First-Year College Students' Time Use: Relations With Self-Regulation and GPA

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Abstract

How students manage their time is critical for academic performance and is an important component of self-regulated learning. The purpose of the present study was to examine relationships among first-year college students' ($N = 589$) time use, academic self-regulation, and target and actual grade point average (GPA) at three time points. Findings showed that students planned and spent less time on academics than socializing and work obligations in their first semester. Students generally planned to spend more time on academics in the second semester. Academic time use (planned and actual academic hours) related to higher self-regulated learning and target GPA in the first and second semester. Students who were farther away from their first-semester target lowered their second-semester target GPA instead of planning more time in academics. Students exceeding their target first-semester GPA planned to socialize more in the second semester. Orientation and transition programs that assist students may need to revisit time management and planning midway through the year to address potentially inadequate self-regulated learning in the first year of college.

Keywords

time use, time management, self-regulated learning, goals, college

College is a time for pursuing a wide array of activities and interests, but each activity takes time. Recent surveys suggest that college students are spending time on vocational

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and employment pursuits at the expense of academic pursuits (Brint & Cantwell, 2010; Nonis, Philhours, & Hudson, 2006). The challenge is to plan out priorities and opportunities that align with the many goals of college life. Higher achieving college students tend to set academic target goals, and they estimate how much time a task requires, practice habits of study, and monitor their learning progress (Bembenutty, 2009; Ramdass & Zimmerman, 2011). Research has suggested the need for remediation of time-management skills. Many students undershoot their target grade point average (GPA) in the first semester (Knouse, Feldman, & Blevins, 2014). Students who report spending most of their time away from campus pursuing work typically have lower GPAs than students who spend most of their time on campus (Brint & Cantwell, 2010), and the former report having lower expectations about academic success (Nonis et al., 2006). Many students in their first semester enroll in college orientation courses (e.g., University 100), which can improve student self-regulated learning, help seeking, retention, and academic performance (Cambridge-Williams, Winsler, Kitsantas, & Bernard, 2013; Cleary & Zimmerman, 2004; Hendel, 2007; Schnell & Doetkott, 2003). However, students continue to have issues with self-regulated learning and goal-setting beyond their first semester.

Self-regulated learning is critical for success in the college setting (Zimmerman, 2008). Processes of self-regulated learning, including setting goals, engaging in strategic planning, using strategies, monitoring performance and reflecting, are especially important for students independently balancing their learning with life activities (Huie, Winsler, & Kitsantas, 2014; Kitsantas, Winsler, & Huie, 2008; Kitsantas & Zimmerman, 2009). Advanced students learn to balance homework and other activities with ease, but incoming students find the balance effortful due, in part, to limited self-regulated learning skills (Huie et al., 2014; Knouse et al., 2014). Students with initially high self-regulation tend to spend time preparing for college exams, and early successful performance on a college exam tends to increase future goals and expectations for performance (Kitsantas, 2002). Thus, students show differences in self-regulated learning that may translate into how they make time for pursuing academic goals. Currently, few studies have examined how new college students' use of time relates to their academic goals and performance.

The current study explores relations among first-year college students' use of time, their target and actual GPA, and self-regulated learning. For two semesters, students reported how they planned to and then how they actually spent time in their first and second semester (by estimating their weekly hours spent in different activities). At the end of their first semester, students were given the opportunity to make new plans of how they would spend their time for the coming second semester. Students also reported on their self-regulated learning and their target GPA each semester, which was compared with their actual GPA of record.

Student Use of Time

Time Use and College Life

College students devote time in their schedule to academic activities including attending lectures, doing homework, studying, and writing papers (Brint & Cantwell, 2010;

Nonis et al., 2006; Zuriff, 2003). Students also need to make time for non-academic activities including work for pay, extracurricular activities, leisure, and social events (Brint & Cantwell, 2010; Nonis et al., 2006). However, some uses of time are more helpful than others. Astin (1999) argued that the activities a student engages in outside of the classroom (e.g., clubs, sports, and recreation), as long as he or she is oriented toward enhancing the college experience, can have a positive impact on academic learning. Nonis et al. (2006) showed with business majors that students could be categorized as "campus-centered" and others classified as "work-centered" based on their priorities. Campus-centered students tended to live on campus, were more likely to study often, and worked less at off-campus jobs. Campus-centered students were higher on semester and cumulative GPA than other students.

Furthermore, Brint and Cantwell (2010) surveyed students and developed a measure conceptualizing time spent along dimensions of scholarly uses of time (e.g., time preparing for class and studying), "active" uses of time (e.g., exercise, socializing, student clubs, volunteering), "passive" uses of time (e.g., commuting, watching television [TV], use of computer for entertainment), "connecting" uses of time (e.g., student clubs, working for pay), and "separating" uses of time (e.g., religious activities, family). Findings showed that students high in active and low on passive time use tended to be more conscientious of their academic work than students high on connecting and separating time. Students tended to spend equal time in academics and leisure, but those who spent more time in leisure and off-campus jobs had lower cumulative GPAs. These findings support Astin's (1999) hypothesis that arranging for activities that enhance the college learning experience needs to be considered when students budget their time. However, plans change and there is often a time to revisit one's plans. From a self-regulated learning perspective, students are expected to revisit their plans and modify goals and time use after reflecting on performance.

Planning Time

College students spend less time in pursuit of academic activities than perhaps they should. Students in a study by Zuriff (2003) ranked the time they spent on academic activities in class (e.g., note-taking) and outside of class (e.g., studying, visiting office hours) every week. Their rankings were compared with semester-end rankings of the time they thought they spent over the entire course. Students accurately reported the time they spent over the course of an entire semester, but they were, on a weekly basis, spending less than 10 hr a week on academic work. Students who reported more time studying performed better in the course than peers who spent less time studying, even after accounting for prior exam scores in the course. Cerrito and Levi (1999) surmised that students have an inaccurate understanding of how much time should be spent on academic work in a week. Student diaries were collected on the time spent on various activities for 1 week. Students spent 2 to 3 hr of study time a week, which differed from instructor recommendations that they should spend at least 3 hr of study for every hour in class (i.e., double the actual time students reported). These two studies illustrate that students may lack an understanding of how much time they should be spending on academics. However, there may be an important difference in actual time use

compared with planned time use, which is why in this study we examine both in relation to student self-regulated learning.

Time Use and Self-Regulated Learning

Self-Regulated Learning

Students learn to manage their time through planning, executing, and receiving feedback on prior performance for future improvement. Zimmerman (2008) stated that self-regulated learning occurs in three phases labeled forethought, performance, and self-evaluation or reflection. In the *forethought* phase, students set goals and expectations. In the *performance* phase, students use strategies and monitor their learning. In the *self-reflection* phase, students use self-monitored outcomes to evaluate the effectiveness of their strategies used. Self-evaluation encourages a student to adjust his or her activities in the forethought phase based on prior performance (Zimmerman, 2008). A self-regulated student plans with a goal in mind. The student is also aware of the effort and investment necessary to accomplish a goal or to change it based on feedback (Pintrich, 2004; Ramdass & Zimmerman, 2011). Below, we discuss three processes involved in self-regulated learning: learning strategies, goals, and time management.

Learning Strategies

Effective learning occurs with the help of cognitive strategies such as organized study techniques and awareness of the gaps in one's knowledge and how one learns best. Students who report having reliable times and environments to study in and high awareness and monitoring of their learning show higher academic delay-of-gratification and higher performance (Bembenutty, 2007; Kitsantas et al., 2008). A self-regulated student would pursue his or her long-term goal requiring full-time academic work (e.g., graduating with a 4.0) and is less likely to procrastinate by pursuing immediately available rewards (e.g., parties, lucrative short-term jobs; Bembenutty & Karabenick, 2013). He or she would also be more likely to engage in daily behaviors such as studying without background distractions and completing his or her assignments instead of procrastinating.

Planning one's time helps avoid procrastination, which can be seen as a failure to self-regulate. Britton and Tesser (1991) found in a survey of students with good GPAs that they tended to understand short-range planning (e.g., making daily lists), have a time-oriented attitude (e.g., feeling in control of one's time), and engage in long-range planning. These students avoided procrastination more than students with low GPAs. Research from a self-regulated learning perspective suggests that students can decrease procrastination by increasing their self-efficacy or expectations for being able to achieve a certain level of performance (Howell & Watson, 2007; Wolters, 2003). Students are less likely to procrastinate if they are shown how cognitive and metacognitive strategies are important to academic success (Tan et al., 2008).

Goal-Setting

Goal-setting is an instrumental skill for achieving objectives and motivating behavior toward a performance standard (Locke & Latham, 2002). GPA is a long-term performance goal for students. Students who set higher academic goals tend to believe they have the capability to self-regulate toward it even in the long haul of a semester (Wolters, 2003; Zimmerman, 2008). A study from Knouse et al. (2014) at a women's college showed that students who set higher goals also have higher motivation for achieving these goals over the semester. The researchers asked students to report their semester GPA goal 8 weeks prior to final exams and report motivational and self-regulatory issues they experience. Students who reported higher motivational and self-regulatory issues (e.g., procrastinating, low, and inconsistent work quality) tended to report a low semester target GPA. Furthermore, students reporting more motivational difficulties tended to have a bigger discrepancy between their end-of-semester actual GPA and target GPA (i.e., they underperformed). Students having difficulty with long-term goals may have difficulty with short-term goals as well.

Bembenutty (2009) showed with at-risk students that making short-term performance goals for study and homework (e.g., going to the library every day) was correlated positively with time management and actual mid-term performance. Students in the remediation program kept a journal in which they logged their goals each day in one column (e.g., estimated time), their start and end time of homework, the details of their homework environment, and whether they met their goals for the week. Time management was measured as the difference between planned and actual time spent on homework. Students with lower discrepancies between planned and actual time completed more homework assignments and garnered higher mid-term grades than students with larger discrepancies. In addition, students who wrote down a specific mid-term exam grade as their target goal performed better on average than students who did not write down a grade. The implications of research on goal-setting and self-regulated learning are that students can use regular goal-setting as a way to help them estimate their time use in the period leading up to an exam or an assignment due. This idea is consistent with self-regulated learning interventions, which posit that student awareness of progress toward a desired performance level will increase the use of learning strategies (Cleary & Zimmerman, 2004). However, students are not being asked in these studies what they would change, or how much they would change their target goals when given feedback on performance. Based on self-regulated learning theory, students who did not achieve their target would likely change their goals. This area needs to be addressed in relation to how students self-regulate their learning.

Questions and Hypotheses

The research reveals a few gaps that the present study attempts to fill. First, most studies have only examined student's self-report of actual time use post hoc rather than how they *plan* to spend their time in the future. Second, studies have rarely examined time use longitudinally across two or more time points. Third, studies have typically

not examined how time use in academic and non-academic areas is related to self-regulated learning and academic goals. We investigate time use, self-regulatory processes, and target and actual GPA among first-year college students across two semesters. The research questions are as follows:

Research Question 1: How are students planning to, and actually spending time over their first and second semesters of college, and how are they changing their time use over time?

Consistent with prior research, we expected that students would spend a majority of time in non-academic activities such as socializing, work-related obligations, and leisure, and that academics would not be their highest priority. We hypothesized that how students planned to spend their time will be similar to how they actually spent time. In addition, we hypothesized that students will plan to spend time differently in their second semester as compared with their first semester.

Research Question 2: To what extent is student time use associated with academic self-regulation and target and actual GPA?

We hypothesized that some students have higher self-regulated learning skills and spend more time on academics than their peers. Having strong academic self-regulation will be related to more investment in academics, and spending more time in academics will be related to strong self-regulation. We hypothesized that time use on academics would be positively associated with both target and actual GPAs.

Research Question 3: How accurate are students with their time use and goal-setting, and to what extent will students revise their time use and goals after the first semester?

We hypothesized that students' first-semester time use will reveal inaccuracies with their initial planning and changes to their future plans in the second semester. In addition, it was hypothesized that students would increase their planned academic time (and decrease their socializing and leisure time) for their second semester if they did not achieve their target GPA in the first semester.

Research Question 4: To what extent is managing and changing time use related to self-regulation and GPA?

We expected that accuracy (a smaller difference between planned and actual hours) in the first semester would relate to higher self-regulation and GPA. In addition, we expected that revising one's plans to do more academic hours in the second semester would relate to increased future self-regulation and target GPA.

Method

Participants

Participants were 589 first-semester undergraduates at a large public, mid-Atlantic university. Students were in their first semester at this university, but some transfer students had attended other institutions previously. Of the participating students, 535 were first-semester freshmen, 25 were second-semester transfer freshmen, 10 were transfer sophomores, one was a transfer junior, and 18 did not indicate a classification. The average age of students was 18 years. Females made up 63% of the sample. White students made up 65% of the sample (7% Black, 6% Hispanic, 18% Asian, and 4% "Other"). Eighty-five percent of the participants were native to the United States and 75% had English as a first language. Average income of students' families was US$70,000 per year. Approximately, one third of the sample were first-generation college students. Almost all students were full-time (97%) and the majority (92%) entered college without any prior 4-year or 2-year college experience from another university. Over half (61%) of the students lived on campus, and a marginal number of students were parents (<1%).

Procedure

All questionnaires were distributed in biology, psychology, and university orientation courses (e.g., University 100) often taken by first-semester students. Students were instructed to take home the questionnaires and return them upon attending the next class period. Questionnaires were collected at three time points: at 2 weeks into the fall semester Time 1 (T1), at the end of the fall semester Time 2 (T2), and follow-up during the end of the second semester Time 3 (T3). Term GPA for the first and second semesters was collected from student records. A portion of the original sample ($N = 243$) returned the questionnaires at T2, and a smaller portion of the sample at T3 returned completed questionnaires, which were then distributed via email ($N = 96$). For consenting instructors, completing the questionnaires in the first semester was incentivized with two extra credit points. Data collection was approved through the university's human subjects review board.

Measures

Self-regulated learning. The Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & De Groot, 1990) assessed the extent to which students engage in self-regulated learning. Self-regulated learning is assessed as engaging in academic/learning activities (e.g., "I attend classes regularly," and "I make good use of my study-time.") and meta-cognitive strategies (e.g., "When reading class material, I try to relate it to what I already know."). There are eight items ($\alpha = .71$) measuring how much a student devotes time and a specific place to studying, and 12 items ($\alpha = .74$), which measure how much a student endorses using strategies such as

planning, monitoring, relearning, and reflecting. The MSLQ has been validated in college students, and the scales correlate significantly with final grades (Pintrich & De Groot, 1990; Pintrich, Smith, García, & McKeachie, 1993). That is, students who are motivated and generally self-regulated in their learning do better in their courses. The wording of the MSLQ was revised slightly from "in this class" to "in my classes" to assess self-regulated learning more broadly across all their college classes. Item responses were scaled according to a 7-point Likert-type scale (1 = *strongly disagree* and 7 = *strongly agree*).

Time use. Time use was assessed as the self-reported actual and planned number of hours a student spent in a week on the following activities: (a) studying/homework, (b) socializing with friends, (c) meeting with instructors, (d) exercise or sports, (e) partying, (f) working for pay, (g) volunteer work, (h) student clubs/groups, (i) watching TV, (j) household/child care duties, and (k) playing video/computer games. Students reported the time they planned to spend on these activities in a semester, and the time they actually spent in a semester. For example, students filling out the survey at the end of their first semester (T2) reported the time they had spent in that semester and the time they planned to spend in the second semester on those activities in a separate section of the survey.

The survey layout showed these categories in a column. For each category, time spent was listed numerically in every row to make a 1 to 8 scale. At the top of the table were time ranges corresponding to each point on the scale. Scale values and time corresponded as follows: 1 = *none*, 2 = *<1 hr*, 3 = *1 to 2 hr*, 4 = *3 to 5 hr*, 5 = *6 to 10 hr*, 6 = *11 to 15 hr*, 7 = *16 to 20 hr*, and 8 = *>20 hr per week*. Four composite variables were created out of the 11 activities. Consistent with prior researchers (Brint & Cantwell, 2010; Nonis et al., 2006), the four composite time use activities included *Academic Activities* (combined amount of time studying/doing homework and meeting with instructors), *Passive Leisure Activities* (combined amount of time watching TV and playing videogames), *Socializing Activities* (combined the amount of time socializing with friends and partying), and *Obligatory Activities* (combined the amount of time exercising/playing sports, working for pay, volunteering, participating in student clubs, and engaging in household/child care duties). The totals were used for subsequent variable computations and analyses.

Time use accuracy and revision. We used the hours that students planned and spent as a means to measuring how much students monitored and adjusted (i.e., revised) their time use. *Accuracy* is operationalized as the deviation (or lack thereof) of actual time use from planned time use of the same semester. The difference between planned hours reported at T1 with actual hours reported at T2 was our measure of first-semester accuracy in time planning. We computed the absolute value of this difference for each of the four activities, thus a positive or negative value transformed into the absolute value with larger values in either direction indicating less accuracy. Similar variables of time-management accuracy have been used with students assessing their time use (Bembenutty, 2009).

In addition, we assessed time use *revision* by quantifying the adjustment students made when they reported their actual time use from the first semester, and then reported newly planned hours for the second semester. That is, students' time use revision is the difference between the actual time spent in the first semester (reported at T2) and the student's planned time use for the *future* second semester (also reported at T2). To compute time use revision, we used the raw difference score in each of the four activities from these two numbers. Thus, a positive value corresponded to an *increase* in planned time use in an area for the second semester, while a negative value corresponded to a decrease in time planned for that activity in the future.

Target GPA. Students reported their target GPA for the first semester at T1. At T2, students reported "target GPA for next semester" in the space provided. Students' target GPAs were compared with their actual GPAs from school records at the end of their first semester. We calculated how close students came to achieving their first-semester goal by subtracting actual GPA from target goal GPA, and grouped them based on if they achieved better than (coded as a 1), the same as (coded as a 2), or worse than (coded as a 3) their target GPA. There was a .10 of a point margin of error allowed. For example, a student was coded within the category of "same" if his or her target GPA was 3.00, but his or her actual GPA was between 2.90 and 3.10.

Analysis Plan

We first describe how students planned and spent their time in their first and second semesters, examine differences within time across domains, and examine changes over time within domain using MANOVAs. Follow-up tests included comparisons between or within each domain using Least Significant Difference (LSD) post hoc tests. Discriminant function analysis was not chosen because, consistent with Enders (2003), given the nature of our research questions and dependent variables (DVs; four domains of time use), we are not interested in reducing the data into a smaller number of latent factors, which would result in linear combinations of ways of spending time that would be difficult to interpret given that we have already carefully constructed four clearly distinct ways of using time. Greenhouse–Geisser corrected *F*-statistics are reported when there was a violation of multivariate normality. Next, we correlated time use (T1-T2) with our surveys of MSLQ academic self-regulation, target GPA, and actual semester GPA. Next, we examined whether students changed their plans (time use revision) for the second semester based on the whether they achieved their first-semester target GPA goal. Finally, we examine time use accuracy and time use revision variables in relation to self-regulated learning scales, target GPA, and semester GPA with correlations, *t* tests, and MANOVA. Throughout, we report Cohen's *d* for statistically significant comparisons involving means. For clarity, the analyses are organized by the research questions.

Missing data. As is always the case with longitudinal studies on college students, there was attrition—some students drop out of college or transfer during their first year and,

Table 1. Estimates of Students' Planned and Actual Weekly Hours in Two Semesters.

	Planned				Actual			
	Time 1 (N = 563)		Time 2 (N = 249)		Time 2 (N = 251)		Time 3 (N = 92)	
Variable	M	SD	M	SD	M	SD	M	SD
Academic	10.78[a]	6.21	13.58[a]	6.55	10.53	6.52	10.70	5.83
Passive leisure	5.21	5.92	5.15	5.97	5.57	6.07	5.79	2.62
Socialization	12.56	8.59	12.21	8.37	13.49[b]	9.16	7.65[b]	2.68
Obligations	16.26[a]	10.07	19.26[a]	10.51	14.61	10.88	13.59	4.06

Note. All post hoc contrast across domain within time are statistically significant except for planned obligations and socialization at Time 2.
[a]*p* < .05 for contrast between Time 1 and Time 2 planned.
[b]Contrast between area at Time 2 actual and Time 3 is significant.

of course, many of those who were still around for the second semester did not agree to fill out another long survey. Only 92 of the original 589 completed the T3 survey. We did a series of attrition analyses to examine whether those who remained in the study at T3 (*n* = 92) were different systematically from those who left the study and had missing data. We examined all demographic variables at T1 and all T1 time use variables (continuous variables were assessed with *t* tests with yes/no missing data as the IV, and categorical variables were analyzed with chi-square tests). Importantly, there were no significant differences between those with and without data on *any* of the demographic variables (gender, race, on campus vs. off campus, immigrant status, ESL status, transfer status, and full-time status). Also critical for our assumption of the data being missing at random (MAR) was that those with missing data were no different from those with data on any of the T1 time use variables and target GPA.

The only difference that existed between those with and without missing data was that those who disappeared from the study had somewhat poorer actual GPAs (*M* = 2.67) in their first semester than those reporting at T3 (*M* = 3.03), *t*(518) = 4.14 *p* < .001. This is to be expected as those who perform worse early on in college are more likely to drop out of college. Given that academic performance was not the focus of the study, and that there were no other systematic differences between those with and without missing data, we chose to use list-wise deletion and we report on everyone possible at each time point to get the best parameter estimates. As a robustness check, we re-ran the analyses reported in Tables 1 and 2 with just the 92 participants who remained in the study the whole time. The results remained nearly identical in each case. This increases our confidence that the results are not due to an odd, biased group of students who happened to remain in the study. It is also important to point out that the attrition problem mostly only refers to our first research question about time use across the two semesters. The other research questions are more specific that mostly just have to do with relations among variables in one semester.

Table 2. First-Semester Relations of MSLQ With Time Use.

	First semester *planned* time use (Time 1)			
	Academic	Passive Leisure	Socialization	Obligations
MSLQ (Time 1)				
Time and environment	.12*	−.02	−.01	.09*
Meta-cognitive SR	.23**	−.10*	−.09*	.10*
MSLQ (Time 2)	First semester *actual* time use (Time 2)			
Time and environment	.22**	−.05	−.26**	−.01
Meta-cognitive SR	.21**	−.15*	−.10	.10

Note. Pearson correlations estimate the degree of association. MSLQ = Motivated Strategies for Learning Questionnaire; SR = self-regulation.
*$p < .05$. **$p < .01$.

Results

Time Use in the First and Second Semesters

Our first research question was, "How are students planning to, and actually spending time over their first and second semesters of college, and how are they changing their time use over time?" Table 1 reports the mean composite ratings for each composite category of time use (Academic, Socialize, Passive Leisure, and Obligations) at the three time points.

Planned time use across activities. A within-subjects MANOVA within T1 (comparisons going down in the first column of Table 1) revealed that the amount of time planned was not the same across all four types of activities, $F_{G-G}(2.67, 1385.30) = 190.79$ $p < .001$. Students planned to spend most of their time in their first semester in *Obligations* (16 hr a week), which is employment, exercising, and household/child care duties. Students planned less time in *Socializing* (12 hr a week), and fewer hours were planned in *Academics* (10 hr a week). The least amount of time was planned for *Leisure* (5 hr a week). Post hoc pairwise comparisons by activity were all statistically significant ($ps < .001$). They revealed *Academics* was significantly higher than *Passive Leisure*, $F(1, 519) = 214.05$ ($d = 1.28$), but lower than *Obligations*, $F(1, 519) = 127.82$ ($d = 0.99$), and *Socializing*, $F(1, 519) = 15.05$ ($d = 0.34$). *Socializing* was lower than *Obligations*, $F(1, 519) = 44.95$ ($d = 0.59$), but higher than *Passive Leisure*, $F(1, 519) = 311.61$ ($d = 1.54$), which was significantly lower than all other areas.

A similar pattern was found for students' plans for using their time for the second semester (T2—going down the second column of Table 1). The amount of time planned on the four types of activities was also not equal in similar ways, MANOVA $F_{G-G}(2.68, 636.10) = 134.05$, $p < .001$. All post hoc pairwise comparisons were significant (all $ps < .001$ except for *Academics* vs. *Socializing*, which was $p < .05$). Planned

time for *Academics* was higher than *Passive Leisure*, $F(1, 237) = 208.54$ ($d = 1.87$), and *Socializing*, $F(1, 237) = 4.57$ ($d = 0.28$), but *Academics* and *Socializing* were both lower than *Obligations*, Fs$(1, 237) = 59.17$ ($d = 0.99$) and 76.56 ($d = 1.13$), respectively. *Passive Leisure* was significantly lower than all other activities.

Actual time use across activities. Similar within-subjects MANOVAs as above were conducted comparing the relative amounts of time *actually* spent on different activities as reported by the students at T2 (reporting on the first semester), and at T3 (reporting on the second semester). For their first semester (going down the third column of Table 1), we found again that students spent time differentially across activities, $F_{G-G}(2.65, 622.88) = 57.43$ $p < .001$. The pattern was similar to that of planned time use. Students spent the most amount of time in *Obligations* (14 hr a week). They spent less time in *Socializing* (13 hr a week), lesser time in *Academics* (10 hr a week), and the least time was spent in *Leisure* (5 hr a week). Except for the difference between *Obligations* and *Socializing*, all post hoc pairwise comparisons were significant (ps $< .001$). *Academics* was significantly lower than *Socializing* and *Obligations*, Fs$(1, 235) = 17.05$ ($d = 0.54$) and 28.08 ($d = 0.69$), respectively. *Passive Leisure* remained the activity with the fewest hours reported. At the end of the first semester, students spent equal amounts of time in work and social activities, while they spent less time in academic activities than work and social activities.

At T3 (second semester), students spent more time in some activities as opposed to others, $F_{G-G}(2.16, 183.87) = 65.67$ $p < .001$. Post hoc pairwise comparisons were all significant (ps $< .001$). Comparisons revealed that *Academics* was higher than *Socializing* and lower than *Obligations*, Fs$(1, 85) = 22.21$ ($d = 0.61$) and 14.43 ($d = 0.49$). *Obligations* was higher than *Socializing*, $F(1, 85) = 132.71$ ($d = 1.50$). *Passive Leisure* remained the least frequent activity. In summary, students actually spent time in the second semester similar to how they did in the first semester. Students spent most of their time in obligatory activities, and the least of their time pursuing passive leisure. Academics were situated between obligatory and social activities.

Change in time use. Next, we analyzed whether the amount of time students spent on each type of activity changed from the first to the second semester (now going across, within rows in Table 1). Two repeated-measures MANOVAs ("doubly multivariate" with both time [i.e., T1, T2] and measure [i.e., *Academic*, *Socializing*, *Obligations*, and *Leisure*] as within-subjects variables) were conducted—one for planned time use (involving T1 and T2), and one for actual time use (involving T2 and T3). Students did not change in the amount of time they *planned* to spend in socializing over time, follow-up, univariate $F_{G-G}(1, 199) = 1.32$ *ns*, nor in their leisure time, $F_{G-G}(1, 199) = 1.68$ *ns*. However, students increased the amount of time they planned to spend in academic ($d = 0.22$) and obligatory ($d = 0.29$) activities from the first to the second semester, Fs $= 9.12$ and 17.28, respectively (ps $< .01$). In terms of *actual* reported time spent, however, students did not change the amount of time they reported spending on academic activities, $F_{G-G}(1.99, 127.82) = 2.30$ *ns*, leisure activities, $F_{G-G}(1.93, 125.44) = 2.03$ *ns*, nor obligations, $F_{G-G}(1.76, 112.63) = 2.30$ *ns*. However, students' ratings of how often

Table 3. First-Semester Time Use Associations With Target and Actual GPA.

Variable	First-semester time use	First semester GPA Target/actual	Second semester GPA Target/actual
Academic	Planned (T1)	.17**/.16**	.21**/.13**
	Actual (T2)	.05/.11	.23**/.17**
Passive leisure	Planned (T1)	.00/−.05	.00/−.08
	Actual (T2)	.03/.08	.11/.02
Socializing	Planned (T1)	−.08/−.05	−.05/−.04
	Actual (T2)	−.07/−.08	−.04/−.23
Obligations	Planned (T1)	.10*/−.05	−.01/−.07
	Actual (T2)	−.01/−.11	−.04/−.02

Note. GPA = grade point average; T1 = Time 1; T2 = Time 2.
*$p < .05$. **$p < .01$.

they socialized decreased from the first to second semester (T2 to T3), $F_{\text{G-G}}(1.96, 125.23) = 13.08$, $p < .001$, $d = 0.72$. In summary, students' report of time use within an activity showed they *planned* to spend more time working on academics (and on obligatory activities) during their second semester in college, but they did not actually spend more time in academics and obligatory activities. They tended to spend less time on socializing in their second semester.

Time Use Related to Self-Regulation and GPA

Self-regulated learning. Our second research question was, "To what extent is student time use associated with academic self-regulation and target and actual GPA?" We analyzed contemporaneous associations between students' time use with MSLQ self-regulated learning in the first semester, and these Pearson correlations are found in Table 2. As hypothesized, students with stronger self-regulation not only planned to, but actually spent more time on academics than those with poorer self-regulation. Similarly, students higher in self-regulation also reported less time on passive leisure and socializing. In summary, students' reported time use related to their self-regulation. Students who invest time in academics tend to be more self-regulated, but students who invest greater time in social activities tend to be less academically self-regulated.

Target GPA. We expected that higher target GPA goals would correspond to higher self-regulated learning. Correlations reported in Table 3 show that time use in different areas was significantly related to the student's target GPA over his or her first semester. Setting a higher first-semester target GPA was related to planning and spending more time on academics, as well as planning more time in obligations. Furthermore, setting a higher second-semester target GPA was related to planning and spending more time during the first semester on academics. Target GPA was unrelated to leisure and socialization.

Actual GPA. The correlations in Table 3 were also used to estimate the relation between time use and actual GPA in the first and second semesters. It was expected that time use that focused on academics would be related to having a high semester GPA. Results indicated that planning more time in academics was related to having a higher GPA for the first and second semesters. In addition, the spending of time on academics was related to having a higher second-semester actual GPA, but not related to first-semester GPA. The correlations were small in size (*r*s between .13 and .17). Passive leisure, socializing, and obligations were not associated with actual GPA over the first year of college.

Time Use Accuracy and Revision

Our third research question was, "How accurate are students with their time use and goal-setting, and to what extent will students revise their time use and goals after the first semester?"

Time use accuracy. The first part of the third research question concerned time management accuracy and revision: How accurate are students in their time use plans? The four accuracy scores (absolute value of the difference between planned [T1] time use and actual [T2] time use) were first entered individually into single-sample *t* tests to test for a non-zero value. A difference of zero would indicate that students were dead on in estimating how much time they were going to spend on the activity in their first semester. Students' actual time spent was different (far away from zero) for time spent on *Obligations* ($M = 7.83$, $SD = 7.63$), $t(214) = 15.06$, *Socializing* ($M = 5.47$, $SD = 4.82$), $t(229) = 17.20$, *Academics* ($M = 5.37$, $SD = 4.46$), $t(229) = 18.23$, and *Passive Leisure* ($M = 3.38$, $SD = 4.06$), $t(226) = 12.53$ ($ps < .001$). These data indicate that a student's weekly hours spent were typically off around 3 to 7 hr from what he or she originally planned.

The four areas of time use accuracy were also entered into a repeated-measures ANOVA to see for which domain students were more inaccurate in the estimation of time spent. Students were more accurate at estimating time use in some areas as compared with others, $F_{G-G}(2.56, 507.58) = 23.00$ $p < .001$. Post hoc pairwise comparisons revealed that students were more inaccurate with *Obligations* than *Academics*, $t(197) = 3.59$ ($d = 0.59$), *Socialization*, $t(197) = 7.44$ ($d = 1.05$), and *Passive Leisure*, $t(197) = 3.38$ ($d = 0.47$), $ps < .001$. *Academics* was also reported significantly more inaccurately than *Passive Leisure*, $t(1, 197) = 5.18$ ($d = 0.73$), $p < .001$, but not more or less inaccurate than *Socialization*. In summary, students tended to report spending much more time in work obligations than they had originally planned, and they reported similar inaccuracies with academic and social activities.

Time use revision. The second part of the third question focuses on time use revision, which is what students reported differently about their *planned* time use for the second semester compared with what they reported was their *actual* time use in the first semester. We examined our within-student time use revision variables (difference scores = student's planned time use for the second semester minus student's actual time spent in the first at T2) by placing the difference scores in

Table 4. Planned Time Use for Second Semester Based on Target GPA Groups.

	What was the target GPA in comparison with actual GPA?		
Planned time use (T2)	Better than expected (n = 30)	Same as expected (n = 49)	Worse than expected (n = 152)
Academic			
M	14.52	12.94	13.56
SD	7.46	6.29	6.54
Passive leisure*			
M	7.42[a]	5.09	4.45[a]
SD	7.75	7.00	5.10
Socializing*			
M	15.75[a]	10.20[a]	12.34
SD	10.10	7.09	8.16
Obligations+			
M	17.07	16.73[a]	20.37[a]
SD	11.38	10.56	10.34

Note. The scores reported are the raw totals calculated by adding up each scale that contributes to a time use area. GPA = grade point average; T2 = Time 2.
[a]significant post hoc comparison based on a paired *t* test.
*F test $p < .05$.
+F test $p < .10$.

single-sample *t* tests. This revealed that students generally made revisions by increasing their time planned on academic ($M = 3.04$, $SD = 4.56$), $t(244) = 10.42$, $p < .001$, and on obligatory activities ($M = 4.50$, $SD = 8.02$), $t(225) = 32.94$ ($p < .001$). However, students revised their plans by decreasing their planned socializing ($M = -1.29$, $SD = 5.25$), $t(243) = -3.84$, and leisure time ($M = -0.55$, $SD = 2.33$), $t(244) = -3.72$ ($ps < .001$), given knowledge of how much time these activities consumed in the first semester.

Time use change based on target GPA. We expected that when students finished their first semester, feedback on their performance would help them to plan for the future. The three-level (better than predicted, same as predicted, worse than predicted) grouping variable for first-semester GPA outcome was analyzed in a one-way MANOVA with each of the planned time use categories (*Academic*, *Passive Leisure*, *Socialize*, *Obligations*) as dependent variables. Note that the sample size for this analysis is 231 because it required students to complete the T2 survey to get their second-semester plans. Overall, the majority of students did worse than they expected in the first semester (66%), while a portion of students did the same as they expected (21%), and some did better than expected (13%).

Table 4 displays the means of the groups on second-semester plans for time. Overall, contrary to our hypothesis, our groups based on target GPA did not reveal

differences in planned *Academic* time use, $F(2, 228) < 1$. Those who failed to meet their target GPA did *not* plan to spend more time on academics the next semester.[1] There were group differences revealed in plans for *Socializing*, $F(2, 226) = 4.22$, $p = .02$. Those who surpassed their first-semester target GPA planned to spend *more* time on socializing, compared with the students who just met the target GPA goal exactly, $t(228) = 2.91$, $p = .003$, $d = 0.64$. In addition, there were marginal group differences in *Passive Leisure* time, $F(2, 225) = 3.13$, $p = .05$. The group who performed better than their target GPA planned to spend more leisure time in the second semester than the group who performed worse than their target GPA, $t(222) = 2.92$, $p = .01$, $d = 0.45$. For *Obligations*, the omnibus was marginal at $F(2, 220) = 2.84$, $p = .06$. Follow-up tests showed the group who performed worse than their target GPA somewhat increased their obligatory hours compared with the group who met their target GPA exactly, $t(228) = 2.08$, $p < .04$, $d = 0.35$. In summary, students who performed above their goals appear more willing to accommodate for more social and recreational activities, but students who performed below their goals do not appear to increase their planned time for studying and doing homework.

Time use accuracy and revision with self-regulation and GPA. Our final research question was, "To what extent is managing and changing time use related to self-regulation and GPA?" We ran correlations between time use accuracy and time use revision with self-regulation, goal-setting, and achieving the target GPA. Time use accuracy was unrelated to self-regulated learning. The strongest association showed that students planning more future socializing had a more consistent time and place to study over the first semester (i.e., reported at T2), $r(229) = .25$ $p < .001$. Time use revision was not associated with meta-cognitive self-regulation. Time use revision was associated with target GPA, but the associations were small. Students who planned more academic time for the second semester set a lower target GPA and later achieved a lower GPA for the second semester compared with their peers, $r(222) = -.19$ and $r(229) = -.20$ ($ps < .01$), respectively. Students who planned to socialize more during the second semester set a higher target GPA and achieved a higher GPA for the second semester than their peers, $r(222) = .14$ $p < .05$ and $r(228) = .13$ $p < .05$, respectively.

Discussion

Our research supports the importance of studying student time use in college (Brint & Cantwell, 2010; Lahmers & Zulauf, 2000; Nonis et al., 2006; Zuriff, 2003). We aimed to add to the research by showing the value of assessing students' planned time use. Per subject, students in our study planned around 2.5 hr to devote to each course per week (assuming a 12-credit full-time course load). Their actual self-reported time use was similarly low, which suggests that not enough time is spent on academics (Brint & Cantwell, 2010; Zuriff, 2003). We also found that students changed their planned time use for their second semester. By the second semester, students' academic time use increased at T2 to 3.75 hr per week. Students entering college appear to underestimate how much time college academics take. It is open to debate whether students

come to a better understanding of expectations to self-regulate after their first semester.

According to Zimmerman (2008), the self-regulated learner uses appropriate cognitive and behavioral tools and strategies to shape how he or she learns. This definition of a student implies a self-conscious and responsible individual learning through planning, evaluating, and reflecting on the importance of the material being learned. Students with higher self-regulated learning could be planning and spending more time in academics and less time in socializing and leisure compared with their peers because they use the tools of self-regulated learning in multiple ways. They could be planning how to tackle a homework assignment or learning how to recognize knowledge gaps in particular subjects. They may also value college as an important opportunity to take responsibility over their learning and future success. Our results, which agree with prior work (Huie et al., 2014), also indicate that some students who have other obligations while in school exhibit high self-regulation through a highly structured schedule (e.g., hours spent working and going to school). Having a busy schedule may paradoxically help with keeping track of time spent on activities, because students are likely to put higher priority goals ahead of lower priority goals. Balancing time use also involves balancing priorities for students. Our first-year students were struggling to meet their goals.

Our results suggest that students' self-regulated learning skills are low in the first year. The question is whether students do not feel up to the task. Evidence of the link between time use and expectations for performance is consistent with social-cognitive theory. The theory posits that achievement of a goal is based on the belief that one possesses the skills required to achieve suitable performance (i.e., self-efficacy; Kitsantas, 2002; Kitsantas & Zimmerman, 2009). What we may have found is that many college students are not optimally performing because of self-regulatory capacities (i.e., reflecting, awareness) they do not yet possess. It could be that students are generally not good at self-regulated learning in their first year (Peverly, Brobst, Graham, & Shaw, 2003). The majority of students did not achieve their target GPA in their first semester, and students tended to lower their expectations. Students could also have unrealistic goals in the beginning of the year, which then leads to lowered expectations. Moreover, students underperforming may not have the ability to override prior habits that may interfere with self-regulation. Intentions to spend time in academics for first-year students may not map explicitly on to practicing self-regulatory skills. Further development of time use assessments may help to capture individual differences that reveal what areas of time use students are struggling with to target self-regulatory interventions.

Time use research has typically used global, retrospective student self-reports of the number of hours they spend on academics (Brint & Cantwell, 2010; Britton & Tesser, 1991). The current study adds new information by reporting on both students' plans for spending time in the future and their retroactively reported actual time use. Planning is a critical component of self-regulated learning (Zimmerman, 2008), and helping students plan and helping them realize when they have deviated from their plans might be a useful strategy for self-regulatory interventions. In the

current study, we found that both were related to target and actual GPA, but some-times in different ways. Reports of actual time use were not related to actual GPA in the first semester. However, planned time use was related to actual GPA the entire year. In the first semester, students may have a hard time keeping track of how much time they spend on academics. Future research on student time management may want to include assessments of students' plans for time use in the future. Students appear to make important changes to their planned time use and their goals within their first year of college, and these changes need to be understood by those imple-menting self-regulatory interventions for students. Another potentially useful direc-tion for time use research would be to incorporate smaller reporting time frames and multiple assessments. Zimmerman (2008) showed that micro-level measures, where students document time spent on academic work day by day or hour by hour, are more effective indicators of self-regulated learning than global weekly or semester estimates. For example, getting daily diary reports of hours spent on various activi-ties each day as well as the student's plans for time use tomorrow, and repeating this for several weeks would provide rich data as well as opportunities for student reflec-tion and self-monitoring.

Bembenutty's (2009) work showed that students who are more accurate in their academic time estimation (i.e., have closer actual vs. planned time estimates) complete more homework and have higher mid-term exam grades than their less-accurate peers. While Bembenutty focused on students who are at-risk of failing a course, we found similar results in our larger first-year cohort. First-year college students tend not to be accurate in their time planning, and those poor at time management are also likely to struggle with appropriately revising their plans and goals. It appears important to iden-tify students who are at-risk academically, and assessments of student time use, plan-ning, and time use revision may be helpful in this regard.

Prior research suggests that engaging in goal-setting improves college performance (Bembenutty, 2009; Knouse et al., 2014). That means students should see themselves as goal-directed and able to generate expectations that help with pursuing academic goals. However, many students may not realize that their poor performance is due to teachable skills in self-regulated learning and goal-setting strategies. Effective goal-setting involves students conceiving of their grades in terms of the time they will need to spend to get there, or what activities they will perform to get a good grade. It may come down to educating students on choices that align with their plans. Effective per-formers tend to report that they would rather study for a good grade than hang out with friends, study in a quiet and organized place than study in a noisy student center area, and work less with music and entertainment as background noise (Bembenutty & Karabenick, 2013). Students would be more likely to engage in effective learning strategies if they were aware of how to *plan* their time use to meet their target GPA. It is also important to understand that the cultural climate influences student academic engagement, which may pit goal-directedness against a fun college experience (Astin, 1999). Altogether, researchers and faculty may need to ask college students to report planned time use, which could help them understand the self-regulatory struggles they experience.

Our findings resonate with the idea that encouraging active student involvement equally with academic activities can create a climate of connectedness for college students. According to Astin (1999), involvement is defined as the psychological and physical expenditure of time and effort toward affiliating with one's college. Part of our *Obligation* category was engaging in sports and exercise, and spending time in school clubs and volunteering. Obligations could be a potentially helpful way to spend time in college if this involves joining social groups and campus organizations. Future research should explore whether time use spent with campus resources and extracurricular activities helps with academic self-regulation. It is likely that many students do not lump exercise, sport, and volunteering into the same area as work. Student norms for activities have also changed over time. Trends for today's American youth suggest that volunteering has increased. Engagement in the community among adolescents and college-age adults is trending upward (Child Trends Databank, 2015), and participation in extracurricular activities that civically engage students is associated positively with college success (American Institutes for Research, 2013). Research suggests that students take volunteering opportunities through their university to improve their employability, help others, and apply their college learning to work experience (Bromnick, Horowitz, & Shepherd, 2012). Volunteering could help with self-regulated learning by motivating students to combine their academic and student involvement goals (e.g., turning coursework into future service projects).

Limitations and Future Directions

Our study is not without limitations. The attrition of our student cohort across the first year was a limitation of our power for analyses involving the second semester. Importantly, however, we showed that those who left the study were no different from those who remained on all demographic and self-regulation variables at T1, thereby increasing confidence in our findings. Another limitation is that our study was correlational and mainly descriptive and does not provide evidence of causality. That is, it remains unclear from these data, say, whether the enhanced academic time use or self-regulated learning led to increased performance, or whether success or high academic competence leads to better study strategies. The literature on time use needs more attention to describing student time use longitudinally and examining it among other predictors of college academic success. Time use fluctuates, and our longitudinal study captures the fluctuation beyond what other studies have reported during a week or one semester's time. However, other factors such as students' cognitive skills, number of credits taken, and efficiency likely also come into play. It is possible that students who are more academically advanced are simply more efficient with their time. Our study did not account for student ability and course load. Notwithstanding, students who spend more time studying and performing homework over time experience higher academic self-efficacy and exam scores (Kitsantas, 2002; Zuriff, 2003). Finally, it is possible that the *quality* of time in activities could be just as important as *quantity* of time, but quantity was the focus of our assessment. For example, a student reporting less than 10 hr a week in academic activities may still perform better than a student

reporting 15 to 20 hr a week because the former student uses campus resources, efficiently prepares in a self-regulated manner, or is a better test-taker. Our global survey was not able to capture specific interactions students had with others, their obligatory activities, and their classes. Future research on student time use could explore whether students use campus resources and get involved in campus and extracurricular groups, as well as the role of prior academic success.

Relevance to Faculty and Administration

Our evidence shows that incoming students are spending time in a way that does not always support their learning, which could have an impact on future transition orientations and seminars. We suggest that colleges continue and perhaps intensify their intervention and transition resources for first-year students (e.g., University 100 courses) to be sure that time management and planning and goals are a strong part of the curriculum. These orientation courses are helpful for increasing student retention and graduation by helping students become better at self-regulated learning (Cambridge-Williams et al., 2013). We also suggest that instructors and staff such as academic advisors in the appropriate positions of offering guidance may consider including curriculum on self-regulated learning in a way that promotes planning one's time and reflecting on goals and academic values. For example, an instructor can show how a model student would plan out writing a paper with effective strategies, perform the writing within a regular writing time and place, and reflect through revising the paper before turning it in or after receiving feedback. Keeping track of time on this could show students how long each process actually takes (as compared with what they think it takes), which could improve their time planning process.

Our study examined students at the beginning and end of their first, and beginning of their second semester. Students who are at-risk for continuing poor self-regulated learning habits could be captured not only at the outset of their first semester, but also just as they are going to start a new semester. They are likely thinking of what they might do differently, but those thoughts of change may or may not translate into real changes in behavior. This is a good time for student transition advisors to meet with students to help them engage in reflective processes that focus on self-regulation and motivation. Research shows that reflection on academic goals promotes mastery orientation, which is an attitude toward learning as a process of mastery rather than a product of social approval (Pintrich, 2004; Radoševich, Vaidyanathan, Yeo, & Radoševich, 2004; Wolters, 1998; Wolters & Benzon, 2013). Viewing learning as a process could help students make adjustments to their time use by setting realistic goals (e.g., taking an appropriate number of credit hours), and choosing academic goals that lead to favorable career choices (e.g., developing quantitative skills as a marketable skill set). Students could encounter frequent opportunities for forming such goals by attending workshops, doing activities that target self-efficacy, and observing peer models of appropriate self-regulation (Kitsantas et al., 2008). Small seminars or lectures that demonstrate to students how to maximize learning potential help them to discover multiple strategies and the importance of investment in their learning.

Declaration of Conflicting Interests

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Note

1. We also examined this within person by using a change score in time planned to spend on academics from Time 1 (T1) to Time 2 (T2) as the dependent variable (DV) in a similar ANOVA, but that too was not statistically significant.

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