

Undergraduates Who Have a Lower Perception of Controlling Time Fail To Adjust Time Estimation Even When Given Feedback

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ABSTRACT

Although there are many studies that have investigated the impact of time management, little research has examined empirically time management. The present study investigated the relationship between the perceived control of time scale and the degree of adjustment in repeated time estimation. Undergraduates were assigned to either an adjustment group or a no-adjustment group. The two groups were asked to estimate the time necessary to complete a task before each trial. The experimenter informed adjustment group participants of the time spent on the previous task before they made time estimates for the next trial. The no-adjustment group participants were not informed of time spent on the previous task. The time estimation trial was repeated ten times. Results indicated that (a) only those in the adjustment group who had higher perceived control of time adjusted time estimates, (b) participants in the adjustment group with low perceived control of time and all participants in the no-adjustment group did not adjust their estimates. These results suggest that not only is it necessary to know the time spent on past tasks, but also it is necessary to have a high perceived control of time in order to adjust time estimates.

Keywords: *time estimation, perceived control of time, adjustment, time management, undergraduate.*

INTRODUCTION

Many undergraduates experience time management problems and suffer from time pressure. One coping strategy offered by university counselling services is time management. Although there are examples of books dealing with time management, such as Lakin's (1989) *How to get Control of Your Time and Life*, most advice on time management has not been based on the scientific research (Macan, Shahani, Dipboye, Philips, 1990; Macan, 1994). Macan et al (1990) developed a questionnaire regarding time management and found that a factor called *perceived control of time*, characterized by participants' perception of having enough time to finish their work, was important in time management. Some studies have demonstrated perceived control of time as a meaningful predictor of job satisfaction, performance, and various indicators of well-being, such as tension, work strain, sorrow, pleasure, and health (Adams & Jex, 1999; Claessens et al., 2004; Häfner & Stock, 2010; Macan, 1994; Macan et al.). These findings led to research showing that perceived control of time acts as a mediator between time management behaviors and indicators of job satisfaction, well-being, and performance (Adams & Jex, 1999; Claessens, Van Eerde, Rutte, & Roe, 2004; Macan, 1994). Thus, perceived control of time must be considered an important factor in time management.

Although time management studies since Macan et al. (1990) have continued to use questionnaires to measure time management beliefs as well as behaviors, it should be noted that responses on time management scales did not always reflect actual time management behaviour. Thus, in order to capture the essential features of the time

management construct, it might be useful to consider it from points of view other than social psychology. Some empirical studies of time management have been based on cognitive psychology (e.g., Burt & Kemp, 1994; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Roy, Christenfeld, & McKenzie, 2005). Most of the studies based on cognitive psychology asked a participant to estimate the time required for a task before conducting the task; however, only Francis-Smythe and Robertson (1999) tested the relationship between time estimation and time management.

Francis-Smythe and Robertson (1999) found a relationship between a score on the perceived control of time scale and accuracy in a duration estimation task. However, they only used the time estimation task once; the task was not repeated. In the real world, some jobs require workers to repeat similar tasks day after day. Even when they are given new tasks, some workers gradually become accustomed to the work and acquire the ability to estimate the time required. On the other hand, other workers have difficulty in estimating task time even when they have become accustomed to the task. In this regard, perceived control of time may affect the degree of adjustment in time estimation. If, in fact, perceived control of time affects time management, then those who have a high perceived control of time might effectively adjust their estimation of the time required for the repetition of a task. The present study, therefore, extends the work of Francis-Smythe and Robertson (1999) by exploring relationships between perceived control of time and degree of adjustment in time estimation.

THE STUDY

In this experiment we investigated whether those with a high perceived control of time could adjust their estimate of the necessary time for a trial. We accomplished by assigning participants to either an adjustment or a no-adjustment group. We asked each participant to estimate the required time before each task started. Then, the experimenter informed participants in the adjustment group of the amount of time spent on the previous trial, which could act as the cue for the adjustment. The participants in the no-adjustment group were not informed about the amount of time spent on the previous task. Finally, the participants again made estimates of the time required to complete a trial. This process was repeated for ten trials. The amount of work required was different for each trial.

In this experiment, we hypothesized that only those in the adjustment group who had a high perceived control of time would be able to adjust their estimates of the time required for a task as they progressed through the series of trials.

METHOD

Participants

The participants were undergraduate students at the authors' university. They received credit in their Psychology class as a reward for participating. We tested 40 participants (16 male, 24 female) with a mean age of 19.7 (range: 18-22 years).

Perceived control of time (PCT)

The seven items assessing the extent to which participants perceived their control of time were taken from Macan et al. (1990), Macan (1994), and Claessens et al. (2004). These items included the following: "I find it difficult to keep to a schedule because others take me away from my work," "I underestimate the time that it would take to accomplish tasks," "I must spend a lot of time on unimportant tasks," "I find myself procrastinating on tasks that I don't like but that must be done," "I feel that I have my work under control," "I feel confident in that I am able to complete my work on time," and "I often have little control of what is happening at work." The responses were made using a 4-point Likert scale (each scale range: 1~4; total range: min 7- max 28). The coefficient alpha for this scale was .75.

Time Estimation task

We created the time estimation task by modifying part B of the Trial Making Test (TMT). The TMT has been used widely as an executive function test (Corrigan & Hinkeldey, 1987). It requires subjects to connect a series of numbered and lettered circles, alternating between the two sequences.

All participants were asked to estimate the time required (sec) before each trial. And then, after finishing the task the adjustment group was informed of the time spent completing it. In the no-adjustment group, participant was not given the information about the time spent on the task. This process was repeated ten times. We changed the difficulty of the trial by varying the length of the series of numbered and lettered circles. The average number of circles was 25 (range: 15 - 40).

We scored both the actual time spent (sec) and the participants estimated time. We defined the time estimation

error as the absolute differences between the time spent and the time estimate made before a trial. We used the mean of the time estimation errors over ten times as the dependent variable.

Procedures

First, the experimenter asked a participant to answer the perceived control of time scales. Then, participants were assigned either were randomly assigned to either an adjustment group ($n = 20$) or a no-adjustment group ($n = 20$). Third, the experimenter showed the participant a TMT sheet for three seconds. After viewing the amount of numbered and lettered circles, the participant was asked to estimate the time necessary for the task. After finishing the task, only a participant assigned to the adjustment group was informed of the actual time spent; a participant assigned to the no-adjustment group (control condition) was not informed of the actual time spent. For each trial, the amounts of circle randomly changed and were as follows: 15, 17, 19, 20, 22, 24, 27, 30, 36, and 40. The trial was repeated ten times.

RESULTS

We assigned participants to either a high or low perception of time control group based on a median split ($Md = 2.13$). Eight participants whose score was near the median value score were excluded, leaving 32 participants for statistical analysis. The participants who had higher scores than the median value were classified into the high perception of time control group ($n = 15$: adjustment 7; no-adjustment 8), whereas the participants who had lower score than the median value were classified into the low perception of time control group ($n = 17$: adjustment 9; no-adjustment 8). The mean (SD) of the time estimation errors over ten trials and the mean perception of control of time scores can be seen in Table 1. There was no significant difference of sex of participant with respect to time estimation error ($t = 1.33$, $df = 30$, $p > .05$). Also, the results indicated that the difference between sexes on the perceived control of time scale was not significant ($t = 0.40$, $df = 30$, $p > .05$). Therefore, the data for both male and female were combined for subsequent statistical analyses.

Table 1

Means (SD) on Perception Time of Control and Error of Time Estimation.

Variable	Male ($n = 13$)	Female ($n = 19$)	Total ($n = 32$)
Perceived time of control	2.38 (0.44)	2.11 (0.66)	2.22 (0.59)
Error of time estimation (sec)	11.05 (2.66)	11.10 (3.48)	11.08 (3.13)

Table 1 showed the mean time estimation error as a function of perceived control of time (high and low) and the no-adjustment and adjustment conditions. We conducted a mixed model design 2×2 ANOVA with group (no-adjustment vs. adjustment) as between-subject factor and perceived control of time (high vs. low) as within-subject factor. The ANOVA revealed significant the interaction between two factors ($F(1, 28) = 4.21$, $\eta^2 = .12$, $p < .05$). Post hoc analysis showed that there was the difference between high and low perceived control of time in the adjustment group ($F(1, 28) = 6.56$, $p < .05$). There were no main effects of the group ($F(1, 28) = 2.93$, $\eta^2 = .08$, $p > .05$) and the perceived control of time ($F(1, 28) = 251$, $\eta^2 = .07$, $p > .05$). The result indicated that only those in the adjustment group with a high perceived control of time were able to adjust the time required for a trial based on repetition, when compared with other conditions.

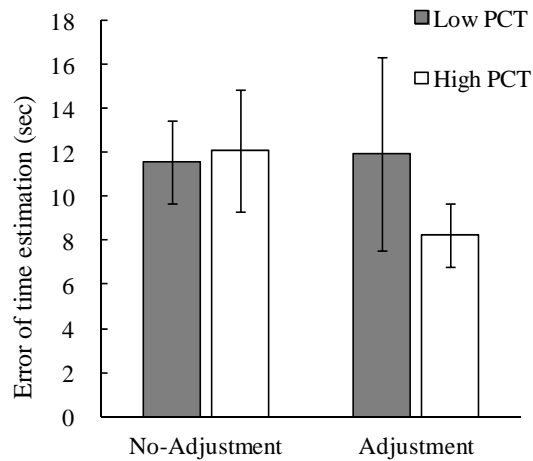


Figure 1. Mean Error of Time Estimation at the Low and High Perceived control of time (PCT) in the No-Adjustment and Adjustment condition.

DISCUSSION

This study hypothesized that undergraduates who have a high perceived control of time could appropriately adjust the time required for a task by the repetition of that task. The results supported our hypothesis by indicating that differences between workers who can adjust their time estimate for performing a task and those who cannot might be related to differences in their perceived control of time.

The results suggest that the more one has a perception of controlling time, the more one could appropriately adjust the estimation of the time required for a task. As a consequence, those high in perceived control of time might perform at a high level, as proposed in the time management model found in Macan (1994) and Claessens et al. (2004). Thus, the results extend the work of Macan (1994) and Claessens et al. (2004). However, it should be noted that the present study could not establish the casual connection. Moreover, the duration of each trial in the time estimation task was shorter than that in other studies. Future research, should investigate the relationship using tasks similar to real world tasks, which require more time. Although time management studies have continued since Macan's work (1994), all time management studies were conducted with questionnaires and frequently did not use an empirical method. Therefore, we assumed that a response on the time management scales did not always reflect actual time management behaviour. In the present study, we used an empirical method to examine the relationship between perception of time control and the degree of adjustment of time estimation for a task.

Our study was the first to demonstrate that a feeling of time management might relate to the ability to adjust time estimates for repeated tasks. This research, in the future, will help many undergraduates who have poor time management. Moreover, the present study extends the work of Francis-Smythe and Robertson (1999) by showing a relationship between perceived control of time and the ability to adjust time estimates. Future research that connects time management and time estimation is needed.

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