Method

Participants

Data from 98 PWA retrieved from AphasiaBank. Criteria: (i) chronic aphasia (min = 6 months post onset); (ii) left hemisphere stroke; (iii) aided or unaided normal hearing acuity; (iv) corrected or uncorrected normal visual acuity; (v) English as their primary language; and, (vi) no reported history of psychiatric or neurodegenerative diagnosis.

Table 1

<table>
<thead>
<tr>
<th>Aphasia WAB-R Type and Severity</th>
<th>WAB-R Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anomic</td>
<td>33</td>
</tr>
<tr>
<td>Broca</td>
<td>22</td>
</tr>
<tr>
<td>Conduction</td>
<td>22</td>
</tr>
<tr>
<td>Wernicke</td>
<td>14</td>
</tr>
<tr>
<td>Global</td>
<td>4</td>
</tr>
<tr>
<td>Transcortical Motor</td>
<td>3</td>
</tr>
<tr>
<td>Duration (Yrs)</td>
<td>5.59 (6.23)</td>
</tr>
<tr>
<td>Mean WAB-R RQ</td>
<td>70.42 (77.03)</td>
</tr>
</tbody>
</table>

Note. SDs are shown in parentheses

Results

Confrontation Naming Test

Discourse Production

Procedures

Elicitation of Language Sample & Estimation of Discourse Based Indices

Stimuli. Three discourse tasks from the AphasiaBank Protocol were used:

(i) Free Speech, (ii) Picture Description, (iii) Cinderella Story

Discourse Level Indices. Content words were tagged in CLAN to indicate the different types of paraphasias:

- Paraphasias types included: semantic, formal/phonological, neologisms, and mixed.
- The number of words for each type of discourse was estimated and proportions of paraphasias in each type of discourse were calculated

Confrontation Naming Tests

All PWA were administered the Western Aphasia Battery-Revised4, the Short Form of the Boston Naming Test5, and the Verb Naming Test6

Statistical Analysis

Data were analyzed using structural equation modeling in Mplus 6.1. Factor scores formed based on confrontation naming tasks were used to predict the factor scores that were based on discourse production. The model was estimated using robust maximum likelihood to account for non-normality. Missing data (~2%) were accommodated using direct maximum likelihood.

Discussion

Main Findings & Implications

It is common in practice to refer to performance on CNTs to presume a patient’s performance in discourse. This study explored the validity of the assumption that CNTs are valid indicators of rates of paraphasias in discourse.

The relationship between the latent variables that determine performance in CNT’s and discourse production with respect to the proportion of paraphasias produced was statistically significant and moderately strong ($r = .48$).

While CNTs are informative about performance at the discourse level, there is a large proportion of unique variance.

These results do not support the common practice of reaching conclusions about rates of paraphasias in discourse based on performance on CNTs.

Standard path analytic procedures1 can provide estimates of the relationship between any two observed variables in the model.

E.g., the relationship between BNT and proportion of paraphasias in story telling is equal to the product ($\lambda_1 \cdot F^2 \cdot \lambda_2 + .90 \cdot .48 \cdot .87 = .37$). In practice, for clinicians and researchers who do not have access to large samples and techniques such as SEM and rely on observed scores for a single individual at a time, inferences may be even less justified because they do not have the resources to partial noise from the observed scores.

Professionals may gain additional information from assessing both the patient’s ability to retrieve single words by way of CNTs and also assessing discourse by way of a language sample.

Statistically significant, very strong loadings were observed in confrontation naming tests ($r = .90$ - .82) and discourse production ($r = .90$ - .87).

The magnitude of these results suggest that the observed indicators reflect the unitary underlying psychological constructs (i.e., single word retrieval).

Caveats & Future Directions

The analysis is restricted to paraphasias but excludes other instances of word finding difficulty at the discourse level (e.g., filled or unfilled hesitations, circumlocutions, comments, self corrections, deletions, overuse of indefinite terms; Mayer & Murray, 2003). Also, verbs and nouns are combined.

Employ a more detailed coding system for paraphasias.

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References


