



Naming Obligatory and Optional Verbs in Aphasia

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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 a 3-argument **obligatory** verb: The boy put the cat 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 structure configurations than **obligatory** verbs, the processing demands are thought to be greater for **optional** verbs (See Shapiro 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); 35 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=3), 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.

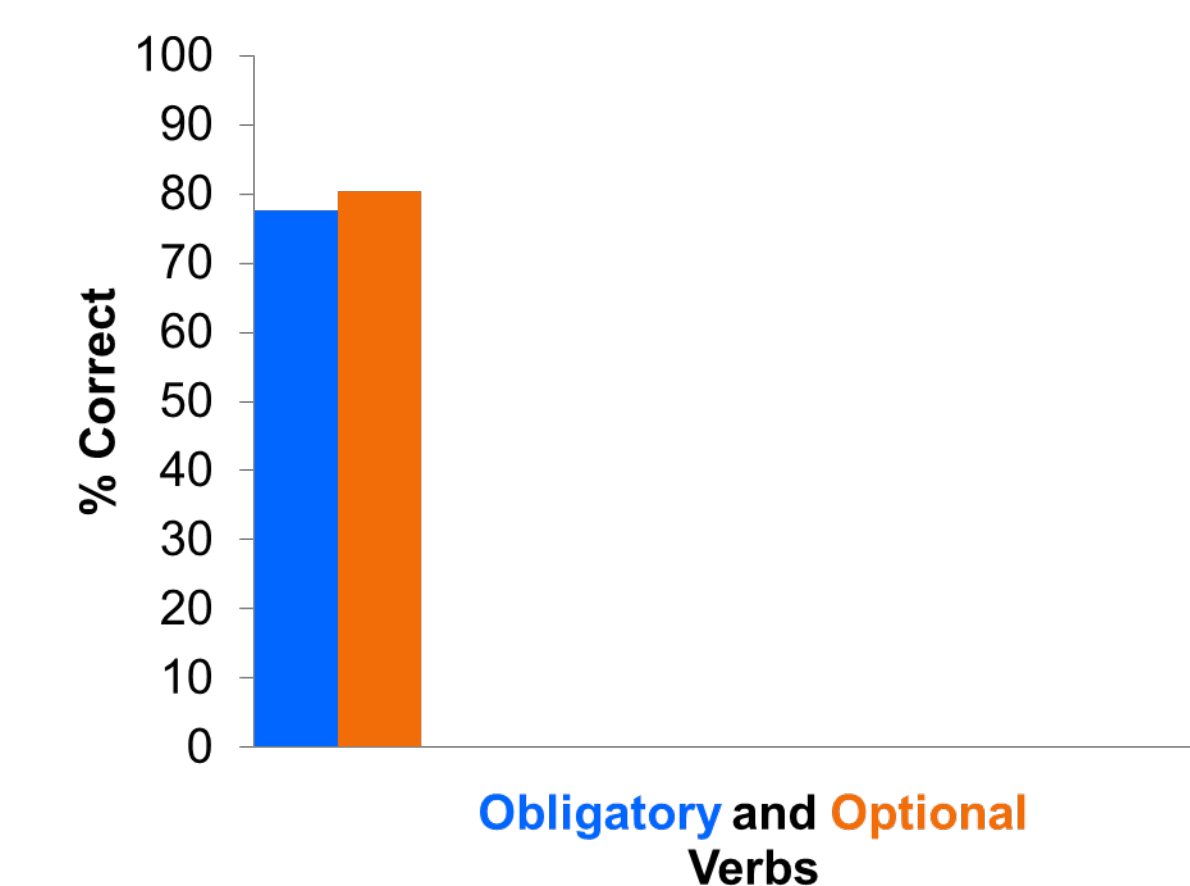
They were excluded if there was no demographics file (n = 9).

Procedure

Persons participating in the **AphasiaBank** project were administered a variety of standardized tests, including the Verb Naming Test (VNT). For the current study, we analyzed the results of the VNT. The VNT requires the person with aphasia to name 22 pictured verbs that vary in number of arguments and in whether they are **obligatory** or **optional**. Only the 2- and 3-argument verbs were included in the analysis (5 obligatory and 5 optional 2-argument verbs; 2 obligatory and 5 optional 3-argument verbs).

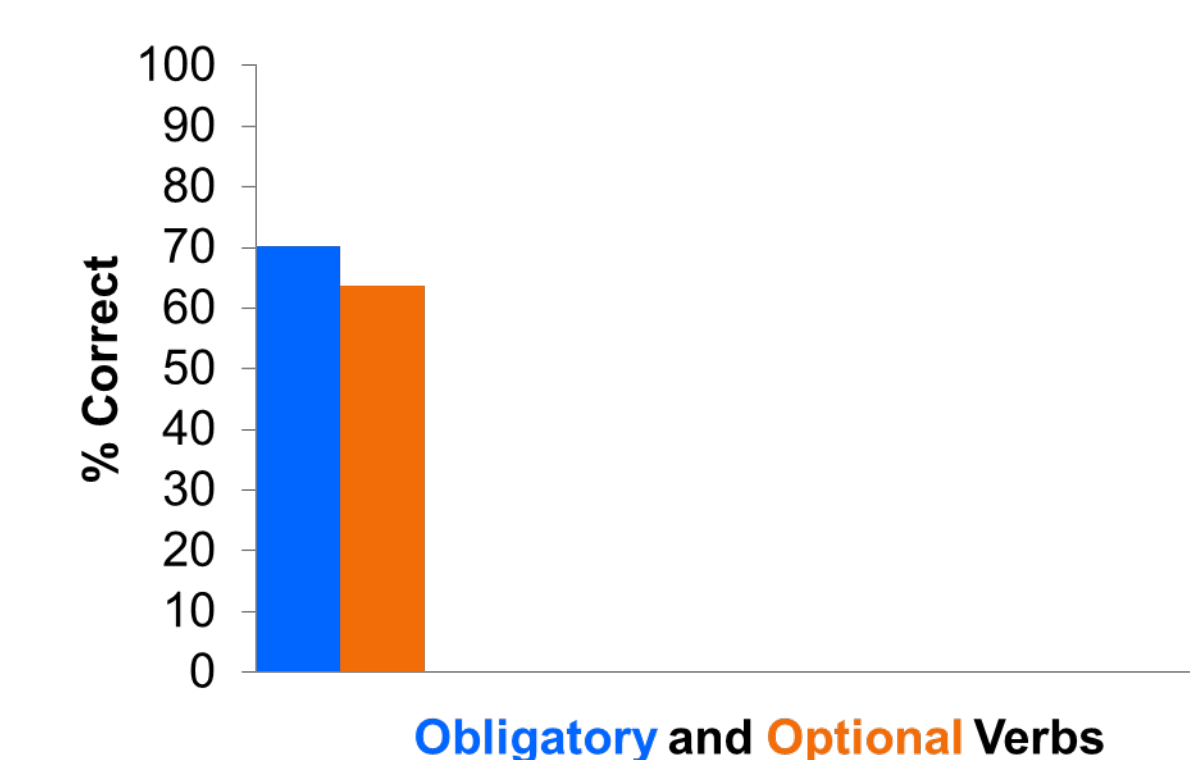
Results: All Subjects with Aphasia (n = 62)

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** v. **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

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