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Revealing Subtle Cognitive-Linguistic Differences in Adults with Mild Traumatic Brain Injury Through Discourse Analysis

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Results

A one-way ANOVA was conducted to determine a difference of participant (TBI vs. non-TBI) on propositional density without fillers (PDWOF). The result showed a significant difference between TBI (M: .49, SD: .02) and control (M: .52, SD: .02), F(1,9) = 6.33, p = .03. This means that the control had a higher PDWOF than TBI group.

<table>
<thead>
<tr>
<th>Propositional Density</th>
<th>TBI Without Fillers</th>
<th>Control</th>
<th>m</th>
<th>SD</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDWOF</td>
<td>0.496</td>
<td>0.524</td>
<td>0.0215</td>
<td>0.03</td>
<td></td>
</tr>
</tbody>
</table>

To explore additional discourse variable, a one-way ANOVA was conducted. A Bonferroni adjustment of .006 was used to reduce type-1 error. The results showed no significant difference on propositional density with fillers, cohesion, coherence, TTR, and words before the main verb discourse variables.

- A second analysis was conducted to determine the correlation between cognitive, linguistic, and educational variables and discourse variables of both groups. A Kendall Tau correlation was conducted and results revealed a positive correlation between PDWOF and the STAI-1. However, due to limited cognitive overlap between the two tasks, results were determined to be spurious.

- Lastly, a one way AVONA was conducted to determine if there were differences on all discourse measures between the mild and severe TBI participants. Results indicated no significant differences between these two groups.

Discussion

Cognitive-Linguistic Differences Between TBI and Control

- Results indicated that PDWOF, a microlinguistic measure of semantic complexity, was significantly higher in the control group. This may contribute to a measure of less cognitive reserve in the mTBI population.

- Discourse which contains more propositionally complex sentences is found to be better organized, clear, and comprehensible to the listener.

- The TBI group seemed less skilled at applying the strategy of chunking of information compared to the control group. One explanation may be to due the disruption of specialized neural networks which sub-serve both linguistic and non-linguistic discourse functions, namely organizational and executive function abilities.

- Lack of differences for other discourse measures may be due to compensatory strategies developed by TBI group or limitations with text analysis software.

Severe and Mild TBI Differences

- There were no significant discourse differences between the mTBI and severe TBI group. This may be attributed to the heterogeneity of the TBI populations, compensatory strategies, and lack of medical records to determine if injuries could be differentiated by severity.

Conclusions

The findings of this study support the idea that discourse analysis may be a useful tool for determining subtle cognitive-communication deficits in the TBI population that common neuropsychological tests may not detect. Such information may be important clinically for validating persisting cognitive symptoms and guiding effective therapy goals. Linguistic disruptions may reveal cognitive impairments due to diffuse damage of the brain.

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References


