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## Children's referential communication skills: The role of cognitive abilities and adult models of speech



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#### ABSTRACT

Referential communication is effective when speakers describe a specific entity in a way that leads to accurate identification of that referent among competitors. Young children's initial referential expressions are often inadequate, and this state of miscommunication needs to be repaired in subsequent communicative attempts. Exposure to adults' effective descriptions of referents is beneficial for children to develop referentially clear initial descriptions. Here, we examined whether adult models of speech also provide henefits for children's communicative repair Furthermore, we assessed the relation between children's cognitive abilities and referential communication skills. We tested 59 children (aged 4 years to 5 years 9 months) on their ability to request specific stickers among similar distractors in a pretest-m odeling-posttest design. In the modeling phase, 30 children heard more informative descriptions of stickers with relative clauses (e.g., "you selected the horse that the boy is riding") and 29 children heard less informative descriptions with demonstrative noun phrases (e.g., "you selected that horse"). In a second session, we measured children's short-term memory, executive functions (working memory and cognitive flexibility), and theory of mind. Children who heard more informative expressions showed a greater increase in uniquely identifying initial descriptions than children who heard less informative expressions. Hearing more informative expressions did not provide an additional benefit in repairing ambiguous messages, an ability we found to be related to cognitive flexibility and memory. Results indicate that

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informative language structures that uniquely identify referents provide limited benefits to children for effective communication where children's short-term memory and executive functions also matter.

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#### Introduction

One of the basic goals of communication is to give information or make requests about objects and people. In referring to external things, communicators need to avoid ambiguity and choose appropriate linguistic expressions. This is not an easy feat, and only with development do children learn to become referentially informative. Referential communication is an important component of the pragmatic aspect of language development in preschool-aged children (Küntay, Nakamura, & Ateş-Şen, 2014). At preschool ages (4–5 years), glitches often occur in the production of referring expressions. For example, when a child points to a toy basket that contains several balls and says "ball", the object that the child's gesture and utterance are directed toward may be deemed ambiguous. The caregiver, using former experience, could correctly guess whether the child wants the most bouncy ball or the newly bought red ball. If the caregiver's guess turns out to be incorrect, the child faces the task of repairing the communication breakdown by providing a more specific referring expression such as "the ball with stripes".

Even preschool-aged children can use their listener's communicative feedback to tailor their descriptions appropriately (Glucksberg & Krauss, 1967). When their initial expressions are ambiguous, children benefit from the repetition of their messages in question form (Deutsch & Pechmann, 1982) or the listener picking an alternative referent (Coon, Lipscomb, & Copple, 1982). In addition to making use of communicative feedback, children model on how adults describe referents (e.g., Whitehurst, 1976). There are many linguistic constructions that adult speakers use to uniquely describe referents, and the relative clause is one such complex construction. One of the communicative functions of relative clauses is to discriminate the intended referent from potential competitors (e.g., "The student who worked here last year has moved to another city"). Our first objective in the current study was to investigate the effects of exposure to adults' informative referential descriptions that contain relative clauses on the development of referential qualities of children's own descriptions.

The lack of sophisticated language skills is only one reason why young children might not produce adequately informative referring expressions. Thus, our second objective was to investigate the relationship between children's referential communication abilities and their potentially relevant sociocognitive skills. In the example that involves identification of a specific striped ball, it may be that the child does not yet have adequate working memory skills to grasp or express the relevant nonlinguistic comparisons between the target and its competitors (i.e., the striped ball and all the other balls) to determine which distinguishing properties to convey to the listener. In addition, taking the precise communicative perspective of the listener in relation to the referent may be difficult. Hence, general limitations in sociocognitive abilities, such as young children's still-developing executive functions and relative inability to represent the knowledge states of other people (i.e., relative lack of theory of mind), are factors that may influence referential communication skills (De Cat, 2015; Nilsen & Fecica, 2011).

#### Modeling with adult speech

Hearing adult models of speech affects how children describe referents. In Whitehurst (1976), 6-year-olds were presented with cups that were similar to or different from each other with respect to their size, color, and pattern. In the listening trials, children were assigned to either the *bad modeling* condition, where they listened to adults' ambiguous descriptions, or to the *good modeling* 

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