

Contingent Queries and Revisions Used by Aphasic Individuals
and Their Most Frequent Communication Partners

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One important aspect of sociocommunicative competence is the ability to effect communication repairs. Components of "repair making" include (1) the receiver's recognition and signalling of the need for clarification, (2) the sender's monitoring of these signals and (3) the sender's revision of the ambiguous message. Several recent studies have examined these various components of communication repairs in aphasic patients. To date, however, no studies have examined the communication repair strategies employed between aphasic individuals and their most frequent communication partners when communication breakdowns occur naturally, save that by Lubinski *et al.* (1980) which included a single aphasic-spouse dyad. Furthermore, no studies have examined the bidirectional use of these strategies nor their effectiveness in repairing communication breakdowns. The purpose of this study was to compare the types of contingent queries and revisions used by aphasic individuals and family members within and across dyads and to examine the effectiveness of these query-revision sequences in repairing communication breakdowns.

METHOD

Subjects. The subjects for this study were six aphasic individuals. Three were fluent and three were nonfluent. The spouses of five of the aphasic individuals and the daughter of the sixth also served as subjects. Relevant information about these subjects is provided in Table 1. Two dyads composed of non-brain-damaged married couples also participated in the experimental procedure. The mean age of these four subjects was 61.8 years, and the two dyads had been married 48 and 35 years, respectively.

Table 1. Pertinent information on subjects (T.P.O. = Time post onset).

Subject	Age	T.P.O.(yrs)	Aphasia Type	BDAE	SEV	ACTS	Family Member
1	58	6.3	Fluent	3		17	Husband
2	68	0.8	Fluent	4		16	Daughter
3	69	7.7	Nonfluent	3		17	Wife
4	44	3.3	Nonfluent	3		17	Husband
5	73	11.6	Fluent	4		14	Wife
6	72	10.2	Nonfluent	1		10	Wife

Procedure. The procedure used in this study was a referential communication task using a visual barrier as described by Glucksberg *et al.* (1966). The

barrier was modified to obscure only the referent picture being described by the family member and the response alternatives presented to the aphasic subject. This permitted the transfer of information via facial expression and gesture, as well as by verbalization.

The family members participating in this study were given 10 referent pictures to describe to the aphasic subject. For each of the 10 pictures, the aphasic subject was presented with four response alternatives, the referent picture and three foils. Each foil picture differed from the referent by one or two distinctive features. Prior testing revealed that verbal interchanges containing contingent queries and subsequent revisions were necessary to correctly identify the referent picture.

The aphasic subjects and family members were seated on opposite sides of the barrier. A referent picture was presented to the family member while the four response pictures were presented to the aphasic subject. The family members were instructed to provide a brief description of the picture before them. The aphasic subjects were instructed to request additional information if necessary to select the picture being described.

All exchanges between the subjects were videotaped. The tapes were transcribed by one of the investigators and notations were made for all gestural and graphic exchanges.

Data Analysis. The transcriptions were analyzed by two of the investigators. Occurrences of communication breakdowns and the outcomes of these breakdowns were determined. Contingent queries and revisions produced by both the aphasic subjects and family members were coded for modality(ies) and placed in one of the categories listed in Appendix A.

RESULTS AND DISCUSSION

Interjudge Reliability. For each of the six subject dyads, data from two of the ten picture sets were randomly selected and analyzed independently by two of the investigators. Mean point-by-point agreement for occurrence of breakdowns and repairs was 97.8 percent with a range of 86.7 percent to 100 percent for individual dyads. Mean point-by-point agreement for categorization of contingent queries and revisions was 93.4 percent with a range of 89.2 to 100 percent for individual dyads.

Errors in Referent Selection and Communication Breakdowns. Table 2 shows the number of errors in referent selection made by each of the dyads. The mean number of errors was 2.7, with a range of 0 to 6. Table 2 also shows the number of communication breakdowns which occurred and the percentage of these breakdowns which were repaired for each dyad. As can be seen by scanning across the dyads from left to right, the number of errors in referent selection generally increased as the percentage of breakdowns which were repaired decreased. The exception to this trend was dyad 6, who made 6 errors in referent selection in spite of their having repaired 76.5 percent of their breakdowns. This aphasic individual was the most severely involved patient among our subjects, and the "fatal" breakdowns typically occurred just prior to his making an inaccurate response.

Table 2 also shows the mean number of contingent query-revision sequences per breakdown used by each dyad. Here again dyad 6 deviates from the group trend, using more than three query-revision sequences per breakdown.

Table 2. Number of errors, number of breakdowns, percent of breakdowns repaired and mean number of query-revision sequences per breakdown for each dyad.

	Dyads						Total	Mean
	1	2	3	4	5	6		
Errors	0	1	1	4	4	6	16	2.7
Breakdowns	11	13	25	9	19	17	94	15.7
Breakdowns repaired (%)	100.0	92.3	88.0	55.6	68.4	76.5	--	80.9
Query-revisions/breakdown	2.6	2.2	2.0	2.1	2.1	3.3	--	2.4

Frequency Distributions of Contingent Queries and Revisions. A total of 221 contingent queries were produced by the subjects in this study, of which 148 (67%) were produced by the aphasic subjects. A total of 217 revisions were produced, with the family members producing 144 (66.4%) of them. In the two normal dyads, the respondents produced 95.3 and 93.3 percent of the queries, respectively. This distribution of queries and revisions appears to be a result of the task format, in which one partner is primarily responsible for providing the information necessary to complete the task.

Table 3 shows the relative frequencies of the types of contingent queries used by each of the subjects. The most commonly occurring query type among the aphasic subjects was potential request for additional information which accounted for nearly 55 percent of their queries. An additional 27 percent of their queries were specific requests for affirmation. The most commonly occurring query type among the family members was specific request for affirmation which accounted for 74 percent of their queries.

Table 3 also shows the relative frequencies of the types of revisions used by each of the subjects. Fifty-six percent of the revisions produced by the aphasic subjects were either affirmation or nonaffirmation revisions. In addition, 19 percent of the aphasic subjects' responses to family member contingent queries were either inappropriate, inaccurate or ambiguous revisions or off-query responses; i.e., responses which did not contribute to information transfer. Forty-four percent of the revisions used by family members were either affirmations or nonaffirmations. An additional 25 percent were information additions. Approximately 14 percent of family members' responses to contingent queries were of a type which failed to contribute to information transfer.

Query-Revision Distributions and Communicative Success. Examination of Table 3 together with Table 2 reveals several different patterns of query-revision distribution and provides important insights into the communicative difficulties experienced by certain of the dyads. Dyads 1 and 2 followed the expected pattern in which the aphasic subject produced all or nearly all of the queries. These dyads repaired 100 percent and 92.3 percent of their breakdowns, respectively. Moreover, no member of either dyad produced any response which was inconsistent with their partner's queries. Predictably, however, the lone breakdown which dyad 2 failed to repair resulted in the only error in referent selection made by these two dyads.

Dyad 4 produced a query-revision distribution similar to that of dyads 1 and 2. This dyad experienced the lowest number of breakdowns but was able to repair only 55.6 percent of them. As a result, they made 4 errors in

Table 3. Frequency of occurrence of contingent queries and revisions.

	Dyads													
	1		2		3		4		5		6		Total	
	A	P	A	P	A	P	A	P	A	P	A	P	A	P
Contingent Queries														
Nonspecific	5	0	1	0	3	0	0	0	1	1	3	4	13	5
Affirmation	8	1	6	0	3	20	4	0	12	6	7	27	40	54
Specification	5	0	3	0	1	0	1	0	0	1	4	1	14	2
Additional Information	10	0	19	0	23	1	13	1	15	3	1	7	81	12
Total	28	1	29	0	30	21	18	1	28	11	15	39	148	73
Revisions														
Affirmation	1	6	0	10	5	4	0	6	2	11	16	1	24	38
Nonaffirmation	0	4	0	3	10	6	0	6	3	3	4	4	17	26
Complete Repetition	0	1	0	1	0	0	0	0	0	0	0	0	0	2
Partial Repetition	0	5	0	3	0	3	1	0	0	1	1	1	2	13
Information Addition	0	7	0	11	1	8	0	3	2	4	4	4	7	37
Information Deletion	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Syntactic Revision	0	4	0	1	0	0	0	0	1	0	10	1	1	6
Phonetic Revision	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Recapitulation	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Inappropriate Revision	0	0	0	0	1	2	0	0	1	1	5	0	7	3
Inaccurate Revision	0	0	0	0	2	0	0	0	0	2	6	0	8	2
Ambiguous Revision	0	0	0	0	2	0	0	0	0	0	2	0	4	0
Off-Query Response	0	0	0	0	0	4	0	2	2	6	1	1	3	13
No Response	0	0	0	0	0	1	0	0	0	0	0	1	0	2
Total	1	28	0	29	21	28	1	18	11	28	39	13	73	144

A=aphasic
P=partner

referent selection. Examination of the transcript of this dyad's interaction revealed that the family member's revisions were generally appropriate to the query produced by the aphasic partner. The low percentage of repaired breakdowns, and hence the large number of errors, was a result of the aphasic subject's failing to request clarification of utterances which, within the context of the task, were ambiguous. This subject failed to pursue the information necessary to disambiguate such utterances and thus make a fully informed selection from among the response pictures.

Dyad 3 experienced the greatest number of breakdowns, but was able to repair 88.0 percent of them. As a result, this dyad made only one error in referent selection. However, the query-revision distribution observed for this dyad is quite different from those discussed so far. Here the family member produced approximately 40 percent of the queries. Of the queries produced by the family member, all but one were specific requests for affirmation. This shift in the query-revision distribution appears to be reflective of the marked severity of this aphasic subject's expressive deficit. Nearly all of the family member's queries were seeking clarification of one of the aphasic subject's queries or of a revision he had produced in response to a previous query.

Dyad 5 experienced 19 communication breakdowns but was able to repair only 68.4 percent of them. As a result, they made four errors in referent selection. The source of the difficulties experienced by this dyad is apparent from inspection of the family member's responses to the aphasic subject's queries. This family member produced one inappropriate revision, two inaccurate revisions and six off-query responses. Thus, 32 percent of her responses to the aphasic subject's queries were inadequate. Most of these inadequate responses came in response to potential requests for additional information. She tended to reiterate information about the referent which she deemed important, rather than providing the additional information requested by the aphasic subject.

As noted above, dyad 6, which included the most severely involved aphasic subject in this study, made six errors in spite of having repaired 76.5 percent of their breakdowns. What is striking about this dyad's interaction is a reversal of the query-revision distribution. Here the family member produced 72 percent of the queries. This reversal appears to be the result of the family member's having recognized that the aphasic subject was not able to produce adequate queries to obtain the information needed to complete the task. Thus she adopted a strategy of seeking information about the response pictures from the aphasic subject and using contingent queries to clarify his responses. The high mean number of query-revision sequences per breakdown (3.3) and the large number of errors derives from the aphasic subject's having responded inadequately to 36 percent of the family member's queries. In part, the aphasic subject's difficulty in responding to queries may have been a result of the family member's use of excess verbal mazing and noncontingent repetitions in her queries (e.g., In all the pictures does he have dark glasses? Like a mask or something? Does he got dark glasses?).

METADISCUSSION

The results of this study are difficult to compare with those of previous studies because of differences in methodology and classification of queries and revisions. Nevertheless, some discussion of the results of previous studies and their relationship to the present study is appropriate.

Lubinski et al. (1980) examined breakdowns and repairs between a 41-year-old aphasic woman and her husband and a speech and language pathologist. Two hundred fifty repair attempts were recorded in response to 23 breakdowns. This yielded a mean of more than 10 repair attempts per breakdown -- a remarkably inefficient performance. Closer examination of Lubinski et al.'s classifications of repairs and their data suggests, however, that the interactants may not have been so inefficient in achieving "true" communicative repairs. This conclusion is based on the fact that many of the repair types (e.g., hints, corrections) considered by these investigators were not repairs at all, but rather cues intended to elicit a known target word. Conversely, many recognized forms of repairs were not included in their classification system. In addition, they did not separate the repairs used by the aphasic subject from those used by her nonaphasic partners. As a result, the inferences which may be drawn from this study are very limited.

Newhoff et al. (1982) compared the revisions used by 15 aphasic subjects of various types and severity with those used by age-matched normals. In this study, an examiner feigned misunderstanding 30 times during a 60 - 70 minute conversation by saying "What?", "What did you say?", or "Hmmm?". The results indicated that the aphasic subjects did, for the most part, attempt some revision when called for. However, no data were provided regarding the potential effectiveness of these revisions. In addition, the relative frequencies of the revision types were probably influenced to a significant degree by the contingent queries which were used. All three of the queries used were nonspecific requests for repetition. It is not surprising, then, that 47 percent of the revisions used by the aphasic subjects and 37 percent of those used by the normals were either complete or partial repetitions. These results differ markedly from those of the present study, in which complete or partial repetitions accounted for only 2 percent and 10 percent of the revisions used by aphasic subjects and family members, respectively.

Apel et al. (1982) compared the contingent queries used by 10 Broca's aphasic subjects with those used by 10 normal subjects. Here an examiner produced ambiguous utterances during a discussion of pictures by inserting a nonsense word. Subject responses were placed in one of four categories: (1) nonvocal contingent query, (2) vocal contingent query, (3) verbal contingent query and (4) nonrequestive response. The normal subjects nearly always produced a verbal contingent query, whereas the queries produced by the aphasic subjects were more evenly distributed among the four categories. The results of this study are difficult to analyze in terms of the query types used by the subjects. Both the nonvocal and nonverbal queries would appear to serve as nonspecific requests for repetition. The verbal queries could be any of the four query types examined in the current study. As a result, one cannot determine the types of information sought to disambiguate the examiners' utterances or the range of query types employed by individual subjects.

Flowers and Peizer (1984) examined the strategies used by various communication partners to obtain information about pictures from 11 aphasic subjects. The effect of their task format was essentially the opposite of that in the current study in that the primary direction of information transfer was from the aphasic subject to the partner. Thus the partners produced most of the contingent queries and the aphasic subjects produced most of the revisions. By far the most common form of query was a "yes-no question/guess" about what the aphasic subject had just said or about the picture. In our classification scheme, these queries would most likely be classified as specific requests for affirmation or potential requests for additional information. Flowers and Peizer's data on redundant questions and repetitions suggests that from 21 to

61 percent of the contingent queries used by the partners were specific requests for affirmation. In the current study, 27 percent of the queries produced by the aphasic subjects and 74 percent of those produced by the family members were specific requests for affirmation. A more detailed comparison of Flowers and Peizer's results with those of the present study is confounded by the differences between the primary directions of information transfer and the classification systems.

The results of our study are consistent with those of previous studies in that aphasic subjects were generally found to use contingent queries and revisions appropriately. In addition, they used a variety of these socio-communicative devices, just as their most frequent communication partners did. The effectiveness with which individual dyads repaired communication breakdowns varied considerably, however. Percentages of breakdowns which were repaired ranged from 55 to 100 percent. Moreover, some dyads achieved repairs more efficiently than others did. These results suggest that enhancing the success and efficiency with which communication breakdowns are repaired is a worthy goal of intervention. To achieve this goal, the nature of the breakdowns experienced by individual aphasic patients and their frequent communication partners, the antecedents to these breakdowns, and the strategies used to repair the breakdowns need to be analyzed. Intervention should then be focused on minimizing the occurrence of breakdowns and on achieving repairs in the most expeditious manner possible for each patient.

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APPENDIX A

Definitions of Contingent Query and Revision Types

Contingent Queries

- Nonspecific Request for Repetition: a request for repetition (e.g. "what?", "huh?").
- Specific Request for Affirmation: a request for confirmation in yes/no-question form.
- Specific Request for Specification: a request for repetition of a specific part of the message in wh-question form.
- Potential Request for Additional Information: a request for new information in yes/no- or wh-question form.

Revisions

Affirmation: confirmation of information contained in the eliciting query.

Nonaffirmation: negation of information contained in the eliciting query.

Complete Repetition: an exact repetition of the entire message preceding the query.

Partial Repetition: an exact repetition of a segment of the message preceding the query.

Information Addition: provision or affirmation of new information requested in the preceding query.

Information Deletion: a restatement of the message preceding the query with deletion of a segment of information.

Syntactic Revision: a restatement of the message preceding the query with a change in syntactic structure.

Phonetic Revision: a change in a phonetic element of the utterance preceding the query.

Recapitulation: a summary of previously provided information.

Inappropriate Revision: use of one of the above revision types when it is not appropriate to the query (e.g. query: "Which one?" response: "Yes.>").

Inaccurate Revision: provision of misinformation.

Ambiguous Revision: provision of information which is susceptible to more than one interpretation.

Off-Query Response: failure to produce a revision in response to a query.

No Response: failure to produce any response following a query.