Auditory Selective Attention Deficits In Mild-Moderate Aphasia: Relation To Formally-Tested And Self-Reported Auditory Comprehension Impairments

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INTRODUCTION

People with aphasia (PWA) often have concomitant deficits in attention.1 It has even been suggested that aphasic language deficits are rooted in impairments of attention, which could account for the variability seen both within and across PWA.2 Attention deficits in PWA are generally shown to be contingent on task complexity, with higher-order types of attention more frequently impaired. Comparing controls to a sample of PWA with a range of severities, Villard & Kiran3 documented increased intra-individual variability across testing sessions in complex attention tasks. They noted that the amount of intra-individual variability showed a substantial range across PWA, and suggested this factor might play a role in responsiveness to treatment. The present study addressed the relationship between attention and auditory comprehension (AC) in a sample of PWA with mild to moderate comprehension difficulties.

We address the following research questions:
1. Is auditory selective attention impaired in PWA with mild to moderate AC impairment when compared to controls?
2. Are there differences between PWA and controls in the amount of intra-individual variability in auditory selective attention?
3. In PWA, how are auditory selective attention, formally tested AC, and self-reports of AC related?

METHODS

Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>PWA (n=7)</th>
<th>Control (n=6)</th>
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</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Age (years)</td>
<td>Mean (SD)</td>
<td>Median</td>
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<tr>
<td>Education</td>
<td>Mean (SD)</td>
<td>Median</td>
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Inclusion Criteria

- Time post-onset ≥ 6 months
- Self-reported functional AC impairment, measured by a Functional AC Questionnaire (FAQC)
- Limited formal AC impairment (Boston Diagnostic Aphasia Examination BDAE-3 Basic Word Discrimination, Commands, and Complex Ideational Material subtests averaging ≥ 60th percentile)

Exclusion Criteria:

- No signs of dementia as determined using the Mini-Cog screening tool
- PWA and controls passed hearing and vision screenings.

Procedure

Each participant completed pre-assessment tasks & 4 repeated assessment sessions.

Intra-individual variability

- Pre-assessment
- Test of Everyday Attention (TEA)4,5 a norm-referenced test of various types of attention
- Selective attention: TEA Elevator Counting with Distraction (ECD)

Data Analysis

Between-group differences on measures of attention

Comparing raw scores of the TEA subtests at initial administration, PWA had significantly lower scores than controls on 4 of the 7 subtests: ECD (p=.04), Visual Elevator 1 & 2 (p=.04 and p=.02, respectively), and Telephone Search (p=.01). Differences in Telephone Search while Counting approached significance (p=.07).

RESULTS

Repeated assessment

- Sustained attention: TEA Elevator Counting (EC)
- Selective attention: TEA Elevator Counting with Distraction (ECD)

Intra-individual variability

- Individual ECD Scores Over Time – PWA
- Individual ECD Scores Over Time – Controls

Correlation between ECD and FACQ-Basic Scores

**=Significance at the 0.05 level (1-tailed); ***=Significance at the 0.001 level (1-tailed)

Spearman Rank Correlations Between Selective Attention and AC for PWA

**=Significance at the 0.01 level (1-tailed); ***=Significance at the 0.001 level (1-tailed)

**DISCUSSION

PWA with mild-moderate AC deficits appear to have worse attention skills overall when compared with age- and education-matched controls, and have greater intra-individual variability during selective attention but not sustained attention tasks. Selective attention had the strongest correlation with self-reports from PWA of their basic functional AC as well as with AC tasks that place higher demands on syntax and working memory.

These findings suggest that for some PWA with mild-moderate AC deficits, impaired selective attention may be perceived as, or exacerbate, underlying AC deficits. This study supports the clinical practice of comprehensive assessments of cognitive-linguistic skills in PWA and highlights the need for further research with larger sample sizes to describe attention skills in PWA as well as efficacy of targeting attention skills to improve communication skills in PWA.

References