



Connection Between Specific Pragmatic Domains and Specific Executive Functions

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Introduction

- Pragmatic communication = social use of communication in context¹
 - Domains: *Quantity, Quality, Relation, Manner*²
- Executive functions = ability to regulate thoughts and behaviors³
 - Subcomponents: *Inhibition, Shifting, Working Memory*³
- Pragmatic communication deficits relate to executive dysfunction in people with TBI
- Current research looks at this relationship generally – limited research accounts for subcomponents of each
 - Participants with TBI demonstrated chronic conversational difficulties in pragmatic domains of quantity, relation, and manner relative to healthy controls⁴
 - All three pragmatic domains were strongly correlated with executive function subcomponents of inhibition and working memory⁴

Research Question & Hypotheses

Will deficits in specific pragmatic domains relate to deficits in specific executive function subcomponents in three adults with TBI?

- Quantity will be most related to inhibition.
- Quality will be most related to shifting.
- Relation will be related to inhibition, shifting, & working memory.
- Manner will be related to inhibition, shifting, & working memory.

Methods

Participants

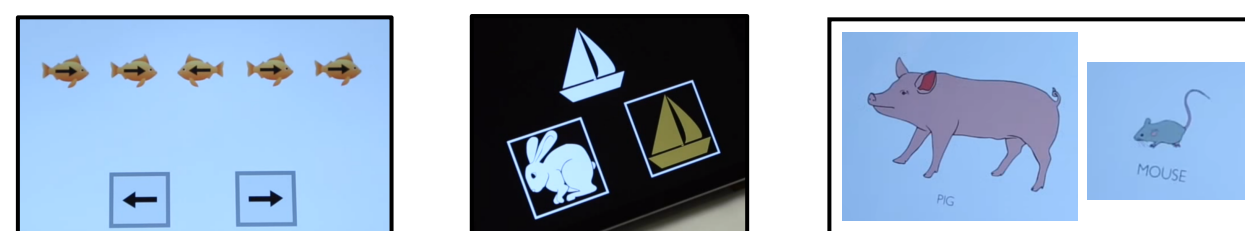
Subject	1	2	3
Sex	Male	Male	Female
Race	Caucasian	Caucasian	Caucasian
Age	49	36	45
Communication Mode	Verbal	Verbal	Augmentative Communication Device
Time Post Onset	Not Reported	12 Years	21 Years

Procedure

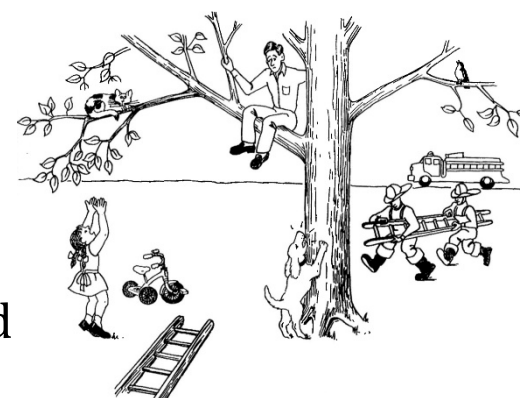
- Standardized/informal assessments and questionnaires administered across 1-2 sessions in the Communication Sciences and Disorders Research Lab

Measures

- Pragmatic Protocol (PP)**⁵: examiner-coded rating system where 30 behavioral parameters are labeled appropriate, inappropriate, or not able to be observed based on conversational and narrative samples (i.e., Cat Rescue Narrative)⁶
- La Trobe Communication Questionnaire (LCQ)**⁷: self-report questionnaire rating how often a given communication behavior occurs (i.e., "When talking to others [how often] do you answer without taking time to think about what the other person has said?")
- NIH Toolbox Cognition Battery (NIHTB-CB)**⁸: standardized measure of executive functions delivered on a tablet that targets specific executive functions:
 - Inhibition: Flanker Inhibitory Control and Attention Test
 - Shifting: Dimensional Change Card Sort Test
 - Working Memory: List Sorting Working Memory Test



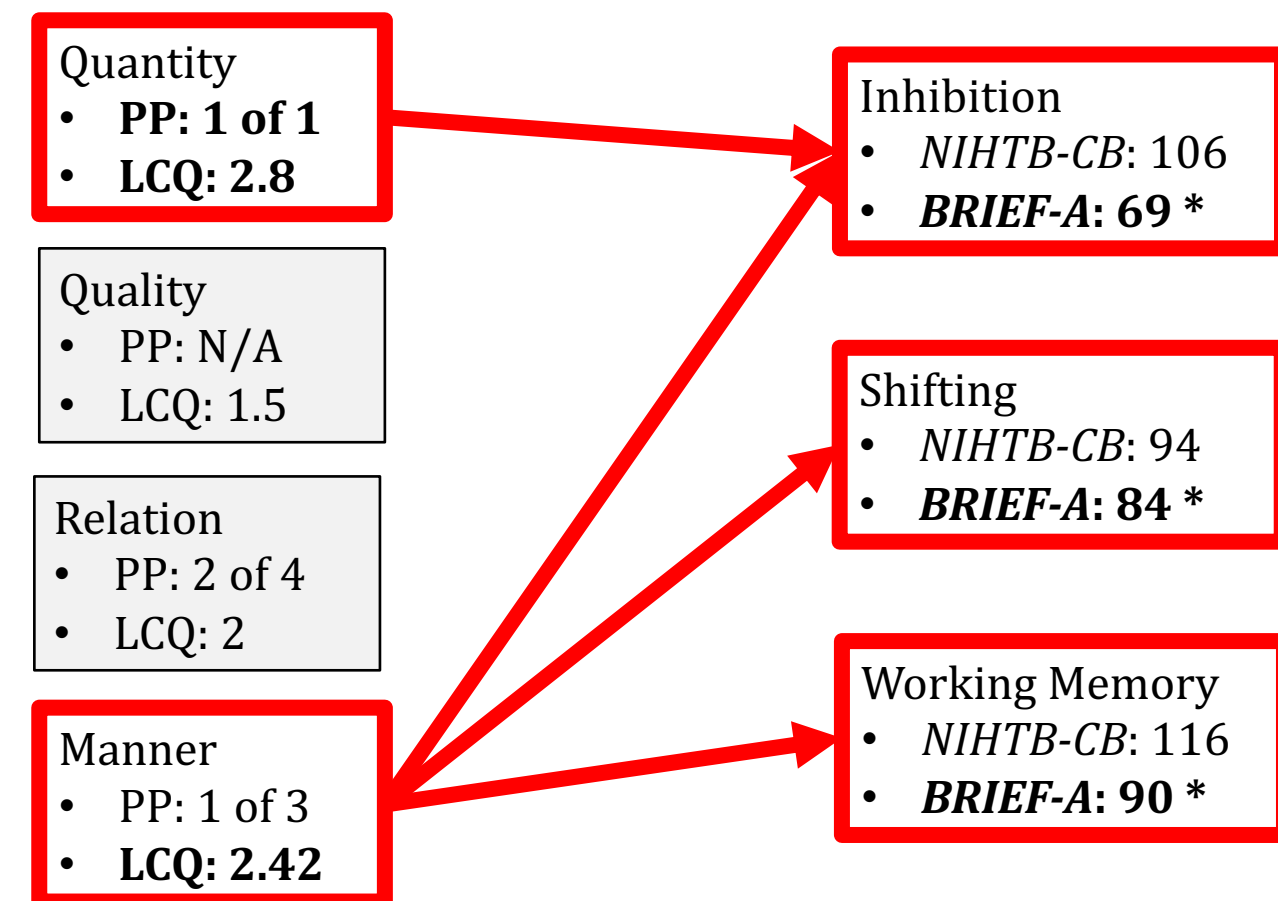
- Behavior Rating Inventory of Executive Functions for Adults (BRIEF-A)**⁹: self-report questionnaire that measures executive functions on a 75-item scale that yields 9 scaled scores, including: Inhibition, Shifting, and Working Memory



Results

Subject 1

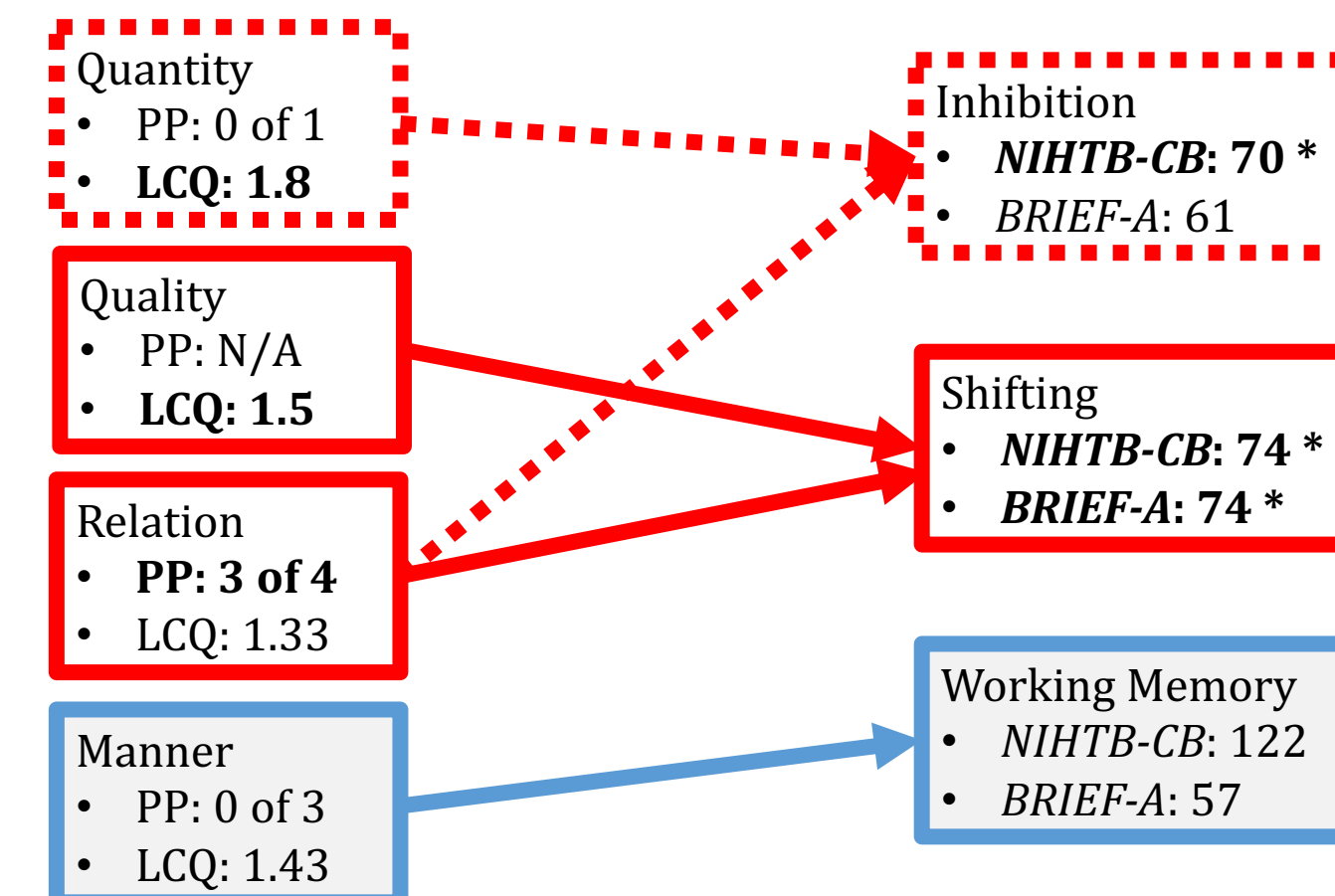
- Had trouble with turn taking and the flow of discourse unless it directly pertained to him
- Repeatedly referred to himself as "broken" and would stop himself to point out his difficulties
- Demonstrated inconsistencies across self-report and examiner-scored measures (i.e., inhibition)
- Seemed hyperaware of deficits; may explain poorer self-report scores



- Quantity seemed to be connected with inhibition
- Relation seemed to be connected with inhibition, shifting, and manner
- Manner seemed to be connected with inhibition, shifting, and working memory

Subject 2

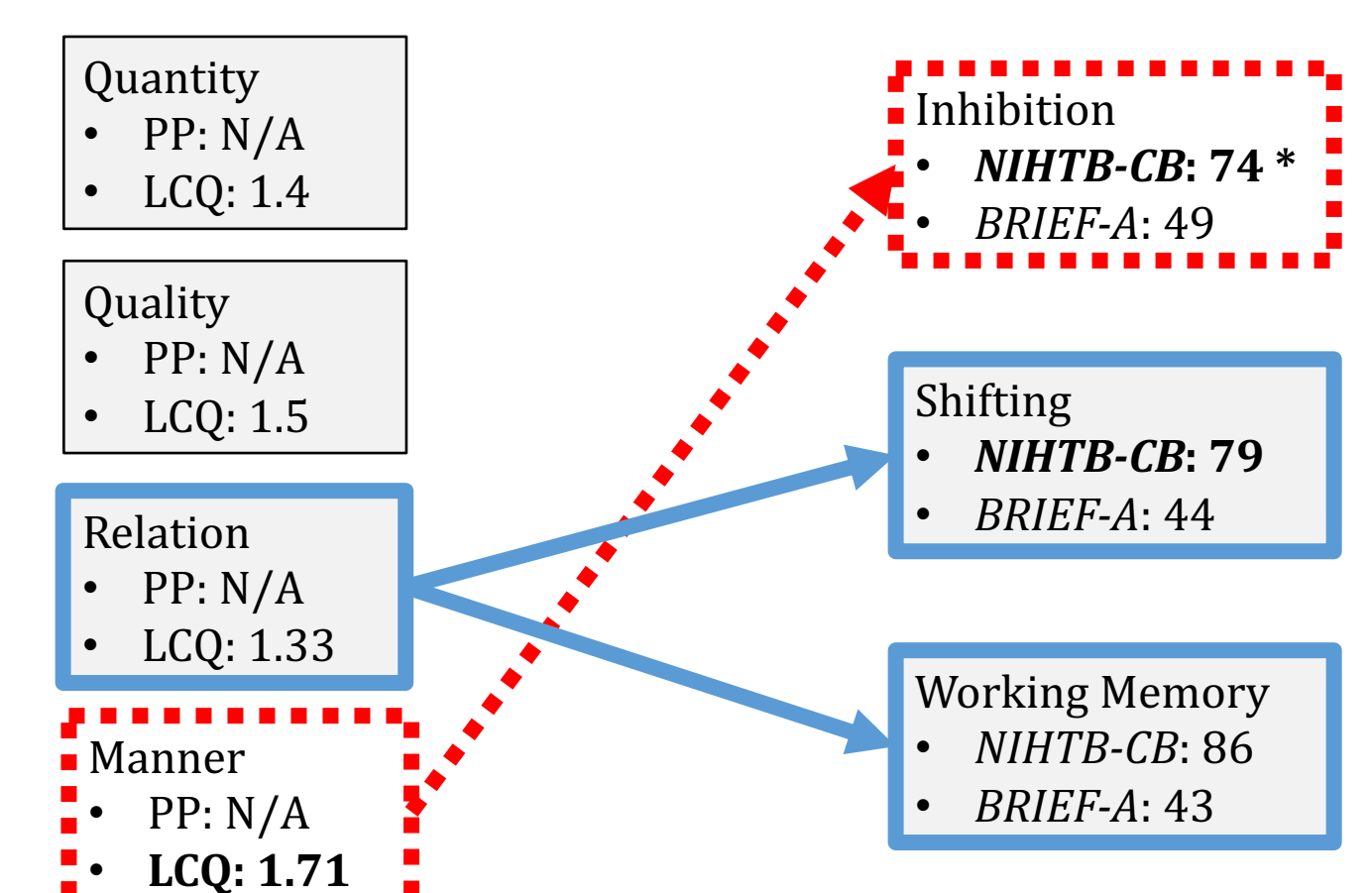
- Had trouble with turn taking, abruptly changing the topic in discourse, and using inappropriate language in a professional and clinical environment
- Scored clinically significant on shifting on both the NIHTB-CB and the BRIEF-A
- Demonstrated inconsistencies across self-report and examiner-scored measures (i.e., quantity, inhibition)



- Quantity might be connected with inhibition (unclear)
- Quality seemed to be connected with shifting
- Relation (PP) seemed to be connected with inhibition (unclear) & shifting (NIHTB-CB), not working memory
- Manner seemed to be connected with working memory

Subject 3

- Did not have conversational/narrative samples due to augmentative communication → did not have PP data, making it difficult to determine if self-reports were an accurate representation of pragmatic communication abilities



- Relation seemed to be connected with working memory and possibly shifting (BRIEF-A), not inhibition
- Manner might be connected with inhibition (NIHTB-CB) (unclear), not shifting or working memory

Conclusions

Based on the three case studies, preliminary data suggests:

- Quantity seemed to be connected to inhibition in at least one case (possibly two)
- Quality seemed to be connected to shifting in at least one case
- Relation seemed to be connected to:
 - Inhibition in at least one case (possibly all three)
 - Shifting in at least two cases (possibly all three)
 - Working memory in two cases
- Manner seemed to be connected to:
 - Inhibition in at least one case (possibly two)
 - Shifting in one case
 - Working memory in two cases

Future research is needed to confirm that these results generalize to other individuals with TBI. Research with a larger sample also should use correlational and/or regression analyses to confirm connections between specific pragmatic communication domains and specific executive function subcomponents.

Limitations

- Small sample size
- Lack of diversity
- Structured measures
- Pragmatic Protocol was based on small samples/not able to be rated in people who use alternative modes of communication (i.e. augmentative communication device)
- Bias self-report measures (comparison to before accident/focusing on the negative consequences)
- Environment bias (participants trying harder than in daily life)
- Co-existing conditions

Acknowledgements

I want to thank Dr. Greenslade and Dr. Ramage for their guidance, feedback, and support. Thanks also go to Daniella Almeida and Jade Bowden for their help with coding the Pragmatic Protocol, and Melanie Pond for her help in checking my data entry. Finally, I want to thank our participants, without whom this work would not have been possible.

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