



# Global Coherence of Story Narratives in Right Hemisphere Brain Damage (RHD)

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## Purpose:

- To examine discourse in participants with RHD as compared to healthy controls via:
  - Assessment of **global coherence**.
  - Main concept analyses (MCA)**.

## Literature Review

- Individuals with right hemisphere brain damage (RHD) often:
  - exhibit cognitive-communication deficits,<sup>1</sup> including impairments in discourse.<sup>2</sup>
  - have difficulty maintaining vocational or avocational pursuits, or have disrupted social relationships.<sup>1</sup>
- Many speech-language pathologists have been unable to reliably rate discourse of people with RHD.<sup>3</sup>
- Global coherence of discourse is the degree to which specific utterances relate to the main topic.<sup>4</sup>
- Main concept analysis measures a speaker's ability to provide the essential elements of a story. At least 33% of healthy controls produced 34 specific main concepts for Cinderella.<sup>5</sup>



## Methods

- Discourse elicitation:**
  - Language samples were elicited from participants as part of the RHDBank project (<http://rhd.talkbank.org/>).
  - "Cinderella" story samples were obtained using an illustrated story book with the narrative hidden. The book was then removed and participants were asked to tell the story.
  - Language samples were transcribed using the Codes for the Human Analysis of Transcripts (CHAT) format.<sup>6</sup>
  - Computerized Language Analysis (CLAN)<sup>7</sup> programs were used to analyze the samples.
- Global coherence:**
  - Two raters independently rated each utterance with a G-code (Table 1) using the 4-Point Global Coherence Rating Scale.<sup>4</sup>
  - Examiners' scores were compared and discrepancies were resolved through discussion and consensus.
  - Inter- and Intra-rater reliability were calculated.
- Main concept analysis:**
  - Samples were compared to the main concept (MC) list from Richardson & Dalton.<sup>6</sup>
  - Transcripts were scored using the following formula (see Table 2)<sup>6</sup>:  $MC = (3 \times AC) + (2 \times AI) + (2 \times IC) + (1 \times II) + (0 \times AB)$

G Code	Definition
G1	Entirely unrelated to the stimulus or contained tangential information.
G2	Remotely related to the stimulus and may include egocentric or tangential information.
G3	Related to the stimulus but not essential.
G4	Contained main details and were overtly related to the stimulus

MC Code	Definition
AC	Accurate, complete
AI	Accurate, incomplete
IC	Inaccurate, complete
II	Inaccurate, incomplete
AB	Absent

## Results

	RHD (n= 13)	Control (n= 5)	p-value
Age Range (Mean)	31.1-81.7 (61.6)	44.1-64.2 (53.5)	0.15
Sex	4 F, 9 M	4 F, 1 M	0.06
Education Range (Mean)	13-24 (18.1)	14-21 (17.0)	0.47
Handedness	12 right	5 right	0.52
CLQT EF Domain Score Range (Mean)	8-35 (23.9)	NA	NA

	G1	G2	G3	G4	Row Totals
RHD	63 (53.97) [1.51]	25 (23.43) [0.10]	118 (115.74) [0.04]	323 (335.86) [0.49]	529
Control	13 (22.03) [3.70]	8 (0.57) [0.26]	45 (47.29) [0.11]	150 (137.14) [1.21]	216
<b>X<sup>2</sup> statistic = 7.43, p=0.059</b>					

Inter-rater reliability = 82.67%  
 Intra-rater reliability = 84.99%

	RHD	Control
Range	10-80	39-82
Mean (SD)	43.4 (21.0)	54.8 (19.2)
<b>Independent samples t-test, p=0.30</b>		

	CLQT-EF Score	MC Score	%g4	%g3+g4
CLQT-EF Score	-	<b>.767*</b>	<b>.781*</b>	<b>.820*</b>
MC Score		-	<b>.760*</b>	<b>.637*</b>
%g4			-	<b>.711*</b>
%g3+g4				-

Note: \*p ≤ 0.006

## Discussion, Limitations, Future Directions

- Global coherence trended toward significant difference between RHD participants and healthy controls. MCA showed no significant difference.**
- Global coherence and number of MCs used highly correlated with CLQT-EF score.**
- Small, highly variable sample may have limited ability to detect significant differences between groups.
- Highly educated sample.
- Inter-rater reliability for global coherence was challenging to achieve. Coding schema was continuously refined.
- Small samples of RHD and control ppts. limited analyses.
- Recruit and assess additional participants with RHD and healthy controls to increase statistical power.
- Analyze other forms of discourse in RHDBank (e.g., procedural discourse, conversation).
- Long-term goals:
  - Use discourse measures to assess treatment efficacy in RHD.
  - Examine discourse in RHD in relation to size and site of lesion.

### References

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