

Macrostructure revisited: An examination of gist responses in aphasia

H.K. Ulatowska *, G.S. Olness, L.J. Williams-Hubbard

Callier Center for Communication Disorders, School of Behavioral and Brain Sciences, University of Texas at Dallas, Dallas, TX, USA

Accepted 8 July 2005

Available online 25 August 2005

Introduction

The ability to extract and express the gist from a body of information reflects high level language processing related to the construct of macrostructure (Kintsch, 1999). General findings from aphasia (e.g., Ulatowska, Sadowska, Kordys, & Kadzielawa, 1993) indicate that gists, as one expression of macrostructure, are preserved in many individuals with mild aphasia. However, these expressions of gist may be more frequently bound to the text among individuals with aphasia, especially at more severe impairment levels.

The processing of macrostructure depends heavily on the organization and form of the information from which the gist is derived. Studies of gist processing in aphasia to date have employed tasks requiring processing of verbal information in the form of narrative texts. The current study examines whether these findings also generalize to didactic information in other modes.

This study was designed to answer the following questions:

- (1) Do expressions of gists produced by individuals with and without aphasia differ in:
 - (a) level of generalization; and
 - (b) pragmatic function?
- (2) Do expressions of gists produced by individuals with and without aphasia differ across different didactic materials?

Methods

Participants

This study included 35 individuals with aphasia (of mild to moderate severity as assessed by the Western Aphasia Battery–Aphasia Quotient; APH) and 36 non-brain-injured participants (NBI) who took part in a larger study of discourse in aphasia. The participants of both groups were speakers of English.

Age ranged from 41 to 73 years for the APH group and 41 to 74 years for the NBI group. Education and socio-economic status of the two groups were comparable, and both men and women were represented.

Gist elicitation

Three stimulus sets with didactic content were presented: a single picture, a picture sequence, and a narrative (a fable) presented in oral and written form. Participants were asked to tell the “main idea or most important thing” represented in the stimulus.

The single picture (*Easter Morning* by Norman Rockwell) depicts a family conflict over church attendance. The picture sequence (*Boys and Apples*) depicts a foiled attempt at stealing. The fable narrative (*Farmer and Sons*) relates how a father teaches the value of hard work.

Analysis

Responses were coded according to level of generalization (generalized or text-specific) and pragmatic function (providing a lesson or providing a summary). Instances of inappropriate/no response were also coded. See Appendix for example responses.

Reliability

Original group consensus ratings were compared with those of a second rater on a random sample of 20% of the data stratified by group and stimulus. Point-by-point inter-rater agreement was 98%.

Statistical analyses

χ^2 analyses with Yates correction factor for low degrees of freedom were used to examine the relationship between clinical group (aphasic vs. control) and response type (generalized vs. specific; lesson vs. summary) for each stimulus (*Easter Morning*, *Boys and Apples*, *Farmer and Sons*).

Results

Relationship between group and response type

Generalization level

Stimulus type and group showed a statistically significant relationship. APH participants produced proportionately fewer

* Corresponding author. Fax: +1 214 905 3006.
E-mail address: hanna@utdallas.edu (H.K. Ulatowska).

generalized gists than NBI participants on the picture sequence and the
Table 1

Frequency of pragmatic function and generalization level of gist responses on three stimuli for APH and NBI participants

Stimulus	Pragmatic function			Generalization level				
	APH	NBI	χ^2 (1)	APH	NBI	χ^2 (1)		
Single Picture (<i>Easter Morning</i>)	Generalized	21	18	1.11	Lesson	9	13	0.20
	Specific	11	18		Summary	23	23	
Picture Sequence (<i>Boys and Apples</i>)	Generalized	19	30	3.24	Lesson	13	26	5.22*
	Specific	11	5		Summary	17	9	
Narrative fable (<i>Farmer and Sons</i>)	Generalized	13	25	4.37*	Lesson	10	25	8.36**
	Specific	8	15		Summary	18	8	

Note. Differences in totals between tasks reflect missing data cells.

* Significant $p < .05$.

** Significant $p < 0.01$.

Generalized		Specific		Inappropriate/no response
Lesson	Summary	Lesson	Summary	
Sometimes your treasures that you are looking for is right in your own backyard.	About your kids and learning how to do things.	The main idea of the story is plant grapes.	He told them that there was a treasure there. If he wouldn't told them that they would worked in the vineyard.	Don't steal.
If you work hard, and if you work hard at something it will produce. You will produce riches.	Hard work.	That they learn to obey their parents.	The father wanted the sons to be just like him.	The father.

narrative fable (see Table 1).

Pragmatic function

Stimulus type and group showed a statistically significant relationship. APH participants produced proportionately fewer lesson responses than NBI participants on the narrative fable (see Table 1).

Inappropriate/no response

Inappropriate/no response ratings were more frequent for the APH group (20% of responses) as compared to the NBI group (5% of responses) on the fable narrative, although this could not be tested statistically due to low cell counts. Instances of this category across the other two stimuli ranged from 0 to 8% for both groups.

Discussion

This study suggests that the general ability to express macrostructure in the form of gists is preserved in aphasia as manifested by the small number of failures. However, these expressions of macrostructure differ in the type of information they contain. The less generalized responses of the APH group confirm previous findings on expression of macrostructure (e.g. Ulatowska et al., 1993). Individuals with aphasia also show a tendency towards summary responses. This is especially apparent when the didactic information is less explicit and more inference is required. This investigation contributes toward our understanding of how individuals with aphasia process macrostructure across tasks that represent a variety of information structures.

Acknowledgments

This investigation was supported in part by Grant C888-2RA from the Department of Veteran Affairs Rehabilitation Research and Development program, and NIDCD Grant 1 R03 DC05151.

Appendix

Examples of gist expressions

Fable narrative

Farmer and sons. A farmer worked in the vineyard and became very rich. He wanted his sons to be just like him. On his deathbed, the farmer told his sons that there was a great treasure buried in the vineyard. After the farmer died, the sons went to the vineyard and dug up the soil. They could not find a buried treasure. At harvest time, the vineyard produced the best grapes ever. Now the sons understood the meaning of the treasure. See above table for examples of gist expressions.

References

- Kintsch, W. (1998). *Comprehension: A paradigm for cognition*. Cambridge: Cambridge University Press.
- Ulatowska, H.K., Sadowska, M., Kordys, J., & Kadzielawa, D. (1993). Selected aspects of narratives in Polish-speaking aphasics as illustrated by Aesop's fables. In H.H. Brownell & Y. Joannette (Eds.), *Narrative discourse in neurologically impaired and normal aging adults* (pp. 171–190). San Diego, CA: Singular Publishing.