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# Do preschoolers remember what to do? Incentive and external cues in prospective memory

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## Abstract

Prospective memory, which involves remembering to perform an action at a future time, is used frequently in daily life. Few researchers, however, have studied this type of memory with children. The present study examined and compared 3- and 5-year-olds' performance on naturalistic and computer-based prospective memory tasks. The effects of incentive and external cues on memory performance were examined along with the relationship between prospective and retrospective memory. The results indicated that 5-year-olds demonstrated greater prospective memory performance than did 3-year-olds and neither incentive nor external cues consistently improved performance. Relationships between performance on the naturalistic and computer tasks varied with age. In contrast to the adult literature, younger children's prospective and retrospective memory performances were related. Implications of these findings are discussed. © 2000 Elsevier Science Inc. All rights reserved.

*Keywords:* Incentive; External cues; Prospective memory; Retrospective memory; Memory performance

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## 1. Introduction

When hearing the term memory, one usually thinks of retrospective memory, or recalling information from the past. Another important type of memory is

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prospective memory that involves remembering to perform a future action (Ceci et al., 1988). Unlike remembering who won the World Cup 5 years ago, some tasks, like attending a meeting, involve a person's remembering certain behaviors that must be completed at a future time. Einstein and McDaniel (1990) defined two types of prospective memory tasks: (1) time-based tasks which involve remembering to perform an action at a particular time or after a period of time has passed and (2) event-based tasks that require remembering to perform an action when a certain event occurs. The study discussed here involved an event-based prospective memory task.

Because prospective memory is commonly used in everyday remembering, many researchers have become increasingly interested in studying this type of remembering with adults (e.g., Einstein & McDaniel, 1990; Einstein et al., 1997; Kidder et al., 1997; Marsh & Hicks, 1998). Few researchers, however, have investigated prospective memory with children. While there have been several recent experimental studies conducted with school-aged children (Ceci et al., 1988; Brandimonte & Passolunghi, 1994; Passolunghi et al., 1995), early studies of children's prospective memory primarily employed naturalistic tasks (e.g., stopping for ice cream, taking skates to school) in familiar settings (Kreutzer et al., 1975; Somerville et al., 1983). To date, no studies have examined preschool children's prospective memory performance in a controlled, laboratory setting. This was the purpose of the present study.

### *1.1. Factors involved in prospective memory*

One way to develop an understanding of prospective memory is to compare it to retrospective memory, a more well-researched aspect of memory. In the following section, these two types of memory will be contrasted and compared and relevant literature from child development will be discussed to introduce potentially important factors in the development of prospective memory.

Brandimonte (1991, as cited in Brandimonte & Passolunghi, 1994) identified six steps that highlight the central characteristics of prospective memory: (1) establishing an intention; (2) remembering what to do; (3) remembering when the action needs to be performed; (4) remembering to perform the action; (5) performing the action at the appropriate time, and in the appropriate place and manner; and (6) remembering that one has performed the action. The second, third, and sixth phases of Brandimonte's model suggest that prospective memory possesses a retrospective memory component. The first part of a prospective memory task is to remember a fact: What needs to be done and when. Interestingly, however, research with adults has produced contradictory findings concerning the association between retrospective memory and prospective memory (Wilkins & Baddeley, 1978; Einstein & McDaniel, 1990; Brandimonte & Passolunghi, 1994; Kidder et al., 1997). Whereas, Wilkins and Baddeley (1978) found an inverse relationship, others (Einstein & McDaniel, 1990;

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