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Academic Time during College: Associations with Mood, Tiredness, and Binge Drinking across Days and Semesters

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Abstract

The current study examined the amount of time American college students spent on academics and explored whether functioning indicators (i.e., positive affect, negative affect, tiredness, and binge drinking) rose and fell with academic time across days and semesters. College students ($N=735$) were followed longitudinally and completed 14 daily diaries within each of 7 semesters ($N=56,699$ days). The results revealed that academic time decreased slightly during the middle semesters and then increased in later semesters. Furthermore, on days when students spent more time on academics, they reported less positive affect, more tiredness, and less binge drinking; however, the strength and direction of associations depended on the analysis level and whether it was a weekend. Positive affect, for instance, was inversely associated with academics across days, but the reverse was true across semesters. These results emphasize the importance of considering the temporal context in research on adolescent and young adult time use.

Keywords

college; daily; time use; affect; alcohol; academics

Over the past 40 years, the time use of college students¹ has changed dramatically. Contemporary college students spend much less time studying and more time on leisure activities and paid employment than students in prior decades (Babcock & Marks, 2010). These trends have caused some to lament the state of higher education today, arguing that students today are unmotivated, spend too little time on academics (Arum & Roksa, 2011), and are unprepared to successfully become contributing members of adult society. Yet, the educational and economic contexts facing Millennials (born 1980–2000) are unique. Millennials are more likely to attend college, accumulate educational debt, and encounter

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¹Throughout the article, we use the American description “college students” to refer to individuals pursuing an undergraduate post-secondary degree; however, we recognize that in many countries this population is referred to as “university students.”

job instability than prior generations (Levenson, 2010). In the face of this changing reality, it is unclear how much time Millennial students *should* be spending on academics in order to maximize their current and future well-being.

Guided by an ecological framework that draws attention to everyday activities and the contexts in which they occur (Bronfenbrenner & Morris, 2006), the current study documents the trajectory and correlates of time spent on academics among a sample of US college students. Because college students determine their own course schedules and choose whether to attend class, their academic time is largely discretionary and may vary dramatically across days and semesters. Furthermore, as adolescents transition into adulthood, they gain autonomy and begin establishing adult health behaviors and lifestyles making it important to understand how they spend their time and the consequences of this time use.

Daily Fluctuations and the Developmental Course of Academic Time

The college years are a dynamic time period characterized by changing academic and social environments. Although most of the research exploring time use among adolescents and young adults has focused on differences between students (e.g., Brint & Cantwell, 2010; Mortenson, 2011; Wight, Price, Bianchi, & Hunt, 2009), there are compelling reasons to examine within-person variation and identify *when* students increase or decrease the amount of time they spend on schoolwork. Changing employment statuses, courseloads, and residential locations are just a few examples of the myriad time-varying factors that may impact college students' academic time. Prior work has shown that older students and those in their final year of college spend more time on academics than younger students and those just beginning higher education (National Survey of Student Engagement, 2012) highlighting the need for research examining changes in academic time across shorter and longer time frames. In the current study, we examined changes in time spent on schoolwork and we hypothesized that students would spend more time on academics on (a) weekdays and (b) as they progressed through college.

Functioning Correlates of Academic Time

The amount of time that students spend studying and attending class may have long-term consequences for educational achievement, labor market success, and health. In the current study, we sought to understand whether shorter-term psychological and physical health states and behaviors would rise and fall with fluctuations in academic time. Because of our interest in daily associations, we operationalized functioning with four indices that have been shown to fluctuate across days within individuals: positive affect, negative affect, tiredness, and binge drinking (Del Boca, Darkes, Greenbaum, & Goldman, 2004; Fuligni & Hardway, 2006; Röcke, Li, & Smith, 2009). These indicators are not only appropriate for studying short-term changes, but they have been linked to critical health markers and success during adulthood. For instance, mood has been linked to prosocial behavior, relationship quality, and labor market success (Lyubomirsky, King, & Diener, 2005) and rates of disturbed sleep are high among college students (Lund, Reider, Whiting, & Prichard, 2010) highlighting the importance of examining feelings of tiredness and sleepiness. Finally, binge

drinking is of interest given that binge drinkers are less likely to complete college and have worse labor market outcomes than those who do not binge drink (Jennison, 2004). Furthermore, alcohol use is a leading contributor to disability and death globally (Lim et al., 2012). Taken together, these variables capture salient aspects of college students' daily experience that have implications for well-being during adolescence and young adulthood.

College students' state of health on a particular day may depend on their class attendance and study time. Schoolwork requires mental effort that may impact students' mood or energy levels. Mental effort can deplete cognitive resources which in turn can lead to changes in physical health states (e.g., tiredness) and psychological states (e.g., negative moods) (Robert & Hockey, 1997). Supporting this idea, research with early and mid-adolescents has shown that homework and school-related activities are less enjoyable than most other activities (Larson & Kleiber, 1993; Shernoff & Vandell, 2007). Academic time may also shape daily functioning by limiting time available for healthy behaviors. The time availability perspective (also known as the "time trade-off" perspective) posits that time is finite and therefore increasing time in any particular activity will reduce time in other domains (Safron, Schulenberg, & Bachman, 2001). For instance, schoolwork may reduce time available for sleep, resulting in more tiredness and fatigue. In line with this theory, previous research has shown that high school and college students sacrifice sleep for studying (Galambos, Dalton, & Maggs, 2009; Gillen-O'Neel, Huynh, & Fuligni, 2013). Of course, when students have more schoolwork, they may also have less time for other activities such as attending parties and socializing with friends, potentially reducing the likelihood of binge drinking. In line with this proposition, one study found that college students with Friday morning classes drank less alcohol on Thursdays than those without Friday classes (Wood, Sher, & Rutledge, 2007). Guided by the time availability theory and previous literature, we hypothesized that on days when students spent more time on academics, they would report (a) worse moods, (b) more tiredness, and (c) less binge drinking.

Rises and falls in academic time *across semesters* may likewise shape the functioning of college students. The semester-level associations may follow the same pattern as the daily associations because the previously discussed underlying mechanisms may be the same. However, it may be that the associations between academic time and functioning differ depending on the time frame being studied. One reason is that the theoretical constructs measured by the daily and semester indices of academic time may differ. At the daily level, fluctuations across days in academic time may be an acute response to an immediate deadline such as writing a paper or studying the night before a test. In contrast, spending long hours on academics in a given semester may indicate a student's broader commitment to studying and schoolwork in that semester. Thus, whereas cramming for a test might result in a temporarily worse mood, spending more time on classwork in a semester might capture engagement in coursework and thus be linked to more positive affect. Another reason why the daily and semester associations might not follow the same pattern is that the time trade-off theory may be less applicable at the semester level because students can balance activities across days. In other words, students could spend long hours studying one day and binge drink the following day. Thus, there might not be an association between the two activities because students could easily engage in both. Because these reasons suggest that

associations between academics and functioning might differ across levels, in the current study we disentangle the daily and semester within-person associations.

Variation across the Weekly Calendar

Importantly, the functioning implications of time spent on academics may depend on the day of the week. Prior research has examined linkages between daily activities and alcohol use (Finlay et al., 2014) as well as social interactions and mood (Ram et al., 2014) and found that associations depended on the temporal context within the weekly calendar. Because college students typically have classes on weekdays and the weekend has been culturally constructed to be a time of ample relaxation and leisure (Ryan, Bernstein, & Brown, 2010), spending time on academics during the weekend may conflict with normative expectations. Therefore, in the current study, we hypothesized that associations between academic time and health states would be stronger on weekend days than on weekdays.

The Current Study

Guided by the ecological framework that highlights everyday activities as central to development (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006), the current study has two primary aims. The first aim is to document college student time use, testing whether students spend more time on academics on weekdays, and whether they increase their academic time as they progress through college. The second aim is to understand the potential functioning implications of time spent on academics. More specifically, we test whether students report worse moods, more tiredness, and a lower likelihood of binge drinking when they spend more time on academics on a particular day or in a particular semester.

We use longitudinal daily diary data in which students reported on their daily time use for 14 consecutive days across 7 semesters enabling us to explore whether academic time *on a particular day* and *in a particular semester* is associated with fluctuations in functioning *on that day* or *in that semester*. By capturing “life as it is lived” (Bolger, Davis, & Rafaeli, 2003), this within-person focus provides a detailed look at college students’ academic time and how it is linked to microprocesses in a natural environment. In addition, because many college students juggle school and work demands, our models also include time-varying indicators of paid work. Controlling for time spent on employment is critical given that employment requires time and energy of college students which has the potential to reduce study time and impact functioning.

Method

Data and Procedure

Data came from the University Life Study, an existing longitudinal study of college students at the Pennsylvania State University, a large residential university in the northeastern United States (Patrick, Maggs, & Lefkowitz, 2014). Students were followed for seven semesters from fall of their first year (2007) through fall of their fourth year of college (2010). Using registrar information, stratified random sampling (by gender and race) with replacement

identified potential participants. Students were informed of the study via mail, emailed a hyperlink for the survey, and 744 participants consented and completed the initial baseline assessment. Each semester, students completed a ~30-minute online survey and a “burst” of 14 shorter consecutive daily surveys. The goal of these web surveys were to capture a typical two-week period of college life and thus they were timed to avoid holidays such as Thanksgiving break and final exams. The email containing the hyperlink for the daily web surveys was sent at about 4 am and students responded about their previous day’s activities. A “day” was defined as beginning when the student woke up and ending when the student went to sleep. A participant who did not complete the survey on the day that the link was sent could respond late as access to the survey was allowed for up to two days. Students were followed regardless of whether they were continually enrolled in the sampled university through the use of alternative email addresses. In total, 82% of participants were retained at wave 7. The current sample was limited to students who completed some daily diaries and provided information about academic and employment time ($N=735$ students). With no attrition and complete data compliance, we would expect to have 72,030 observations (i.e., 735 students*98 observations); 51,450 weekdays and 20,580 weekend days. Instead, students had complete daily surveys on the variables of interest in the current study on about 77–78% of diary days (see also Howard, Patrick, & Maggs, 2014 for detailed information about survey completion timing and additional description of missing data using the ULS dataset). Because not all of the students remained in the sample or fully completed all 98 daily diaries, the number of days, semesters, and people in each model varies (see notes in Tables 2 and 3).

Reflecting the university from which they were drawn, participants came from relatively advantaged backgrounds. For instance, 72% of the sample had one or more parents who completed college (i.e., earned a four year degree). As a result of the sampling approach, students in the current sample were racially/ethnically diverse, more so than the university itself and the broader college student population in the US. Based on self-reports, 25.31% of the sample was Hispanic American, 15.78% was African American Non-Hispanic (NH), 23.27% was Asian American/Pacific Islander NH, 27.07% was European American NH, and 8.57% was Multi-racial American NH. In addition, the sample was about half (50.75%) female and averaged 18.4 ($SD = .43$) years of age at Semester 1.

Measures

Unless noted otherwise, daily variables were collected for 14 days during each of the 7 semesters, yielding a possible 98 days of data on activities and functioning per participant. Table 1 presents descriptive information about the primary variables used in the current study.

Academic time—Students indicated the amount of time that they spent on academic-related activities (including class time, homework, and studying) by selecting one of 10 categories: 0 minutes, < 30 minutes, 30–60 minutes, 1–2 hours, 2–3 hours, 3–4 hours, 4–6 hours, 6–8 hours, 8–10 hours, and 10+ hours. To estimate hours, the midpoint of each category was assigned (e.g., 4–6 hours was coded as 5 hours). The highest category (10+

hours, which was reported on 2.35% of the sampled days) was topcoded at 10 hours to reduce the impact of outliers.

Employment time—The process for coding employment time was identical to that of academic time. Students identified the category that captured the amount of time they spent on paid employment and the midpoint was assigned. The top category (10+ hours; 0.27% of sampled days) was topcoded at 10 hours.

Affect—Positive and negative affect were measured with the Positive and Negative Affect Schedule (PANAS; Tellegen, Watson, & Clark, 1988). These two 10-item scales measured the extent to which students felt positive emotions (e.g., excited, interested) and negative emotions (e.g., distressed, hostile) on a given day. Students responded from 1 (*Very Slightly or Not at All*), to 5 (*Extremely*).

Tiredness—Students reported the extent to which they felt tired and sleepy using the same response scale (1–5) as for affect. These two questions were included in semesters 3 through 7 only. Feelings of tiredness and sleepiness were highly correlated and were averaged.

Binge drinking—We used self-reported information about the number of alcoholic drinks consumed, the rate of consumption, gender, and weight to estimate peak blood alcohol content (eBAC) on a particular day (Matthews & Miller, 1979). Days when eBAC reached .08 or more were classified as binge drinking days (National Institute on Alcohol Abuse and Alcoholism, 2004).

Semester—The semester in college of the student (1–7) was included and centered at semester 4.

Weekend—The traditional definition of a weekend (i.e., Saturday or Sunday) was used in analyses that predicted time use, affect, and tiredness. In analyses predicting binge drinking, a weekend was defined as Thursday, Friday, or Saturday, congruent with prior research (e.g., Del Boca et al., 2004; Maggs et al., 2011).

Demographic control variables—Gender (coded 1=male) and a dichotomous indicator of parental education (coded 1 if one or both of the students' parents had a four-year university degree) were measured at Semester 1. Students missing information on parental education ($N = 10$) were imputed at the mode.

Analytical Strategy

Multi-level modeling (Raudenbush & Bryk, 2002) was used to account for the clustered data and corresponding correlated errors in which days (Level 1) were nested within semesters (Level 2) which were nested within individuals (Level 3). In addition to accounting for the nestedness of the data, a multi-level modeling approach is useful because it improves over listwise deletion by analyzing all available observations rather than only those individuals with complete diaries on all days. To understand whether students changed across semesters in the amount of time devoted to academics (aim 1), we included a linear indicator of time.

A quadratic indicator (i.e., semester squared) was included to capture nonlinearities in the time trend because it improved model fit, as determined by Wald tests.

The second aim of this study was to test whether college student functioning covaried with academic time. Indicators of academic time were included at all three levels of the analysis, the time trend was included at Level 2, and demographic control variables (i.e., gender and parental education) were included at the person-level (Level 3). A random slope was included for semester, allowing the time trend to vary across people. One variance parameter was estimated for each random effect (i.e., the intercepts and slopes) and the covariance between the random effects were set to zero. The time use variables were centered in order to distinguish within-person effects across days and semesters from between-person effects. More specifically, at the daily level, the indicators were centered on each individual's mean within a given semester. In addition, at level 3 we included the individual's overall mean across the 7 semesters to distinguish semester variation from between-person variation.

To demonstrate how models linking academic time and functioning were computed, the equations predicting positive affect are presented below.

$$Positive\ Affect_{dij} = \pi_{0ij} + \pi_{1ij}(Academic\ Time_{dij}) + \pi_{2ij}(Work\ Time_{dij}) + e_{dij} \quad (1)$$

$$\pi_{0ij} = \beta_{00j} + \beta_{01j}(Semester\ Academic\ Time_{ij}) + \beta_{02j}(Semester\ Work\ Time_{ij}) + \beta_{03j}(Linear\ Semester_{ij}) + r_{0ij}$$

(2)

$$\pi_{1ij} = \beta_{10j} \quad (3)$$

$$\pi_{2ij} = \beta_{20j} \quad (4)$$

$$\begin{aligned} \beta_{00j} = & \gamma_{000} + \gamma_{001}(Person \\ & - Mean\ Academic\ Time_j) \\ & + \gamma_{002}(Person \\ & - Mean\ Work\ Time_j) + \gamma_{003}(Gender_j) \\ & + \gamma_{005}(Parent\ Education_j) + u_{00j} \end{aligned} \quad (5)$$

$$\beta_{01j} = \gamma_{100} \quad (6)$$

$$\beta_{02j} = \gamma_{200} \quad (7)$$

$$\beta_{03j} = \gamma_{300} + u_{10j} \quad (8)$$

Positive affect on a given day (d) in a given semester (j) for a given individual (i) was modeled as a function of the individual's average positive affect that semester (π_{0ij}) and the extent to which the amount of time she spent on academics (π_{1ij}) and work (π_{2ij}) on that day deviated from her average that semester. Residual variance at the daily level that was not explained by these predictors was captured in the error term (e_{dij}). Average semester positive affect (π_{0ij}) was a function of the individual's overall average positive affect across all semesters (β_{00j}), the extent to which the amount of time spent on academics (β_{01j}) and work (β_{02j}) that semester deviated from her overall average time spent on these activities, and the number of semesters she had been in college (β_{03j}). Unexplained semester-level variance was captured in the residual error term (r_{0ij}). At the person-level, an individual's average level of positive affect across semesters was modeled as a function of the overall average positive affect for the entire sample across all semesters (γ_{000}) as well as the average amount of time spent she spent on academics (γ_{001}) and employment (γ_{002}) and a set of demographic characteristics. The inclusion of u_{00j} and u_{10j} indicated that both the intercept and the linear time trend, respectively, were allowed to vary across people (i.e., models included both a random intercept and a random coefficient for time).

We used multi-level linear regression for outcomes other than binge drinking, which was modeled with multi-level logistic regression due to its dichotomous measurement. We computed all analyses separately for weekdays and weekend days and tested whether coefficients differed using the equation proposed by Clogg and colleagues (1995).

Results

Fluctuations in Academic Time across College

The first set of models examined differences in academic time across days and semesters. Unconditional models without predictor variables demonstrated that participants averaged about 2.86 hours ($SE = .05$) per day on academics, and spent much more time on academics on weekdays (3.53 hours) than weekend days (1.22 hours). To assess change over time, indicators of semester in college and semester squared were included (see Table 2). For both weekdays and weekends, the quadratic time trend was significant. Examining the predicted values demonstrated that across college, academic time (regardless of whether it was a weekday or weekend) decreased slightly during the middle semesters and then increased in later semesters.

Academic Time and Functioning

Table 3 displays the extent to which fluctuations in academic time were linked to fluctuations in functioning. The first row describes the daily associations. Beginning with positive affect, on days when students spent more time on academics, they reported less positive affect and more negative affect than when they spent less time on academics. Students also reported being more tired on days when they spent more time on academics. On weekend days, when students spent more time on academics, they were less likely to binge drink than when they spent less time on academics. As is indicated by the bolded coefficients, the associations with positive affect and binge drinking were stronger on weekends ($z = 5.80$, $p < .05$ and $z = 7.69$, $p < .05$, respectively), whereas the association with tiredness was stronger for weekdays than weekends ($z = 3.02$, $p < .05$).

At the semester level (row 2), when students spent more time on academics on weekdays, they reported more positive affect than when they spent less time on academics. Students also reported higher than average negative affect in semesters when they spent more time on academics. More academic time in a given semester was associated with more tiredness, but the association was strong for weekdays and absent on weekends ($z = 2.05$, $p < .05$). Across semesters, time spent on academics was inversely associated with binge drinking. That is, in semesters when students spent more time on academics, they were less likely to binge drink.

At the individual- or between-person level (Level 3), the results demonstrated that students who spent more time on academics across the seven semesters reported more positive affect. These students were also less likely to binge drink on weekdays compared to students who devoted less time to schoolwork.

Supplemental materials, available online, document changes in employment time across days and semesters and describe the associations between paid work and functioning that are presented in rows 3–6 of Table 3.

Discussion

An ecological approach suggests that everyday activities—such as studying and working—set in motion proximal processes that can propel development across the lifecourse (Bronfenbrenner & Morris, 2006). However, little longitudinal research has taken an intra-individual approach to understand the nature and implications of academic time. The current study demonstrated that students fluctuated in their academic time across days and changed how they spent their time across college semesters. These within-person changes were linked to both positive and negative indicators of functioning. Furthermore, the strength and direction of associations depended on the level of analysis under examination as well as the temporal context within the week. Thus, findings from the current study highlight the importance of considering multiple indicators of functioning and how they fluctuate or change across time in order to gain a more complete understanding of the daily lives and experiences of college students.

Within-Person Change in Academic Time

A major contribution of the current study was the attention to within-person variation in time use. Results provided strong evidence that time use varied across days of the week with students spending much more time on academics on weekdays than weekends. This dramatic difference is not surprising given that most classes occur on weekdays and empirical studies suggest that a substantial portion of academic time consists of class attendance (Babcock & Marks, 2010). Time devoted to academics also changed as students progressed through college. Academic time was highest at the start and near the end of college. These patterns may reflect students' response to changing course demands. Early in college students may spend longer on academics as they strive to adapt to new and more stringent courses. When students near college completion, they may be taking advanced courses related to their area of specialization that are simultaneously challenging and interesting to them. Real and perceived needs to succeed or excel academically—whether due to prior failures or specific goals such as gaining admission to graduate school—may increase time spent on academics.

Academics and Functioning

Some of the most intriguing findings were the complex associations between academic time and affect. In particular, the associations between academic time and positive affect were in opposing directions at the daily and semester levels. That is, on days when students spent more time on academics, they had less positive affect and more negative affect as predicted; however, in semesters when students spent more time on academics, they reported *higher* levels of positive affect on weekdays. This contradictory finding regarding positive affect suggests that some other force is occurring at the semester level. It is possible that—in the moment or in the short-term—spending time on academics may not be very enjoyable for students. However, students may receive delayed gratification or rewards from spending more time on academics over longer time periods, including better college grades (Stinebrickner & Stinebrickner, 2004) and feelings of accomplishment. Alternatively, if students spend more time on academics in semesters when they have especially interesting and rewarding coursework, their positive affect may be higher in those semesters, though not specifically on days when they study more than usual.

In contrast, the direction of association between academics and negative affect was consistent across the daily and semester levels. Although we do not know the underlying reasons for these positive associations, it may be that students who spend long hours on academics in a particular semester are responding to especially challenging and demanding courses. Trying to succeed in—or even pass—these courses may result in feelings of negative affect including anxiety and distress. This negative affect might be lower in semesters when students are enrolled in easier courses that require less of their time. Future research should aim to identify the processes linking time spent on academics, academic engagement and commitment, course characteristics, and functioning. Furthermore, future research could use an alternative data collection strategy, such as the experience sampling method (ESM) to examine how affect changes during the course of a day among college students and how academics and affect are associated at a particular moment in time.

As with affect, the results linking fluctuations in time use with tiredness were intriguing. On days when students spent more time on academics they reported feeling more tired. Given that time and energy are finite resources, schoolwork may come at the cost of relaxation or sleep, as has been found in prior research on adolescents and adults (Galambos et al., 2009; Gillen-O'Neel et al., 2013; Virtanen et al., 2009). Yet the association between academic time and tiredness depended on the temporal context within the week. In general, fluctuations in academic time were more closely linked to tiredness on weekdays than weekends, possibly due to differences in available time. The extra free time that students have on weekends may enable them to sleep more and better manage their academic workloads making them less tired and sleepy. Interestingly, while academic time was more strongly associated with tiredness *on weekdays*, the inverse association between academics and positive affect was stronger *on weekends*. Thus, different processes may be underlying these daily associations. Culturally shaped time use preferences may result in students being especially unhappy when completing coursework on weekends.

Correlates of binge drinking also varied depending on the day of the week. At the daily level, time spent on academics on the weekends was associated with less binge drinking. The stronger associations for weekends may result from students primarily binge drinking on those days (Del Boca et al., 2004; Maggs et al., 2011). Spending more time on academics may cut into students' opportunities for socializing and binge drinking. Additional research is needed to better understand the processes and circumstances linking daily activities to alcohol use. It is possible, for instance, that schoolwork is simultaneously protective (e.g., it reduces free time that could be spent drinking) and risky (e.g., it increases stress). Thus, long hours of schoolwork may reduce drinking for fun, but increase drinking to cope with problems (Cooper, Frone, Russell, & Mudar, 1995; Mohr et al., 2001). Future work should not only focus on drinking behaviors, but also on drinking motivations in order to understand the process through which academic time may shape drinking behaviors situationally and developmentally across days, weeks, semesters, and years.

Limitations and Contributions

Some important limitations must be noted. First, participants were drawn from a single university and thus the extent to which results generalize to other populations is unknown. Second, we were interested in concurrent associations, and thus causation or even directionality cannot be determined. For example, although we described why academic time might lead to changes in affect, it is also plausible that negative affect might lead a person to study long hours in a given day, and not engage in other activities such as going out with friends. Third, the measurement of some of our variables could have been improved. Time use was self-reported in categories (e.g., 1–2 hours) rather than minutes, and thus our daily estimates are imprecise and may be inflated due to social desirability bias. In addition, given our interest in understanding daily associations with time spent on academics, our functioning outcomes needed to vary from day to day limiting our focus to short-term indicators. Furthermore, we examined feelings of tiredness which is likely a poor proxy for sleep quantity or quality. However, we recognize that there is a need for research examining how academic time is related to additional health outcomes including sleep quality, as well as longer term outcomes such as mental health disorders.

Despite these limitations, the current study makes a number of important contributions to the literature. First, by using an intensive longitudinal design, our results demonstrate how students shift their academic time as they progress through college. Second, our results advance research on adolescent and young adult time use by determining *when* associations are the strongest. Indeed, the magnitude of the associations between academic time and functioning depended on the temporal context. Third, the multi-level analytic strategy disentangled associations across days, semesters, and people exposing novel within-person associations. For instance, students who averaged longer hours on academics exhibited more positive affect *on average*; however, on days that students spent more time on academics they reported worse moods. Thus, stable characteristics of studious students (selection factors) could have influenced the between-person associations; however, the methodological strategy helped to uncover daily associations in the opposing direction.

Continued research is needed that provides information about how young people in diverse settings spend their time, as well as the consequences of this time use. Identifying specific aspects of activities that are directly tied to functioning at the daily level is important to appropriately design interventions and target those situations that may pose a risk to healthy functioning across the transition to adulthood. These studies provide practical information that may assist individuals (and those who care about them) as they make time use choices that hopefully maximize their current and future well-being.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Descriptive Statistics for Primary Study Variables

	Mean	SD	Min	Max
Academic Time	2.948	2.642	0	10
Employment Time	0.543	1.587	0	10
Positive Affect	2.216	0.864	1	5
Negative Affect	1.466	0.576	1	5
Tiredness	2.246	1.110	1	5
Binge Drinking	0.070	0.255	0	1

Table 2

Multi-level Models Predicting Academic Time during College

	Weekday		Weekend	
	B	(SE)	B	(SE)
<i>Fixed Effects</i>				
Semester	−0.019	0.009 *	0.009	0.009
Semester ²	0.032	0.005 **	0.018	0.005 **
Constant	3.387	0.059 **	1.151	0.046 **
<i>Random Effects</i>				
Level 3	1.936	0.115	1.023	0.066
Level 2	0.956	0.031	0.427	0.030
Residual Variance	3.430	0.026	2.973	0.038
Ndays, semesters, people	40339, 4390, 735		16360, 4325, 733	
Deviance	171307.200		67378.256	

Weekend days are Saturday and Sunday. SE = standard error.

Table 3

Multi-level Models Predicting College Student Functioning with Academic Time Across Days, Semesters, and Individuals

	Positive Affect			Negative Affect			Tiredness			Binge Drink														
	Weekday	B	(SE)	Weekday	B	(SE)	Weekday	B	(SE)	Weekday	B	(SE)	Weekday	B	(SE)	Weekday	B	(SE)	Weekday	B	(SE)	Weekday	B	(SE)
<i>Fixed Effects</i>																								
<i>Academics</i>																								
<i>Employment</i>																								
<i>Control Variables</i>																								
<i>Random Effects</i>																								
Ndays _{sem, people}																								
Deviance																								

For affect and tiredness models, weekend days are Saturdays or Sundays. For binge drinking models, weekend days are Thursdays, Fridays, and Saturdays. Bold indicates that the weekday coefficients differ significantly from the weekend coefficients.

SE = Standard Error. OR = Odds Ratios. Odds ratios greater than 1 indicate a direct association whereas odds ratios less than 1 indicate an inverse association. Ed = education. Sem = Semester.

^aSemester: Fall 2007 (1) through Fall 2011 (7).

100>d_***'10>d_**'50>d_*'1>d+

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