Student Perceptions of Study Time

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ABSTRACT. The ability to assess time accurately is limited. One example is the planning fallacy, defined as the time underestimation to complete larger tasks and the time overestimation for smaller tasks (Kahneman & Tversky, 1979). Accurate time allocations facilitate better time-management skills, which are critical to college students' success. The purpose of this research was to compare perceived study time and actual study time. Sixty-five students participated in a 2-part study consisting of 3 surveys (Internal Control Index, Student Studying Survey, and Demographics Survey) and 1 study log used to report daily study times for 1 week. Data were analyzed using a paired samples t test, denoting that students underestimated study time (M = -154.25), $t(64)$ = -2.73, p = .008, r = .10, and a Pearson r, which indicated no correlation between study time and perception of control, $r(61)$ = .224, p = .083. The underestimation of study time suggests that students perceive studying as a larger task, further indicating that students are placing importance on studying.

The ability to assess and evaluate time accurately is limited (e.g., Forsyth & Burt, 2008; Trautwein, Ludtke, Kastens, & Koller, 2006). Accurate time allocations facilitate better time-management skills, which are critical to college students' success. Students who are better at estimating completion time for tasks will be more capable of managing their time successfully. Burt and Kemp (1994) noted that there are two required parts of good time management skills: planning a schedule and keeping a schedule. Despite best efforts to plan and keep time accordingly, time inaccuracies are still present in daily life, as indicated by phenomena such as the planning fallacy (Kahneman & Tversky, 1979).

Kahneman and Tversky (1979) defined the planning fallacy as the time underestimation to complete larger tasks and the time overestimation for smaller tasks, while the individual remains confident during the planning stage. This underestimation indicated by the planning fallacy often results in the inability to complete other tasks. By underestimating completion time, the individual has reduced his or her allotted time for all other tasks, which can decrease productivity. Conversely, by overestimating completion time, the individual may have time left to devote to other tasks, which can increase productivity. The purpose of this research was to examine the difference between perceived total study time and actual total study time, as well as the relationship between the total study time and the feeling of control.

The first part of the current research focused on the difference between perceived study time and actual study time due to the inability to make accurate time estimations. Buehler, Griffin, and Ross (1994) conducted two experiments that focused on predicting time completion. The first experiment consisted of asking undergraduate students to estimate when their thesis would be completed and submitted. The students submitted their thesis after a mean of 55.5 days, but estimated it would only take a mean of 33.9 days, which indicated an underestimation. Students in the second experiment

were asked to predict when they would complete two tasks (one academic and one nonacademic) within the next week. Students predicted that the academic task would take approximately 5.8 days; in actuality, the students reported that the task took, on average, 10.7 days to be completed. For the nonacademic task, students predicted that the task would take approximately 5 days, but actually the task took on average 9.2 days. The researchers indicated that participants were overly optimistic in their predictions, despite participants reporting high levels of confidence about the estimations. The results of both experiments suggested an overly optimistic perspective in terms of task completion, as described by the planning fallacy. Both experiments also indicated the tendency to underestimate completion time, which could imply that the individual tasks were perceived as "smaller" or less important, according to the planning fallacy. The underestimation of completion time creates more time for task completion than anticipated, which could severely impact the allocation of time set aside for other important tasks.

Forsyth and Burt (2008) asked participants to indicate how long it would take to complete six everyday tasks. The researchers chose tasks that were considered "everyday" to preserve a sense of familiarity within the task. Forsyth and Burt (2008) reasoned that the more familiar an individual would be with a task, the more accurate the estimation would be for completion time. The researchers reported that participants actually overestimated the amount of time required to complete the tasks. The two studies (Buehler et al., 1994; Forsyth & Burt, 2008) reported different results in terms of overestimations and underestimations. A potential reason for the inconsistency between the two studies is that the Forsyth and Burt (2008) study did not restrict participants to a specific time scale (i.e., minutes or hours), and Buehler et al. (1994) asked participants to estimate in terms of minutes.

The difference between perceived and actual study time is important to examine due to the prevalence of insufficient time-management skills (Eison & Holtschlag, 1989). Although previous research has requested that participants complete more active tasks, the present study required students to report stationary and relatively inactive tasks in regard to studying. As suggested by previous researchers (e.g., Allan, 1979; Hornik, 1984), an individual's enjoyment and the nature of an activity (i.e., active or passive) can influence the individual's judgment on the perceived duration of an activity. Furthermore, Allan (1979) also indicated that there may be a connection between perceived time duration and the frequency in which an individual is engaged in the activity. Because studying is considered a nonactive task, students may perceive time as beginning to "move more slowly." Disinterest, or a combination of nonactivity and disinterest, may also cause students to perceive that time has slowed down.

Therefore, the first hypothesis was that students would have a tendency to overestimate the amount of study time due to the inactivity (and possible disinterest) associated with studying. Ultimately, students who can make more accurate completion-time estimations for homework, studying, and other academic tasks will be better able to manage their time and potentially increase productivity. Although the current study did not focus on student productivity per se, it did establish that time-management skills and accurate completion time estimates could increase the time students have to complete other tasks, which are linked to productivity.

The second part of the current research focused on the relationship between the feeling of control and study time. Stress-related research conducted by Macan, Shani, Dipboye, and Phillips (1990) reported that lower stress levels were related to a feeling of control in a situation. Furthermore, the research showed that students who practice time-management skills perceive themselves as better performers, which may reduce levels of stress as well. Poor-performing students may become less capable of managing their time efficiently due to higher stress levels (Macan et al., 1990; Misra & McKean, 2000). Students who study and become familiar with the materials presented in class may exhibit less stress, which may ultimately lead to the feeling of being in control. Case and Gunstone (2003) conducted 11 interviews to report students' attitudes about time. Students claimed that situations causing strict time demands were considered to be unrealistic, regardless of time investments and efforts (Case & Gunstone, 2003). The researchers also observed a language distinction between students who felt in control (time management) and those who felt out of control (time-consuming tasks). Although some students classified time as either "wasted" or "wisely spent," the majority agreed that time management was a critical factor in achieving success. Accurately estimating time for specific tasks may facilitate better time management skills for university students. The

perception of control is important for individuals to feel confident and maintain less stress, especially when the individuals practice time-management strategies (Macan et al., 1990). For the current study, the perception of control may also have been important for students to maintain confidence and less stress relating to their academics. For these reasons, the second hypothesis maintained that the feeling of control would be positively correlated with the amount of study time.

Method

Participants

Sixty-five students from the University of Central Missouri, a moderately-sized Midwest university, were recruited for this research study. A minimum sample size of 60 was established because it would allow a correlation coefficient of medium size (.30) to be significant at the .05 level. Participants were 18 years of age or older ($M = 20.62$, $SD = 5.79$) and currently enrolled in classes. Because all participants met these two criteria, all participants were allowed to participate in the study. The sample consisted of 46 women (70.8%) and 16 men (29.2%). Forty-two students were classified as first-year students, 13 students were sophomores, 6 students were juniors, and 4 students were seniors. Participants were recruited using the SONA system, the psychological science department's online participant management system, which allowed students to view and sign up for available research studies. Participants were compensated for their time by being awarded with research credits that could be applied as credit in their psychology courses. Given the nature of how participants were recruited, participants were considered part of a convenience sample.

Materials

The materials for this study consisted of the Internal Control Index (ICI), a Student Studying Survey, a short demographics survey, and a weekly study log. The Internal Control Index (Duttweiler, 1984), which was provided with the consent of Patricia Duttweiler, consisted of 28 statements. The index contained statements such as, "When faced with a problem, I _____ try to forget it" and "If I want something, I _____ work hard to get it." Students ranked how well each statement represented them on a scale of rarely (less than 10% of the time) to usually (about 90% of the time); for example, "When faced with a problem, I *rarely* try to forget it" (Duttweiler, 1984). The Student Studying Survey,

developed specifically for the use in this research study, consisted of four questions:

> 1) On average, how many hours a week do you study? (open-ended response)
>
> 2) Do you tend to study more during the day or at night? (answer choice: day or night)
>
> 3) Do you set aside time specifically for studying? (answer choice: yes or no)
>
> 4) In terms of time management, do you feel in control of the time you spend? (answer choice: yes or no).

Questions 2 and 3 of the Student Study Survey were not analyzed in the present study as they were not directly relevant to the primary hypotheses. The demographics survey consisted of basic questions such as age, participant sex, and class rank. The weekly study log was developed for students to log their study times for one week during the course of this research study. The study log was numbered in order to keep all participant surveys and materials together for pretest and posttest analysis.

Procedures

Typical procedures were followed for obtaining Institutional Review Board approval prior to data collection. Participants began the study by reading and signing the consent form. The research study was divided into two parts. The first part required participants to complete the Internal Control Index (ICI), a Student Studying Survey, and a short demographics survey. Upon completion, participants submitted their surveys to the researcher. Participants then received the numbered weekly study log to monitor and record their total study time for the duration of 1 week. The weekly study log indicated one row for each day of the week (e.g., Sunday, Monday). Each day had two study sessions for which the students indicated their "start time" and "stop time" while studying. Participants were informed both verbally and in written format to indicate any other study sessions on the blank area to the side of each day on the study log. Participants were not restricted to the two provided study sessions on the weekly study log. Participants were asked to sum their total study times for each day and the researcher confirmed the total during data analysis. The researcher verbally informed participants that "homework" should not be included in study time, and that

the research was only directed towards the "act of studying." However, no operational definition of studying was given to the participants.

The numbers given to the participants were not linked to their identities; the numbers were simply used for grouping surveys and study logs. Participants were given instructions on how to log their study times throughout the week. For part 2, participants returned with the completed study log in exactly one week. Participants turned in the weekly study log and were then asked to complete the Internal Control Index, the Student Studying Survey, and demographics survey once more. Participants submitted the surveys from part 2 and were given a debriefing statement and the opportunity to ask any questions.

Results

Data were analyzed using a repeated measures t test and a Pearson r. The assumptions for the repeated measures t test were tested and met prior to analysis. The repeated measures t test was used to analyze the data relevant to the first hypothesis, which stated that students would have the tendency to overestimate the amount of studying each week. Two estimations were used to compare the accuracy of both estimations with their actual study time, which was indicated by their student study log. The first estimation, labeled the pretest estimation, came from Question 1 of the Student Studying Survey that asked participants to estimate how many hours they studied each week. The pretest estimation was completed before the participants were exposed to the student study log for the week. The second estimation, labeled the posttest estimation, also came from Question 1 of the Student Studying Survey and was completed after the participants were exposed to the student study log for the week. The study log, which participants used to indicate their actual study times, was used to compare both estimations with the actual time spent studying for the entire week.

Comparing the pretest estimations (based on Question 1 of the Student Studying Survey from part 1) and the student study log, students underestimated their study time (M = -154.25), $t(64)$ = -2.73, p = .008, r = .10. Comparing the posttest estimations (based on Question 1 of the Student Studying Survey from part 2) and the student study log, students underestimated their study time even more (M = -188.86), $t(64)$ = -5.52, p < .001, r = .32. Comparing the pretest estimations and posttest estimations showed no significant difference

(M = 34.62), $t(64)$ = .844, p = .402, r = .01. The descriptive statistics for each measure are presented in Table 1. Unfortunately, the multiple t tests used for analyses might have caused the experiment-wise probability to be slightly inflated, which should be noted when interpreting the results.

The Pearson r was used to analyze the second hypothesis, which stated that study time and the perception of being in control would be positively correlated. The Internal Control Index was utilized to determine if students felt in control, the Internal Control Index and the study log for each participant was used to determine if there was a relationship between study time and the feeling of control. The correlation was not statistically significant, $r(61)$ = .224, p = .083. Four students were excluded from the correlational analysis due to incomplete survey responses on the Internal Control Index. The descriptive statistics for the pretest and posttest Internal Control Indexes are presented in Table 2.

Discussion and Conclusion

The first hypothesis of this study, which stated that students would have a tendency to overestimate the amount of study time, was not supported by the results. Participants actually underestimated their study time by approximately three hours. The second hypothesis, which stated that study time would be positively correlated with the feeling of control, was also not supported. The correlational analysis indicated that there was no significant relationship between study time and perception of control.

The time underestimation suggests that students perceive study time as a larger task, as illustrated by the planning fallacy, which further suggests that studying is considered a high priority. Because the underestimation of study time could result in reduced time available for other tasks, student efficiency could be diminished in the future. Students in this study underestimated their study times by a mean of approximately three hours. However, regardless of underestimation or overestimation, the discrepancy between estimated

TABLE 1		
Descriptive Statistics for the Pretest and Posttest Study Time (in Min) Estimations (N = 65)		
Measures	M	SD
Pretest Estimation	649.39	519.19
Study Log	803.63	519.98
Posttest Estimation	614.77	409.69

time and actual time creates a difficulty in accurate and appropriate time management, which is the underlying issue discussed in the planning fallacy. The time discrepancies for this study could be a result of the sample, which consisted primarily of first-year students. First-year students, and potentially nontraditional students, may have not developed appropriate college-level study habits. Buehler et al. (1994) noted that individuals are able to make more realistic estimations for completion time when using past experience to influence the estimations. Because first-year students have had limited experience with college-level studying, these students may be limited in their abilities to make accurate estimations of study time.

The results of the correlational analysis suggest that students felt in control of the time they spent, regardless of the amount of time spent studying. Although study time across students ranged from approximately 1 hr to 48 hrs, the majority of students indicated feeling in control of the time spent studying. In fact, further examination of the descriptive statistics show that 52 out of 65 students reported feeling in control on the pretest survey and 54 students reported feeling in control on the posttest survey. Despite the increase from 52 to 54, this difference was not indicative of a significant increase between the pretest and posttest survey. A potential implication of these results could indicate that students became more aware of the time they spent when required to log their study time, which made the students feel more in control of their time. Unfortunately, the increase was too small to determine any definitive conclusions about student awareness during and after study time logging.

The U.S. Department of Education (2011) recommended that for one credit hour of in-class instruction, students should be required to complete two hours of outside work. Therefore, students should expect an average week to consist of three hours of in-class instruction and six hours of outside work per class. For example, a student enrolled in 12 credit hours should be spending approximately 12 hrs in class and 24 hrs of outside class work each week for a total of 36 hrs per week.

TABLE 2		
Descriptive Statistics for the Internal Control Index ($N = 61$)		
Measures	*M*	*SD*
Pretest ICI	103.71	1.28
Posttest ICI	105.00	1.47

Participants in the current study indicated from their study logs that they were studying an average of 14 hrs per week, which suggested that the participants did not take into account the number of credit hours in which they were enrolled. Access to the number of credit hours enrolled in would have shed light on the number of hours the students should have been studying, as recommended by the U.S. Department of Education (2011). Typically, students are enrolled in 12 credit hrs in order to reach full-time status. Unfortunately, the Department of Education (2011) does not provide detailed descriptions on what is considered "outside class work." Although the current results suggest that students are studying only 14 hrs per week, instead of the recommended 24 hrs, this does not take into account the amount of time spent on other academic activities, such as homework and reading assignments. Given the ambiguity of "outside work" and difficulty with distinguishing between actual studying and other academic activities, the findings on whether students are studying the required amount cannot be conclusively determined.

The results of the current study may be beneficial for universities that provide academic enrichment courses to students, specifically first-year students. Academic enrichment courses typically provide students with the resources and workshops to succeed academically, such as time-management skills, college adjustment skills, and extra assistance with courses and programs of study selection. By applying the time-underestimation finding to programs similar to academic enrichment, universities could place more emphasis on better time-management practices to highlight the time necessary for academic success. In fact, Misra and McKean (2000) suggested that encouraging student involvement in time-management seminars may improve student success. Academic enrichment courses would give students the opportunity to experience the challenges often faced with scheduling tasks and managing time to complete tasks.

An important limitation of this study was that the distinction between "small" tasks and "large" tasks may vary across students. For example, a first-year college student could perceive an eight page essay as a large task, but a graduate student may perceive that same essay as a small task. This task distinction can be due to individual perceptions and experiences. A second limitation of this study was the difficulty students had with distinguishing

between homework and studying. Although some homework assignments can be utilized as a study tool, for this research we focused specifically on the act of studying (e.g., through study methods such as note cards or reading the class textbook).

A third limitation of this study was the inability to treat studying as a specific task in a similar fashion as previous research. Previous research studies (e.g., Buehler et al., 1994; Burt & Kemp, 1994) asked participants to estimate the duration of a task, and then asked the participants to spend time completing that task. In this study, the researchers simply asked students to indicate how long they spent on the task of studying each week, then asked the students to log their study time. For the current research design, participants were not asked to give an estimation, which would have been consistent with previous research designs. Asking participants to indicate their average study times, this did not reflect the estimation technique as employed in previous research. Further limitations of this study consisted of the sample being comprised predominantly of women and first-year students. A fourth limitation of this study was the self-reported measures in terms of both the pretest and posttest estimations, as well as the student study log. All these items required students to self-report the information, which left room for students to forget to log their study time causing incomplete data.

Future research should include extending the time students have to use the student study log to facilitate a better perspective of actual study time for students. Specific questions, such as course load and other extracurricular activities, would gauge the time constraints students have for studying. Additional information such as upcoming exams and assignments may also be utilized to assess actual study time. For example, if a student has no exams in the week during the student study log, then the amount of studying may be limited. However, if a student has two exams in the week during the student study log, then the amount of studying may increase.

Examining the effect of task segmentation (Forsyth & Burt, 2008) may also prove to be valuable in examining study habits. Students are often instructed that the most effective method of studying is to divide studying throughout several days prior to an exam, which in essence, is the incorporation of task segmentation and studying. The concept of task segmentation can, in some ways, be applied to the current study by comparing the average study times for students who participate

in task segmentation to the students who do not. By doing so, researchers can determine if students who utilize task segmentation are more effectively learning the material than those who do not. The additional variable of effective learning could be applied to the current study with a few revisions in order to measure effective learning for both styles.

Although the current study has limitations, it does shed light on the study habits of undergraduate students and the application to study time of the planning fallacy. Students who are more capable of establishing accurate predictions of task completion will be able to participate in better time management practices, and typically individuals perceive themselves as being better performers when time-management activities are practiced (Macan et al., 1990). The results of the current study may also aid students in better understanding the limitations of estimating the time required to complete essential academic tasks, as well as bringing to attention the challenges that students may face when allotting time for these tasks. The underestimation of study time observed in the current study suggests that students perceive studying to be a "larger" or more important task, which requires more emphasis and time.

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