PREDICTING COLLEGE STUDENTS' ACADEMIC SUCCESS

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Abstract

This study investigated factors that predict college students' academic success using the Academic Success Inventory for College Students (ASICS), which is a 7-point scale instrument of 50 questions divided into 10 subscales. ASICS focuses on factors that help students successfully complete and navigate difficult and challenging courses. The study further explored factors correlated with students' academic success. Students' academic success is defined as a student's successful course credit completion rate. Results show that internal motivation and personal adjustment significantly predicted students' academic success. A comparison between first-generation and continuing-generation students shows that first-generation students have a significantly higher mean on 4 of the ASICS factors (career decidedness, socializing, perceived instructor efficacy, and concentration). There was however no significant difference in terms of students' academic success between the two groups.

Keywords: Academic success, Course completion, First-generation students, Student support services, Internal motivation, Personal adjustment, Academic Success Inventory for College Students

Predicting College Students' Academic Success

Students' successful and timely college completion has been one of the biggest challenges in higher education in the United States. In a report from the National Student Clearinghouse Research Center, Shapiro et al. (2018) indicated a 150% time to degree rate of 56.9% for the entering Fall 2011 cohort. While this shows an increase from the 2010 cohort, it still reveals that close to half of the students (43.1%) who started college in 2011 had not earned a degree after six years. Furthermore, nearly a quarter of students do not return after the first year (National Center for Education Statistics, 2019).

On the other hand, there has been an increase in college enrollment. According to the National Center for Education Statistics (2019), undergraduate college enrollment went up 27% between 2000 and 2017, with a projected 3% increase between 2017 and 2028. While enrollment is increasing, the National Center for Education Statistics also reports smaller rates of increase for degree completion. For example, at 2-year institutions, the percentage of students who completed their degree at their first-attended institution increased from 30.9% in 2009 to 31.6% in 2014, showing a little less than a one-percentage-point increase. At 4-year institutions, the completion rate went from 58 % in 2010 to 60% in 2011, again showing a small increase of only two percentage points. Although transfer students are counted as non-completers in these reports, there seems to be a common agreement regarding the gap between the rates of enrollment compared to that of completion. While the good news may be that more students are pursuing higher education, the bad news is that students are completing college at lower proportions. The major implications of such a situation for higher education institutions are to ensure that a greater proportion of students finish their degrees given the higher rate of enrollment.

Value of a college degree

The low rate of college student completion seems to contrast with the importance of earning a college degree in an individual's social and economic mobility. As reported by Kuh, Kinzie, Buckley, Bridges, and Hayek (2006) "earning a baccalaureate degree is the most important rung in the economic ladder" (p. 1). Other scholars (Avery & Turner, 2012; Strohush & Wanner, 2015) have studied the importance and value of getting a college degree. For example, Avery and Turner (2012, summarizing Golden & Katz, 2008)

contended that "the earnings premium for a college degree relative to a high school degree nearly doubled in the last three decades" (p. 166). Similarly, Purcell, Iams, and Shoffner (2015) reported higher and faster growth of earnings for college graduate workers compared to non-college graduate workers. Rose (2013) extended the benefits of a college degree beyond earnings and highlighted its impact on other values, such as civic engagement and job security. For example, the author states that "the main arguments in favor of earning a college degree are based on college graduates' larger earnings over a lifetime, lower unemployment rates, better health, higher marriage rates, and greater civic involvement" (p. 25).

This contrast between the high percentage of students not finishing college and the importance of a college degree for economic and social development has been exacerbated by the soaring costs of higher education. Critics of higher education have also used such contrasts to frame their narratives regarding the value and the effectiveness and efficiency of colleges and universities to graduate students on time, which is perceived to be their mission. Consequently, colleges and universities around the U.S. have been developing plans and initiatives to promote students' academic success, which is usually measured by the successful and timely completion of one's academic degree. Such plans and initiatives aim to answer questions, such as: what are the factors that may be inhibiting students' academic success? What practices need to change to make sure students successfully complete their education in a timely manner? Attempts to answer these questions highlight a stronger focus on data-informed decision making and measuring the effectiveness of university programs and support services for improving students' academic success and ensuring students successfully complete their degrees.

Students' Academic Success

Scholars have long been interested in factors that may positively or negatively affect a student's academic success (Hepworth, Littlepage, & Hancock, 2017; Morlaix & Suchaut, 2014). Students' academic success, as defined by retention and/or successful and timely completion of an academic degree (Chan-Hilton, 2019; Ragan, 2010), can be affected by a multitude of factors such as the students' aptitudes, beliefs, college environment, academic preparedness, family and socio-economic background, to name a few. Numerous studies

looked at students' academic success focused on cognitive factors such as GPA and admission tests (Camara, 2013; Korbin et al, 2008), and non-cognitive contextual factors such as social integration (French, 2018) and interactions with faculty (Story, 2013).

Scholars (Van Hofwegen, et al., 2019; Pitts, & Johnson, 2017; Millea, Elder, & Molina, 2018) have explored students' academic success in connection with cognitive skills, such as test scores and quality of high school academic preparation. For example, Morlaix and Suchaut (2014) found that cognitive abilities were predictors of students' academic success and retention. Similarly, Geiser and Santelices (2007) reported high school grades as strong predictors of student performance for freshmen year as well as four-year college outcomes.

Research on students' academic success has expanded to include non-cognitive factors. Chan-Hilton (2019) reported that students' academic success can be affected by structural, attitudinal, and relational factors. According to the author, "structural factors are the practices and resources of the institution or environment, attitudinal factors are based on values, beliefs, and attitudes, and relational factors involve interactions between students, faculty, and/or family" (p. 5). Chan-Hilton contended that attitudinal factors (work ethic, motivation) were identified as most important (42.7%) in affecting students' academic success compared to the other two factors. This examination of structural, attitudinal, and relational factors dovetails with the work of Nancy Schlossberg in exploring how students cope with transition, and namely those who enter college after high school (Schlossberg et al., 2005).

Academic Mindset

Other studies (Buzzetto-Hollywood, Hill, & Mitchell, 2019; Farruggia, Han, Watson, Moss, & Bottoms, 2018) have also focused on the impact of non-cognitive factors on students' academic success. In a study involving first year students, Farruggia and colleagues (2018), found that students' academic mindset had a positive effect on their academic performance. In this study, an academic mindset was defined as a student's sense of "self-efficacy, motivation and belonging" (p. 310), and a student's academic success was measured as GPA and retention from first to second year.

Motivation and Capacities to Set Goals

Attributes such as self-efficacy, motivation, and mindset are widely discussed in the literature on self-determination theory. Prior research (Cheung & Tsui, 2010; Deci & Ryan, 2016; Di Domenico & Ryan, 2017) has linked students' academic success with self-determination factors, such as motivation (especially intrinsic motivation), decision making, and goal setting. For instance, in a study of incoming first year college students, Conti (2000) reported that students who articulated and reflected on autonomous goals exhibited a higher level of intrinsic motivation, which predicted a higher grade point average and higher adjustment capacities. The author went further to report that "in addition to simply thinking about one's goals for college, a firm connection between those goals and one's sense of self is important for positive adjustment and motivation" (p. 201). Vansteenkiste, Lens, and Deci (2006) argued that internal motivation serves students better when it is grounded in autonomous, internally driven goals.

First-Generation Students

While the literature reviewed underscores the importance of non-cognitive factors such as self-efficacy, motivation, mindset, and personal adjustment capacities in affecting a student's academic success, the extent to which they can affect a student's ability to succeed could most likely depend on other external factors, like family environment. For example, a student coming from a family where there is little or no prior college experience may be less likely to successfully transition to college and be motivated to overcome challenges than a student from a family with an established college experience. In the context of non-cognitive, non-demographic factors, few studies have focused on specific student population groups like first-generation students. The research has shown that first-generation students, even those with the same level of academic preparedness, often do not achieve and persist at the same rates as their non-first-generation counterparts (Bui, 2002; Gibbons & Borders, 2010). Eitel and Martin (2009) noted in their research that when examining the number of students leaving college after the first year, first-generation students were overrepresented. Students without a college role-model in the household may not be as likely to attain a degree as students with a close example of success. Soria and Stebleton (2012) identified the value of a college role-model. They argued that first-

generation students have lower levels of social capital (the personal connections to seek help and guidance). Due to this lack of connection and social capital, first-generation students often face more challenges when navigating the college experience.

Furthermore, most studies have focused on academic success measures, such as overall GPA, retention, and graduation rate. When academic success is defined as degree completion (Radunzel & Noble, 2012), success is most likely to be dependent on a student's ability to overcome challenges and complete the courses they have to take to complete their degree. Therefore, successfully completing coursework is an important condition towards successful degree completion and should be studied as a means to promote students' academic success. Understanding these factors will be of tremendous value in higher education leadership's quest to support students' academic success because successfully completing a course is a condition for persistence towards finishing a degree program and to graduate. Hence, there are benefits in investigating factors that may help students overcome challenging and difficult courses in order to successfully complete attempted credits.

Context and Purpose of this Study

The literature review points to non-cognitive factors – such as motivation, ability to make decisions, adjusting, and persisting to sustain those decisions and related goals – that could influence students' academic success, where success is defined by an overall GPA, degree completion, or retention. The current study will utilize the Academic Success Inventory for College Students (ASICS), (Prevatt, Li, Welles, Festa-Dreher, Yelland, & Lee, 2011) to explore how non-cognitive factors like motivation and decidedness can affect a student's ability to successfully complete challenging and difficult courses. Rather than focus on overall GPA or degree completion or retention, the ASICS is an instrument that asks students to rate themselves on factors that help them successfully complete credits when enrolled in challenging and difficult courses. More specifically, this study aims to address the following research questions:

- What are the factors that significantly predict students' successful completion of college courses?

- Are there differences between first-generation students and continuing-generation students in terms of factors of the academic success inventory for college students?

Method

Participants

The study took place in a comprehensive metropolitan university. The total Fall 2018 undergraduate enrollment was 12,158 students with 47% of them being first-generation students. The survey was sent to 2,123 sophomore students in Fall semester of 2018. The study focused on second-year students because this is part of a larger longitudinal research project that intends to follow participants throughout their education at this institution to apply our investigative model each year. For that purpose, we determined that second-year students were the most appropriate population for the study because they would have acclimated to college life. We purposefully avoided first year students for that reason. Third- and fourth-year students would not have provided us with enough data for the longitudinal study by the time they graduate. We have collected data for two more years. This paper is based on the first year of data collected.

Four follow-up email reminders were sent. A total of 303 students responded, which corresponds to a response rate of 14.2%. After removing missing data, the total number of 243 respondents were retained for analyses. The average age of the students was 20.9 years with a minimum of 18 and a maximum of 57. The average number of attempted credit hours for the sample was 14.61 while the number of earned credit hours was 14.03. The majority of the respondents were white (84.4%). Other represented ethnicity groups included Black/ African-American (4.1%), Hispanic or Latino (2.5%), and Non-Resident Alien (4.9%). Additionally, 45.3% of the respondents were first-generation students. The study was approved by the university's Institutional Review Board.

Instrument

The Academic Success Inventory for College Students (ASICS) was administered to second-year students in a mid-size metropolitan institution in Fall 2018 semester. The survey instrument was recently developed and is available for viewing and use upon granted permission, as with this research study. The ASICS is a 7-point scale instrument

made of 50 questions divided into 10 subscales and focuses on factors that help students successfully complete and navigate challenging courses. The subscales each contain between three and twelve questions with a handful being reverse scored. Each question is rated from 7 (Strongly Agree) to 1 (Strongly Disagree). The 10 subscales are; (1) General Academic skills, (2) Internal Motivation Confidence, (3) Perceived Instructor Efficacy, (4) Concentration, (5) External Motivation/Future, (6) Socializing, (7) Career Decidedness, (8) Lack of Anxiety, (9) Personal Adjustment, and (10) External Motivation/Current. For a definition of each one of these factors, see Prevatt et al. (2011). The internal consistency of the instrument was previously tested and the "Cronbach alphas for the ASICS were as follows: General Academic Skills =.93, Internal Motivation/Confidence = .86, Perception of Instructor Efficacy = .92, Concentration = .87, External Motivation/Future = .88, Socializing = .84, Career Decidedness = .87, Lack of Anxiety = .77, Personal Adjustment = .86, and External Motivation/ Current = .62" (Prevatt et al., 2011, p. 27). Regarding the internal consistency within research, a Cronbach's alpha value is statistically acceptable with .70 being the acknowledged baseline for factor reliability.

An internal consistency analysis from the data collected for this current study yielded similar results with only external motivation/current showing a coefficient below the .70 threshold. Internal consistency coefficients from the data collected for this study are as follows: General Academic Skills = .89, Internal Motivation/Confidence= .86, Perception of Instructor Efficacy= .95, Concentration= .88, External Motivation/Future= .87, Socializing= .75, Career Decidedness= .86, Lack of Anxiety= .83, Personal Adjustment= .86, External Motivation/Current= .58.

Data Collection

Students' academic success, which is the dependent variable in this study, is defined as the student course credits completion rate. Data regarding how many credits a student attempted as well as how many they successfully completed was obtained from the university's Office of Institutional Research. The ASICS survey was administered electronically to a panel of 2,123 second-year students through the Office of Institutional Research using the Qualtrics survey tool. Sophomore students were categorized as enrolled students who, prior to the Fall 2018 semester, had earned between 30 and 59 credit hours.

This categorization is the accepted federal standard regarding the average of 120 credit hours in the completion of a baccalaureate degree. The initial invitation to participate was sent near the conclusion of the fall semester and remained open for approximately six weeks. During this time, four individual reminder emails were sent to participants who had yet to complete the survey. Within the invitation email, the purpose of the study was explained and students were told participation was voluntary.

Data Analysis

Data collected using the ASICS instrument were exported from the survey tool and analyzed using SPSS version 26. Descriptive statistics are presented to provide the general context of the data. Predictive analysis, correlation, and mean comparison were used to answer the research questions. Data were cleaned by removing any ASICS incomplete participant dataset. Using this method, 243 respondents were retained for analysis.

Results

Factors that Predict Students' Successful Completion of Courses

A standard multiple regression analysis was conducted with academic success as the dependent variable and the 10 factors from ASICS instrument input as predictor variables. The results indicated that the model explained about 13% of the variance, $R^2 =$ .129, $F(10, 235) = 3.43$, $p < .001$. Internal motivation/confidence, $\beta = .20$, $p < .025$ and personal adjustment, $\beta = .25$, $p < .000$ were the two factors that significantly predicted student academic success. In this study, internal motivation/confidence is defined in the ASICS as "belief in one's abilities to perform well academically, as well as satisfaction and challenge associated with performance", and personal adjustment is the "lack of personal issues that detract from one's ability to perform academically." Only one participant within the 243 cases of the clean dataset was enrolled in an online degree. Table 1 below shows the items under each one of the two significant factors.

Table 1. Items under Internal Motivation and Personal Adjustment

Factors	Internal Motivation/Confidence	Personal Adjustment
Items	● I got satisfaction from learning new material in this class ● I enjoyed the challenge of just learning for learning's sake in this class ● I felt confident I could understand even the most difficult material in this class ● I was pretty sure I could make an A or B in this class ● I knew that if I worked hard, I could do well in this class ● I worried a lot about failing this class **(reverse code)** ● I was pretty sure I would get a good grade in this class ● I felt pretty confident in my skills and abilities in this class	● Personal problems kept me from doing well in this class **(reverse code).** ● I would have done much better in this class if I didn't have to deal with other problems in my life **(reverse code)** ● I had some personal difficulties that affected my performance in this class **(reverse code)**

A follow-up analysis was conducted to see how items under internal motivation and personal adjustment may be associated with students' academic success. For that purpose, a Pearson correlation analysis was used. For internal motivation, the following three items were significant at the 0.001 level with a positive coefficient:

- I was pretty sure I could make an A or B in this course, $r(240) = .192$, $p <. 001$,
- I worried a lot about failing this course, $r(240) = .217$, $p < .001$,
- I was pretty sure I would get a good grade in this course, $r(240) = .171$, $p < .001$

o   These items within the internal motivation factor relate to a students' self-confidence in their competence to do well in their course.

Table 2. Pearson Correlation Coefficient between Students' Academic Success and Internal Motivation

	I was pretty sure I could make an A or B in this course	*I worried a lot about failing this course*	*I was pretty sure I would get a good grade in this course*
Students' Academic Success Design	.649**	.533**	.556**
Course Facilitation		.729**	.632**
Course Assessment			.585**
Student interaction			

When it comes to personal adjustment, all three items that made up that factor were significantly and positively correlated to students' academic success:

- Personal problems kept me from doing well in this class (reverse coded), $r(240)$ = .271, p <. 001,
- I would have done much better in this class if I didn't have to deal with other problems in my life (reverse coded), $r(240)$ = .228, p <. 001,
- I had some personal difficulties that affected my performance in this class (reverse coded) $r(240)$ = .262, p < .001

First-Generation Students and Continuing-Generation Students

A total of 14 students identified as neither first-generation nor continuing-generation students. Those cases were excluded in this analysis, which only concerns 229 respondents. There were 110 first-generation students and 119 continuing-generation students. Table 3 shows demographics and descriptive statistics for first-generation and continuing-generation students.

Table 3. Descriptive Statistics by First-Generation Status

Status	Male	Female	LI	Age		Hours Worked		Average
				M	SD	M	SD	success rate
FG	24.5%	75.5%	56.4%	21.51	5.89	17.8	13.38	97.74%
Not FG	29.4%	70.6%	16.8%	19.95	3.19	14.41	12.94	95.16%

FG: First-generation student

Not FG: Non first-generation students

There were no significant differences between first-generation students and continuing-generation students in terms of students' academic success (completion rate) as defined in this study. An independent samples t-test analysis was run to compare first-generation students and continuing-students in terms of the factors of the ASICS. Of the 10 ASICS factors, only four of the factors were significant at the .05 alpha level. Those were Career Decidedness, $t(227) = 1.84$, $p < .05$, 95% CI [2.64, 10.89], Socializing $t(227) = 2.10$, $p < .05$, 95% CI [8.52, .27], Perceived Instructor Efficacy, $t(227) = 2.73$, $p < .05$, 95% CI [18.08, 2.94], and Concentration, $t(227) = 2.09$, $p < .05$, 95% CI [12.06, .11]. Results are shown in Table 4 with first-generation students having a significantly higher mean on the significant factors.

Table 4. T-Test Comparing First-Generation and Continuing-Generation Students by the 10 ASICS Factors

| | First-generation | | | | 95% CI for Mean Difference | | |
| | Yes (n = 110) | | No (n = 119) | | | | |
	M	SD	M	SD		t	df
Career Decidedness	83.92	18.88	79.05	20.97	[2.64, 10.89]	1.84	227
Socializing	88.69	14.57	84.30	16.90	[8.52, .27]	2.10	227
Perceived Instructor Efficacy	68.77	28.69	58.27	29.30	[18.08, 2.94]	2.73	227
Concentration	52.73	23.97	46.65	21.89	[12.06, .11]	2.09	227

First-generation students also tend to be older than their continuing-generation counterparts and may work more hours (see Table 3). A t-test revealed there were significant differences with respect to age and working hours between these two groups. These results are further examined in Table 5.

Table 5. T-Test Comparing First-Generation and Continuing-Generation Students by Age

| | First-Generation | | | | | | 95% CI for Mean Difference | | |
| | Yes | | | No | | | | | |
	M	SD	n	M	SD	n		t	df
Age	21.51	5.89	110	19.95	3.19	119	[2.78, .33]	2.51**	227
Working hours	17.88	13.38	109	14.41	12.94	118	[3.46, 1.74]	1.98	225

Discussion

The results of this study reveal students' internal motivation/confidence and their abilities to personally adjust are the main predictors of a student's academic success. Internal motivation can be linked to personal adjustment, as prior studies have documented how internal motivation can lead to skills in goal setting and resiliency to develop strategies and face challenges (Staribratov & Babakova, 2019). Additional studies have illustrated how internal motivation can drive and impact a student's performance (Buzdar, Mohsin, Akbar, & Mohammad, 2017). Prior research (Gordeeva, Sychev, & Osin, 2014) reported that internal motivation, as opposed to external motivation, positively affects creative thinking and is a predictor of enhanced learning strategies, learning achievements, and sense of personal satisfaction. In their theory of self-determination, Deci & Ryan (2000) posed that internally motivated individuals tend to be more proactive and adapt their behaviors and practices accordingly. Therefore, internally motivated students may be more likely to focus time and energy than externally motivated students and thus more inclined to act based on internal factors such as self-satisfaction, self-interest, and personal commitment rather than to satisfy external forces. As Glas, Tapia Carrasco, and Miralles Vergara, (2019) reported

The more "external" the source of motivation - individuals acting to avoid punishment or to attain rewards offered by others - the closer it is to amotivation

[lack of motivation]. The more 'integrated' the source of motivation into one's self-concept and congruent with self-determined goals, the closer it is to intrinsic motivation. (p. 45)

Students with a higher internal motivation/confidence score in this study may be performing higher than their counterparts with lower scores because of their focus and belief that they can control their behaviors to achieve a desired outcome. This attribute is similar to what could be referred to as an internal locus of control. Prior studies (Gujjar & Aijaz, 2014) reported a positive correlation between students' internal locus of control and their academic performance. Gujjar and Aijaz (2014) define locus of control as "a personal belief about who can control the consequences of one's action" (p. 2). They added that:

People with an external locus of control believe that the consequence of their actions (success and failure) is controlled by others. They do not see a strong link between their efforts and outcomes, and between their action and consequences of that action. People with an internal locus of control believe that they have direct control over the outcomes of their actions. (Gujjar & Aijaz, 2014, p. 2).

This belief that students' academic success depends directly on them rather than on an external force may be the difference between internally motivated and externally motivated students in this study. Internally motivated students are then more likely to develop strategies and mechanisms to adapt to circumstances so that they do not lose control of that locus to an external force. Hence, the potential reason why personal adjustment was found as a predictor of student academic success in this study as well. As reported by Deci and Ryan (2000) internal motivation tends to be translated into persistence, perseverance, and self-efficacy. Internally motivated individuals would be more likely to adapt to new circumstances and the surrounding environment because they believe they have the required competence to self-regulate and be successful.

In this study, first-generation students have a statistically higher mean score on career decidedness, socializing, perceived instructor efficacy, and concentration. This is consistent with prior research. For example, in a study with first-generation college students, McCallen and Johnson (2019) reported that faculty play a significant role in first-

generation students' success. Because of the lack of college experience in their families, first-generation students have a higher tendency to rely more on instructors for support and guidance. Ramos (2019) reported that visiting professors during office hours could improve first-generation students' chances of success. These differences between first-generation and continuing-generation students may be due also to age. In this study, first-generation students tended to be older, and according to McCallen and Johnson (2019) factors that can limit success for first-generation students include age and working full time. First-generation students in this study worked more hours outside of school than their counterparts. A plausible explanation of first-generation students scoring higher on socialization, concentration, and career decidedness could be that they tend to experience a lower sense of belonging as reported in previous research (Garriott & Nisle, 2018; Roksa, Feldon, & Maher, 2018). Others have explored the benefit of socializing for first-generation students. For example, Vincent and Hlatshwayo (2018) reported that providing opportunities for social capital and networks can help first-generation students' transition to college and improve academic success.

Implications

The findings of this current study have practical implications for the leaders within higher education institutions. Scholars (Liu, Chee, Wang, & Ryan, 2016; Deci & Ryan, 2016) described ways in which universities can promote self-directed and lifelong learning by developing and promoting autonomy supported learning environments. Deci and Ryan (2016) contended that one of the dilemmas facing current learning environments is what could be referred to as a mismatch between autonomous motivational goals and the external rewards approach to support them. In other words, educational institutions tend to use an externally controlled approach to promote internally driven motivation, as Deci and Ryan (2016) state: "this controlling approach actually involves incentivizing, reinforcing and rewarding outcomes rather than behaviors" (p. 10). Therefore, higher education institutions can promote learners' autonomous motivation capabilities by promoting interest in and satisfaction for the sake of learning in order to support students in different manners. Students' autonomous motivation can be promoted in and outside the classroom. Research has explored ways to achieve such an outcome. Glas et al. (2019) and

Deci and Ryan (2016), reported that learners need three components in order to develop autonomous motivation capacities: (1) autonomy, (2) relatedness, and (3) competence. Autonomy involves giving students more responsibility and choices in terms of topics, how to demonstrate competency with respect to assignments etc. Relatedness involves helping students relate the learning to personal meaningful intrinsic goals in a caring and welcoming learning environment. Competence involves fostering students' self-efficacy and confidence that they can do the work and that the required tasks are within their reach. In this study, the items within the internal motivation/confidence factor that were significantly correlated to students' academic success all relate to a student's self-confidence that they can do well in their courses.

There are numerous ways that universities can promote autonomous motivation and personal adjustment in light of this study's and prior research findings. Below are some examples that can help promote autonomy, relatedness, and competence.

In the classroom

- Gradually remove external motivators (incentives, bonus points, etc.) and start articulating to students the importance and benefits of doing the work. Self-reflection activities might help with an initiative of this sort (Deci & Ryan, 2016; Glas, et al., 2019).

- Allow students more flexibility and choice in terms of how to respond to an assignment (Glas et al., 2019). For example, is a paper the best and only way for all students to show that they understand concepts in a given discipline? If not, allowing students to complete the assignments with a medium of their choice (e.g., a video where they would explain concepts, a PowerPoint, or a poster) can promote students' sense of autonomy, relatedness, and competence.

- Integrate students' perspectives and input in instructional decision making by engaging them in conversations about the importance of expected learning and why they are being asked to complete assignments. Providing frequent and timely feedback and allowing students to move at their appropriate pace could help better integrate students' perspectives on their learning, and also allow them to better adapt the learning to their needs, background, and experiences in their daily lives

beyond the classroom. This could potentially minimize students' focus on grades only rather than the learning *per se* (Deci & Ryan, 2016). Current research on transparent assignment and instruction (Winkelmes, 2013) could help support these types of initiatives.

Extracurricular activities and student support services

- Engage students in goals articulation exercises early on. Orientation teams can start with students the first time they come to campus to work with them in developing goals, and connect those goals to their daily lives and needs. Advising and Student Affairs units can build on those goal-setting activities and engage students in frequent reflections on those set goals (Conti, 2000)

- Close collaboration between student support services and academic programs to foster students' autonomous motivation capacities and an autonomous supportive learning environment. An example of such collaboration could be for student affairs personnel and academic programs to develop ways to promote more intentional connections between the work students do in student organizations and the work they do in their academic programs, in order to support more lifelong autonomous goals.

For first-generation students, develop targeted initiatives to support first-generation students' resilience (Ramos, 2019). Initiatives to support first-generation students could include developing networks that allow them opportunities for early involvement in high impact practices, such as research projects or internships. High impact practices can support factors like socializing, connection with career choice, and closer collaboration with instructors.

Conclusion

This study provides important information on the factors that can help foster college students' academic success. Overall, internal motivation and personal adjustment are the factors that seem to predict a student's successful completion of their coursework. Further analyses also reveal significant differences between first-generation students and their counterparts with first-generation students having a statistically higher mean score on career decidedness, socializing, perceived instructor efficacy, and concentration.

The study's results confirm previous research and can be interpreted through the lenses of Deci and Ryan's (2000) self-determination theory. The findings can be helpful to instructors, advisors, student affairs personnel, and other professionals in higher education to develop strategies to support students' internal motivation/confidence and personal adjustment capacities. More specifically, higher education professionals can start working with students early on in their educational career to develop skills such as goal setting and autonomous motivation that seem to be related to a student's internal motivation and personal adjustment abilities which, in turn, affect their academic success. Developing activities to foster and promote such skills can ultimately increase students' successful course completion rate and therefore colleges' and universities' effectiveness.

Limitations and Future Research

Limitations of this study include the limited number of participants in fully online programs. Given the tremendous growth in online course offerings, future research might be needed to explore factors of academic success with programs that are fully offered online and compare factors of success by modes of delivery. While there may be other relationships among the significant ASICS factors, this study mostly focuses on the significant predictors. Existing literature highlights the relationship between internal motivation and personal adjustment with making a decision and develop strategies to sustain it. This established connection helped guide the focus of this research publication. Another limitation could be that this study asks about whether respondents were in a relationship but not their marital status, nor whether they have children or not. Further research may be needed in the comparison between students based on their marital and family status.

This study did not fully explore contextual factors and their possible impact on the ASICS factors. While internal motivation/confidence and personal adjustment are the predictors of students' academic success in this study, these non-cognitive factors can be influenced by the environmental context in which students study. Vansteenkiste, Lens, and Deci (2006) reported that context can promote or inhibit autonomous motivation. Other scholars (Cheung & Tsui, 2010; Deci & Ryan, 2000, 2016; Glas et al., 2019) also discussed how the contextual environment can help students foster internal motivation. Another

research avenue to consider is exploring whether the environmental context can influence the factors in the ASICS. Finally, further research should be considered to explore differences between first-generation students and their continuing-generation counterparts to develop an appropriate support system for first-generation students.

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