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

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**INTRODUCTION**

Attention is a prerequisite to other cognitive skills and processes.

- A number of studies have identified impairment 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-Pompton, 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, & Seng, 2004).

- 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, Goldinger, & Laphonte, 1996).

- It has also been suggested that an impairment in attention allocation may underlie or influence language impairment in aphasia (McNeil, Odell, & Tseng, 1991; Hula & McNeil, 2008).

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

**METHODS**

- Five conditions, each assessing a different type of non-linguistic attention. Participant was 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 L/R congruency between the two stimuli.

**RESULTS**

- Condition 1: visual attention
  - Condition 2: auditory attention
  - Condition 3: auditory-visual integration attention

**DATA ANALYSIS**

- Post hoc analyses for the PWA group revealed:
  - A complexity effect: Condition 3 > Condition 1; Condition 4 > Condition 2 ($p < .05$).
  - A modality effect: Condition 4 > Condition 3; Condition 2 > Condition 1 ($p < .01$).
  - Condition 5 vs. Condition 4: no significant difference.

**探讨问题3**：跨个体的差异在PWA之间是否存在？

**Hypothesis**

- 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 presented), 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; some individuals exhibit low intra-individual variability while this group. One subgroup was characterized by high variability on both selective auditory and auditory/visual/intentional attention, another subgroup was characterized by high variability on selective visual attention, and a third subgroup 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, R. J., Cappeliez, P., & Schumaker, D. L. (1983). Auditory neglect in aphasic individuals: variability within sentence, suggesting inter-individual variability in this group. The effect of the auditory condition on COV was then analyzed separately for each group.

- Conclusions:
  - On a non-linguistic attention task, increased task complexity elicits slower response times for both PWA and age-matched controls.

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