Cohesive Devices Analysis of Discourse Production between Individuals with Left Hemisphere Damage with Wernicke's Aphasia (IWA) and those with Right Hemisphere Damage (RHD)

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Introduction

- The discourse production of individuals with Right-Hemisphere Damage (RHD) has been relatively understudied compared to individuals with aphasia with Left-Hemisphere Damage (LHD) [1].
- However, it is crucial to consider the significant heterogeneity within aphasia population, where different types of aphasia display distinct patterns of discourse production patterns [2]. Therefore, comparisons between these two hemispheric damage groups require caution.
- Research on the discourse production of individuals with Wernicke's aphasia (IWA) has predominantly focused within the broader "aphasia" category, and the unique characteristics of discourse production specific to this type have not been thoroughly studied or compared to the RHD group.
- Previous studies have revealed that the RHD group often exhibit off-topic conversation, as well as irrelevant and redundant speech [3]. They also experience difficulties in integrating content and understanding the main points of stories [4].
- Interestingly, the IWA group also show off-topic and excessive irrelevant utterances in conversation [5], indicating sharing similar patterns in discourse production. However, there is a lack of literature comparing discourse production, specifically for cohesive devices, between the RHD and IWA groups.
- Thus, the current study aims to address the gap by examining the cohesive devices in these two groups: Right Hemisphere Damage and Wernicke's Aphasia Groups

Method

- **Discourse Data Collection:** The discourse data in this study were obtained from the AphasiaBank database on the TalkBank System [6]. The Cinderella discourse task was administered to each participant.
- ***Participants:*** The current study analyzed the data obtained from two groups of participants: 1) Twenty-three individuals with Right-Hemisphere Damage (RHD), and 2) 23 individuals with Wernicke's aphasia (IWA) (For the Descriptive Information, see Table1).

Method

- **Cohesion Data Coding and Statistical Data Analyses:** In this study, the analysis of the discourse data was based on general rules and coding structures from previous studies [2,7]. Following six types of cohesive devices were manually coded and analyzed:
  1. Grammatical devices: reference, substitution, and ellipsis
  2. Lexical devices: reiteration and collocation
  3. Conjunction
- The number of cohesive markers for each type of device was computed and compared between the RHD and IWA groups.
- Twenty percent of the coding was tested for a good reliability using the inter-rater correlation coefficient (ICC).
- The number of cohesive markers were compared between the RHD and IWA groups using the Multivariate Analysis of Variance (MANOVA).

Results

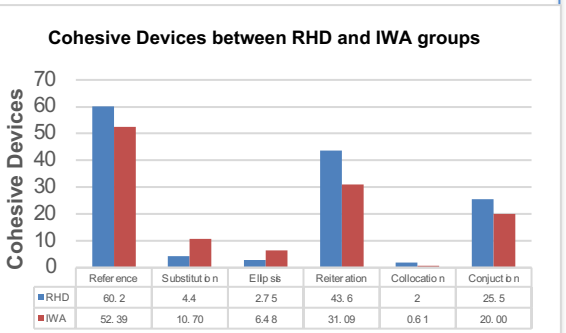
- There were statistically significant differences in the use of the cohesive markers in two groups, $F(6,36)=8.173$, $p<0.001$, Wilk's A =.423.
  - The Bonferroni Post hoc test revealed that the IWA group (M=10.7) was significantly higher than the RHD group (M=5.65, SE=2.23) in the mean substitution scores.
  - The IWA group (M=.61) was significantly lower in the mean scores for collocation than the RHD group (M=2.6, SE=.55).
  - No significant differences were found in other cohesive devices between the two groups (see Figure 1).

Table 1. Participants' Descriptive Information

Group	RHD	IWA
Age	M=57.98 (SD=14.11)	M=66.23 (SD=10.42)
Education	M=18.45 (SD=4.31)	M=15.62 (SD=2.48)
AQ		M=54.84 (SD=13.5)

Results

Figure 1. Cohesive Devices Between RHD and Wernicke's Aphasia Groups



Discussion and Conclusion

- The IWA group used more substitution markers and fewer collocation markers compared to the RHD group.
- These two aspects may indicate the distinctive features of aphasia in comparison to RHD.
- IWA group: less collocation ➔ weak association of lexical items
- IWA group: more substitution ➔ presence of aphasia
  - A high frequency of substitutions may signify improved efficiency and cohesion in spoken discourse among individuals without aphasia (controls).
  - However, in IWA, this could indicate reduced efficiency and a lack of cohesion.

References

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