Primary progressive aphasia (PPA) is a degenerative disease affecting language while leaving other cognitive facilities relatively unscathed (Mesulam, Wieneke et al. 2012). There are three major variants of the disease, which affect language in characteristic ways. The agrammatic variant (PPA-G) is associated with grammatical impairments, the logopenic variant (PPA-L) with impaired word retrieval and sentence repetition, and the semantic variant (PPA-S) with deficient lexical-semantic knowledge.

With respect to different word categories, noun comprehension seems to be consistently impaired in the semantic and logopenic variants of PPA, but relatively preserved in the agrammatic variant. In contrast, verb comprehension may be relatively preserved in all three variants of PPA, though impairments have been observed for verbs in sentence contexts, particularly for the agrammatic and semantic variants, albeit inconsistently (for review, see Thompson and Mack, 2014).

Here we investigate the comprehension of verbs as single words and in sentence contexts, in the three major variants of primary progressive aphasia and in a comparison group of age-matched healthy controls.

Participants completed two tasks related to verb comprehension. First, they completed a verb/picture matching task in which they heard a verb that is either transitive (i.e., it needs a direct object; for example, the verb “wash” is incomplete with a direct object, e.g. “John washed the floor”) or intransitive (i.e., it does not have a direct object; for example, the verb “yawn” is complete by itself, e.g., “John yawned”) and selected a picture that matched the verb (out of an array of four pictures).

In the second task (sentence completion), participants heard a sentence fragment and selected a picture that could complete the sentence. In one experimental condition, the sentence fragments and pictures were semantically constrained such that only one choice was correct (e.g., the sentence fragment “Tomorrow Susan will open the …” was presented with pictures of a book, a trail, a needle, and a cake). In another condition, the sentence fragments and pictures were semantically unconstrained, such that all four choices were possible (e.g., the sentence fragment “Tomorrow Susan will find the …” with the same four pictures).

Preliminary results indicate that for the verb/picture matching task, the PPA-G and PPA-L groups were not significantly worse than the healthy controls at comprehension of either transitive or intransitive verbs. However, the PPA-S group showed significantly impaired comprehension both of transitive verbs and of
intransitive verbs. For the sentence completion task, none of the three PPA groups were less accurate than healthy controls in the semantically unrestricted condition. However the PPA-S group was significantly impaired at the semantically restricted condition relative to the healthy controls, whereas the PPA-G and PPA-L groups were not.

The results are consistent with relatively preserved verb comprehension in PPA-G and PPA-L, but do indicate specific verb comprehension deficits in the semantic variant of PPA. The findings from this study add to our growing body of knowledge concerning the nature of the language deficits across the three variants of PPA, and may contribute to improved diagnostic tests and treatment interventions.

References


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