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Brief Report

Children's developing understanding of what and how they learn



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ABSTRACT

What do children know about learning? Children between 4 and 10 years of age were asked what they thought the word *learning* meant and then engaged in a structured interview about what kinds of things they learned and how they learned those things. Most of the 4- and 5-year-olds' responses to these questions indicated a lack of awareness about the nature of learning or how learning occurs. In contrast, the 8- to 10-year-olds showed a strong understanding of learning as a process and could often generate explicit metacognitive responses indicating that they understood under what circumstances learning would occur. The 6- and 7-year-olds were in a transitional stage between these two levels of understanding. We discuss the implications of this development with children's theory-of-mind development more generally.

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Introduction

A fundamental goal of research in cognitive development is to describe how children learn. There are many descriptions of learning mechanisms that allow children to acquire knowledge (e.g., Carey, 2009; Gopnik & Meltzoff, 1997; Harris & Koenig, 2006; Mandler, 1992; Piaget, 1955; Saffran, Aslin, & Newport, 1996; Smith & Heise, 1992; Tenenbaum, Kemp, Griffiths, & Goodman, 2011). Debates in cognitive development revolve around what kind of learning mechanism best describes how children acquire knowledge generally or in specific domains (see Piattelli-Palmarini (1980) for a classic discussion and Johnson (2010) for a more contemporary one).

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Another important, but often overlooked, goal of research in cognitive development is to describe at what age children understand that learning has occurred. There is little evidence that young children accurately reflect on their own learning, nor do researchers appreciate when children begin to conceptualize learning as a process. It is also unclear whether understanding learning as a process matters for reflecting on one's own learning.

Investigations of metacognitive awareness suggest that preschoolers find articulating an understanding of learning difficult. Although children begin to talk about learning during the preschool years (Bartsch, Horvath, & Estes, 2003), it is only after 4 years of age that they appreciate the relations among various mental states that are necessary for learning to occur—for example, attention to the task or a desire or intention to learn (Sobel, Li, & Corriveau, 2007). Preschoolers' developing understanding of the mental states that are involved in learning has implications for their ability to monitor and reflect on their own knowledge. When taught new pieces of knowledge, preschoolers often claim that they knew it all along (Esbensen, Taylor, & Stoess, 1997; Taylor, Esbensen, & Bennett, 1994). Such studies indicate that preschoolers are unable to understand mental states in a dynamic way—as active and changing with thought and reflection (see, e.g., Flavell, Green, & Flavell, 1995; Johnson & Wellman, 1982).

Only a few studies have directly examined preschoolers' abilities to reflect on their own learning. Tang & Bartsch (2012; see also Tang, Bartsch, & Nunez, 2007) demonstrated that preschoolers typically struggled to report when they learned a specific piece of information but could track the source of that knowledge. When information was learned in laboratory settings, 4- and 5-year-olds displayed some ability in describing how a particular piece of information was learned but not when it was learned. One week after being shown or told a piece of information, children could state whether they were shown or told the information but could not report that this was done a week prior.

Although these results suggest that children can track how they learn information, the controlled nature of the task makes it difficult to generalize the findings to more naturalistic learning situations. Children can learn different kinds of information in a multitude of ways, thereby making the forced-choice response options in the previous study analogous to a recognition memory test; when asked the test question, children only need to recognize one of the response options, not recall the actual learning event from their memory. Bemis, Leichtman, and Pillemer (2011) considered this by asking 4- to 9-year-olds a series of factual questions that they were likely to be able to answer. Children were then asked to describe how they had learned that piece of information. Even the youngest children in their sample could generate details about how they learned the information, although there was significant age-related change (i.e., older children could generate more details) and differences between genders (i.e., girls generated more instances of source monitoring than boys). Bemis, Leichtman, and Pillemer (2013) followed up on this finding by first teaching 4- and 5-year-olds new pieces of information and then, in a subsequent session, examining whether those children remembered how they had learned it. They again found that even the 4-year-olds could generate accurate details about how they learned the information and, therefore, suggested that young children possessed some understanding of learning itself.

That said, those authors' data suggest that this understanding develops. Bemis and colleagues (2011) showed that only 25% of 4- and 5-year-olds generated an account of where they learned a particular fact, whereas 7- to 9-year-olds did so only 45% of the time. Moreover, because this study asked children to recall how they had learned arbitrary facts that they were exposed to at some point in the past (see also Tang & Bartsch, 2012), differences among ages might reflect children's developing source memory capacities (e.g., Lindsay, Johnson, & Kwon, 1991).

The current investigation considers what children know about learning in general and whether they can reflect on instances of their own learning. Children were asked to describe what they believed learning was. Then, they were asked to generate their own examples of what and how they had learned in the past. Our goal was to document whether children regarded learning as a *process* (articulating something about their own knowledge changing) or whether they conceived of learning as the *content* or knowledge itself. Moreover, we were interested in whether children's understanding of learning as a process influenced the way in which they reflected on particular instances of their own past learning.

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