

30. Conversational Discourse of Aphasic and Normal Adults: An Analysis of Communicative Functions

Julie L. Wambaugh, Cynthia K. Thompson,
Patrick J. Doyle, and Stephen Camarata

Sampling discourse in order to study speech and language variables in aphasic and/or non-brain-damaged adults has been undertaken by numerous investigators (Ernest-Baron, Brookshire, & Nicholas, 1987; North, Ulatowska, Macaluso-Haynes, & Bell, 1986; Ulatowska, North, & Macaluso-Haynes, 1981; Yorkston, Beukelman, & Flowers, 1980). Clinical researchers have found discourse sampling to have value for assessing generalization of trained language behaviors with aphasic patients (Doyle, Goldstein, Bourgeois, & Nakles, 1989; Thompson & Byrne, 1984; Wambaugh & Thompson, 1989).

The manner in which discourse has been sampled has varied widely. A few researchers have reported that some linguistic and nonlinguistic variables vary according to the eliciting condition whereas other variables do not (Bottenberg, Lemme, & Hedberg, 1985; Lemme, Hedberg, & Bottenberg, 1984; Potechin, Nicholas, & Brookshire, 1987). Only a few variables have been studied and additional research is needed to delineate further the effects of discourse-eliciting conditions upon speech and language.

The type of discourse studied (e.g., narrative, procedural, conversational, and expository) has also differed. Because narrative, procedural, and expository discourse tends to be monologic rather than dialogic, such discourse samples may have less ecological validity than conversational discourse. That is, "conversation is clearly the prototypical kind of language useage" (Levinson, 1983, p. 284).

Conversational discourse also lends itself well to the study of pragmatics. One aspect of pragmatics that is central to the concept of language use in context and that requires conversational discourse as a vehicle for thorough analysis is the notion of speech acts or communicative func-

tions. The study of speech acts in aphasic communication has been sparse and results have been equivocal. A few investigators have suggested that aphasic adults may exhibit a reduced or restricted variety of speech acts (Gurland, Chwat, & Wollner, 1982; Prutting & Kirchner, 1987; Wilcox & Davis, 1977), whereas Holland (1982) reported a preserved range of communicative acts. A lack of quantitative data from normal adults as well as lack of information regarding the effects of discourse elicitation procedures may have contributed to these conflicting findings.

The purposes of the present investigation were (a) to obtain quantitative data regarding the use of communicative functions in the conversational discourse of normal and aphasic adults, (b) to compare the effect of the manner of eliciting discourse on communicative functions, and (c) to compare the effect of the speaker's age (normals only) on communicative function use (as a result of findings that age cohort may influence linguistic variables; see Bayles, 1987, for a review).

METHOD

Subjects

Sixty non-brain-damaged (normal) and 6 aphasic adult males served as subjects. The normal subjects ranged in age from 35 to 75 years, with 20 subjects in each of three age categories: (a) 35–44 years, (b) 50–59 years, and (c) 65–74 years.

The aphasic subjects were all premorbidly right-handed, native English speakers between 49 and 70 years of age, and ranged from 31 to 168 months post-onset of a single left-hemisphere cerebrovascular accident. All aphasic subjects exhibited reduced and agrammatic verbal output; relatively unimpaired auditory comprehension; and an ability to repeat simple words, phrases, or sentences. Individual scores from the *Western Aphasia Battery* (Kertesz, 1982) are presented in Table 30.1.

Procedures

Samples of conversational discourse were elicited under two conditions: (a) a referential communication task and (b) a planning activity. The subjects' spouses served as conversational partners in both discourse tasks.

The referential task entailed having each subject and his spouse use verbalizations to arrange 16 small objects (e.g., comb, stick of gum, paper

TABLE 30.1. WESTERN APHASIA BATTERY RESULTS

<i>Subject</i>	<i>Information Content</i>	<i>Fluency</i>	<i>Auditory Comp.</i>	<i>Repetition</i>	<i>Naming</i>	<i>Aphasia Quotient</i>	<i>Diagnostic Category</i>
1	9	5	9.8	7.7	9	79	Anomic
2	7	4	8.5	5.7	6	62.4	Broca's
3	8	4	5.9	6.7	4.8	58.8	Broca's
4	7	4	9.75	6.3	7	68.2	Broca's
5	6	4	8.3	3.2	7.8	58.6	Broca's
6	9	4	8.2	5.8	6.5	67	Broca's

clip) on 4×4 matrices, while being separated from each other by an opaque divider. They were instructed to work together to make their matrices look identical. There were no restrictions on what could be said or who should give instructions, as well as no restrictions on time. The planning activity consisted of having each subject and his spouse jointly plan a 2-week vacation. Travel brochures, maps, and so on were provided to facilitate conversation. This task was limited to 15 minutes.

The data were collected in the subjects' residences with the investigator absent from the room while the subjects completed the tasks. All conversational interactions were audio- and videorecorded. Conditions were counterbalanced.

Data Analysis

All language samples were transcribed verbatim by the principal investigator. Gestural communication was included on the transcripts. Each utterance (or gesture) was coded in terms of its communicative functions using a modification of McShane's (1980) categories.

The major communicative function categories were as follows: Regulation, Statement, Exchange, Personal, Conversation, and Miscellaneous. Several subcategories were subsumed under each of the main categories. (See Table 30.2 for category definitions and examples.)

In order to control for different numbers of utterances among speakers, the proportionate use of each of the function categories was calculated for each speaker for each task.

Reliability

Reliability data were calculated for the normal subjects only.

TABLE 30.2. COMMUNICATIVE FUNCTION CATEGORIES

<i>Category</i>	<i>Definition</i>	<i>Example</i>
Regulation		
Attention	Attempts to direct another's attention	"Look at that."
Request	Requests action or permission from another	"Hand me the salt."
Vocative	Requests presence or attempts to locate another	"Where are you?"
Statement		
Naming	Makes reference to object or person by name only	"Cookie jar," while pointing to a picture of a cookie jar
Description	Describes something in the here and now but not intended actions of the speaker	"The biscuits are hot."
Information	Tells about an event beyond the here and now, excluding speaker intentions	"The arms talks resumed yesterday."
Exchange		
Giving	Accompanies physical act of giving	"Here." (produced as the speaker hands an object to another person)
Receiving	Accompanies physical act of receiving	"Thanks." (produced as speaker receives an object)
Personal		
Doing	Describes actions carried out or being carried out by the speaker	"I'm on the phone."
Determination	States speaker's intention to do something	"I'll get more pie."
Refusal	Expresses speaker's refusal to accede to another's wishes	"I'm busy right now." (produced following another speaker's request to answer the door)
Protest	Expresses displeasure of speaker	"I hate fish."
Covert disagreement	Expresses inner state Expresses disagreement with a previous utterance (other's or own)	"I think I have it." "Not really."

Table 30.2. (continued)

<i>Category</i>	<i>Definition</i>	<i>Example</i>
Conversation		
Imitation	Imitates all or part of another speaker's previous utterance	"Red string" (produced following another speaker's utterance that indicated that a red string should be placed at a specific board location during a referential communication task)
Answer	Provides a response to another's question	"Ten o'clock." (produced in response to the question, "When did you get home?")
Follow-On	Serves as a conversational response that is not obligated and is not an answer or an imitation	"Um-hmm." (produced in response to the comment, "The car is dirty.")
Question	Requests information that has not been uttered (in whole or part) by the other speaker before	"How many people are coming to dinner?"
Request for repetition	Requests an entire or partial repetition of another speaker's previous utterance	"What did you say?"
Request for confirmation	Requests a yes/no verification from another speaker	"Are you ready to eat?"
Miscellaneous	Did not adequately fit preceding category specifications	"Wow!"

Reliability of Sampling. To evaluate consistency of sampling over time, 25% of the normal subjects participated in the discourse procedures a second time. The second set of samples was obtained within a 6-week interval of the first sampling date and was transcribed and coded according to the same guidelines as the first samples. In addition, *t* statistics for paired samples were calculated for each communicative function category. Differences in the proportional use of communicative functions between the two samples were not statistically significant at $p < .01$.

Coding Agreement

Interjudge agreement. Twenty-five percent of the original transcriptions were selected for recording by an individual other than the primary investigator. Point-to-point agreement with the original coded data was

calculated for classification of each utterance in terms of communicative function category. Mean point-to-point agreement for the referential task samples was 92% with a range of 84% to 100%. Mean point-to-point agreement for the vacation planning samples was 88% with a range of 82% to 91%.

Intrajudge agreement. The investigator recoded 10% of randomly selected transcripts from each sampling context 4 weeks following the time of the original coding. Point-to-point agreement between the original and recoded reliability task transcripts was 95% with a range of 90% to 100%. Point-to-point agreement for the vacation planning task was 93% with a range of 91% to 96%.

Reliability of Transcription

Interjudge agreement. Two discourse samples for each age group for each language sampling condition were selected at random for the determination of reliability of transcription. A master's student in communication disorders was provided with the original transcripts of the 12 samples along with the corresponding audio recordings and was instructed to indicate any errors of transcription on the original transcript. The primary investigator determined the number of instances for which errors in the transcription caused utterances to be coded into a different communicative function category. The mean percentage of changed communicative functions was 0% for the referential task and 1% for the vacation planning task, indicating that these functions can be transcribed reliably.

Intrajudge agreement. Twelve discourse samples, 2 per age group for each language sampling condition, were selected at random for calculation of intrajudge reliability of transcription. The primary investigator listened to the audiotapes of the samples and indicated errors in transcription on the original transcripts. Procedures for determining the impact of the errors in transcription were as described above. The mean percentage of changed communicative functions was 1% for the referential task and 2% for the vacation planning task.

RESULTS

Group means and standard deviations for the normal subjects' use of the communicative function categories are displayed in Table 30.3 for both discourse tasks. Function categories used rarely by the normal subjects (e.g., Giving) were not included on Table 30.3.

Data for individual aphasic subjects are presented in Table 30.4. Asterisks following aphasic subjects' percentages indicate values more or

**TABLE 30.3. NORMAL SUBJECTS' USE OF FUNCTIONS
IN PERCENTAGE OF ENTIRE CORPUS**

<i>Condition</i>	<i>Function Category</i>	<i>Subjects</i>					
		YOUNG GROUP		MIDDLE GROUP		OLD GROUP	
		35-44 YRS.		50-59 YRS.		65-74 YRS.	
		\bar{x}	(SD)	\bar{x}	(SD)	\bar{x}	(SD)
Vacation							
	Attention	0.8	(0.9)	1.6	(1.9)	1.4	(2.2)
	Request	2.6	(1.4)	1.9	(1.3)	1.8	(1.5)
	Naming	3.9	(5)	2.9	(1.9)	3.9	(2.9)
	Description	20.3	(7.1)	20.1	(5.9)	22.8	(7.1)
	Information	4.7	(3.6)	7.6	(3.2)	6.1	(3.7)
	Doing	2.8	(1.8)	2.9	(1.9)	3.2	(2.9)
	Determination	14.6	(6.4)	13.8	(4.9)	14.3	(5.9)
	Covert	4.4	(3.1)	5.4	(4)	5.8	(5.7)
	Disagreement	.6	(.9)	1	(.9)	.6	(1)
	Refusal	.1	(.2)	0	(.1)	0	(0)
	Imitation	1.2	(1.1)	1.3	(1.1)	1.9	(1.6)
	Answer	13.6	(7.1)	11.9	(5.8)	14.4	(7.9)
	Follow-On	12.4	(5)	12.7	(5.7)	10.5	(7.9)
	Question	5.4	(3.7)	5.2	(2.7)	5.2	(3.3)
	Request Repetition	.2	(.4)	.4	(.8)	.4	(.9)
	Miscellaneous	3.7	(4.2)	4.1	(3.5)	1.6	(.3)
Referential							
	Attention	.1	(.4)	0	(0)	.2	(.6)
	Request	22.1	(20.8)	19.7	(19.1)	19.5	(16.1)
	Naming	.6	(1.4)	.8	(1.5)	.3	(.9)
	Description	8.9	(5.9)	13.8	(10.2)	13.7	(6.5)
	Information	.2	(.5)	2.5	(3.1)	2.9	(3.8)
	Doing	3.5	(4.9)	.9	(1.5)	1.3	(2)
	Determination	6.7	(9.2)	7.5	(8.4)	5.3	(10.3)
	Covert	1.7	(2.5)	1.7	(1.8)	1.2	(2.6)
	Disagreement	.4	(.9)	.8	(1.8)	.5	(.9)
	Refusal	.3	(.1)	0	(0)	0	(.3)
	Imitation	2.6	(3.4)	2.1	(2.6)	3.4	(5.3)
	Answer	8.5	(5.3)	6.4	(5.9)	11.9	(9.4)
	Follow-On	26.2	(18.2)	24	(17.2)	25.4	(14.9)
	Question	3.3	(4.9)	4.8	(4.4)	3.5	(3.7)
	Request Repetition	.2	(.6)	0	(.3)	.4	(.9)
	Miscellaneous	3.9	(4.4)	5	(3.6)	2.7	(2.9)

less than two standard deviations from all normal group means. All aphasic subjects had some percentages falling beyond two standard deviations and each subject displayed a unique pattern of aberrant communicative function use. Values beyond two standard deviations of normal occurred more often for the categories of Description, Answer, Follow-On, Naming, and Question than for the other categories. Subjects 1, 4, 5, and 6 employed a wide variety of functions, whereas Subjects 2 and 3 used a restricted variety of functions.

Two-way analyses of variance for repeated measures were performed for each communicative function category (normal data) in order to evaluate the effects of the age group, the eliciting condition, and the interaction of group and condition on observed proportions for the normal subjects (Northwest Analytical, 1983). The proportional data were transformed, using an arcsin transformation, prior to the analyses in order to stabilize the variances (Neter, Wasserman, & Kutner, 1985).

Group Effects

The effect of age group was statistically significant only for the category of Information at $p < .01$. Tukey follow-up tests were conducted to determine the nature of the difference in Information functions among groups. Young normal subjects produced a significantly smaller proportion of Statement functions than Middle and Old normal subjects.

Condition Effects

The effect of the eliciting condition was statistically significant at $p < .01$ for 17 of the 26 categories and subcategories. Specifically, the referential condition elicited more Request, Follow-On, Total Regulation, and Total Conversation functions. Conversely, proportionately more of the following functions were employed in the vacation task condition than in the referential condition: Attention, Naming, Description, Information, Answer, Question, Doing, Determination, Covert, Giving, Total Statement, Total Personal, and Total Exchange functions. No significant differences were noted for the remaining functions of Vocative, Refusal, Disagreement, Protest, Receiving, Imitation, Request for Confirmation, Request for Repetition, and Miscellaneous.

Interaction Effects

The interaction effects of group and condition were not found to be statistically significant for any of the function categories.

TABLE 30.4. APHASIC SUBJECTS' USE OF FUNCTIONS IN PERCENTAGE OF ENTIRE CORPUS

<i>Condition</i>	<i>Function Category</i>	<i>Subjects</i>					
		1	2	3	4	5	6
Vacation							
	Attention	0	0	0	1.2	19.5*	5.3
	Request	9.6*	2.1	0	0	4.9	2.6
	Naming	2.7	6.4	6.3	3.6	4.9	1.3
	Description	12.3	0*	1.3*	0*	4.9*	5.3*
	Information	13.7	4.3	0	10.7	4.9	4
	Doing	8.2	0	0	0	0	0
	Determination	5.5	0*	0*	10.7	4.9	5.3
	Covert	5.5	0	0	0	0	0
	Disagreement	2.7	0	0	4.8*	4.9*	7.9*
	Refusal	0	0	0	0	0	5.3*
	Imitation	1.4	0	11.4*	4.8	2.4	0
	Answer	12.3	53.2*	41.8*	28.6	14.6	10.5
	Follow-On	19.2	31.9*	27.9*	17.9	12.2	31.6*
	Question	1.4*	2.1	0	13.1*	14.6*	14.5*
	Request Repetition	0	0	0	0	0	0
	Miscellaneous	5.5	0	11.4	4.8	7.3	6.6
Referential							
	Attention	0	0	0	0	2.8*	0
	Request	10	0	11.7	22.8	18.1	0
	Naming	0	3.5	8.2*	0	6.9*	0
	Description	10	0	0	19.3	0	0
	Information	0	0	0	0	0	0
	Doing	4	0	0	1.8	0	0
	Determination	0	0	0	0	0	0
	Covert	2	0	0	0	0	0
	Disagreement	0	1.2	1.2	5.3*	1.4	0
	Refusal	0	0	0	0	0	0
	Imitation	0	9.3	3.5	0	19.4*	0
	Answer	4	75.6*	67.1*	33.3*	27.8	25
	Follow-On	36	10.5	8.3	3.5	15.3	50
	Question	16*	0	0	10.5	4.2	25*
	Request Repetition	4*	0	0	0	0	0
	Miscellaneous	14*	0	0	3.5	4.2	0

*More than 2 SD above or below normal group mean (see Table 30.3).

CONCLUSIONS

The way in which discourse was elicited significantly affected the subjects' use of communicative functions (e.g., more Request functions in the referential condition and more Description functions in the vacation condition). Some functions were used frequently (e.g., Description), whereas others were used rarely (e.g., Giving), regardless of task. The preceding findings may have implications diagnostically as well as therapeutically. That is, it appears that the potential effects of the discourse situation should be carefully considered when evaluating the use of specific communicative functions. Additionally, if specific functions are to be targeted for treatment, consideration should be given to how frequently those functions are normally used in conversation and in what situations treatment effects can best be assessed.

Given the finding that discourse sampling methods influenced proportional representation of communicative functions, equivocal results among previous investigations may have been due in part to sampling methodology. Investigators should attempt to account for the effects of sampling before drawing conclusions that subjects are deviant or normal in their use of communicative functions.

The results relating to communicative functions and aphasia suggest that such functions may not necessarily be resistant to the degradation seen in other aspects of the language of aphasic subjects as indicated by Holland (1982). Instead, it appears that some aphasic subjects may exhibit a normal range of speech acts in comparison to normal subjects, whereas others may display a restricted range of communicative functions as noted by Gurland et al. (1982), Prutting and Kirchner (1987), and Wilcox and Davis (1977). Although the number of aphasic subjects included in this study was small, it appears that communicative function usage may be related to severity of aphasic impairment and, in particular, severity of verbal impairment.

Overall, the findings of this investigation highlight the need to better understand the effects of language elicitation procedures upon specified language variables, as well as the need to broaden our knowledge of normal speakers' performance in the elicitation conditions employed with aphasic speakers.

REFERENCES

- Bayles, K. A. (1987). *Communication and cognition in normal aging and dementia*. Austin, TX: PRO-ED.

- Bottenberg, D., Lemme, M. L., & Hedberg, N. (1985). Analysis of oral narratives of normal and aphasic adults. In R. H. Brookshire (Ed.), *Clinical aphasiology* (Vol. 15, pp. 241-247). Minneapolis, MN: BRK Publishers.
- Doyle, P. J., Goldstein, H., Bourgeois, M. S., & Nakles, K. O. (1989). Facilitating generalized requesting behavior in Broca's aphasia: An experimental analysis of a generalization training procedure. *Journal of Applied Behavioral Analysis*, 22, 157-170.
- Ernest-Baron, C. R., Brookshire, R. H., & Nicholas, L. E. (1987). Story structure and retelling of narratives by aphasic and non-brain-damaged adults. *Journal of Speech and Hearing Research*, 30, 44-49.
- Gurland, G., Chwat, S., & Wollner, S. G. (1982). Establishing a communication profile in adult aphasia: Analysis of communicative acts and conversational sequences. In R. H. Brookshire (Ed.), *Clinical aphasiology* (Vol. 12, pp. 18-27). Minneapolis, MN: BRK Publishers.
- Holland, A. L. (1982). Observing functional communication of aphasic adults. *Journal of Speech and Hearing Disorders*, 47, 50-56.
- Kertesz, A. (1982). *Western Aphasia Battery*. New York: Grune & Stratton.
- Lemme, M. L., Hedberg, N. L., & Bottenberg, D. E. (1984). Cohesion in narratives of aphasic adults. In R. H. Brookshire (Ed.), *Clinical aphasiology* (Vol. 14, pp. 215-222). Minneapolis, MN: BRK Publishers.
- Levinson, S. C. (1983). *Pragmatics*. New York: Cambridge University Press.
- McShane, J. (1980). *Learning to talk*. Cambridge, MA: Cambridge University Press.
- Neter, J., Wasserman, W., & Kutner, M. H. (1985). *Applied linear statistical models* (2nd ed.). Homewood, IL: Richard D. Irwin.
- North, A. J., Ulatowska, H. K., Macaluso-Haynes, S., & Bell, H. (1986). Discourse performance in older adults. *International Journal of Aging and Human Development*, 23, 267-283.
- Northwest Analytical. (1983). *NWA statpak*. Portland, OR: Northwest Analytical.
- Potechin, G. C., Nicholas, L. E., & Brookshire, R. H. (1987). Effects of picture stimuli on discourse production by aphasic patients. In R. H. Brookshire (Ed.), *Clinical aphasiology* (Vol. 17, pp. 216-220). Minneapolis, MN: BRK Publishers.
- Prutting, C. A., & Kirchner, D. M. (1987). A clinical appraisal of the pragmatic aspects of language. *Journal of Speech and Hearing Disorders*, 52, 105-119.
- Thompson, C. K., & Byrne, M. E. (1984). Across setting generalization of social conventions in aphasia. In R. H. Brookshire (Ed.), *Clinical aphasiology* (Vol. 14, pp. 35-45). Minneapolis, MN: BRK Publishers.
- Ulatowska, H. K., North, A. J., & Macaluso-Haynes, S. (1981). Production of narrative and procedural discourse in aphasia. *Brain and Language*, 13, 345-371.
- Wambaugh, J. L., & Thompson, C. K. (1989). Training and generalization of agrammatic aphasic adults' Wh-interrogative productions. *Journal of Speech and Hearing Disorders*, 54, 509-525.
- Wilcox, M. J., & Davis, G. A. (1977). Speech act analysis of aphasic communication in individual and group settings. In R. H. Brookshire (Ed.), *Clinical aphasiology: Conference proceedings* (pp. 166-174). Minneapolis, MN: BRK Publishers.
- Yorkston, K., Beukelman, D., & Flowers, C. (1980). Efficiency of information exchange between aphasic speakers and communication partners. In R. H. Brookshire (Ed.), *Clinical aphasiology* (Vol. 10, pp. 96-105). Minneapolis, MN: BRK Publishers.