



Task interference in time-based, event-based, and dual intention prospective memory conditions [☆]

Jason L. Hicks ^a, Richard L. Marsh ^{b,*}, Gabriel I. Cook ^b

^a *Department of Psychology, Louisiana State University, USA*

^b *Department of Psychology, University of Georgia, Athens, GA 30602-3013, USA*

Received 2 December 2004; revision received 4 April 2005

Available online 1 June 2005

Abstract

Forming the intention to complete an activity later is the standard definition of a prospective memory task. Recently, a debate has arisen concerning the degree to which near-term intentions usurp resources away from other ongoing activities. In four experiments the authors tested how much interference was caused by holding a variety of different intentions. In all but one case, possessing an intention to perform an activity later resulted in slowed decision latencies to a different, ongoing activity. Intentions that were well-specified interfered less than intentions that were more ill-specified. In dual intention conditions, evidence for subadditivity of interference was obtained, although not uniformly. In considering potential mechanisms that cause this interference, the explanation favored here is that people establish resource allocation policies based on their predictions of being able to successfully complete both the ongoing and prospective memory tasks.

© 2005 Elsevier Inc. All rights reserved.

Keywords: Prospective memory; Intentions; Task interference

Perhaps dating as far back to Aristotle's treatise *On Memory and Reminiscence*, the primary function of memory is often cited to be reminiscence. However, memory actually subserves a multitude of daily human activities such as comprehending or producing language, preparing a meal, or appreciating the aesthetics of an evening at the theater. Among these many, often overlooked functions of memory, one is to record activities and plans that cannot be carried out immediately. This

particular use of memory has been labeled prospective memory because hypothetical actions are recorded that will (hopefully) take place in some future spatiotemporal context that is frequently different from the context in which the intention is formed. Later, when an appropriate opportunity arises such as sufficient time, adequate funds, appropriate objects, or the correct people are present to complete a task; recollection of the previously stored intention allows it to be fulfilled. Therefore, other than spontaneous decisions about action such as retrieving a piece of fruit from the refrigerator because one is hungry, memory is integral to completing the vast majority of activities in which humans engage. From this perspective, there are important theoretical and applied ramifications for understanding how prospective memory operates and for delineating the cognitive

[☆] We thank Benjamin Martin, Eric Grissino, Chris Burns, Sarah Perpich, and Gene Brewer for their invaluable assistance in collecting the data.

* Corresponding author. Fax: +1 706 542 3275.

E-mail addresses: jhicks@lsu.edu (J.L. Hicks), rlmarsh@uga.edu (R.L. Marsh).

processing that supports it. The present study was conducted to seek some clarification about the degree to which possessing near-term intentions can interfere with other ongoing activities.

Before describing the theoretical motivations for this study, a brief synopsis of laboratory-based experiments on prospective study is provided. Although many types of intentions exist, event-based and time-based intentions have proven to be the most amenable to laboratory control. Therefore, most studies use one or both of these types of intentions. In event-based tasks, participants are busily engaged in an ongoing task such as making word or picture ratings, reading, answering questions, making lexical decisions, or taking a video tour of a town. When an intention-related cue appears (e.g., a face, word, concept, or category of items), participants must make some overt, recordable response to indicate that they have remembered the intention (Brunfaut, Vanoverberghe, & d'Ydewalle, 2000; Einstein, Holland, McDaniel, & Guynn, 1992; Ellis, Kvavilashvili, & Milne, 1999; Maylor, 1996, 1998; McDaniel, Robinson-Riegler, & Einstein, 1998). Therefore, event-based prospective memory tasks are characterized by the rememberer identifying a cue in the environment that reminds them to fulfill an intention. In contrast, time-based intentions must be completed after some duration has elapsed, such as remembering to perform an action after 8 min or at a specific clock time (Einstein & McDaniel, 1990; Einstein, McDaniel, Richardson, Guynn, & Cunfer, 1995; Park, Hertzog, Kidder, Morrell, & Mayhorn, 1997). Within time-based tasks, the distinction has been drawn between intentions that must be carried out at a specific time (called pulse intentions) versus those that can be completed within a window of time (called step intentions, see Ellis, 1988). For reasons that are not entirely clear, the vast majority of research has investigated event-based prospective memory whereas only a handful of articles have appeared on time-based prospective memory.

As it relates to event-based intentions, one issue that has arisen recently in this literature concerns whether detecting a cue requires processing resources or can be done relatively automatically. According to the multiprocess view theory, cue detection will be automatic when one or more of the following conditions are met: when the cue and the to-be-performed target action are highly associated, when the cue is salient, and when the ongoing processing focuses attention on the relevant features of the cue (McDaniel & Einstein, 2000; McDaniel, Guynn, Einstein, & Breneiser, 2004). Otherwise, cue detection can require significant processing resources. By contrast, the preparatory attention and memory (PAM) model argues that even under those conditions where cue detection should be automatic according to the multiprocess view, possessing an intention creates a processing cost manifested in the ongoing activity itself

(Smith, 2003; Smith & Bayen, 2004). More specifically, Smith (2003) found that lexical decisions as an ongoing task were slowed when participants possessed an event-based intention relative to not having an intention. Although Einstein et al. (in press) prefers the term *monitoring* for the slowed latencies, we advocate calling this effect *task interference* because this label is neutral on the cognitive mechanisms that give rise to it (Marsh, Hicks, & Cook, 2005; Marsh, Hicks, Cook, Hansen, & Pallos, 2003). Regardless of its label, the PAM theory argues that fulfilling event-based intentions always requires significant and measurable capacity.

The present study was not designed to adjudicate between the PAM and multiprocess theories because we have obtained significant task interference with some event-based intentions and not with other event-based intentions (Marsh et al., 2003). Rather, the opposing views highlight the fact that insufficient empirical evidence currently exists to disambiguate between the two theoretical positions. The lack of empirical evidence concerning task interference also makes it difficult to specify with any confidence the underlying cognitive mechanisms that give rise to it when it does occur, or to provide a complementary rationale for when it does not occur. Therefore, the approach taken in this study was to assess task interference effects with a vastly expanded set of intentions than has hitherto been explored. Not only did we test event-based intentions which are the only ones known to date to produce interference, but we also tested time-based intentions and situations in which participants held both types of intentions simultaneously. In all cases, the primary interest concerned how latencies to the ongoing task were affected by possessing these different kinds of intentions.¹

The data from the present study will allow us to speculate in General discussion on the opposing points made by PAM versus the multiprocess views, as well as offer some specific hypotheses about what cognitive mechanisms give rise to task interference when it occurs. The reader will note that we have conspicuously refrained from speculating on the theoretical mechanisms until General discussion. However, in the remainder of this introductory section, we use the existing theoretical frameworks in the prospective memory literature to

¹ Our focus in this article is on task interference. However, the reader should not construe this to mean that we are stating that performing well on an ongoing task is necessarily antagonistic to finding event-based cues. As Maylor (1996) pointed out, when the ongoing activity focuses a person on the correct features of an event-based cue, prospective memory is better than when it does not (also see Marsh, Hicks, & Hancock, 2000). Recently, we have shown this effect (dubbed task appropriate processing by Maylor) actually requires cognitive capacity (Marsh et al., 2005).

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات