2014-05-13

Inter- and Intra-Individual Variability in Non-Linguistic Attention in Aphasia

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http://hdl.handle.net/2144/8479

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**INTRODUCTION**

Attention is a prerequisite to other cognitive skills and processes. A number of studies have identified impairments in one or more types of attention processing in persons with aphasia (PWA) relative to healthy controls; variability among PWA has also been noted (e.g., Tseng, McNeil, & Milenkovic, 1993; Hunting-Pompon, Randall, & Moore, 2011; Murray, 2012). Many studies on attention in aphasia have used linguistic tasks and have found PWA as a group to have poorer attention than controls on these tasks (e.g., Murray, 2000; Hula, McNeil, & Sun, 2012). Several studies have used purely non-linguistic tasks and have also found PWA as a group to have poorer attention and/or attention allocation than controls (Robin & Rizzo, 1989; Erickson, Goldberg, & Lapointe, 1996). It has also been suggested that an impairment in attention allocation may underlie or influence language impairment in aphasia (McNeil, Odell, & Tseng, 1995; Hula & McNeil, 2008).

The present study looks systematically at five types of non-linguistic attention in aphasia.

**PARTICIPANTS**

- 18 individuals with chronic aphasia from a unilateral stroke (M, mean age = 63.4, SD = 7.5)
- 5 age-matched controls (M, mean age = 65.3, SD = 5.9)

**METHODS**

**Experimental Task**

- Five conditions, each assessing a different type of non-linguistic attention.
- Participants were instructed to press a key to indicate whether the target was on the left, on the right, or absent. For Condition 5, the target was left/right congruency between the two stimuli.

**RESULTS**

- Table: High PWA COVs > low control COVs. Differences between conditions were also significant.

**CONCLUSIONS**

- On a non-linguistic attention task, increased task complexity elicits slower response times for both PWA and age-matched controls.
- Increased task complexity also elicits a higher degree of between-session intra-individual variability for PWA (but not for controls).
- This suggests that PWA may have difficulty maintaining consistent attention levels from day to day, particularly in situations that require more complex types of attention (e.g., when asked to attend to auditory information while visual information is also present), a finding which could have implications for prognosis in therapy.
- Additionally, PWA were found to exhibit a higher degree of between-session intra-individual variability than controls overall.
- Within the PWA group, several different patterns of intra-individual variability were found, suggesting that individual variability within this group. One sub-group was characterized by high variability on both selective auditory and auditory/visual/integrational attention, another sub-group characterized by high variability on selective visual attention, and a third sub-group exhibited generally lower variability.
- This is the first demonstration of between-session intra-individual variability in a purely non-linguistic task.
- Future studies should directly investigate the link between intra-individual variability in non-linguistic attention and treatment outcomes.

**SELECTED REFERENCES**

- Erickson, K. L., Gandolfo, T. D., & Glutting, J. L. (1992). Auditory attention in aphasic individuals: Variability within fetters, suggesting inter-individual variability within this group. One sub-group was characterized by high variability on both selective auditory and auditory/visual/integrational attention, another sub-group characterized by high variability on selective visual attention, and a third sub-group exhibited generally lower variability.
- This is the first demonstration of between-session intra-individual variability in a purely non-linguistic task.
- Future studies should directly investigate the link between intra-individual variability in non-linguistic attention and treatment outcomes.

**ATTENTION**

- Underlying non-linguistic attentional impairment
- Linguistic task performance
- Difficulty paying attention in a variety of situations

**OBJECTIVES**

- **RESEARCH QUESTION 1:** How does task complexity/difficulty on a non-linguistic attention task impact reaction time in PWA and in age-matched control participants?
- **RESEARCH QUESTION 2:** How does task complexity/difficulty on a non-linguistic attention task impact between-session intra-individual variability (BS-IV) in reaction time in PWA and in age-matched control participants?
- **RESEARCH QUESTION 3:** What kinds of inter-individual variability in BS-IV are present within the PWA group?