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

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**RESEARCH QUESTION 1:** How does task complexity/difficulty on a non-language attention task impact reaction time in PWA and in age-matched control participants?

**RESEARCH QUESTION 2:** How does task complexity/difficulty on a non-language 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?

**OBJECTIVES**

- To determine the effect of task complexity/difficulty on reaction time in PWA and in age-matched control participants.
- To assess the variability in reaction time within and between sessions for PWA and control participants.
- To identify the types of inter-individual variability in BS-IV that are present within the PWA group.

**METHODS**

- **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).
- **Experimental Task:** 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 J/R congruency between the two stimuli.

**RESULTS**

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

**CONCLUSIONS**

- On a non-linguistic attention task, increased task complexity elicits slower response times for both PWA and age-matched control.
- 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, with some individuals exhibiting greater variability than others. This group. One sub-group was characterized by high variability on both selective auditory and auditory/visual/intentional attention, another sub-group was characterized by high variability on selective visual attention, and a third sub-group exhibited generally lower variability.
- This suggests 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., Goldstein, G. S., & Nutini, J. L. (1998). Auditory vigilance in aphasic participants: Variability among groups, suggesting intact individual variability within this group. The effect of condition on COV was then analyzed separately for each group:

**DATA ANALYSIS**

- Post-hoc analyses for the control group consistently revealed:
  - A complexity effect: Condition 3 > Conditions 2 and 1 (p < .01).

**RESULTS**

- Tukey post-hoc analyses for the PWA group revealed:
  - A complexity effect: Condition 4 > Condition 1 (p < .01).
  - Condition 5 vs. Condition 4: no significant difference.

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