2013

Not Right Now! Cognitive and Behavioral Impacts of IT interruption Timing

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ABSTRACT

Information technology (IT) mediated interruptions are ubiquitous in today's working environments, and have important implications for task performance outcomes. Extant research on the impacts of IT interruptions has overwhelmingly reported negative outcomes, and has also suggested that the adverse effects can be mitigated via controlling the timing of the interruptions, such that they occur at periods of reduced cognitive activity (i.e. at subtask boundaries).

Such research conceptualizes time across a continuum during which events (i.e. interruptions) punctuate the continuum in an unpredictable manner. The interruptive events are directly tied to the individual's level of cognitive activity since they are manipulated to occur at periods of reduced cognitive activity. While this event-based conception of time overwhelmingly dominates interruptions research, other conceptions are possible, such as the notions of clock time, cyclical time, or lifecycle.

This research focuses on clock time, the most widely used temporal framework (albeit entirely absent in interruptions research). Individuals (and collectives) construct temporal schemata that help them perceive and interpret clock time. These schemata are organized around prototypical ways of perceiving clock times (i.e. quarter-hour increments). When events occur out of sync with the dominant prototypical times that serve as cognitive reference points, individuals will face disruptions that adversely affect their cognitive and behavioral performance.

Adopting clock time in interruptions research allows us design interruption management strategies that are better implementable than event-based strategies. This is because they avoid having to arbitrarily decompose tasks, which is cumbersome and fraught with problems such as determining the appropriate level of detail. Also, clock-based interruption management does not require constant monitoring of cognitive activity levels and aligning such activity to subtask boundaries. Moreover, being independent of the task, clock-based interruption management is more generalizable than event-based techniques and more applicable to complex situations.

The purpose of this paper is thus to examine whether clock-based interruption management provides an additional mechanism beyond event-based techniques to manage the timing of interruptions and mitigate their adverse effects. We focus on the notion of prototypical clock times as cognitive reference points, to see whether manipulating interruptions to occur at prototypical versus atypical times produces differential impacts on psychological and behavioral task performance outcomes. Additionally, we examine the way in which clock-based and event-based interruption timing techniques interact to affect task outcomes.

A 2 (interruption at subtask boundary vs. within task) * 2 (interruption at prototypical timing vs. atypical timing) between subject design is proposed. The research uses business school student subjects from 3rd and 4th years. Subjects will be given one hour to propose an encrypted mail solution for business implementation. The task can be broken into three phases: search phase (determining available solutions), evaluation phase (choosing a solution), and execution phase (writing a memo describing and justifying the solution). Interruptions will be instant message windows, which must be acknowledged to close. Subjects will be assigned randomly to the four conditions, receiving interruptions at subtask boundaries or within tasks, and at prototypical times (15 minutes, 30 minutes, and 45 minutes into the task) or non-prototypical times (22 minutes, 37 minutes, and 52 minutes into the task). After completing the task, the students will take surveys to determine their reflective response as to perceived cognitive load, emotional response, and perceptions of time and interruptions using established scales to be determined.

The main contribution of this research is that it attempts to change the direction of the conversation taking place in the interruptions literature on managing interruption timing. Rather than consider timing as an event that is tied to the individual's level of cognitive activity in a task, we explore additional possibilities of manipulating timing that are independent of task or cognitive activity, and which depend solely on external, easily quantifiable factors. Such intervention requires no action on the part of the interruptee to indicate when interruptions are allowed, or observation by the interrupter to determine appropriate interruption times. This research also provides a simple yet potent tool to decision makers who need to manage their interruptions without delving into the complexities of constant task monitoring or adopting and using attention aware systems.