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Mother–child communication about relative proximity to a landmark: What role does prototypicality play?



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ABSTRACT

This investigation examined how prototypicality affects mother–child communication about relative proximity. In the first two experiments, mothers of 2.5-, 3.0-, and 3.5-year-old children verbally disambiguated a target hiding container from an identical non-target hiding container when the two containers were placed at a smaller (more prototypical) or larger (less prototypical) distance from a landmark. Children then searched for the hidden object. When the absolute distance was smaller, mothers used more consistent frames of reference in their directions and even 2.5-year-olds largely followed those directions successfully. When the absolute distance was larger, mothers used multiple reference frames in their directions (a “kitchen sink” strategy) and children had more difficulty in following directions (especially 2.5-year-olds). A third experiment in which we controlled mothers’ directions confirmed that the increased absolute distance, and not the mothers’ direction-giving strategies, led to 2.5-year-olds’ impaired search performance. These results indicate that young children’s understanding of relative proximity develops from more prototypical cases (smaller distances) to less prototypical cases (larger distances) and that mothers’ attempts to compensate for young children’s difficulty with less prototypical cases did not improve their search performance.

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Introduction

Communicating about location is a common everyday activity for parents and children alike. These conversations often involve referring to the relative proximity of two or more objects to a landmark. For example, if a child wants to know which cup on the counter belongs to him or her, a parent might respond with “Yours is the one closer to the sink.” Previous work has largely focused on young children’s understanding of relative concepts such as close/far and high/low in the context of judgment tasks, where children are asked to judge the relative proximity of objects to a landmark or the relative height of objects on a vertical board (Hund & Plumert, 2007; Smith, Cooney, & McCord, 1986). Although these studies have yielded valuable information, very little is known about how young children understand relative concepts within the context of communication tasks (for an exception, see Plumert, Haggerty, Mickunas, Herzog, & Shadrick, 2012). As noted above, communication about relative proximity clearly plays an important role in real-world tasks such as giving and following directions about missing objects. Here, we examined mother–child communication about relative proximity in a task where mothers described the location of a hidden object to their young children and young children used those directions to search for the hidden object. We were particularly interested in how the absolute distance between a pair of hiding locations and a landmark affects mothers’ direction-giving about relative proximity and young children’s ability to successfully follow those directions.

Relational thinking has long been considered a hallmark of higher-order cognition (Gentner, 2003; Piaget, 1928; Vygotsky, 1962). An important manifestation of such thinking is the ability to make relative comparisons of objects along one or more continuous dimensions such as size and height. These relative comparisons make it possible to describe one object as bigger, taller, or heavier than another object. Previous work on children’s understanding of dimensional adjectives such as *big* and *little* or *high* and *low* shows that young children’s understanding of such adjectives undergoes significant developmental change during early childhood (e.g., Ebeling & Gelman, 1988; Nelson & Benedict, 1974).

A major part of this change is a shift from correctly applying these adjectives in a narrow set of more prototypical cases to correctly applying these adjectives in a broader range of less prototypical cases (Clark, 1970; Sera & Smith, 1987; Smith et al., 1986; Smith, Rattermann, & Sera, 1988; see also Meints, Plunkett, Harris, & Dimmock, 2002, and Sinha, Thorseng, Hayashi, & Plunkett, 1994, for similar arguments about spatial prepositions). For example, Smith et al. (1986) demonstrated that young children make consistent judgments of relative height only when the object is at a highly prototypical location. They presented 3-, 4-, and 5-year-olds with a 6-foot-tall apparatus and asked them to judge whether a single object was high or low at each 1-foot increment. The 3-year-olds primarily judged that a single object was *high* when at the top of the apparatus and *low* when at the bottom. The 4- and 5-year-olds’ judgments of *high* and *low* included a broader range of heights, suggesting that older children can apply the labels high and low even when the object is some distance from one of the extreme values. In a follow-up study, Smith et al. (1988) found that individual children were more successful at judging the relative height of two objects when their previously assessed high/low classifications of a single object spanned a broader range of values. These results support the idea that young children initially view dimensional terms as describing prototypical categorical states.

To what extent do young children have difficulty in judging the relative proximity of locations to a landmark when the distances are less prototypical (larger) than more prototypical (smaller)? Hund and Plumert (2007) addressed this question by examining whether the absolute distance of objects to a landmark affects young children’s judgments of relative proximity. Young children (3- and 4-year-olds) and adults were asked to judge whether a set of target blocks was “by” or “not by” a central landmark. In the intervening condition another set of blocks was arranged between the set of target blocks and the landmark, whereas in the non-intervening condition another set of blocks was arranged outside of the set of target blocks. The 4-year-olds and adults were significantly more likely to judge the target blocks as “by” the landmark in the non-intervening condition than in the intervening condition, whereas the 3-year-olds’ judgments of nearby-ness did not depend on whether there

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