51st Academy of Aphasia Proceedings

Tense production in agrammatic aphasia: a meta-analysis and further data

Faroqi-Shah Y.,*, Friedman L., Stockbridge M.

University of Maryland

Introduction

In persons with agrammatic aphasia, there is substantial cross-linguistic evidence that morphosyntax of verb tense is more severely impaired than other functional categories such as agreement and mood (Friedmann and Grodzinsky, 1997). A consistent explanation for the vulnerability of verb tense production in agrammatism has been elusive. One long-standing hypothesis, which proposes that higher nodes in the syntactic deep structure are inaccessible, has mixed empirical support. While several proposals attribute the susceptibility of verb tense to macrolinguistic conceptual-semantic processes that are engaged in formulating tense, one hypothesis identifies past tense as the core deficit because speaking about a completed (past) event is more demanding than speaking about an ongoing event (Bastiaanse, 2013). Although most prior studies have elicited a variety of tenses (neutral, past, present, future), these data are collapsed in order to compare tense with other functional categories. Hence it is unclear if macrolinguistic accounts are empirically supported. This study aims to provide a more precise characterization of verb tense impairment by examining if there is a dissociation within tenses such that any one tense is more impaired than other tenses.

Methods

Two sources of data were used to examine if tense production in agrammatism shows differences between tenses: 1) a meta-analysis of published research, and 2) new data from 16 persons with agrammatic aphasia. The meta-analysis was conducted by identifying studies published in English peer-reviewed journals (between 1980 and 2012) using relevant key words in electronic databases. Studies were selected using the following criteria: report original, raw data for individual participants for different tenses, sentence stimuli used, task details provided and participants with agrammatic apahasia. Twelve studies (seven different languages) with 106 individual participants and 143 datasets were included in the meta-analysis. Four different tasks were used across studies: sentence completion, sentence production using a model (priming), sentence production with pictures (no model), and grammaticality judgment. We also analyzed new data for this study using sentence production in response to pictures in persons with agrammatism (N=16, 10 men, Mean age = 54.1 years, Mean months post-onset = 52.5).

Results and Discussion

The meta-analysis found main effects of tense ($F(3,392) = 16.785, p < 0.001$) and task ($F(3,382) = 9.357, p < 0.001$) and no interaction ($p > 0.05$). Tamahane's post hoc statistics indicate that the

_____
* Corresponding author.
E-mail address: yfshah@umd.edu .

past, present, and future tenses all significantly differed from neutral tense and picture description was less accurate than other tasks (both $p < 0.001$) (Figure 1). Past tense disadvantage was only found for sentence production priming task ($F(3,159) = 9.3$, $p <.001$). These findings indicate that 1) overall tense accuracy mediated by elicitation method, 2) while production of verb tense is generally less accurate than neutral sentences, a past tense disadvantage is only found in the priming task.

References

Friedmann, N., & Grodzinsky, Y. (1997). Tense and agreement in agrammatic production: pruning the syntactic tree. *Brain & Language, 56*, 397-425.

Bastiaanse, R. (2013). Why reference to the past is difficult for agrammatic speakers. *Clinical Linguistics & Phonetics, Early online*, 1-20. doi: 10.3109/02699206.2012.751626
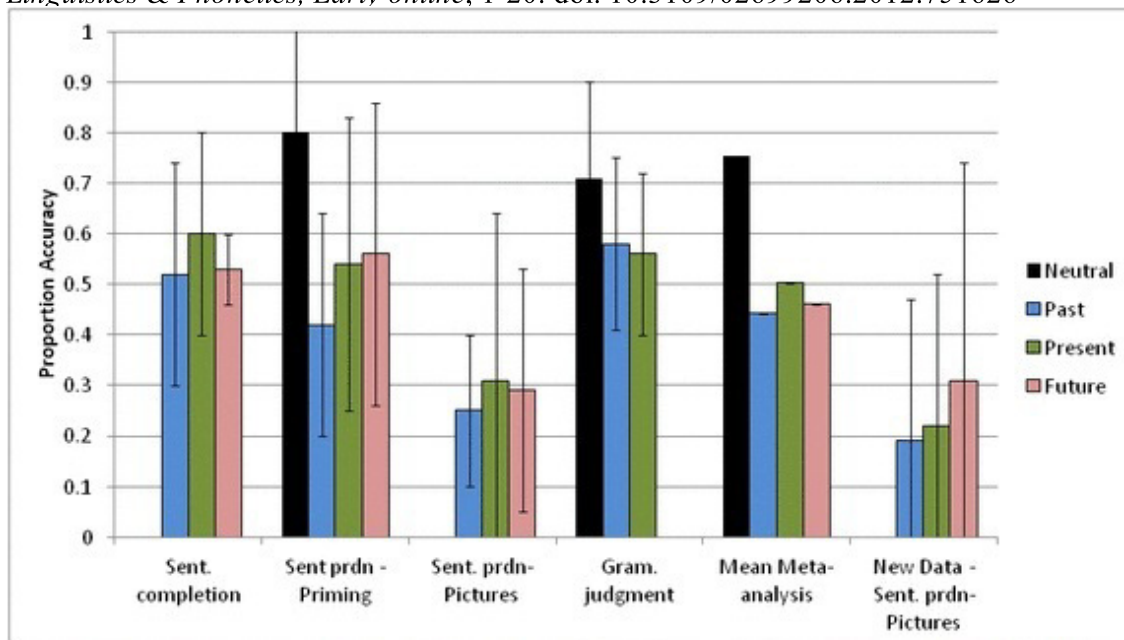
Figure 1. Performance on verb tense. The first four datasets are sorted by experimental task from the meta-analysis of published studies. The last dataset shows new data using a sentence production task with pictures.