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Thinking ahead about where something is needed: New insights about episodic foresight in preschoolers



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ABSTRACT

We explored 3-, 4-, and 5-year-olds' capacity to draw on a past experience that entailed the lack of a particular resource (in this case, toys) in one room, but not in another, to make an adaptive choice (i.e., place toys in the room where there were none) for a subsequent visit to the two rooms. Children's memory for which room had toys and which room did not was explicitly assessed. Children were then queried about where they should place a new set of toys for their next visit to the rooms. In Experiment 1, where children were asked about the "distant" future, 4- and 5-year-olds, but not 3-year-olds, placed the toys in the "no-toy" room at a rate significantly higher than chance. In Experiment 2, where children were asked about the "immediate" future, correct responses of 3-year-olds were still no different from chance, those of 5-year-olds were above chance, and those of 4-year-olds trended in this direction. Our discussion centers on the importance of assessing both "memory" and "foresight" on tasks purported to assess children's episodic foresight, the role of "temporal distance" on children's future-oriented behavior, and implications for future research.

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Introduction

Imagine that you have two close friends: Cathy, who keeps her home on the cool side, and Emily, whose home is the perfect temperature for you. Before too long, you might find yourself bringing a sweater to Cathy's home but not to Emily's home. Indeed, one of the hallmarks of flexible thought is the capacity to draw on our past experiences to make adaptive choices for the future. The example outlined above is one of many instances in day-to-day life where adults demonstrate this capacity. Doing so is argued to reflect the ability to mentally travel through time (e.g., [Suddendorf & Busby, 2005](#))—a topic that has been receiving substantial attention in the areas of adult neuropsychology, social psychology, and cognitive psychology (e.g., [Addis, Wong, & Schacter, 2007](#); [D'Argembeau, Renaud, & Van der Linden, 2011](#); [Gilbert, Killingsworth, Eyre, & Wilson, 2009](#); [Suddendorf & Corballis, 2007](#)).

Developmental psychologists have also been interested in children's mental time travel and, with respect to the future in particular, have coined the term "episodic foresight" to refer to the broad capacity to "imagine future scenarios and use such imagination to guide current action" ([Suddendorf & Moore, 2011, p. 296](#)). One popular scenario to illustrate this phenomenon was nicely described by [Tulving \(2005\)](#) and is commonly referred to as the "spoon test" as follows. A young girl is at a party where guests are being served a chocolate pudding, but she has no spoon with which to eat the delicious treat. That night, she falls asleep while holding a spoon to avoid making the same mistake again. As such, this young girl was able to draw on her past disappointment (i.e., inability to eat the pudding) to make an adaptive choice for the future (i.e., obtain a spoon). Tulving predicted that children younger than 4 years will fail a task that shares the same structure as the spoon test.

Some of the developmental work on episodic foresight has involved tasks that require children to select items for future use (based on a specific past experience), hereafter referred to as "item choice" tasks, thereby mirroring important aspects of the spoon test. For example, [Suddendorf, Nielsen, and von Gehlen \(2011\)](#); (see also [Atance & Sommerville, 2014](#); [Redshaw & Suddendorf, 2013](#); [Scarf, Gross, Colombo, & Hayne, 2013](#)) designed a task that entailed showing children a locked box with a triangular keyhole. The experimenter demonstrated that the box could be opened to retrieve a sticker using a triangular key. Children were then given the opportunity to use the key on two consecutive trials. The box was then removed and replaced by one with a *square* keyhole. Children were simply shown that the triangular key did not fit. At this point, children were told that they would go to a second room but that they would return to the first room later to play with the box. After playing unrelated games for 15 min in this second room, children were presented with three objects and asked to select one to take back to the first room. The target item was a square key, and the distracter items were a circle key and a star key. Whereas 4-year-olds performed above chance, 3-year-olds did not.

Another approach that involves children selecting items for future use was developed by [Russell, Alexis, and Clayton \(2010\)](#). In their study, 3-, 4-, and 5-year-olds were taught to play "blow football"—a game consisting of children and the experimenter standing on either side of a table with a goal at each end and a ball to blow into it. Materials for this game included nonessential thematically related items, such as a cardboard referee and a team badge, as well as one essential item—a straw with which to blow the football. However, to play the game from the experimenter's side of the table (the "blue" side), children also needed a box to stand on. After playing the game with the experimenter from the "red" side, children were told that they would be returning the next day to play the game from the blue side. Children were told that they could save only two items (from an array of six items) and, thus, were instructed to select the items that would be needed for "tomorrow." Only 5-year-olds selected the correct item pair (box and straw) more often than would be expected by chance.

Although these tasks (most notably [Suddendorf et al., 2011](#)) fulfill some of the criteria argued by Suddendorf and colleagues and [Hudson, Mayhew, and Prabhakar \(2011\)](#) to be critical for episodic foresight (e.g., use of single trials, novel problems, the need to imagine a specific future episode), there are nonetheless several limitations that are important to address. The first is that children are required to select one correct (i.e., useful in the future) item among a number of distracter items. These distracter items vary in their desirability, and so it is possible that even in the presence of episodic foresight children (especially younger children with weak inhibitory control) may select one of them rather than

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