



## Early understanding of ability



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### ABSTRACT

Preschoolers' understanding of ability was examined in three studies. Three- to 5-year-olds evaluated the abilities of two characters whose performances were inconsistent with their actual abilities because of an interfering event. Results revealed an age-related change in children's understanding of ability: Three-year-olds evaluated the character who produced the better outcome as more competent, whereas 5-year-olds judged the character who originally had higher ability was more capable and predicted he would do better with no disruption. Study 2 replicated these results with modified stories and also found that the understanding of ability and false belief were related. Study 3 obtained similar results with a simplified story using concrete information about physical ability, interfering event, and observable outcome. These results suggest that an early understanding of ability as differentiated from outcomes is present before the end of preschool years. The results are discussed in relation to the similarities and differences between children's understanding of ability and belief.

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## 1. Introduction

As human beings, we often need to evaluate our own abilities and those of other people. We want to find the best barber to cut our hair, or judge whether we will do well in a new job. When a person is engaged in a task, the outcome produced often reveals the person's ability. Thus, one of the most useful cues for our evaluations of ability is observable outcome. When everything else is equal, it is reasonable to attribute a higher level of ability to the person who produces the better outcome. However, ability is also partially independent from outcome. For example, sometimes external factors may disrupt or facilitate a person's performance, leading to outcomes inconsistent with actual ability. If our understanding of ability is entirely dependent on outcome, then our evaluations of a person's ability will be unreliable. We may judge an athlete to be the best when she wins the Olympic gold medal and then consider her to be incompetent when she falls from a defective balance beam the next day. Therefore, to have a concept of ability requires us at a minimum to be able to differentiate ability from observable outcomes. When do children develop an understanding of ability, especially being able to distinguish it from observable outcomes?

The majority of the existing research suggests that children develop an understanding of ability relatively late. Early research on learned helplessness found that older elementary school students were vulnerable to repeated failures, whereas younger children were likely to remain optimistic about their performance (Fincham & Cain, 1986; Rholes, Blackwell, Jordan, & Walters, 1980). This difference was interpreted as indirect evidence that older, but not younger, children were attributing their failures to a lack of ability rather than to independent events. It may be that before children reach the late elementary

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school years, they only perceive disconnected performances and do not form an understanding of their own ability as the cause of the outcomes.

Nicholls (1978) and Nicholls and Miller (1984) conducted the earliest systematic research investigating children's understanding of ability in relation to effort and outcome. For example, Nicholls (1978) presented 5- to 13-year-olds with films showing two children working on math problems. One child spent the entire time working on the exercises, whereas the other child only worked intermittently. In the end, both characters obtained the same score or the child who spent less time actually got the higher score. Participants were asked to infer the intellectual ability of the two characters. Five- and 6-year-olds did not distinguish ability from effort and outcome. They reported the person who worked longer or obtained the better outcome was smarter. Children started to differentiate ability from effort and outcome at ages 10 or 11, but it was not until ages 12 and above that children were able to reason accurately about how ability and effort could jointly determine outcome. This developmental pattern has been replicated by most existing research on children's concept of ability (e.g., Fincham & Cain, 1986; Folmer et al., 2008; Nicholls & Miller, 1984; Rholes et al., 1980). These results have been interpreted as evidence that children do not have a mature concept of ability as differentiated from effort and outcome until middle childhood. What remains unknown from these and the learned helplessness findings is whether some primary understanding of ability might be present among the younger children (i.e., 5- and 6-year-olds).

Compared to the research on elementary school children, studies about younger children's understanding of ability have been relatively rare. The limited findings provide some evidence that young children could reason accurately about ability in at least some situations. For example, in simplified tasks, Wimmer, Wächter, and Perner (1982) presented 4- to 8-year-olds with information about two factors (e.g., high effort, low outcome) for a single character and the children were asked to infer the level of the third factor (e.g., low ability). To reduce cognitive demands, information about ability, effort and outcome was presented concretely (Ability: small vs. big boy; Effort: work vs. play all the time; Outcome: paint short vs. long section). They found that when information-processing demands were minimized, children as young as 4 were able to make adult-like inferences about ability, effort, and outcome.

Heyman, Gee, and Giles (2003) also conducted one of the few studies that investigated preschool children's reasoning about ability. To examine young children's use of information about perceived task difficulty when making inferences about ability, they presented children with stories in which two characters both finished a puzzle, but one of them found the puzzle hard whereas the other character found it easy (Study 1). Children as young as 4 were able to infer that the person who found the puzzle easy to be smarter than the person who thought the task was hard, suggesting they were sensitive to mental state information when making judgments about ability. Therefore, although most earlier findings suggest that a mature understanding of ability is not developed until middle childhood, it seems that at least some limited understanding of ability is likely to be present before kindergarten. Additional research is needed to begin to build a more comprehensive developmental picture regarding younger children's understanding of ability.

A related question on children's understanding of ability worth investigating is whether young children expect a person's ability levels in different domains to be the same or different. Most existing literature on ability has examined children's understanding of single abilities, which does not provide an answer to this question. However, researchers have examined whether children show global or domain-restricted thinking in understanding traits. Some researchers of trait understanding have found that compared to older children, younger children were more likely to generalize behaviors to only limited and similar domains (Rholes & Ruble, 1984). In contrast, other researchers have found that younger children actually showed global thinking when predicting other people's behaviors or in making self-evaluations. For instance, they did not differentiate between intellectual and social domains (Benenson & Dweck, 1986; Heller & Berndt, 1981) or isolate athletic skills (Stipek & Daniels, 1990).

Using more sensitive measures, Droege and Stipek (1993) determined that young children might show both global thinking and differentiation of traits to some degree. When asked to select classmates to be team members for an academic competition or as playmates, both kindergarteners and older children preferred those who were both smart and nice. However, even kindergarteners implicitly differentiated the two domains by giving greater weight to the trait relevant for the target activity. Taken together, the findings are not conclusive about whether younger children show differentiated or global thinking or both in generalizing trait-related behaviors across different situations. Most of the studies on trait understanding focused on social-moral characteristics, and it will be interesting to see whether children's perception of ability follows similar or different developmental patterns as these attributes.

The present study aims to investigate the early development of ability understanding among preschool children, focusing on whether children differentiate ability from observable outcome. Although ability is often a cause of outcome and outcome is often a good indicator of ability, there are circumstances when the two can be inconsistent. One intervening factor is the person's effort, which has been the focus of investigation in most existing research. Another factor that has received little attention is the role of intervening events. For example, it is possible that a capable person may perform badly if disrupted by an accident, and an incompetent person may exhibit a good outcome when his or her performance is externally facilitated. Since previous research has focused on children's reasoning about ability in relation to effort and outcome information, it remains unanswered when children start to differentiate ability from outcome, especially when the two are inconsistent due to an obstacle or intervening event.

Previous studies on children's reasoning of ability and outcome typically ask children to infer the levels of ability based on information about effort and outcome. It is possible that reasoning about ability in terms of two constraining factors is challenging for young children, even if they have some preliminary understanding of ability. To make the correct inference or

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