.

Coding procedures. After completing transcription and consensus on each session a transcript was ready for coding. The first step in coding was going through the transcript and marking each card placement sequence (CPS). There were twelve CPSs per trial representing a CPS for each card. A CPS began when the conversation shifted from the previous card to the current card and ended when the conversation switched to the following card. After marking each CPS a coder then went through the transcript and marked every reference to a card made within a CPS. References also encompassed questions asked in an effort to find a card. Questions were included in coding so that the collaboration between partners was captured, this helped show how the pair worked together when finding a card. After marking all of the references the coder then entered the references into a Microsoft Excel spreadsheet. The spreadsheet had rows for each of the codes outlined in the previous section. In the spreadsheet the coder entered a "1" into the relevant box for that particular reference. After the first coder completed the spreadsheet a second coder would go through the transcript and spreadsheet concurrently with the first coder to check the validity of each code. These procedures were done in line with the consensus procedures outlined in Hengst et al., (2010).

Results

Regarding the first goal of whether Hengst et al., (2010) could be replicated this study was successful. Both Butch and the clinician-partners came to all 15 sessions on time and ready

to play. Butch was a very eager participant and both she and the clinician-partners enjoyed playing the game, making remarks to this effect several times. Butch and the clinician-partners successfully completed all 90 game trials (6 trials per session, 15 sessions) and placed the target cards (12 per trial, for a total of 1,080 card placements) with over 99% accuracy. (1078/1080). During each trial the pair worked together to find the correct card. This would sometimes involve many turns but the pair almost always succeeded in placing the cards in the correct spaces. Indeed there were only two misplaced card during the entire treatment protocol and this miss could, in part, be attributable to the pair having two pictures of Butch's apartment and mixing them up. In all cases the pair agreed upon labels for each card and used a lot of conversational repetition each session.

Conversational Repetition of Referencing Expressions

Preliminary discourse analysis of conversational repetition was completed on four out of the fifteen total sessions (sessions 1, 4, 7, and 10). The first finding shown in Table 1 is that there were more referencing expressions used than predicted by the design. In the most streamlined collaboration there would be minimally one initial referencing expression from the director and one repetition from the matcher (i.e., 12 initial references and 12 repetitions, for each of the six trials, a total of 144 anticipated referencing expressions per session). In this study the pair averaged 392 (range 225-506) referencing expressions per session or 272% more repetitions than predicted by the design alone. The second finding is in the amount of repetition used by the pair during the task. Of the 1568 referencing expressions 783 or 49.3% were repetitions (R-ATL and R-NATL). The third finding shown in table 1 is that the number of R-ATLs increased each session. This finding shows that the pair was not repeating any utterance. They were trying and were successful at repeating ATLs

Referencing Target Cards: Two Examples

Ferris Wheel. The first example is from session 1 and shows the pairs collaboration in working toward the target reference "Ferris wheel." This example, seen in *Appendix A*, shows the pair decreasing their overt collaboration over the course of the session. In the first trial Butch is unable to say Ferris wheel (e.g., B: Sidawannadose). Elena picks up on this and works with Butch to try and describe the photo (e.g., E: a lot of color in there?; E: a lot of orange). Butch responds to this approach and provides more clues to help Elena locate the picture (e.g., B: The blue). After Elena makes an initial guess (e.g., E: The guys by the airplane?) that is incorrect she makes a second guess (e.g., looks like people going on a Ferris wheel) that is correct and confirmed by Butch through head nods, "uh huh," "yes," and the like. After agreeing on the Ferris wheel being present in the first trial "Ferris wheel" becomes a stable reference for the card across the session. Elena directed trials 2, 4, and 6 and in these trials she mostly says "Ferris wheel" and waits for confirmation from Butch. In the remaining trials directed by Butch (3 and 5) she is able to say "Ferris wheel" and Elena gives her confirmation with her own repetition of the reference (e.g., E: Ferris wheel).

The Pictures on the Bookshelf/ The Family. This example shows the interaction with the same target taken from two different views. This first view, seen in *Appendix B,* is from session 4 and discussed below shows the pair collaborating for the target reference "the pictures on the bookshelf." This is the second time the pair had used this card in the treatment protocol. Nevertheless on the first trial the pair has a great deal of difficulty arriving at the correct card, taking 23 turns. After the initial difficulty of the first trial Elena has no trouble confirming the cards identity. In trials 2, 4, and 6 directed by Elena she consistently provides the ATL (e.g. E:

your apartment bookshelf) with no subsequent repetitions being offered by Butch. Less overt collaboration is also seen across trials directed by Butch. After initially needing 23 turns on trial 1 only 7 and 3 turns are needed on trials 3 and 5 respectively. Consistent use of the ATL is seen, especially in later trials.

The second view, seen in *Appendix C*, is from session 7 and shows the pair collaborating for the target reference "the family." This is the third time they have seen this card but the first time they have seen it from the alternate view. Far fewer turns are needed, in fact Butch is able to quickly describe the card (e.g., B: Darlene and Bill and…Dorothy and Elwood and Joe um Nancy and) to Elena who picks up on the thread of listing off the names seen on the card (e.g., B: And Bob and Ruth and Lowell). Elena then condenses all of the names down into a single label for the card (e.g., E: The fam). Elena's trials (2, 4, and 6) continue to be very discrete but more repetition is seen on the part of Butch than seen on the card in session 4. In session 4 Butch did not repeat a single utterance of Elena's during the trials Elena directed. In session 7 Butch repeats several times (e.g., E: Darlene, Bill, Dorothy; B: Bill). Less overt collaboration is also seen across trials in this session as well. One interesting aspect of this card is that although the listing of the names seen on the card is a clear reference to the card they are classified as NATL. Instead of listing the names they repeated so many times as their ATL they elected to say that "the family" was the ATL for this card.

Discussion

The first goal of this study was to replicate Hengst et al., (2010) with a new client and new clinician-partners. This study was successful in reaching this goal as evidenced by the findings that the pair completed all game trials with a high degree of accuracy and in the use of

repetition by the clinician-partner. Beyond just completing the task the pair also used a great deal of conversational repetition. The original study found that their pair averaged 202.2 repetitions per session while the pair in this study averaged 392 repetitions per session. The pair did an excellent job of completing the study and using conversational repetitions while playing.

This study holds up very well when compared to Hengst et al., (2010). The participant in this study presented a different type of aphasia and had different communication difficulties than the client in the previous study. Butch and Elena performed very well and there were a high number of repetitions in the first session and there continued to be a high number of repetitions in subsequent sessions. The procedures used during the barrier task game and in coding were faithful to the procedures used in the original study so results from this study are comparable to the original study.

Although this preliminary analysis focused only on four of the fifteen sessions (trials 1, 4, 7, and 10) and with only one of the two clinician-partners, the findings were compelling. As more sessions are analyzed it will be interesting to note how patterns of repetition may, or may not, change across the treatment protocol. I expect that the remaining six sessions between Butch and Elena will continue to contain more repetition than anticipated by the barrier task design. Based on the pattern seen in the trials analyzed in this study I expect that the number of R-ATLs will generally increase from session 1-10. I think that the analysis used in this study did a good job of capturing the number of repetitions used by the pair. Whereas it does a good job in that respect, there are some additions that if made would give a better picture of the collaboration. Butch had a preservative utterance (e.g. “sidawannados” and similar ones) that she used frequently. I would be interested to see if she used this perseveration less frequently

across sessions. From my experience as the clinician-moderator my impression was that she did use them less often, but this should be substantiated with a systematic analysis. The second addition I would make to the data analysis would be to analyze the repetition source (i.e., Butch or Elena producing self or allo repetitions) and how these relate to the roles they were in (i.e., director or matcher). I think that this would be informative because in session 1 Butch rarely repeated on trials directed by Elena while in session 10 Butch frequently repeated on trials directed by Elena. It would be very helpful to know the source of the repetitions so that trends of repetition used by each partner would be visible. Based on my experience I suspect that Elena would be responsible for a majority of the repetitions in the first few sessions but the disparity would be much closer to 50/50 or 60/40 in later sessions.

I believe that this line of research is very fruitful. This is displayed when looking from Hengst (2003) which used the barrier task from a theoretical viewpoint testing the validity of the design by using Chinese tangram figures and familiar communication partners to later barrier task studies. After the success of Hengst (2003) Hengst et al., (2010) used pictures familiar to the client and used partners that the client was not familiar with and the pairs are still able to succeed on the task. As more clients with different types of communication disorders participate a more complete picture of this protocols ability to work with different types of communication disorders will come to light. Clinically the barrier task and protocol is not the key to an interactional approach to language use. Clinicians do not need a barrier to draw on the repeated engagement of everyday learning (Hengst et al., 2010). All a clinician needs are clinical interventions that allow for complex, functional communication and interventions that involve mutual and emergent structuring of interactions as opposed to clinician-directed drill.

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Table 1: The card sets used during sessions 1, 3, 7 and 10 and the total number of referencing expressions (e.g., card labels) produced by the pair and coded as ATLs, NATLs, R-ATLs, and R-NATLs in each session.

Table 1					
Referencing expressions for target cards					
Session (card sets)	ATL	NATL	R-ATL	R-NATL	Total
1 (A1, A2)	59	133	16	17	225
4 (A2, A3)	69	118	150	58	395
7 (B3, B4)	68	168	164	106	506
10 (B4, B5)	71	105	204	62	442
Total	267	533	534	240	1568

Table 2: The total number of referencing expressions (e.g., card labels) produced by the pair and coded as ATLs, NATLs, R-ATLs, and R-NATLs for each trial in session 1. (Note: Trials marked in red denote trials that Butch directed).

Table 2					
Session 1					
	ATL	NATL	R-ATL	R-NATL	Total
Trial 1	9	40	6	9	64
Trial 2	9	8	0	0	17
Trial 3	9	49	3	5	66
Trial 4	10	2	0	0	12
Trial 5	10	33	4	3	50
Trial 6	12	1	3	0	16
Total	59	133	16	17	225

Table 3: The total number of referencing expressions (e.g., card labels) produced by the pair and coded as ATLs, NATLs, R-ATLs, and R-NATLs for each trial in session 4. (Note: Trials marked in red denote trials that Butch directed).

Table 3					
Session 4					
	ATL	NATL	R-ATL	R-NATL	Total
Trial 1	11	45	31	37	124
Trial 2	11	3	18	3	35
Trial 3	12	37	41	10	100
Trial 4	12	1	12	0	25
Trial 5	11	32	31	8	82
Trial 6	12	0	17	0	29
Total	69	118	150	58	395

Table 4: The total number of referencing expressions (e.g., card labels) produced by the pair and coded as ATLs, NATLs, R-ATLs, and R-NATLs for each trial in session 7. (Note: Trials marked in red denote trials that Butch directed).

Table 4					
Session 7					
	ATL	NATL	R-ATL	R-NATL	Total
Trial 1	12	58	18	38	126
Trial 2	12	1	33	0	46
Trial 3	11	60	21	47	139
Trial 4	11	2	32	2	47
Trial 5	11	44	25	16	96
Trial 6	11	3	35	3	52
Total	68	168	164	106	506

Table 5: The total number of referencing expressions (e.g., card labels) produced by the pair and coded as ATLs, NATLs, R-ATLs, and R-NATLs for each trial in session 10. (Note: Trials marked in red denote trials that Butch directed).

Table 5					
Session 10					
	ATL	NATL	R-ATL	R-NATL	Total
Trial 1	11	30	23	15	79
Trial 2	12	1	33	1	47
Trial 3	12	49	32	31	124
Trial 4	12	0	41	0	53
Trial 5	12	25	33	15	85
Trial 6	12	0	42	0	54
Total	71	105	204	62	442

Appendix A

Appendix A shows collaboration on card L-18D in session 10. The trial number is listed on the left hand side, the speaker (B: Butch, E: Elena) and their utterance is shown in the middle, and the code (ATL, NATL, R-ATL, or R-NATL) for that reference is listed on the right side of the table.

Appendix A		
Session 1	ATL (Card L-13A) Ferris wheel	Code
Trial 1	B: Sidawannadose	NATL
	E: Sidawannadose	R-NATL
	E: a lot of color in there?	NATL
	E: a lot of orange?	NATL
	E: One color that's in the picture?	NATL
	B: The blue	NATL
	E: Blue	R-NATL
	E: The guys by the airplane?	NATL
	E: looks like people going on a Ferris wheel	ATL
	E: two guys on the Ferris wheel	R-ATL
Trial 2	E: a crew of people getting on the Ferris	ATL
	E: I think that's Navy Pier	NATL
Trial 3	B: Ferris wheel	ATL
	E: Ferris wheel	R-ATL
Trial 4	E: Ferris wheel	ATL
Trial 5	B: Ferris wheel	ATL
	E: Ferris wheel	R-ATL
Trial 6	E: Ferris wheel	ATL
	B: Ferris wheel	R-ATL

Appendix B

Appendix B shows collaboration on card I-1A in session 4. The trial number is listed on the left hand side, the speaker (B: Butch, E: Elena) and their utterance is shown in the middle, and the code (ATL, NATL, R-ATL, or R-NATL) for that reference is listed on the right side of the table.

Appendix B		
Session 4	ATL (Card I-1A) The pictures on the bookshelf	Code
Trial 1	B: It'saoneathose	NATL
	B: A sink	NATL
	B: Dida one	NATL
	B: It'saoneathose	R-NATL
	E: Panera	NATL
	B: It'saoneathose	R-NATL
	B: picture	ATL
	E: picture?	R-ATL
	B: It's good	NATL
	E: It's a good picture	R-NATL
	E: picture is good?	R-NATL
	E: happy sort of picture	R-NATL
	E: wedding?	NATL
	E: it's happy	NATL
	E: It's happy	R-NATL
	B: and sad	NATL
	E: It's happy and sad	NATL
	E: It's happy and sad	R-NATL
	E: personal picture?	NATL
	E: personal picture	R-NATL
	E: personal and it's happy and kinda sad	R-NATL
	E: picture inside your apartment?	R-ATL
	E: Of the bookshelf?	R-ATL
Trial 2	E: your apartment bookshelf	ATL
	E: the bookshelf in your apartment	R-ATL
	E: the bookshelf	R-ATL
Trial 3	B: a fire	NATL
	B: /pə/	NATL
	B: /pokt/	NATL
	B: /pə/ /pə/	NATL
	E: the pictures?	ATL
	E: the pictures?	R-ATL
	E: your family pictures	R-ATL

Trial 4	E: so apartment Obama	NATL
	E: your family pictures on the bookshelf	ATL
	E: family pictures on the bookshelf	R-ATL
Trial 5	E: got the apartment with the U-Haul?	R-ATL
	B: pictures	ATL
	E: your pictures on the bookshelf	R-ATL
Trial 6	E: your family photos on the bookshelf	ATL
	E: got your family photos?	R-ATL

Appendix C

Appendix C shows collaboration on card I-1B in session 7. The trial number is listed on the left hand side, the speaker (B: Butch, E: Elena) and their utterance is shown in the middle, and the code (ATL, NATL, R-ATL, or R-NATL) for that reference is listed on the right side of the table. Table 8 shows the pair collaborating on card I-1B which is the same target as I-1A but from a different view.

Appendix C		
Session 7	ATL (Card I-1B) The family	Code
Trial 1	B: Darlene and Bill and…Dorothy and Elwood and Joe um Nancy and	NATL
	E: And Bob and Ruth and Lowell	NATL
	E: Darlene, Bill, Dorothy, Elwood, Bob, Ruth, Nancy, Joe, and Lowell	R-NATL
	E: The fam	ATL
	E: the fam	R-ATL
Trial 2	E: Darlene, Bill, Bob, Ruth, Nancy, Joe, Dorothy, Elwood, Lowell	NATL
	E: the fam	ATL
Trial 3	B: Darlene and Bill…Mary I mean…Mare-	NATL
	E: Dorothy	NATL
	B: Yeah and Elwood	NATL
	E: And Bob and Ruth and Nancy and Joe and Lowell	NATL
	E: The fam	ATL
Trial 4	E: after Panera	R-ATL
	B: Darlene, Bill, Dorothy, Elwood	NATL
	B: Elwood	R-NATL
Trial 5	B: Darlene and…Darle- Darlene and Bill	NATL
	E: Dorothy and Elwood	NATL
	B: Elwood	R-NATL
	E: Darlene, Bill, Dorothy, and Elwood and the rest of the bunch	R-NATL
Trial 6	E: after Carle	R-ATL
	E: Darlene, Bill, Dorothy	NATL
	B: Bill	R-NATL
	B: and Elwood	NATL
	E: Elwood	R-NATL
	E: Darlene, Bill, Dorothy, Elwood	R-NATL