



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 in ToM
 - Preadolescents with ASD with impaired ToM failed to identify intentions in a communicative task
 - Comparatively Preadolescents with SLI performed similarly to typically developing younger 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 (Happe & Loth, 2002; Sperber & Wilson, 2002)
- Skarakis-Doyle, et al., (2008) tested this possibility when both were kinds of mindreading were developing in preschoolers
 - Adapted the Surian, et al., paradigm comparing mindreading in conversational exchanges and in both verbal and nonverbal false belief tasks
- 3 & 4 year-olds demonstrated above chance ability to accurately read intentions in the former but performed at chance in the latter tasks
- Supports position that mindreading in communicative contexts is distinct from false belief
- Thus, examination of the claim for a causal relationship between ToM and social communication impairments is warranted.
- The purpose of this preliminary investigation was to examine this relationship in preschool children with language impairment when ToM is developing.

METHODS

- 38 typically developing children (16 females; 20 males) (Skarakis-Doyle et al. 2008)
 - 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 ($M=50.00$; $SD=7.2$)
- 1Q WNL
 - Nonverbal: $Mdn = 91.5$; $M = 88$; $SD = 19$
 - Verbal: $Mdn = 104.5$; $M = 97$; $SD=15.5$
- 2 standardized language measures $\geq -1SD$
 - SPELTP-2 or CELF-P-2 and MCDI-III
- 3 children WNL, 3 @ moderate risk in Social Skills
- Participants completed standardized testing and two experimental tasks over two sessions:

1. PRAGMATIC JUDGEMENT TASK

(Skarakis-Doyle, Terry, & Campbell, 2006; Surian, et al., 1996)

- 4 Maxims- Polite, Truth, Relevance, Avoid Redundancy
- Videotaped puppet show- 8 items in routine events
- Mother puppet: Poses a question relevant to context
- Child puppets: One violates maxim, one answers appropriately
- Participant identifies who is 'talking silly'

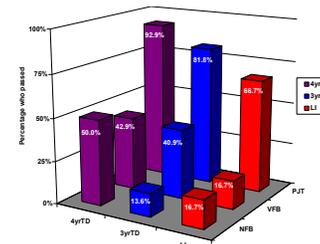
THEORY OF MIND TASK

(Call & Tomasello, 1999)

- Adult Examiner, Adult Confederate, Child
- Two opaque boxes, marker, toy, removable barrier
- 4 Phases
 - Pretest: establish role of the Adult Confederate
 - 3 Control Tasks: establish prerequisite behaviors
 - Verbal False Belief Test: children verbally state a prediction of the confederate's future behavior based on what they think the confederate believes about the object's location
 - Nonverbal False Belief Test: children must act on their understanding of the confederate'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 task
- While the trend is similar, a smaller proportion of LI children passed any of the tasks relative to the typically developing preschoolers
 - 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

	Age months	% PJT (8 items)	% Verbal FB (2 items)	% Nonverbal FB (2 items)	
LI01	45	88	0	50	Passes only PJT
LI02	47	50	0	0	Fails all three
LI03	47	50	0	0	Fails all three
LI04	58	88	100	100	Passes all
LI05	43	63	50	0	Passes only PJT
LI06	60	63*	0	50	Passes only PJT*

Pass > 50%.

*Possibility of response bias

- Based on developmental literature the lack of ToM in all children but LI06 is typical for their age
- Yet all but two were able to identify the violation of a maxim, i.e., speaker's intent despite a lack of ToM (false belief)
- LI02 and 03 performed poorer than most of the typical 4 year olds

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 (Farran, Fletcher, & Maybery, 2006)
- 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

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