Introduction

Production of verbs poses challenges to persons with aphasia (PWA). Verbs vary in the number of arguments they must take in order to be syntactically correct (obligatory verbs) and the number of arguments they may take (optional verbs). The verb “put” is an obligatory verb: “The cat put the fish in a carrier.” The verb “serve” is an optional 3-argument verb: it must take two arguments, but a third argument is possible: “The caterer served lamb to the guests.”

It has been hypothesized that obligatory verbs should be produced more accurately than optional verbs; since optional verbs contain more possible argument structures than obligatory verbs, the processing demands are thought to be greater for optional verbs (see Shaprio et al., 1987, and Thompson et al., 1997). The results of prior studies have shown this hypothesis to be supported in some circumstances but not in others. Two of three prior studies comparing the ability to name obligatory and optional verbs in PWA included few subjects, all of whom had agrammatic Broca’s aphasia (n = 10, Thompson et al., 1997 and n = 7, Kim & Thompson, 2000). The third sample included 59 PWA described in a test manual (Northwestern Assessment of Verbs and Sentences (NAVS), Thompson, 2011); 36 subjects had Broca’s aphasia, and 24 subjects had Anomic aphasia.

There was no significant difference in naming obligatory and optional verbs in the Thompson et al. study or the Kim and Thompson study. The subjects with Broca’s aphasia described in the NAVS manual named obligatory verbs more accurately than optional verbs (results of a t-test after failing to find a significant interaction between group (Broca’s vs. Anomic aphasia) and optionality (obligatory vs. optional verbs)); the subjects with Anomic aphasia showed no significant difference in naming obligatory and optional verbs. In the Kim and Thompson (2000) and Thompson (2011) studies, the analysis of obligatory vs. optional verbs included 1-, 2-, and 3-argument obligatory verbs but only 2- and 3-argument optional verbs; thus, any analysis of obligatory vs. optional verb naming could have been confounded by number of arguments.

Studies with larger sample sizes and subjects with a wider variety of aphasia types are needed, and researchers should be careful not to confound number of arguments with optionality when exploring whether obligatory verbs are named more accurately than optional verbs.

Research Questions and Hypothesis

Research Questions:
1) Do PWA (regardless of aphasia type) name obligatory verbs more accurately than optional verbs?
2) Do persons with Broca’s aphasia name obligatory verbs more accurately than optional verbs?

Hypothesis: Obligatory verbs will be named more accurately than optional verbs in PWA.

Subjects

Participants (n = 62; 36 males, 26 females) were selected from the AphasiaBank web-based database (MacWhinney et al., 2011) containing test results from 234 unique PWA when the database was accessed on February 28, 2013. Aphasia types (based on WAB-R scores) included: Anomic (n=30), Broca’s (n=11), Conduction (n=10), Transcortical Motor (n=5), Transcortical Sensory (n=3), and Wernicke’s (n=5).

Their mean age was 61.47 years (SD = 9.62), and their mean number of years of education was 15.21 (SD = 2.78). They were mainly White (n = 54).

Inclusion criteria were:
- diagnosis of aphasia
- a score of 50% or greater on the Verb Naming Test (VNT; Thompson, 2011)
- adequate vision
- monolingual
- left hemisphere brain damage due to a stroke
- aphasia duration of at least six months
- no history of other neurologic conditions.

They were excluded if there was no demographics file (n = 9).

Results: All Subjects with Aphasia (n = 62)

There was no significant difference in accurately naming obligatory and optional verbs when all 62 subjects were included in the analysis (t = 1.088, df = 61, p = .281). On average, they named 77.67% of the obligatory verbs (SD=20.77) and 80.32% of the optional verbs (SD = 19.33).

Results: Subjects with Broca’s Aphasia (n = 11)

The VNT scores of subjects with Broca’s aphasia (n=11) were analyzed separately; no statistically significant difference was found between naming obligatory and optional verbs (t = 1.080, df = 10, p = .305; obligatory verbs correctly named: M = 70.13%, SD = 22.55; optional verbs correctly named: M = 63.64%, SD=19.63).

Discussion

The finding that a group of PWA that varied widely in aphasia type and included mainly subjects with Anomic aphasia did not differ in their ability to name obligatory and optional verbs is perhaps not surprising given that syntactic deficits are a hallmark of one type of aphasia in particular (Broca’s). Although the subjects with Broca’s aphasia might have been expected to name obligatory verbs more accurately than optional verbs based on theoretical grounds, the non-significant results are consistent with two other studies that included a small number of subjects with Broca’s aphasia; our analyses did not confound number of arguments with optionality.

We conducted a power analysis to determine the direction of future studies. The results of the power analysis indicated that 60 subjects with Broca’s aphasia would need to be included in a future study (alpha =.05, power = .80, effect size = .32) to detect a difference in the accuracy of naming obligatory vs. optional verbs if one exists.

The task of naming single verbs may not activate all of the arguments of a verb; thus, the production of obligatory verbs in the context of a verb naming task might not be expected to be more accurate compared to optional verbs in persons with Broca’s aphasia.

References


