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What sets college thrivers and divers apart? A contrast in study habits, attitudes, and mental health☆

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HIGHLIGHTS

- Examines behaviors, study habits and college experiences for a sample of freshmen.
- Poor time management, lack of study time associated with poor academic performance.
- Past performance and expected study time does not explain the patterns.
- Increasing study time may help improve achievement.

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ABSTRACT

Using a mandatory survey with open-ended questions asking students about their first-year university experience, we explore what particular behaviors, study habits and overall experiences early in college distinguish students who do very well in college (Thrivers) from those who struggle greatly (Divers). We find that poor time management and very little time spent studying are most associated with poor academic performance. Divers also report feeling more depressed and unhappy with their lives. Both Thrivers and Divers arrive with high aspirations, but Divers consistently fall short of their own study expectations. These patterns suggest that very poor performing college students are not happily trading off academic performance for more preferable activities, and that increasing the amount of time students spend trying to learn may be an important necessary condition for improving achievement.

1. Introduction

With postsecondary enrollments having increased dramatically over the last several decades and the importance of degree completion continuing to be emphasized by policy makers and parents alike, more attention is now being directed towards helping postsecondary students finish with valuable experience and skills. Despite efforts to increase student support, a large fraction of students scrape by with minimum grades or fail to graduate entirely (Kena et al., 2016; Finnie et al., 2016).

Knowing what characteristics at time of entry and behaviors during college best predict a student's performance may help suggest paths for improvement. Prior research has shown that overall high school academic achievement is the single best predictor of higher education achievement, but other non-academic variables exhibit predictive power as well. In a previous paper, for example, we linked a survey given to a large representative sample of incoming freshmen to school administrative data and found that several personality traits were associated with exceptionally high and low achievement, even after conditioning on high school grades (Beattie et al., 2018). Including a student's measured levels of conscientiousness, impatience, tendency to cram for exams and their expected study hours at the start of the program to a model with high school achievement for predicting college grades increased predictive power by 11 percent (from an R^2 of 0.221 to 0.255).

In this paper, rather than focus on students' incoming characteristics, we explore what specific behaviors during early college predict achievement. Using a follow-up survey given at the end of first term with open-ended questions asking students about

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their college experience, we explore what separates students who do very well (Thrivers) from those who struggle greatly (Divers), in terms of study habits, attitudes, and personal experiences. Our goal is to describe Thrivers and Divers in clearer context, for better understanding what they experience, what actions they take that help or hurt them, and what behaviors might be malleable.

Our paper relates to a small literature that examines the relationship between time use and student engagement on college outcomes (e.g. Brint and Cantwell, 2010; Kalenkoski and Pabilonia, 2012; Bratti and Staffolani, 2013; Arum and Roksa, 2011). These studies tend to find that passive time on activities such as watching television, playing video games, surfing the internet, and excessive work-for-pay negatively affect achievement, whereas more active time such as physical exercise, volunteering, and class attendance, are associated with higher achievement. Studies examining the relationship between study time and achievement find mixed results, but the most convincing research with quasi-experimental designs supports the view that students would perform better if they studied more (Stinebrickner and Stinebrickner, 2008; Metcalfe et al., 2011; Lindo et al., 2012; Grodner and Rupp, 2013). Our study differs in three distinct ways compared to this earlier work. First, we contrast the very best and worst students from the general population. Doing so highlights characteristics of outliers who might be missed when studying the whole population. Divers are students on a rapid trajectory towards academic probation and program failure, a population that merits particular study. Second, we ask a unique set of questions that previous studies do not, including ones around subjective well-being, stress, depression, and open-ended questions about why students think they struggle and how their college can help. Third, we link to administrative and earlier survey data that allow us to compare expected and realized behavior. This allows us to say more about whether poor performance is due solely to initial background conditions or also depends on changes to plan.

The results indicate that lack of study hours (only 8 h a week, on average, for all courses) and a tendency to cram are habits most strongly associated with poor overall performance. These patterns are not explained by differences in past grades or in *expected* study hours. Deviations from intended study routines predict ending up as a Diver far better than actual intentions. A large fraction of Divers mention poor time management or procrastination specifically as their main challenge with school. Many of them express regret and unhappiness, indicating they are unsatisfied with their situation. These patterns suggest that very poor performing college students are not optimally trading off academic performance for leisure. Rather, Divers may be stuck in an "academic trap", whereby initial poor performance is related to poor time management which in turn lowers well-being and expectations of recovery, which then leads to lower study time, and so on. In contrast, Thrivers are significantly more likely to plan ahead, stick to their study plan, and to use the free university resources available to them to meet with course instructors and tutors.

2. Setup and data collection

During the start of the 2016–2017 school year, all undergraduate students enrolled in an introduction to economics course at the three campuses of the University of Toronto (which includes approximately a quarter of all first-year students) were required to complete a 'warm-up survey' and 'follow-up survey' as part of their participation grade. Virtually all students (97 percent) completed the warm-up survey within the first three weeks of school (5356 students).[1] The overall response rate for the follow-up survey was approximately 83 percent (3849 students). The lower rate is largely due to some students dropping the course. For students who did not drop, the response rate is similar to the initial survey.

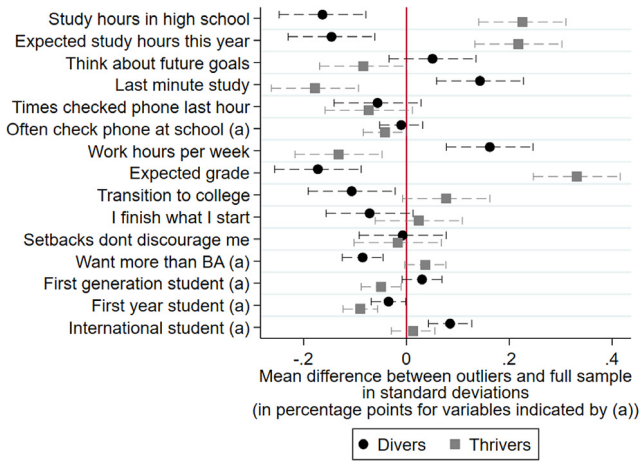

Fig. 1. Differences in initial survey responses. Note: Coefficients represent mean differences, in standard deviation units for continuous variables and in percentage points for binary variables. Dashed lines show 95% confidence intervals.

The set of variables that is collected as part of the warm-up survey contains detailed background characteristics such as international student status and parental education, as well as a large set of self-reported behaviors and subjective expectations. Survey responses are linked to administrative data that include demographic information, high school grades, and course grades.

The follow-up survey was administered at the start of the second semester (January 2017), and included questions on study habits and subjective well-being, as well as open ended questions on perceived reasons for poor performance, the biggest challenges faced, and the type of help students could be using that they are not currently getting.

3. Mean comparisons

Throughout the paper, we define Thrivers (Divers) as students in the top (bottom) decile of the distribution of grades residuals (net of age, campus and cohort fixed effects).[2] Fig. 1 presents standardized mean differences for baseline variables between outliers and the full sample. For example, relative to the full distribution, Divers tend to work for pay more hours per week than an average student (0.16σ above the mean) and have lower expectations about their grades (0.17σ below the mean). On the other hand, Thrivers are less likely to wait until the last minute before starting studying (0.18σ below the mean) and more likely to have higher grade expectations (0.33σ above the mean). Interestingly, several self-reported habits do not differ significantly between the two contrasting groups, including phone use, attitudes about completing what one starts and not getting discouraged with setbacks. A large fraction in both groups aspire to go to graduate school (71 percent for Thrivers, 58 percent for Divers).

Comparisons of self-reported study habits from the follow-up survey are shown in Fig. 2.[3] During the first semester, Divers report studying only about 8 h per week for all of their courses, approximately three fewer hours per week than the average student (0.30σ below the mean). The opposite case holds for Thrivers

[1] See Oreopoulos and Petronijevic (2017) for survey details.

[2] In contrast, Beattie et al. (2018) obtain grade residuals by conditioning on high school grades, as their primary focus is on the incremental explanatory power of non-academic pre-determined characteristics above and beyond that of past performance.

[3] The online appendix provides the exact wording of the follow-up survey questions.

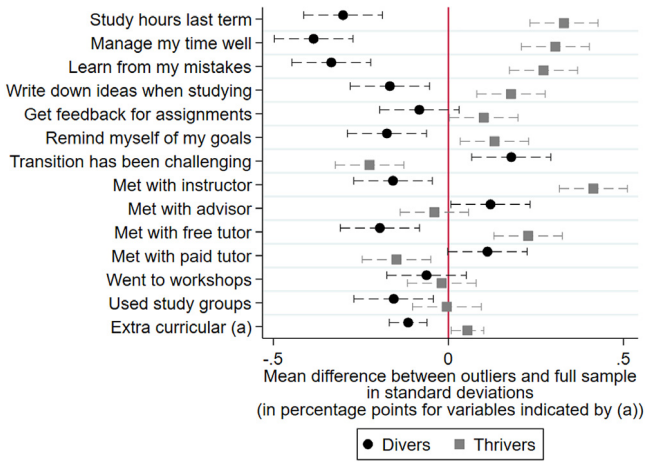

Fig. 2. Differences in self-reported study habits (start of second term). Note: Coefficients represent mean differences, in standard deviation units for continuous variables and in percentage points for binary variables. Dashed lines show 95% confidence intervals.

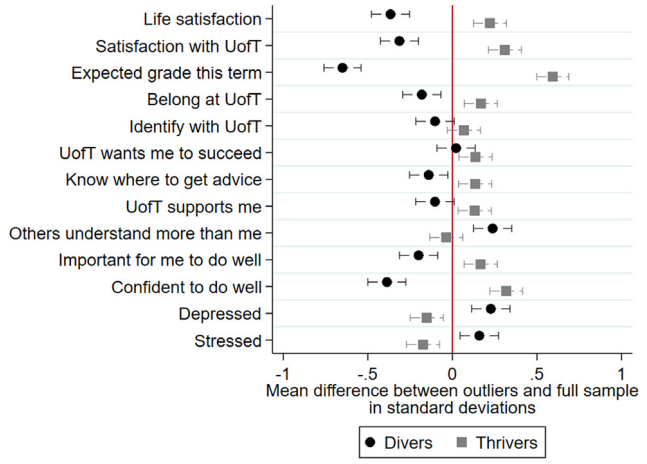

Fig. 3. Differences in follow-up responses (start of second term). Note: Coefficients represent mean differences, in standard deviation units. Dashed lines show 95% confidence intervals.

(0.33σ above the mean). The mean response for the full sample is 10.9 h per week, which implies that on average Thrivers studied close to seven hours per week more than Divers ($p < 0.01$). In addition to the differences in study time, Divers more often disagree with the statement that "I manage my time well". The mean difference on this question between Divers and Thrivers is the largest among all study habits variables (a difference of 0.69σ). Divers are also less likely to write down thoughts and ideas when studying and less likely to remind themselves of their personal goals. They are less likely to meet with their course instructor and free tutors, but more likely to meet with academic advisors and *paid* tutors. Thrivers, in contrast, report managing their time well and learning from their mistakes. They also tend to remind themselves of their goals and motivations for being in university, they are more likely to meet with instructors and free tutors, but are less likely to hire a paid tutor.

Comparisons of mental health, life satisfaction and overall university experience are shown in Fig. 3. The gap in terms of life satisfaction between Thrivers and Divers is particularly large — more than half of a standard deviation separates the two groups. Divers are also more likely to have felt depressed and stressed during the first semester.

Divers still expect to obtain relatively low grades in the Winter semester (0.65σ below the mean). In fact, the gap in expected grades between Thrivers and Divers more than doubles between the initial (0.5σ) and follow-up (1.2σ) surveys. Divers adjust their expectations downward, perhaps due to poor initial performance, while Thrivers remain optimistic. Divers also agree that others understand the material more than themselves and are less confident about their ability to do well, in line with prior results on the importance of academic self-efficacy (Richardson et al., 2012).

4. Text analysis

We also asked open ended questions about challenges, what the University could do better, and what students plan to do differently.

Divers mention time management, mental health problems, personal issues, language barriers, and lack of motivation as major challenges. When asked what the University could be doing more to help, many Divers report that responsibility rested on their shoulders, although some students asked for advice on managing stress, better coordination of assignments, smaller classes, and to be able to talk more with course instructors. When asked what they should be doing to better succeed, Divers mention factors like managing time, working harder and hiring a tutor. Although they recognize that there is a problem, some Divers say they do not know what they should do differently.

We perform a more systematic analysis of these answers by identifying words used significantly more often by Thrivers and Divers.[4] The complete set of results can be found in the online appendix. Thrivers discuss workload and time management as a common concern. When asked about their biggest challenges, they use words such as "load", "deadline", and "hour", and when asked about what the University of Toronto could do to help them more, they mention "breaks". Thrivers are also more likely to identify these issues as things they plan to work on, as they are more likely to use words such as "focus" and "schedule" when asked what they will try to do differently. It is interesting to note that although Thrivers are generally hard workers, they nevertheless find managing time challenging. This is consistent with previous findings that conscientiousness predicts success (Beattie et al., 2018) as students who can force themselves to work hard even when they do not want to are more likely to thrive.

Two patterns emerge among Divers. First, Divers seem to be aware of the time management difficulties they have. When asked about challenges, Divers describe factors that take time away from studying, using words such as "health" and "job". More than one-third of divers used the word "time" when describing their biggest challenge, and one-tenth used "procrastinate", "motivation", or "lazy".[5] Second, Divers report feeling lost. When asked about challenges, Divers use words like "language" and "understand". Students who do particularly poorly find the experience overwhelming and confusing.

[4] For more details about the methodology, we refer readers to Beattie et al. (2018).

[5] Interestingly, the 6 Divers from the highest decile of high school academic achievement all clearly convey time management as their biggest challenge: "The biggest challenges I have so far is to arrange and balance my time well and not procrastinating with the assignment or the reviewing", "My motivation to study my all courses are very weak. I don't really want to work for my courses."; "My biggest challenges have been learning to manage time more efficiently in order to study and go to early morning classes."; The biggest challenges to my academic success so far include my tendency to procrastinate, and that the workload is much more than I had anticipated coming into the school."; "Do the work in time and catch up on the stuff i have missed"

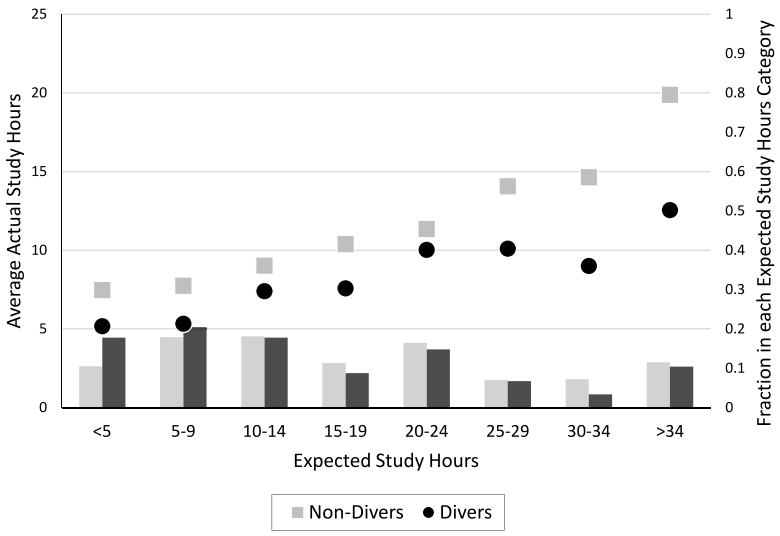

Fig. 4. Expected vs. Actual Study Hours. Note: Markers indicate average actual study hours for each category of expected study hours, separately for Divers and non-Divers. Bars indicate the fraction of each sample that falls in each category of expected study hours.

5. Conclusion

The patterns we report in this paper by no means imply causal relationships. Still, several of our findings suggest to us that very poor performing college students are not happily trading off academic performance for more preferable activities. First, Divers are headed towards academic probation — the student grade average across all classes is 39.9 percent. They face an uphill battle in raising their cumulative GPA enough to avoid suspension and complete their program. Second, a majority of Divers (58 percent) state at the start of the term that they expect to attain a graduate degree, obviously requiring good academic achievement for acceptance into such a program. The gap between what these students aspire to do and their current trajectory is very large indeed.[6] Third, Divers' expectations around study time at the start of the term are similar to other students, but actual (self-reported) student hours diverge as the term progresses. Fig. 4 shows this. Among students with the same study time expectations at the start of term, Divers fall further short than non-Divers. In addition, we can rule out that differences in study habits simply reflect differences in innate ability: high school grades do not account for the gaps in study habits we report.[7] Fourth, the results of the text analysis highlight that Divers are aware of their time management problems and would like to study more but fail to do so. Fifth, Divers are less happy and more stressed than other students and are more likely to mention issues of procrastination and time management problems.

Our results also suggest that study time may play a key role in explaining poor performance. Divers report only spending 8 h a week on all their course material outside of class, far lower than Thrivers. Most administrators and instructors recommend more than 30 h a week of study time for a full course load. It is difficult to imagine improving academic achievement without increasing Divers' study levels. This argues that researchers and higher education administrators should focus their attention more on increasing the amount of time students spend trying to learn as a necessary condition for improving achievement.

[6] Our key results still hold when restricting the sample to students who intend to obtain a graduate degree.

[7] This is perhaps not surprising, because virtually all students in the sample enter college having performed very well in high school. In online appendix D, we conduct a simple decomposition exercise and find that less than 20% of the gap in actual study hours between Divers and non-Divers is explained by differences in expectations. Similarly, less than 25% (3%) of the gap is explained by differences in high school grades (desire to go to graduate school). Alternatively, the 0.30σ difference in study hours between Divers and the average student still stands at $0.24\ \sigma$ when directly controlling for high school grades in the estimation of means differences.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.econlet.2018.12.026.

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