Resuming an Interrupted Task: Activation and Decay in Goal Memory

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Introduction

Interruptions are commonplace in many modern work environments. Often we must temporarily suspend our current task in order to complete an unexpected intervening activity. The processes involved in suspending and resuming interrupted task goals are addressed in the goal-activation model (G-AM; Altmann & Trafton, 2002). According to the model, activation of a goal decays over time such that the longer ago a goal was suspended, the more effortful it will be to reactivate.

In a study that interrupted the execution phase of 5-disc Tower of London problems (ToL; Ward & Allport, 1997), task resumption was slower following a longer rather than a shorter interruption (18 s vs 6 s) because of a greater decrease in activation (Hodgetts & Jones, 2006). The current experiment uses a similar methodology to examine in more detail G-AM's decay function which predicts a decrease in activation as a power function of time delay. That is, base-level activation of the suspended goal should decrease more quickly at first when that goal no longer governs behavior, but this decay will eventually level off with a less rapid decline in activation thereafter. To assess this proposition, we compare task resumption times over a range of three interruption durations, with the prediction that move times will increase markedly when the goal is initially postponed (reflecting a rapid activation decrease) but that for longer interruption intervals any further decrease in activation will be less apparent.

Method

Thirty-six Cardiff University students completed a series of computerised 5-disc ToL problems. On 6 out of 25 trials, participants were interrupted after executing their third move to complete a mood checklist (selecting one mood from a list of six that best described how they were feeling at that point). Interruption duration was manipulated by the number of checklists to be completed consecutively during one interruption break. A repeated measures design was used in which participants completed two examples of each of the three interruptions, categorised as either short (one mood checklist), medium (three checklists) or long (five checklists), the order of which were counterbalanced. There were also six matched no-interruption control trials.

Results and Discussion

Move times were recorded (Figure 1), and a repeated measures analysis of variance revealed a significant difference between conditions, $F(3, 105) = 27.34$, $MSE = 2.71$, $p < .01$. As expected, time taken to make the fourth move following interruption was longer relative to when solution execution was continuous. For short interruptions (mean duration 3.85 s), the time cost at resumption was significantly less than for either medium or long interruptions (mean durations 11.22 s and 18.67 s); however, there was no significant difference in resumption times between these latter two conditions.

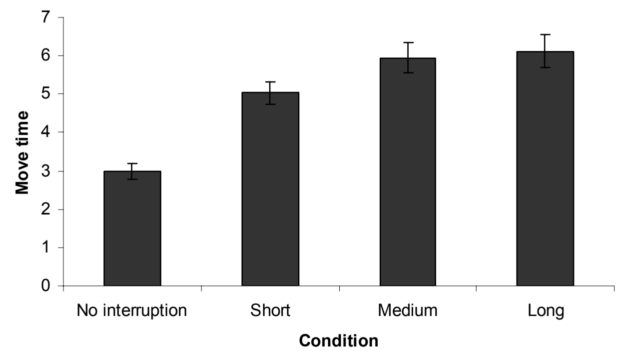

Figure 1: Time taken (in seconds) to make fourth move.

The current results are in keeping with G-AM's decay function. The significant increase in task resumption times between short and medium interruptions indicates an initial rapid loss of activation, but there is little additional decrement for the long interruption condition. More systematic scrutiny is required to gain a clearer understanding of this decay function, but future research could compare several short interruption intervals (e.g., 2, 4, 8, 12 and 16 s), to assess at what exact point the decrease in activation reaches an asymptote.

Acknowledgments

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