The Importance of Verbs in Diagnosing Aphasia

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August 27, 2021

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Introduction

In clinical practice, standardized tests are used to assess the presence of aphasia. Verbs often play a minor role in these tests. Their role in language, however, is essential and they are known to be more difficult to retrieve for people with aphasia (PWA) (Bastiaanse & Jonkers, 1998; Mätzig, Druks, Masterson, & Vigliocco, 2009). Therefore, milder forms of aphasia might be missed in the diagnostic process.

In the current study, we investigate whether a group of people with brain-damage, but no diagnosed aphasia (BDnoA) shows specific problems in verb retrieval and if so, whether similar psycholinguistic variables drive the performance as is the case in aphasia, e.g., age of acquisition (AoA) and imageability (Bastiaanse, Wieling, & Wolthuis, 2016).

Methods

Data were collected during the normative study for the VAST-app (de Kok, Wolthuis, & Bastiaanse, 2018) and consist of the outcomes of object naming (ON) and action naming (AN) tasks for non-brain-damaged speakers (NBD, n = 61), PWA (n = 48) and BDnoA (n = 12). Initial diagnoses were based on the Dutch version of the AAT (Graetz, De Bleser, & Willmes, 1992).

Results

A Kruskall-Wallis Anova revealed significant differences between the groups for ON, $H(2)$ = 53.5, $p < .001$. Bonferroni-corrected Dunn tests showed that PWA were less accurate than NBD ($p < .001$) and BDnoA ($p = .012$). BDnoA did not differ from NBD ($p = .387$), see Figure 1.

For AN, groups also differed (Kruskall-Wallis Anova, $H(2)$ = 58.8, $p < .001$). Bonferroni-corrected Dunn tests showed that PWA scored worse than NBD ($p < .001$) and tended to be less accurate than BDnoA ($p = .081$). BDnoA scored worse than NBD ($p = .047$).

[Figure 1 here]

A forward stepwise logistic regression investigating AN in the BDnoA group resulted in a model including predictors 'AoA' and 'imageability' but not 'frequency' or 'length', $\chi^2(2)$ = 21.31, $p < .001$. Both included predictors were significant, see Table 1.

[Table 1 here]

Conclusions

A group of people with brain-damage but no diagnosed aphasia was tested with object and action naming tasks. While results confirmed that they did not perform worse than NBD in ON, it turned out that their performance in AN is worse. The deficits in verb retrieval, albeit small, are clearly visible. Common diagnostic batteries, such as the AAT used in this study (Graetz, De Bleser, & Willmes, 1992), might miss these mild language deficits as verbs are not included or only play a minor role in the assessment.

The performance of the BD group was driven by age of acquisition and imageability, in line with findings of Bastiaanse, Wieling, and Wolthuis (2016) for PWA. It thus seems that the underlying deficit is comparable and that BDnoA present with a mild form of aphasia. With the current data we can, however, not exclude other, not language-specific causes for the verb retrieval deficit with certainty. Nonetheless, in order not to overlook mild cases, verb retrieval should play a more prominent role in the assessment process.

References

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A: Object Naming

B: Action Naming

	NBD	PWA	BDnoA
Mdn	100%	88%	98%
M	98.7%	82.0%	97.3%

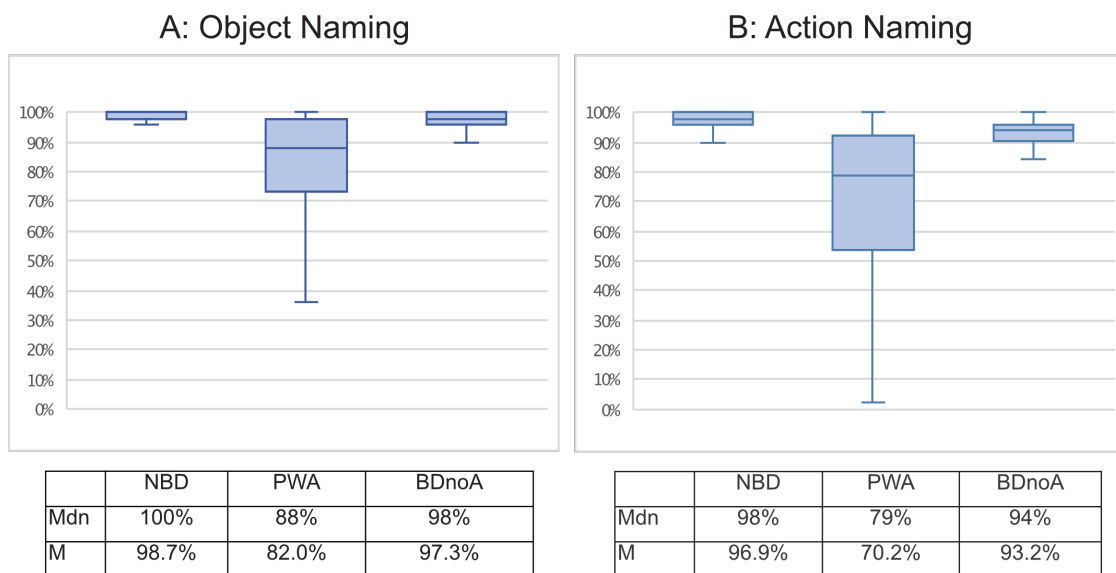|	NBD	PWA	BDnoA
Mdn	98%	79%	94%
M	96.9%	70.2%	93.2%

Figure 1. Results on the object naming (panel A) and action naming (panel B) tasks for non-brain-damaged speakers (NBD), people with aphasia (PWA) and people with brain-damage but no aphasia (BDnoA).

Table 1. Results of the forward stepwise binary logistic regression

	B (SE)	Wald χ^2 (df)	p	Odds Ratio
Age of Acquisition	-.57 (.26)	4.94 (1)	.026	.57
Imageability	-1.66 (.43)	15.32 (1)	< .001	.19
Constant	6.74 (1)	45.63 (1)	< .001	848.08