

MEASURING THE COHERENCE OF HEALTHY AND APHASIC DISCOURSE

PRODUCTION IN CHINESE USING RHETORICAL STRUCTURE THEORY (RST)

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INTRODUCTION: Discourse coherence refers to the semantic connectedness of propositions in a connected speech. Various theoretical bases, narrative elicitation tasks, and sample quantifications as well as small sample sizes in most studies resulted in a substantial disparity in findings regarding the micro-linguistic and macro-linguistic aspects of aphasic discourse (Armstrong, 2000). Specifically, while some reports claimed macro-linguistic skills in aphasia to be well-preserved despite lexical, grammatical, and phonological impairments, other studies demonstrated reduced discourse coherence due to omission of important content and higher proportion of irrelevant propositions. In this study we analyzed the discourse structure in aphasic connected speech using Rhetorical Structure Theory (RST; Mann & Thompson, 1988). RST analyzes text organization by describing the semantic relations that hold between units of a text. The present study investigated how discourse coherence in healthy speakers differed from speakers with anomic aphasia. Potential factors contributing to these differences were also examined.

METHOD: Fifteen Cantonese-speaking adults with anomic aphasia and their controls matched in age, education, and gender participated. Sixty language samples were obtained using the story-telling and sequential description tasks of the Cantonese AphasiaBank protocol. Each sample was segmented into elementary discourse units (EDU) and annotated according to RST. The annotations were analyzed in terms of 12 parameters measuring the depth, structural disruption, and expansion of discourse structure. Twenty naïve listeners participated in a perception experiment, where they were asked to provide subjective ratings of the coherence, completeness, correctness of order, and clarity of each speech sample.

RESULTS: The non-brain-damaged group demonstrated significantly higher production fluency, total number of EDUs, size of relation set, and fewer errors (semantic, phonemic paraphasia, morphological errors, and neologisms) than the aphasia group. Analysis of semantic relations employed revealed that controls used a richer set of relations than subjects with aphasia, particularly those to describe settings, to express causality, and to elaborate. More reformulations, corrections, false starts, and retracing were found in aphasic discourse. The aphasic group also

tended to have a higher degree of omission of essential information content and was rated by naïve listeners with significantly lower coherence and clarity than controls. An effect of genre was found where both speaker groups had a faster EDU production and greater variety of relations used in their story-telling than sequential description. Unexpectedly, speakers with aphasia produced more EDU, with a greater depth of discourse structure, in the sequential description task.

CONCLUSION: Our results seemed to suggest that speakers with anomic aphasia had reduced proportion of essential information content, lower degree of elaboration, simplified discourse structure, and more structural disruptions than their healthy counterparts. We argue that the above characteristics have contributed to the reduced overall coherence in their oral discourse. The use of RST to quantify discourse coherence provided more objective measurement on macro-linguistic characteristics in aphasia and, therefore, warrants further investigation.

References:

- Armstrong, E. (2000). Aphasic discourse analysis: The story so far. *Aphasiology*, 14, 875–892.
- Mann, W. C., & Thompson, S. A. (1988). Rhetorical structure theory: Toward a functional theory of text organization. *Text*, 8(3), 243-281.