*Research*

# Participation of a Conversation Partner in the Word Searches of a Person With Aphasia

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Conversation analysis was applied to answer the question of when and how a conversation partner participates in the word searches of a person with aphasia. Thirty-eight videotaped conversational sequences from eight naturally occurring conversations of a single couple were analyzed. Sequences were characterized by the spouse's participation in the self-initiated word searches of her partner, who had aphasia. Sequences were analyzed on a turn-by-turn basis to reveal their sequential organization. Results showed that participation was determined by interactional techniques and interactional resources. Interactional techniques included direct and indirect invitations to participate. Direct invitation was constructed via direct gaze or a wh- question. Indirect invitation was constructed with verbal and nonverbal signals, including specific metalanguage and downward gaze. Interactional resources were information states derived from both life experience and online analysis. Research and clinical implications are discussed.

**Key Words:** aphasia, conversation, word search, partner, conversation analysis

Word retrieval difficulty has been identified as a universal symptom of aphasia and, consequently, is a common cause for communicative breakdown in conversations with persons with aphasia (Brookshire, 1992; Davis, 1993). Such breakdown requires repair before the conversation can continue (Schegloff, Jefferson, & Sacks, 1977). Study of the conversational breakdown associated with word retrieval difficulty has shown that there are at least two ways repair is achieved. One involves the initiation of a solitary word search by the person with aphasia as an attempt to self-repair such breakdowns (Laakso, 1997; Lubinski, Duchan, & Weitzner-Lin, 1980). When such solitary word searches succeed (i.e., the individual ultimately says the searched-for word), the conversation continues.

The other way repair of the breakdown associated with aphasic word searches occurs involves the participation of conversation partners in the repair effort. In this case, the person with aphasia initiates a solitary word search, and at some point the conversation partner offers a candidate word that, if accepted, repairs the breakdown. Again, following repair, the conversation continues (Ferguson, 1992, 1994; Lubinski et al., 1980; Milroy & Perkins, 1992; Perkins, 1995; Wilkinson, 1995).

The importance of knowing about the participation of conversation partners in the word searches of persons with aphasia is seen in relationship to current pragmatic approaches to aphasia treatment involving training of conversation partners (e.g., Holland, 1991; Kagan & Gailey, 1993; Lyon, 1992). An integral part of such programs is the promotion of the collaborative interactions of conversation partners to achieve communicative success. The appropriateness of this treatment approach is based on an understanding of what conversation partners are to be "trained" to do. Understanding the participation of a conversation partner in the resolution of word searches is necessary for the design and conduct of treatment programs involving training of conversation partners.

The studies mentioned above provide information in this regard. More specifically, Lubinski et al. (1980) investigated the participation of two different conversation partners (i.e., husband and aphasia therapist). Participation was defined as an offer of a "guess" when a woman with aphasia experienced word retrieval difficulty. Ferguson (1992) described participation in essentially the same way: persons with aphasia displayed "trouble-indicating behavior" (i.e., word searches), which was followed by "hypothesis testing" (i.e., a guess) by conversation partners. Milroy and Perkins (1992) and Wilkinson (1995) made similar observations in their studies of aphasic repair strategies and Perkins (1995) identified differences in frequency of participation related to aphasia severity.

Despite the descriptions of conversation partner participation in aphasic word searches noted in these studies, the information provided was insufficient to answer a question basic to the understanding of this form

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of repair. That is, the question of what occurred in the conversational interaction that determined participation was not directly addressed in these studies. Both Ferguson (1992) and Wilkinson (1995) offered a possible answer to this question when they noted that participation often occurred when partners were directly asked to offer a word by the person with aphasia. However, Ferguson (1992) reported this observation as an incidental finding and requests for participation characterized only half of the observed instances of participation. No explanation for the other half was reported. Another suggestion was indirectly offered by Lubinski et al. (1980) and Wilkinson (1995). These researchers described instances when the conversation partner's knowledge about the sought-for word supported their "guess." Specifically, Lubinski et al. reported that the person with aphasia often offered a "hint" before the "guess" of the conversational partner. Wilkinson also described a conversational interaction when knowledge about the sought-for word was not available and the partner did not participate in the word search. However, both of these studies focused on the ability of the person with aphasia to provide this information to a conversation partner. No evidence was reported to explain how knowledge of the desired word influenced the participation of the conversation partner.

This study was conducted to further explicate the participation of conversation partners in the word searches of persons with aphasia. The purpose was to investigate the conversational interaction characterized by partner participation in repair of breakdowns associated with the word finding difficulty of a person with aphasia and to determine how such participation occurred. With a greater understanding of partner participation, clinicians should have a better idea of what to look for when evaluating the conversation of persons with aphasia and their partners and will have more options for promoting conversational interactions.

## Method

In this study, the ethnomethodological approach known as conversation analysis (CA) was employed. CA has been used extensively in the study of ordinary speakers (e.g., Atkinson & Heritage, 1994; Sacks, 1992; Sacks, Schegloff, & Jefferson, 1974) and in studies of aphasia (Ferguson, 1994; Goodwin, 1995; Laakso, 1997; Milroy & Perkins, 1992; Oelschlaeger & Damico, 1998a, 1998b; Perkins, 1995; Wilkinson, 1995). Because CA has been described in this literature, it is only summarized here.

CA is a qualitative research methodology and, as such, is essentially inductive. The basic objective of CA is to describe the procedures "by which conversationalists produce their behavior and understand and deal with the behavior of others" (Heritage & Atkinson, 1994, p. 1). To meet this objective, instances of a particular phenomenon are examined across many naturally occurring conversations to discover their organizational systematicity (Levinson, 1983). The basic analytic tool of CA is descriptive analysis of conversational sequences and turns at talk within sequences (Heritage & Atkinson, 1994). Validity of findings is established through extensive data collection and thick, rich description of observations (Atkinson & Heritage, 1994; Creswell, 1998). Specifically, a "method of instances" is employed (Benson & Hughes, 1991; Psathas, 1995) with singular events, obtained from extended observations, being combined to derive an overall understanding—and potential generalization—of findings.

Conversation analysis was regarded as particularly appropriate to answering this study's question of how a conversation partner participates in repair, as it is based on the premise that conversation is the result of the collaborative interactions of participants. Also, as a qualitative methodology, it is data-driven, with motivations of participants being inductively derived from observation and analysis of behavior. That is, there is no appeal in CA to unobservable phenomena such as psychological states as explanations of behavior. Rather, as mentioned above, CA focuses on what occurs in the local conversational context to understand the talk of conversation participants.

### *Conversation Participants*

One couple, Ed and M, provided the data for analysis. They were selected from the membership of a stroke support group because they actively participate in conversation. Ed and M were in their early fifties and had been married for 28 years. Ed had a 6-year history of a single left hemisphere CVA (i.e., at 3 weeks post onset, CT scan showed a large area of infarction extending into the left temporal and parietal regions of the left hemisphere) with residual right hemiparesis and aphasia. He had not received formal treatment for over 5 years before this study. His aphasia was characterized as moderately severe. His Aphasia Quotient derived from administration of the Western Aphasia Battery (Kertesz, 1982) was 46.6 (subtest scores for the WAB are presented in Appendix A). Descriptively, he was able to follow the topic of conversation. However, at times, when comprehension was dependent on a single word or when the message was too long or linguistically complex, he misunderstood. Although he was able to use many different forms of language and could almost always get his main idea across, his spontaneous speech was replete with instances of word retrieval difficulty. He was employed full time as a draftsman. M, his spouse, was an ordinary speaker, having no history of illness, disease, or deficit. She worked outside the home as a secretary. They had no children. At the time of this study, M's mother had been living with them for about one year.

### *Data Collection*

Conversations used in this study were collected as part of a larger, ongoing study of the conversational strategies of individuals with aphasia and their spouses (Oelschlaeger & Damico, 1998a, 1998b).

Over a 2-month period of time, the naturally occurring conversations of Ed and M were videotaped. Procedures recommended for the study of naturally occurring phenomena were followed (Atkinson & Heritage, 1994; Orange, Lubinski, & Higginbotham, 1996). These procedures included recording naturally occurring conversations over an extended period of time in a familiar setting. An 8-mm

video camera was left in the subject's home for a period of approximately 6 weeks. The couple was taught how to use the equipment and told to use it to record their conversations at their own discretion. No further direction was given as to when, where, how often, or in what manner conversations were to be recorded. This resulted in the capturing of 5 conversations between the subject and his wife, recorded outdoors on their backyard patio, and totaling 149 minutes of conversation. In addition to these dyadic conversations, 3 multiparty conversations were recorded in the couple's home. Conversation partners included—in addition to Ed and M—the author, MO (two conversations), and a research assistant, MG (in all three conversations). These conversations took place with participants seated around the couple's dining room table and were allowed to develop naturally with no pre-agreed topic, length, or procedural arrangements. These conversations resulted in 117 minutes of taped discourse. In total, 266 minutes (4 hours and 26 minutes) of videorecorded conversation were obtained.

Videotaped conversations were transcribed by trained research assistants. Conversations were then reviewed multiple times by the author and research assistant while reading from these transcripts. Discrepancies between the video and the initial transcripts were resolved by consensus, and corrections were made. The transcript and videotapes were used to divide the conversations into turns at talk according to syntactic, semantic, and extralinguistic features (Schegloff, 1996).

Table 1 displays conversation parameters related to length of the conversation and number of turns at talk for all participants. In the 266 minutes of conversation, the combined total number of turns at talk for all participants was 3,561. The number, length of conversations, amount of talk, and variations in time, place, and participants in these conversations contribute to verification of findings as noted previously. Particularly important is the observation in Table 1 that Ed, despite his aphasia, was a very active participant in all conversations. There was only a difference of 131 turns at talk out of the 2,797 turns observed between Ed and M. This is less than a 5% asymmetry and is largely accounted for by the difference in one of the three multiparty conversations.

**TABLE 1. Turns at talk for conversational participants for each conversation.**

| Conversation | | Turns at Talk | | | |
|---|---|---|---|---|---|
| | | Ed | M | MG | MO |
| A | 42 min | 211 | 192 | 197 | |
| B | 28 min | 212 | 213 | | |
| C | 31 min | 169 | 195 | 49 | 173 |
| D | 35 min | 186 | 176 | | |
| E | 44 min | 184 | 336 | 56 | 289 |
| F | 19 min | 64 | 55 | | |
| G | 31 min | 122 | 114 | | |
| H | 36 min | 185 | 183 | | |
| Total | 266 min | 1,333 | 1,464 | 302 | 462 |

### *Data Analysis*

Videotaped and transcribed conversations were reviewed to identify conversational sequences that were characterized by Ed's initiation of a word search as the observable indicator of an attempt to self-repair and M's joining his effort. This review resulted in identification of 38 conversational sequences that made up the data subset. Conversational sequences included Ed's turn at talk that initiated a word search, M's participatory turn, and the turns at talk that followed it until resolution was reached. It should be noted that, during initial review of conversations, it was observed that many of Ed's word searches were not joined by M. Although these instances warrant investigation, they were not included in this analysis as the focus in this study was on determining when and how she joined his effort, not when she did not. It remains for future research to investigate the dynamics of this latter phenomenon.

A prototypical illustration of M's participation when Ed initiated a word search is shown in Example 1 (transcription markings are described in Appendix B and are included when deemed necessary for understanding the ongoing data presentation and discussion throughout this paper).

**Example 1 (Conversation E)**

In this example, Ed is telling MO about a recent hike he and M had been on when they went down the wrong path and ended up at a sewer plant.

77 Ed: So I says this wa- down to water. So we march and
78 march and says its closer. See? See? Closer. And then
79 we suddenly (1.3) is a (1.7) how should put it?
80 M: Sewer
81 Ed: Sewer pipe.

In this example, Ed experiences word finding difficulty in line 79 and initiates a word search as noted by his pauses, revisions, metalanguage (e.g., "how should put it") and mid-distance gaze (Goodwin & Goodwin, 1986; Linebaugh, 1990; Marshall & Tompkins, 1982). In the next turn, M joins his effort by offering the word " sewer". Subsequently, in line 81, Ed repeats her offered word to acknowledge the accuracy of her contribution (see Oelschlaeger & Damico, 1998b, for an extended discussion of the use of repetition to show acknowledgment) and continues telling his story to MO.

Following identification of the 38 sequences, the observable behaviors in these sequences were analyzed on a turn-by-turn basis. Analyses included detailing the linguistic and paralinguistic features of each turn in the conversational sequence. From these behavioral analyses, patterns of organization of conversational sequences were identified. Interpretive analysis of patterns was performed to identify the meaning and design of the talk-in-progress.

Intrarater reliability for identification of the conversation sequences providing the data subset was established by the recounting of these sequences in two (25%) of the conversations by the author. Determination of interrater reliability involved the identification of sequences characterized by

Ed's initiation of a word search and M's joining his effort from the same two conversations by a second rater, well versed in interactional analysis. Both intra-rater and interrater reliability were calculated by dividing the number of agreements by the total number of agreements and disagreements and multiplying by 100. With this procedure, interrater and intrarater agreements were 88% and 100%, respectively. Following determination of reliability, the conversational sequences fostering disagreement were discussed and agreement was reached by consensus.

## Results

Analysis of the 38 conversational sequences in which M joined Ed's word search revealed that participation was determined by interactional techniques and interactional resources. The interactional techniques were direct and indirect invitations to participate, performed via nonverbal and verbal signals. The interactional resources determining participation related to information states derived from shared knowledge and online semantic, phonological, and syntactic analysis. Data to support these conclusions follow.

### *Interactional Techniques*

Interactional techniques are the procedures that conversation participants employ to organize and thus make sense of their talk (Atkinson & Heritage, 1994; Sacks et al., 1974). They are "framing devices" that influence the understanding of the talk in progress and the structure of subsequent talk (Goodwin, 1987). In this case, the interactional techniques leading to M's participation when Ed experienced word finding difficulty were direct invitations by gaze and wh- question and indirect invitation occasioned by Ed's abandonment of his solitary word search.

*Direct invitations to participate.* M's participation was determined by her receipt of a direct invitation. That is, M joined Ed's word search when he asked her to do so. There were two ways M was directly invited: one was constructed nonverbally and the other was constructed verbally. Ed's gaze shift directly toward M was a nonverbal invitation. Verbal solicitation was performed through the use of a wh- question.

*Invitation by gaze.* The organizational pattern of Ed's shift of gaze directly toward M was a direct invitation for her participation. Example 2 is prototypical of the way this was accomplished. In this example, Ed is talking about a well-known flamboyant community protestor.

**Example 2 (Conversation C)**

105 Ed: x———MO——— See- the- how should we say it? He puts-

106 ———,,,gaze down to table with hand gesture— ,,,–MO——,,,—M he's a- this is the street. This is the entrance to the-

107 ———x to (1.0) uh:::

108 M: the base.

109 Ed: ,,,–MO———————————————x Base. Right here. He stands. He puts his sign.

At the beginning of this sequence, Ed is talking to MO, as noted by his direct gaze toward her. However, shortly after he begins, he runs into difficulty and initiates a word search. As his solitary search continues, several gaze shifts occur. He looks down, then back to MO when he gains access to the word "entrance." However, as he continues, he runs into difficulty again, initiating another search. Shortly after he begins this search, he shifts his gaze directly to M (end of line 106). This gaze shift serves as a direct invitation to her to join in his effort, evidenced by the fact that, when he turns to her, she offers the phrase "the base." Ed then repeats her offered word in his next turn as a way to acknowledge the end of his search and continue on with his story.

It is of additional interest to appreciate the power of gaze invitation. In this example, the conversational exchange was occurring primarily between Ed and MO. Ed was looking at MO, and she was returning his gaze as an attentive listener. M's conversational participation was primarily limited to a bystander role, a participatory status often taken in conversations by spouses when their mate is telling a story they already know (Goodwin, 1987). However, when Ed turns to her, she joins his talk. The rapidity of M's shift from bystander to active speaker shows the power of Ed's invitation.

*Invitation by wh- question.* The organizational pattern of a wh- question was an interactional technique that determined M's participation in Ed's word search. A prototypical example of the organizational structure of wh- invitation is seen in Example 3. In this sequence, Ed is telling MG about the clinical practice of his previous speech-language pathologist.

**Example 3 (Conversation E)**

411 Ed: x— mid-distance———,,,–MG——,,,– mid-distance–,,,—MG— Well. She's got two things. The (2.0) uh me::: the

412 ———,,,—M–nods———————————————x stroke and the::: other thing. What's the name of it?

413 M: Uhm::: Lou Gehrig's disease.

414 Ed: x–MG–x ('sease).

In this example, Ed is having difficulty saying a proper name in the first turn of this conversational sequence. He makes an attempt to say it, but then he shifts his speaking effort to M. Ed turns to her, nods in her direction and directly asks her "what's the name of it." With his question, he verbally makes his invitation to participate in his word search explicit. With his gaze, M knows that she is the "invitee" in this multiparty conversation. She offers an answer to his question, providing a candidate word (line 413). Once again, in his next turn, Ed accepts M's answer when he repeats it. Following this sequence, the conversation continues.

Although the organizational structure of conversational sequences characterized by a wh- question followed by M's participation was representative of this form of invitation, the verbal format of Ed's question varied somewhat to include "what's it?" "what is that?" "what's the name of it?" Also, in the above example, Ed's wh- question was

combined with a gaze shift directly toward M. However, this was not invariably the case (see example 9, line 550), indicating that the wh- question technique as a direct invitation may operate independently of gaze shift.

*Indirect invitation to participate.* In the next example, M participates in Ed's word search, but there is no sign that she is *directly* invited. Rather, M's participation occurs when Ed abandons his solitary search. Review of this example shows how Ed indicates verbally and nonverbally that he is unable to continue his word search. These interactional signals serve as an indirect invitation for M to participate in his word search.

**Example 4 (Conversation A)**

Ed is talking to MG about what he does for a living.

x– mid-distance gaze ——— ,,,– gaze down ———
83 Ed: Well, I was a (1.0) I'm the- uhm how should I say it?
——— gaze further down and head down —x
84 (2.1) I'm::: (1.7) can't think of the name of it.
85 M: Draftsman?
,,,—MG— x
86 Ed: Draftsman.

Once again, Ed initiates a word search that includes several attempts to state his employment. However, after these unsuccessful efforts, he shifts his gaze downward, bowing his head down as well. These nonverbal gestures are paired with his verbalization of "can't think of the name of it." All of these actions make it clear to the other conversational participants that he is not succeeding in his solitary search effort. Ed does not make a direct appeal for participation in his word search. However, his indication that he cannot continue his solitary search serves as an indirect invitation to others. The needs of the conversation require that the word search be terminated. Given that Ed can't supply the word, someone else must. And, in this example, M accepts this indirect invitation when she offers a word to Ed (line 85) that would effectively resolve his search.

In addition to the combined verbal and nonverbal cues noted in Example 4, Ed used other nonverbal behaviors to signal this abandonment of his solitary word search. Specifically, in other instances, he ceased speaking and shook his head "no" when terminating his effort.

A final comment on the interactional techniques of direct and indirect invitation relating to participant recipiency warrants mention. Participant recipiency refers to the orientation (i.e., ongoing monitoring) of a participant to the talk in progress (Heath, 1994). It is basic to all conversational interaction, and thus discussing participant recipiency is stating the obvious. However, both the findings of this study and those in previous reports amplify the importance of participant recipiency (Laakso, 1997; Lubinski et al., 1980). Related to this study is the observation that the effectiveness of interactional techniques of invitation to determine M's behavior was dependent on her receipt of these invitations. She needed to be in a position to accept an invitation when it was extended to her. Evidence of M's recipiency in this regard was noted in two ways. One was the rapidity of her acceptance of invitations to participate as noted above. Her timing, as well as the format of her contribution, shows that she was actively monitoring Ed's talk and was ready, when invited, to participate. A second indication of M's recipiency was her continuous gaze toward Ed as seen in the next example.

**Example 5 (Conversation A)**

x——— ,,,-MG——— ,,,– gaze down ———
19 Ed: I'd say ten (2.3) uh (1.5) uh (1.8) uhm I can't think of
M: x——— nod x 4 ———
———x
20 the name of it.
———x
21 M: Times?
Ed: x–gaze down
,,,—MG–x
22 Ed: Times

Throughout Ed's speaking effort, which in this sequence is directed to MG, M maintains a "gaze vigil." Even though she is a bystander, she is both listening to and watching Ed. As discussed previously, his "I can't think of the name of it" (line 19) serves as verbal signal for participation. However, as she watches him, she can observe his gaze downward as the nonverbal component of this indirect invitation to participate. Similarly, her gaze vigil positions her to receive a direct invitation by gaze as noted in Example 1.

Participant recipiency was also an issue in Lubinski et al.'s (1980) study and in a more recent one of Laakso (1997) when comparisons of participation across various conversation partners were made. Lubinski et al. suggested that these differences related to participant recipiency as it was observed that the therapist (one of the two conversation partners in this study) was busy organizing activity for treatment while the subject was conversing and, thus, not *available* to participate in word searches. However, other explanations such as the therapist's goal of fostering self-correction by withholding participation were also offered. It remains for future research to more clearly delineate the importance of participant recipiency in conversation partner participation in word searches.

### *Interactional Resources*

Interactional resources refer to the contextual features available in the conversation that participants may draw on to understand and design their talk (Goodwin, 1987; Pierce, 1991). As mentioned previously, the goal of repair is to allow the conversation to move forward. In this study, M used interactional resources to formulate her participation in Ed's word searches to achieve successful repair. That is, she used these resources to determine her lexical choice when she offered a word to Ed.

Primary sources of information that M used to formulate her participation in Ed's word search were shared experience and online semantic, phonological, and syntactic analysis. With shared experience, she capitalized on her world and personal knowledge to project Ed's talk. As a competent language speaker, she was able to analyze the linguistic features of Ed's talk online and use this information to design her contribution to his word search effort. Evidence of the influence of information gained through

shared experience and online semantic, phonologic and syntactic analysis in designing her participation follow.

*Shared personal and life experience.* The most explicit evidence of the importance of shared experience in determination of participation is seen in conversational sequences when Ed is searching for a proper name. This is exemplified in Example 6.

**Example 6 (Conversation A)**

(points upward with finger—lowers hand)
x—MG———————————————,,,-M-x
111 Ed: And where is it going? From- come from- uhm:::
112 M: Kansas City?
113 Ed: Kansas City.

In this conversational sequence, Ed is telling MG about a work-related trip he has planned. His talk is not directed to M, but she is in a unique social position as a "knowing recipient" (Goodwin, 1987). That is, as Ed's spouse, she knows a lot about what he does in his everyday and work life. She is able to use this biographical knowledge to project the direction of his talk so when she receives a direct gaze invitation in this conversational sequence, she readily offers "Kansas City" in line 112.

Although the above example is associated with personal experience, M's information state was also enhanced by world or life experience. For example, in the next conversational sequence, Ed is talking about a city in Nevada, permitting M to use her world knowledge to formulate her participation.

**Example 7 (Conversation B)**

,,,—M———————————,,,-mid-distance—,,,-M————
162 Ed: So right now she's got uh Las Vegas but what is the
————x
163 other town?
164 M: Reno?
x-M points up with thumb-x
165 Ed: No no. Out south.
166 M: Laughlin?
x-M-nods-x
167 Ed: Laughlin. That's where he lives.

As Ed asks M for the name of a city in Nevada, she is able to capitalize on shared information as a result of similar life experience. Ed rejects "Reno" in line 165 but then gives her additional information. The scope of her shared information is expanded as she learns about the location of the city. With this added geographic information (i.e., it is south of Reno), she offers him the name of the city he desires.

The next example offers additional evidence of information as an interactional resource determining M's participation.

**Example 8 (Conversation H)**

136 Ed: The only thing that goes is Dorothy occasion talks to
137 me. We'll talk the work (*), flowers and things that
138 we talk about. Like my, the uh trips, uhm, I can't
139 think of the name of it but you know that she's (2.0)
140 uhm (2.2) there's an Indian right over there
,,,- mid-distance ————————————
141 the::: uhm (2.9) I can't think of the name of it
—,,,-M————————,,,—away-,,,-M————————
142 (1.5) lake you know that (*) last week we went
143 M: //Cochiti?
144 Ed: Uh well right there.
145 M: There's a Cochiti village.
146 Ed: No no no. This is a o- overpass with the trains.
147 M: Mm:::
148 Ed: Okay go way back there.
149 M: Keep going?
150 Ed: No turn around.
151 M: Okay. Right near the train center, a pueblo there?
152 Ed: Yeah
153 M: Santa Domingo or?
154 Ed: //She's from there.

Here, M receives a direct gaze shift invitation to participate in Ed's extensive and unsuccessful solitary word search following his verbalizing that he "can't think of the name of it" (line 139). However, M does not participate at this time. He then goes on, providing her with additional information about a lake and their recent trip there at the end of line 142. After receiving this contextualizing information, M offers a word formatted as a guess (i.e., Cochiti?). Her word offer is apparently not the word Ed was searching for as he does not acknowledge its accuracy, but rather gives her nonspecific feedback that she's on the right track. However, the information content of his feedback is limited and again, M does not offer another word. Rather, she uses her next turn (line 145) to confirm her understanding of their talk so far. In line 146, Ed provides more information about a train and an overpass, but apparently this too is not enough to support another offer of a word. M passes up the opportunity to "guess" again and responds minimally in line 147 with "Mm:::". She uses her next two turns (lines 149 and 151) to improve her information state, asking Ed to supply more specific information about the location. Finally, *when she has enough information to work with,* she offers a name for the place Ed is trying to say, and this turns out to be the one he wanted.

It is apparent in the above example that a lot of conversational work is being done as it takes 12 turns before the word search is successfully brought to an end. To be sure, this is a significant conversational digression. But, important to the understanding of shared information as an interactional resource is that the work being done is directed toward increasing M's information state so that she may then use it to formulate her next offer of a word. That is, M's "guesses" are not randomly determined. Rather, she dedicates several of her conversational turns to increasing her information state so that her participation has the desired outcome of repair of the breakdown associated with Ed's word retrieval difficulty and the conversation may continue to move forward.

*Online semantic, phonological, and syntactic analysis.* A second source of information is derived from M's ability to use semantic, phonological, and syntactic analysis to determine her participation, which is shown in the next example. This example was taken from Conversation A when Ed and M were telling MG about the events surrounding Ed's stroke.

**Example 9**

541 MG: Then they realized, then they put you in the hospital.
542 M: Uh huh.
543 Ed: Yeah but then they did uh (1.2) the
,,,- looks down -circles hand around head————— x
544 uh (1.9) uh what do you call it (2.1) the uh
545 M: MRI?
gaze down
546 Ed: No.
547 M: Angioplasty?
gaze down
548 Ed: No.
549 MG: EEG?
gazes down-,,,-MG—,,,-gaze down————————————x
550 Ed: No. The irr...no (tsk tsk) srays. What do you call it?
(1.0)
551 M: An x-ray?
,,,-M & nod-,,,MG————————————
552 Ed: X-ray. And he says "oh look he's got a tra
553 MG: //Look there!

In this sequence, both M and MG become involved in Ed's word search. Their word offers are again formatted as guesses and are derived from their semantic category knowledge of "hospital tests or procedures," which was predicated by MG's mentioning "the hospital" in line 541. Problematically, none of their offerings are accepted by Ed. However, in line 550, Ed makes another effort to self-complete his word search. In this effort, he offers the word "srays". At this point, participants have additional phonological information. Then, when Ed again invites participation with a wh- question (line 550), M uses this phonological information in line 551 in her offer of the sought-for word—"x-rays."

A variation of the use of semantic knowledge to project Ed's talk is noted in the next example. Here, semantic knowledge is obtained directly from the conversational context. This conversational sequence occurred shortly after one previously described in Example 7 when M participated in Ed's search for the name of a Nevada city.

**Example 10 (Conversation B)**

x————M————x
188 Ed: He's in ve- la ve- uh what I er
189 M: Laughlin?
190 Ed: Laughlin.

As Ed and M continue their conversation, Ed attempts, again unsuccessfully, to name the Nevada city (line 188). From their previous talk, M knows both the name of the city and that Ed has experienced previous difficulty naming it. With this information, gained from the conversational context, she is positioned to join his search. She does so in line 189, again offering the city name of Laughlin that Ed again accepts.

At times, the division of information sources into "semantic" and "shared life experience" is somewhat problematic because semantic systems are built on experience and are coded through linguistic systems. As discussed by both Peirce (1955) and Oller (1991), this is what is meant by "pragmatic mapping." However, for the purpose of this study, the application of this knowledge through online analysis supports this analytic division.

The resource of online analysis of syntactic information is presented in the following conversational sequence.

**Example 11 (Conversation F)**

x—mid-distance————————————
53 Ed: I don't think so. One (1.5) one year and that's
————,,,—M—x
54 about it. One
55 M: One summer.
x——M—x
56 Ed: //Summer.

In this example, the syntax of Ed's turn, including his self-repair effort, provides information to M about the grammatical features of the word he is trying to say. As she grammatically analyzes his language, she can project that, for the sentence to be coherent, a noun is needed.

As noted in the previous discussion of participant recipiency, online analysis is necessary for the success of the communicative process in general. But, as specific sources of information, M's online semantic, phonological, and syntactic analyses provide information that she then used to design her participation in Ed's word search.

## Discussion

As noted previously, the goal of conversation analysis is to show the way participants work together to perform the work of the conversation. In this regard, the major significance of the findings of this study is derived from the primary observation that this person with aphasia-conversation partner dyad used interactional resources and techniques to determine participation in word searches. Transferability of findings to clinical practice is based on the understanding that such organizing mechanisms (i.e., interactional resources and techniques) are available to other conversational participants.

Although derived from only one person with aphasia-conversation partner dyad and relating to only one aspect of word search interaction (i.e., how partner participation in word searches is accomplished), this study advances ideas about clinical practices focusing on training of conversation partners. Generally, persons with aphasia and their conversation partners could be counseled about sharing responsibilities for resolving communicative breakdown associated with word finding difficulty. More specifically, clinical assessment would include determination of the interactional techniques a couple used to invite

participation in a word search. If it was noted that the person with aphasia did not extend an invitation to his or her partner for participation in a word search (yet desired the partner to offer a word), treatment would include establishing such a technique. Or, conversely, if a partner participated without invitation, treatment would include training the partner to withhold participating until invited. Similarly, identifying how information resources may be capitalized on in conversation could be a focus of treatment. For example, if a partner participated in a word search but offered an undesired word, the way a person with aphasia may provide additional information or how a partner could solicit such information before their next contribution to the search may be developed.

It would, of course, be naive to think that all conversation partners would (or should) use only the techniques and resources noted in this study, especially in light of various levels of severity of aphasia and different chronicities. For example, Ed and M used a gaze shift as a direct invitation to participate. Also, information resources were primarily provided verbally. One might speculate that other behaviors such as gesture might be used as an interactive resource by more linguistically limited persons with aphasia and their conversation partners. Some evidence of the use of gesture as an interactional technique is provided in Goodwin's (1995) and Simmons' (1993) study of individuals with severe aphasia. The potential for gesture and gaze as interactional techniques is also noted by Simmons-Mackie and Damico (1997) in their discussion of compensatory strategies. Additional research of other person with aphasia-conversation partner dyads is needed to support the generalizability of findings related to specific interactional techniques and resources and to more definitively describe treatment protocols for training of conversation partners.

The results of this study are also relevant to specific aspects of other current clinical practices. For example, the clinical practice of increasing shared information (e.g., defining a topic of common knowledge to talk about) in conversational groups (Kagan & Gailey, 1993) or through mutual experience (Lyon, 1992) is supported by the findings of this study. Holland's (1991) Conversation Coaching technique of videotaping persons with aphasia in interactions with family members followed by clinical discussion is readily applicable to assessing how conversation participants manage word searches. And the importance of incorporating conversation principles in treatment such as in Promoting Aphasic Communicative Effectiveness (PACE) (Davis & Wilcox, 1981) is also supported by this study. Additionally, findings of this study suggest clinical modifications of PACE through manipulation of shared information. For example, PACE intervention involves the participants (i.e., clinician and client) taking turns sending and receiving information about *unrevealed* pictures. This procedure positions one of the participants, at least initially, as an "unknowing recipient" (Goodwin, 1987). Such positioning is most meaningful when the clinical goal is to promote an individual's ability to establish a "new" topic of conversation. However, if the treatment goal is to promote ongoing participation of individuals with aphasia in conversation when the topic is *known*, information about the pictures could be shared before initiating the treatment task. For example, the clinician and client could select pictures to be described from a semantic category (e.g., food, restaurants). This would allow them to use this shared information as a resource for understanding or in their design of subsequent communicative efforts.

Finally, the findings of this study combined with the results of others (Copeland, 1989; Ferguson, 1992, 1994; Goodwin, 1995; Klippi, 1990; Laakso, 1997; Milroy & Perkins, 1992; Oelschlaeger & Damico, 1998a, 1998b; Penn, 1987; Perkins, 1995; Simmons, 1993; Simmons-Mackie & Damico, 1996) constitute a sizable body of evidence demonstrating the productivity of viewing the communicative process as collaborative in nature (Butterworth, 1978). In this study, this is most clearly demonstrated through emphasis on the interactive aspect of the techniques and resources described. For example, for participation in a word search to occur, an opportunity to participate had to be provided. The conversational behavior of one participant (M) was dependent on the conversational behavior of the other (Ed). When Ed extended direct and indirect invitations to M, he *set the stage* for her participation. Then, when M accepted the invitation and offered a word, Ed acknowledged it. Repair of the breakdown of the conversation as a result of Ed's word retrieval difficulty was not dependent on the unique skills or abilities of either speaker. Rather, it resulted from Ed and M's active negotiation of the work of the conversation to achieve their conversational goal.

Additional support for viewing conversation as collaborative is derived when the results of this study are considered in relation to studies of ordinary speakers. Schegloff et al. (1977) describe the organizational mechanisms of ordinary speakers' initiation, speaker identification, and word search resolution. Goodwin (1987) identifies both the verbal and nonverbal formats of wh- question, gaze, and gesture for word search participation of ordinary speakers and the resource of shared information through his discussion of knowing recipiency. Jefferson (1984) refers to the active recipiency of participants. The similarity between the results of this study and those of ordinary speakers suggests that M & Ed's use of interactional techniques and resources is much the same as ordinary speakers. Such a similarity argues for the intactness of pragmatic ability despite aphasia (Holland, 1991). It also suggests that the use of interactional techniques and resources manifest pragmatic competencies of both Ed and M that were present before Ed's stroke. However, it is also possible that these competencies have been acquired after the onset of his aphasia. Future research describing interactions of person with aphasia-conversation partner dyads longitudinally could offer meaningful information in this regard.

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## Appendix A

Western Aphasia Battery Scores

| Subtest | Subtest Score |
|---|---|
| **Spontaneous Speech** | |
| Information Content | 9/10 |
| Fluency | 9/10 |
| Total | 18/20 |
| **Comprehension** | |
| Yes/No Questions | 60/60 |
| Auditory Word Recognition | 57/60 |
| Sequential Commands | 50/80 |
| Total | 167/200 |
| **Repetition** | 58/100 |
| **Naming** | |
| Object Naming | 54/60 |
| Word Fluency | 8/20 |
| Sentence Completion | 10/10 |
| Responsive Speech | 10/10 |
| Total | 82/100 |
| Aphasia Quotient | 46.6 |
| WAB Aphasia Classification | Conduction Aphasia |

## Appendix B

Transcription Codes

Talk is transcribed using a simplified version of the Jefferson transcription system (Sacks, Schegloff, & Jefferson, 1974).

| | | |
|---|---|---|
| 1. | (#) | A number in parentheses indicates elapsed time in seconds for pauses one second or greater. This device is used between turns at talk between speakers, between two separable parts of a single speaker's talk, and between parts of a single speaker's turn. |
| 2. | ? & . | Punctuation markers are used for intonation. A question mark indicates rising intonation, and a period indicates falling intonation. |
| 3. | : | A colon is used as a sound production marker, indicating that the previous syllable is prolonged. |
| 4. | - | A short dash indicates a "cut off" of the previous word or sound. |
| 5. | (*) | A single pair of parentheses surrounding an asterisk indicates that transcribers are not sure about the words or that the talk was unintelligible. |
| 6. | // | The double oblique indicates the point at which a current speaker's talk is overlapped by the talk of another. |

### Transcription of Gaze and Gesture

Gaze and gesture transcription is based on a system described by Goodwin and Goodwin (1986).

| | | |
|---|---|---|
| 1. | | Gaze of the listener is marked below the turn at talk. A line indicates that the listener is gazing toward the speaker. |
| 2. | | Gaze of the speaker is marked above the turn at talk. A line indicates that the speaker is gazing toward the listener. |
| 3. | x | An x marks the beginning and end of the direction of gaze. |
| 4. | ,,, | Three commas indicate a shift of gaze from one direction to another. |
| 5. | | Specific gaze direction is described orthographically through indication of the person or place of the direction of gaze (i.e., mid-distance, away, or initial of person). |
| 6. | | Gesture of the speaker is described orthographically above the turn at talk. |