



Developmental Language
and Cognition Lab at OSU

Connections Between Theory of Mind and Pronoun Competence

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Background

Pronouns are a complex part of our everyday language with both grammatical and pragmatic dimensions. Pronouns in general have long been a subject of linguistic research; however there have been few comprehensive examinations of the grammatical aspects of pronouns (gender and case), as well as the pragmatic aspects (interlocutor specificity and discourse continuity), and their possible cognitive correlations (theory of mind). These five components (gender, case, interlocutor specificity, discourse continuity, and TOM) together play a large role in how we use pronouns in everyday communication.

One aspect of pronoun use in conversation is the "familiarity presupposition". This signifies that the use of a pronoun presupposes that the interlocutors already know a discourse referent that corresponds to that pronoun (Roberts, 2005). For example, it would not be acceptable for an adult speaker to say, "He really likes ice cream" without any referent known to the interlocutors. This idea is examined in the interlocutor task of this experiment by measuring a child's use of a pronoun, a definite noun phrase, or an indefinite noun phrase with a new interlocutor.

Another aspect of pronoun use is discourse salience. When a pronoun is used in discourse, it takes on the referent that is maximally salient in the antecedent discourse. Roberts states that this is why pronouns do not possess a great deal of uniqueness (uniqueness is unnecessary if the possible referent in the antecedent discourse is strongly restricted). The discourse salience of pronouns is examined in this experiment using an adapted version of Song and Fisher (2005) looking at children's ability to track a referent throughout discourse.

A concrete theory of mind enables a person to understand that their own perspective may be distinct from that of their interlocutor. This study examines these dimensions, along with pronominal case and gender, with the purpose of providing a clearer understanding of how linguistic and non-linguistic cognition interact.

Specific Questions

1. Do children acquire the grammatical dimensions (gender and case) of pronouns before or after the pragmatic (discourse continuity and interlocutor specificity) dimensions?

2. How do the pragmatic dimensions of pronouns correlate to theory of mind ability in children? Do children need to possess theory of mind ability in order to correctly introduce a referent to an interlocutor new to the discourse situation?

3. How to the grammatical dimensions of pronouns correlate to theory of mind ability in children? Does theory of mind ability affect a child's understanding of pronominal case and gender?

Methods

Participants

Thirty-three children ranging in ages from 3;7 to 4;2 (18 girls and 15 boys) participated in the experiment. This study recruited children at the cusp of theory of mind ability with the aim of getting half the subjects to pass and half to fail the unseen-displacement task. Twenty-six of the children were able to complete all five sections of the study (those who were unable to complete all the sections were excluded from the data).

Tasks

Gender-

The children were presented with pictures of both a male and a female, each possessing a distinct object, and then asked either "What does she have?" or "What does he have?"



Case-

The case task was a grammaticality judgment task in which two puppets were used to present the children with two sentences differing only in the pronoun case.

Puppet One: He is swinging.

Puppet Two: Him is swinging.

Examiner: "Tell me which on said it right!"



Discourse- a picture selection task adapted from Song and Fisher (2005)

The children were read a story with two characters (one of which was in the subject position throughout the story) and presented with the corresponding pictures.

Picture One-

"See the dog and the mouse?"



Picture Two-

"The mouse pets the dog. He likes the dog."



Picture Three-

"What does he have?"



Interlocutor-

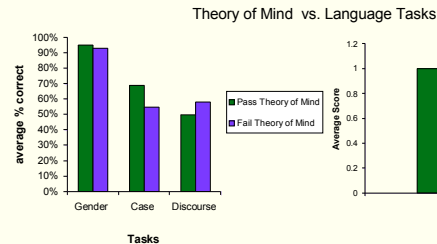
To set up the task, the children played with a doll girl in a dollhouse with the experimenter. The experimenter discussed the doll's actions with the child using a pronoun since they were both familiar with the subject (ex. "She went downstairs. She ate breakfast."). After the child was comfortable discussing the doll's actions with the experimenter, the doll was removed from the house and a new interlocutor (a puppet) was introduced. The new puppet then asked the child to talk about what happened in the house. Their introduction of "the doll" was then recorded (pronoun, definite NP, or indefinite NP). Scores on this task were awarded as follows: Indefinite NP= 2 points, Definite NP= 1 point, Pronoun = 0 points.

Theory of Mind-

The theory of mind task was an unseen displacement task.

Results

This study showed a slight correlation between theory of mind ability and performance on the interlocutor task as well as performance on the case task.



Future Research Implications

1. A greater target population to determine if the correlations between the above tasks are significant.
2. The need to examine whether a correlation between multiple aspects of pronoun use and theory of mind is indeed a result of direct correlation, or if there is an outside factor, such as the use of puppets in some tasks but not in others.

Overall, future research investigating pronoun use and theory of mind could benefit from a set of tasks that use similar materials (either all puppet tasks or no puppet tasks) as well as a greater number of participants to determine whether there are significant correlations between theory of mind ability and the pragmatic dimensions (specifically interlocutor specificity) of pronoun use.

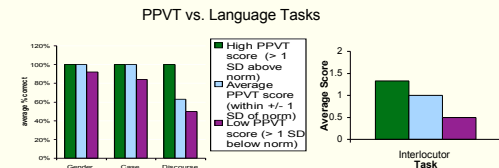
A specific population of interest for this study is children with Autism Spectrum Disorders (ASDs). A great deal of research has shown that ASDs hinder the cognitive ability of theory of mind, an ability that may affect the global use of pronouns. Looking at the different dimensions of pronouns in this specific population will help begin to answer whether a difficulty with theory of mind also encumbers the ability to reach more mature levels of competence in pronoun use. Preliminary data on this particular subgroup was collected as a second part of this study and is discussed below.

Autism Spectrum Disorders

Participants- Thirteen children ranging in ages from 5;8 to 11;8 (12 boys and 1 girl) participated in this study. The children in the study were diagnosed with an autism spectrum disorder by a clinical psychologist.

Methods- The same procedure was applied for the five tasks from experiment one along with the evaluation of receptive vocabulary with the *Peabody Picture Vocabulary Test-III (PPVT-3)* and auditory number memory with the Auditory Number Memory-Digits Forward and Auditory Number Memory-Digits Reversed sections of the *Test of Auditory-Perceptual Skills-Revised (TAPS-R)*.

Results- Only one child failed the theory of mind task so a correlation between theory of mind and the other tasks was not able to be determined. It was observed that children with higher PPVT scores were able to perform better on the other tasks.



Future Research Implications

- The children in the study were able to perform very well on the first-order false belief task without necessary impact on their ability to use pronouns correctly
- Use a second-order theory of mind task in future studies.
- Choose participants with an ASD who are younger than the majority of those in the present study.

In order to develop more efficient and effective treatment for the language problems that often accompany an autism spectrum disorder, it is necessary to continue looking at the possible affects of theory of mind on language, including the search for other syntactical/grammatical tasks that may be related to theory of mind ability.

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