

Abstract

The research in linguistic aphasiology has been dominated by structuralist, rule-based approaches to the study of language. However, recent work has shown that analyses based in constructivist, usage-based frameworks can provide explanations to patterns of language processing in aphasia that are difficult to accommodate in structuralist models. The present work follows up on these findings and aims to provide additional evidence for the benefits of the usage-based model by using data from Czech speakers with aphasia, an understudied language in this context. The aims of the study were threefold: to create a collection of samples of aphasic connected speech available to other researchers, to provide a description of the patterns of aphasic discourse production in Czech, and, most importantly, to show potential benefits of usage-based construction grammar for aphasia research.

A corpus of the speech of eleven persons with fluent and non-fluent aphasia of varying degrees of severity was created. The corpus consist of more than 23000 word position produced by speakers with aphasia in tasks used to elicit conversational, narrative, descriptive, and procedural discourse. The corpus is lemmatized and morphologically tagged and the transcripts are aligned with audio recordings. A smaller sample of three, demographically matched neurotypical speakers is also included. A sample of the corpus with a more detailed annotation was used in subsequent analyses.

First, a quantitative description of the micro-structure of Czech aphasic discourse production was carried out. A suite of measures of fluency, productivity, and well-formedness differentiated between a group of persons with non-fluent aphasia on the one hand and a group of neurotypical speakers and individuals with fluent aphasia on the other. Consistent with the current state of knowledge, non-fluent speakers produced shorter utterances with fewer verbs and a high number of disfluencies and sentence fragments. A hierarchical clustering analysis that revealed several language profiles within the fluent and non-fluent group.

The second analytical part consists of three case studies that are concerned with the role of cumulative lemma frequency, relative frequency of a paradigmatic cell, and frequency of cooccurrence in aphasic speech production. An analysis of verb production found that lemma frequency can better explain observed differences on group and individual level, compared to structural complexity. Participants with more severe word finding problems relied more on high frequency verbs and non-fluent participants produced verbs with complex argument structure frames that simultaneously have high frequency. They also relied more on the use of the existential-presentative construction which is both highly frequent and partially lexically fixed. Verbs with higher frequency also induced fewer disfluencies.

An analysis of inflected nouns in the corpus showed that speakers with more severe aphasia produced fewer inflected word forms which was caused by their frequent use of single word utterances or the existential-presentative construction. Nevertheless, these speakers were able to spontaneously produce inflected forms that had high relative frequency or were tied to specific argument structure constructions.

A third analysis of the production of prepositional phrases found that combinations of particular prepositions and nouns that are frequently used together were produced more fluently which points to

the fact that such multiword units are stored as chunks and retrieved as read-made wholes rather than assembled from component parts during production. This was true even in phrases with prenominal modifiers that were overall produced with more disfluencies.

These findings demonstrate the benefits of the usage-based framework for the analysis of patterns of language behavior in aphasia and have implications for clinical practice that could benefit from integrating frequency effects in the formulation of assessment tools and approaches to therapy.

Keywords:

acquired aphasia, chunking, corpus linguistics, discourse production, disfluencies, fluency, frequency effects, inflectional morphology, usage-based construction grammar