

# **Cognition and Discourse Production in Right Hemisphere Disorder**

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# Introduction

- RHD Discourse Deficits
  - Tangential/verbose
  - Inappropriate humor or demeanor
  - Poor or absent inferencing
  - Deficient in linguistic and pragmatic content
  - Above the sentence level of production/comprehension (intersentential)

(Bloom, 1994; Brownell & Martino, 1998, Tompkins, 1995)

# Cognition and Discourse

- Cognitive Processing Deficits in RHD

- Visuospatial skills
- Attention
- Executive function
- Inferencing
- Orientation

(Cherney & Halper, 1996; Tompkins, 1995)

- Cognitive Element Needed for Discourse?\*

- Task dependent
- Yes
- Yes
- Yes
- Yes

(\*non-empirical materials)

(Cherney & Halper, 1996; Halper, Cherney & Miller, 1991; Myers, 1999; Tompkins, 1995)

# Current Study

- Question 1

- Will differences exist between an RHD group and a control group on cognitive performance, and narrative or procedural discourse production?

- Question 2

- Will relationships exist between cognitive profiles and the two discourse production tasks?

# Participant Characteristics

matched by age, gender, education, and race

- RHD Group Means

- Education: 13.8 years
- Age: 62 years
- Time Post Onset: 74.9 months

2 Males and Five  
Females with RHD

- Control Group Means

- Education: 13.9 years
- Age: 61.6 years

2 Males and Five  
Females with no  
Neurological Impairment

# Cognitive Assessment

- Cognitive Linguistic Quick Test (CLQT; Helm-Estabrooks, 2001)
- Ten tasks contributing to five cognitive domains
  - Attention
  - Memory
  - Executive Function
  - Language
  - Visuospatial Skills
- Clock Generation Subtest scored independently
- Composite Score obtained as well as domain total scores

# Discourse Elicitation Tasks

- Narrative

- Children's illustrated book of Cinderella, words covered with paper, tell story

- Procedure

- Explain two tasks to unfamiliar listener
  - How do you make a peanut butter and jelly sandwich?
  - How do you change a light bulb?

(Ulatowska et al., 1983)

# Discourse Analysis Procedures

- Microstructure
- Both narrative and procedural
  - Content Information Units
    - Total CIU
    - Percent CIU
    - CIU per minute

(Nicholas & Brookshire, 1993)

- Macrostructure
- Narrative
  - Main concepts
    - Absent
    - Incomplete
    - Accurate/incomplete
    - Accurate/complete

(Nicholas & Brookshire, 1993)
- Procedure
  - Essential steps
  - Total steps

(Ulatowska et al., 1983)

# Results

Question #1: Differences between the groups on cognitive measures

- There were no significant differences between the two groups on the CLQT (Helm-Estabrooks, 2001) .

# Results

## Question #1: Differences between groups on discourse

- Narrative
  - Significant group differences in
    - Percentage of CIU ( $t = -2.798, p < .05$ )
    - CIU/minute ( $t = -2.513, p < .05$ )
    - Absent main concepts ( $t = 3.332, p < .05$ )
    - Total main concept points ( $t = -2.889, p < .05$ )
- Procedural
  - No significant group differences

# Results (RHD)

Relationships between cognitive domains and discourse

- CLQT Cognitive Domain

- Clock Generation



- Clock Generation



- Narrative Measures (Microstructural)

- Total words (.813\*)

- CIU (.813\*)

(CIU=content information units)

- (Macrostructural)

- AC main concepts (.891\*)

- Total MC points (.826\*)

(\* =  $p < .05$ )

AC=accurate/complete main concepts

MC=main concept

# Results (RHD)

## Macrostructural narrative continued

- CLQT Domain

- Attention

- Visuospatial

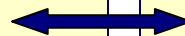
- Narrative Measures

- AC concepts (.823\*)

- AI concepts (-.821\*)

- Total MC points  
(.830\*)

- AC concepts (.881\*)



# Results (RHD)

## Procedural discourse and cognition

- CLQT Domain

- Memory

- Common correlations of the two tasks

- Light Bulb Task

- Total words (.887\*\*)

- CIU (.933\*\*)

- Peanut Butter Sandwich

- Total words (.950\*\*)

- CIU (.868\*)

- (\*= p < .05) (\*\*= p < .01)

# Discussion

- No significant differences between groups on cognitive measure
  - There was a small subject sample
  - The CLQT may have been insensitive to differences between the two groups
  - Perhaps a more acute population would have yielded different results

# Discussion

- Narrative differences between groups
  - Consistent with literature
    - RHD are less efficient, more verbose and tangential, divulge less information, and produce fewer main concepts than controls
  - The visual stimulus (book) may have been a factor in poor RHD performance
- Procedure differences between groups
  - Consistent with literature
    - RHD produce number of essential and total steps similar to controls, less informative and efficient

# Discussion

- The clock generation task and attention domain were related to several narrative and procedural discourse measures.
  - Are these cognitive-communication relationships a reflection of the symptoms of RHD, or
  - Are there other reasons that these two cognitive areas may be related to discourse production?

# Conclusion

- Cognitive deficits may become less obvious with time post onset, but discourse deficits remain. Therefore, discourse should be a high priority in treatment.
- The use of narratives in assessment may be more beneficial in revealing discourse disruptions in RHD than use of procedure production.