The Cooperative Principle and Theory of Mind in Children with Language Impairments

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INTRODUCTION

- Theory of Mind (ToM) has been described as an innate domain-specific module of mind that accounts for children’s ability to understand others’ intentions among other states of mind, i.e., mindreading
- Modular theories of mindreading have had substantial influence on the understanding of social communicative impairments.
- Surian, et al., (1996) examined the relationship between mindreading in communicative exchanges and ToM.
- Pre-adolescents with ASD and impaired ToM failed to identify intentions in a communicative task.
- Comparatively, pre-adolescents with SLI performed similarly to typically developing children in reading communicative intentions, although their ToM was never tested.
- Surian et al., concluded that the inability to read communicative intention was the result of impaired ToM.
- Yet interpreting others’ intentions in communicative interactions may be a specialized case of mindreading (Hayes & Luh, 2002; Sperber & Wilson, 2002)
- Skarakis-Doyle, et al., (2008) tested this possibility when both were kinds of mindreading were measured.
- Children between 3 & 4 year-olds demonstrated above chance ability to identify intentions in a communicative task.
- Yet two LI participants showed no evidence of mindreading in either type of task.
- This study was conducted with funding from a University of Western Ontario Internal Research Grant, the Social Sciences and Humanities Research Council of Canada Award to the first author. We gratefully acknowledge the support of the S-LP Clinical Research Coordinator of the CRU. Kaja Jasinska is at the University of Toronto. Julie Theurer is participating as well as the tykeTalk staff. Wenonah Campbell is now at McMaster University, Social Sciences and Humanities Research Council of Canada Award to the first author.

METHODS

- 38 typically developing children (16 females; 20 males)
- 22 between 36-46 months (M = 41.75; SD = 2.59)
- 14 between 49-60 months (M = 51.64; SD = 3.48)
- 6 children receiving Speech and Language Treatment from the Provincial Preschool Speech and Language program (2 females, 4 males)
- 43-60 months (M=50.00; SD=7.2)
- IQ: WNL
- Nonverbal: Mdn = 91.5; M = 86; SD = 19
- Verbal: Mdn = 104.5; M = 97; SD=15.5
- 2 standardized language measures > .15SD
- SPELT-2 or CELF-P-2 and MCDI-III
- 3 children with NL: 3 moderate risk in Social Skills
- Participants completed standardized testing and two experimental tasks over two sessions:

1. PRACTICAL JUDGEMENT TASK

2. PRAGMATIC JUDGEMENT TASK

4 Maximis- Polite, Truth, Relevance, Avoid Redundancy

Videotaped puppet show- 8 items in routine events

Mother puppet: Poses a question relevant to context

Child puppet: One violates maxim, one answers appropriately

Participants identify who is talking silly

THEORY OF MIND TASK

Call & Tomasello, 1999

- Adult Examiners, Adult Confidante, Child
- Two opaque boxes, marker, toy, removable barrier
- 4 Phases
  - Pickit: Establish role of the Adult Confidante
  - 3 Control Tasks: establish prerequisite behaviors
  - Verbal False Belief Test: children verbally state a prediction of the confidante’s future behavior based on what they think the confidante believes about the object’s location
  - Nonverbal False Belief Test: children must act on their own (nonverbal) prediction of the confidante’s belief based on their observation of her current behavior

RESULTS

Figure 1. Percentage of participants in each group who passed the experimental tasks

- More children in all three groups performed better than chance on the PJT than on either version of the False Belief Test.
- Performance did not improve in the nonverbal version of the false belief task relative to the verbal version.

Table 1. Individual data for Six Children with LI on the Experimental Tasks

<table>
<thead>
<tr>
<th>Age (months)</th>
<th>% of PJT Pass</th>
<th>% of VFB Pass</th>
<th>% of N-VFB Pass</th>
<th>PJT Passes (Out of 4)</th>
<th>VFB Passes (Out of 3)</th>
<th>N-VFB Passes (Out of 3)</th>
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<tr>
<td>4yrLD</td>
<td>45</td>
<td>95</td>
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<tr>
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<tr>
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<tr>
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<td>50</td>
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<tr>
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<td>60</td>
<td>60</td>
<td>0</td>
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</tr>
</tbody>
</table>

DISCUSSION

- Mindreading was evidenced by a majority of the LI participants in the communicative task but not in the false belief task, supporting the position that mindreading in a communicative context may be distinct from understanding another’s false belief.
- Most of the LI children demonstrated the same relationship in mindreading as the typically developing preschoolers.
- These preliminary findings do not support the modular position that lack of false belief understanding may be a causal factor in social communication impairment.
- Yet two LI participants showed no evidence of mindreading in either type of task.
- Not evidence of the purported causal link between understanding false belief and understanding communicative intent.
- This pattern more often reported in ASD groups, not usually reported in LI. Are different mechanisms possible in innate modules in clinical populations?
- Literature suggests other aspect of ToM than false belief may share closer connection to communicative mind reading.
- In this small sample, Age, IQ, or Social Skill development were not systematically associated with the LI children’s mindreading in any domain.

Future Research

- Findings should be replicated with a larger number of LI participants, including examination of other child variables.
- Other aspects of ToM should be evaluated relative to the ability to read communicative intent e.g., diverse desires and beliefs.

ACKNOWLEDGEMENTS

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