Factors Influencing University Student Academic Success

Daniel Hepworth *Ben Littlepage* *Katy Hancock*

Murray State University

Ensuring student success has been a ubiquitous and enduring goal of institutions of higher education, making it paramount to identify how this goal can be achieved. The researchers identified social integration, perceived institutional commitment to student success, and academic preparedness as potential predictors of student academic success. An ordinal regression model was used to test the relationship between the predictor variables and class grade. A sample of students enrolled in a freshmen-level general education, gateway course was surveyed. Perceived commitment of the institution to student welfare and social integration were not statistically significant. However, academic preparedness was found statistically significant in predicting the acute measure of academic success. These findings suggest that, in the quest to ensure student success, social integration and commitment should be considered secondary factors to academic preparation.

Introduction

The point where social integration and academic success intersect has fascinated higher education theorists for decades (Astin, 1984; Braxton, Doyle, Hartley III, Jones, & McLendon, 2014; Chapman & Pascarella, 1983; French, 2017; Pascarella & Terenzini, 1991; Tinto, 1975, 1993). As a general rule, student academic success is measured in one of two ways: acute academic performance (e.g. grades, semester course completion) and continuous academic performance (e.g. student persistence, institutional retention) (Bloemer, Day, & Swan, 2017; Connolly, Flynn, Jemmott, Oestreicher, 2017; Severiens, Meeuwisse, & Born, 2015). Rarely has anyone studied whether social integration influences acute

academic success, such as class grade. The purpose of the present research is to identify influences for an acute measure of student academic success.

In a previous study, Littlepage and Hepworth (2015) applied theoretical constructs of Braxton's et al. (2014) persistence theory for residential colleges and universities to the dependent variable of acute academic performance. The measure of acute academic performance was the course grade for an introductory to criminal justice course, that serves as both a university elective and gateway course to the criminal justice program; in that study, those variables were found to have no significant impact on class performance. The intention of the present study is to expand on that analysis with additional variables and stronger analytical methods allowed by a much larger sample size. The theoretical basis for this study comes from two primary sources: Tinto's (1975, 1987) interactionalist theory, expanded upon by Braxton et al. (2014) as well as the body of literature which examines the impact of academic preparedness of students on their academic success.

Literature Review

Tinto's (1975) interactionalist theory proposed that a student's willingness to integrate themselves socially at an institution and the perceived care for them employed by the institution increases the likelihood the student will remain enrolled at that institution. In a revision of his original theory, Tinto (1993) acknowledged other factors influence persistence, such as financial resources, experiences, and interactions within the classroom.

Researchers have scrutinized various iterations of Tinto's work (Chapman et al., 1983; French, 2017; Lundy-Wagner, 2012). Other studies found influences beyond social integration impact academic performance, such as student background and motivation (Flynn, 2014; Vanthournout,

Gijbels, Coertjens, Donche, & Van Petegem, 2012; Wolfe, 1993), degree and style of classroom organization, availability of faculty and other support services, style of classroom instruction, and enrollment in a first-year transitions course (Hopper, 2011; Kluger & Koslowsky, 1988; Kot, 2014; Lundquist, Spalding, & Landrum, 2002; Moore, 2007; Montgomery, Jeffs, Schlegel, & Jones, 2009; Pascarella, Seifert, & Whitt, 2008; Schenker-Wicki & Inauen, 2012; Wyatt & Bloemker, 2013).

Braxton notably scrutinized Tinto's (1975, 1987, 1993) original research in a series of persistence-related studies (Braxton et al., 1997, 2004, 2014). In 1997, Braxton and associates sampled residential college students and reiterated Tinto's (1975) early finding that social integration and institutional commitment to student success, influences student persistence toward graduation. Braxton and associates (2004) revised and expanded upon the interactionalist theory, placing additional emphasis on student social integration, perception of institutional commitment to student success, and other additional factors, such as ability to pay for school, perceived potential for an on-campus community, and perceived level of institutional integrity. This revised theory was later tested (Braxton et al., 2014) and student social integration and perception of institutional commitment to student success were identified as key variables influencing persistence into subsequent academic years at the school.

Academic preparedness is another factor often cited as influencing student academic success, specifically a student's preexisting level of preparedness upon entering postsecondary education (Camara, 2013). Pre-existing measures of preparedness are typically considered to be standardized college entry test scores (e.g. SAT, ACT) and high school grade point average (HSGPA). While both standardized test scores and HSGPA have shown separately to predict college performance (Korbin, Patterson, Shaw,

Mattern, & Barbuti, 2008; Vare, DeWalt, & Dockery, 2004; Westrick, Le, & Robbins, 2015), not surprisingly, they are all the more effective when used together. For example, in a study of just under 150,000 students at over 100 colleges and universities, Mattern and Patterson (2009) found students who returned for their second year of college had an earned SAT score 40 points higher and a HSGPA 0.2 (out of a 4.00-scale GPA) higher than their non-returning counterparts. Additionally, this study identified that those students in the highest range of SAT scores (2,100-2,400) returned to school for the second year at a rate of 95.5%, compared to 63.8% of those students with the lowest range of scores (600-890). It is worth noting these data were found while controlling for other, related variables, such as student personal and institutional characteristics. Korbin et al. (2008) found first year college GPA to be best predicted using a combination of HSGPA and SAT scores.

Zwick and Himelfarb (2011) examined a notable discrepancy in the predictive power of HSGPA, standardized test scores, and college performance across ethnic lines. They found utilizing a "high school SES index," which accounts for a variety of factors commonly seen in poorer and underperforming school districts, was more useful for prediction. Zwick (2013) later found HSGPA and standardized test scores were still useful in predicting the student academic success of blacks and Latinos, and were less dependent on student socioeconomic status than is commonly believed. Similarly, Campbell and Fleming (2000) examined the success of mostly black, working-class students. The authors controlled for multiple race- and class-oriented variables, and found race-related factors to be unimportant, especially against other factors, such as student personal study habits and father's socioeconomic status.

Burton and Ramist (2001) support the predictive validity of both standardized test scores and HSGPA for not

only graduation and college GPA, but also of other factors, including college honors, college leadership, and earning potential after graduation.

Of course, not all studies demonstrate the predictive validity of these variables. Hiss and Franks (2014) examined the college GPA and graduation rates of a students at a variety of institutions, which did not require standardized test scores for institutional admissions purposes, but were instead optional (e.g. scholarship). They found only mild differences in student success rates across a wide range of test score results. In an article critical of the existing SAT and ACT formats and arguing for a more achievement-oriented test system, Atkinson and Geiser (2009) note that while both standardized tests and HSGPA are useful in predicting student college performance, HSGPA is presently the superior of the two, especially when accounting for other factors, such as student socioeconomic status.

Methods

The authors sought to understand how student perception of institutional commitment, social integration, and academic preparedness impacted student academic performance in a particular class, specifically the Introduction to Criminal Justice course, at a residential university in west Kentucky. These variables of student perception of institutional commitment and social integration were selected based on a combination of Tinto's original interactionist theory (1975, 1987) and the follow-up study by Braxton et al. (2014). Littlepage and Hepworth's (2015) previous research on this topic failed to find a relationship between either student perception of institutional commitment or social integration to class performance, however, they identified the small sample size as a limitation of that research. The research question is again posed here with a larger sample size and an additional variable of academic preparedness. Drawing from

previous research, it is expected that all three variables of perceived commitment, social integration, and preparedness will be positively correlated to the dependent variable of class grade; additionally, it is expected that academic preparedness will have the strongest relationship of the three.

The study took place at a public regional, residential university in west Kentucky. The university had a combined graduate and undergraduate enrollment above 10,000, a fall-to-fall retention rate of 72% among first-time freshmen, and a 6-year completion rate of 53% at the time the study took place. The student body was 80% white, 7% black, and 53% female. Financial aid, of some form, was awarded to 85% of the student population.

Students were given a voluntary survey in the Introduction to Criminal Justice course over a period of three semesters (spring 2015, fall 2015, spring 2016), during which time four different instructors taught the course. Students were informed of the surveys by their course instructors; the actual surveys were taken online; those students who completed the survey were given a small amount of extra credit for the course.

Criminal justice major and minor students receive their first academic exposure to the field in this introductory course at this university; it is also classified as a university studies elective, thus drawing freshmen to senior students from various academic programs across campus. The course provides an overview of the American judicial system at both state and federal levels and serves as an introduction and gateway course to the criminal justice program for those students who wish to pursue it.

In addition to demographic data, results of which were reflective of the university at large (see Table 1), students were asked survey questions to better understand how their perception of institutional commitment and level of social integration at the university.

Table 1. Demographic Data from Survey Respondents and Associated University

	Survey percentage (n = 300)	University percentage (n = 10,017)
Gender		
Female	49.5	53.0
Male	50.5	47.0
Race/ethnicity		
White/Caucasian	81.1	80.4
Black/African-American	7.8	6.8
Other ethnicity	11.1	12.8
Age		
Under 25 years	95.1	84.0
Over 25 years	4.9	16.0

In their 2014 book, Braxton et al. identified multiple components of student perception of institutional commitment to their success and degree of social integration (pp. 86-90); in order to ensure effective assessment of these two key variables, it was from these components that the survey items and questions were constructed. For a complete and categorized list of these survey items, see Table 2; each survey item listed was utilized in its respective category (i.e. institutional commitment and social integration) for the statistical analysis. A total of 300 students returned a completed survey for a response rate of 53.7%.

The final predictor variable of academic preparedness was constructed based on the existing literature which indicates the importance of three elements of standardized test score, high school grade point average, and need for remedial classes. In order to properly weight these three items for statistical analysis, the student's ACT score (the ACT is the most commonly taken standardized test at this university) was broken down into quartile based on national averages (0-16, 17-20, 21-24, and 25-36) and high school GPA was categorized based on the standard 4-point scale (0-1.99, 2.00-2.99, 3.00-3.99, 4.00).

Table 2. Survey Questions and Items

Institutional Commitment
I felt welcomed the first time I entered class. [a]
I feel my CRJ 140 instructor wants me to succeed. [a]
In the first four weeks of the course, I received prompt written or oral feedback from the instructor on my performance. [a]
I am aware of academic and student support servies available at this university. [a]
My academic advisor clearly explained how completing CRJ 140 meets an academic requirement for my degree. [a]
I understand the course grading policy. [a]
I understand the course syllabus. [a]
I feel comfortable asking my instructor for help. [a]
In the first four weeks of the course, I discussed a topic related to the course with my instructor [a]
In first four weeks, I ask questions and contributed to class discussions. [a]
I attended summer orientation. [a]
I attended transfer orientation. [a]
I enrolled in a college preparation-transitions course. [a]
Social Integration
I have made a meaningful connection with at least one other student in class. [a]
I am an athlete [a]
I am a member of a fraternity/sorority [a]
In first four weeks, how often did you collaborate with or study with other students outside of class? [b]
In first four weeks, how often did you use email, social media or phone to communicate with a classmate about coursework? [b]
Indicate how much time per week you spend relaxing and socializing (e.g. time with friends, watching TV, playing video games) [b]
Indicate how much time per week you spend participating in co-curricular activities (e.g. student organizations, campus activities) [b]

[a] **Dichotomous measure** [b] **Likert scale measure**

The need for remedial classes was scored inversely where no classes needed equated to a score of 3, decreasing with each remedial course needed up to a maximum of 3 courses for a score of 0. See Table 3 for descriptive statistics on each index.

Table 3. Results of Descriptive Analysis of Predictors

	n	$\bar{x}$	**Range**	**SD**
Academic preparedness	298	8.51	5-11	1.35
Perception of institutional commitment	295	9.11	2-14	1.78
Social integration	295	12.57	6-24	3.21

In place of the more traditional measure of student academic success, which is continuous enrollment, the objective for this study was to see how well these concepts of student success predicted a more acute measure of success, which was class performance. The dependent variable used was the students' end-of-term course grade (i.e. A, B, C, D, E, and W). The E and W grades were combined because students who earned theses grades demonstrated an inability to complete the course, either through failure and withdrawal. Regardless of the student's motivation for withdrawing from a course, the student who withdrew did not pass the course and thus, the authors felt, belong in this category. For a breakdown of student grades, see Table 4.

Table 4. Final Grade Distribution from the Course Surveyed

Final grade	A	B	C	D	EW	Total
	88	88	68	15	41	300

Results

As the outcome variable is ordinal and all the predictors are continuous, an ordinal logistic regression was conducted to determine the impact of perceived institutional commitment, social integration, and academic preparedness on the students' final grades. As seen in Table 2, an acceptable number of cases exist at each outcome level to satisfy analytical requirements. The test of parallel lines indicated that the slope coefficients were the same across response categories ($x^2 = 4.014$, $df = 3$, $p = 0.260$), so the proportional odds assumption was not violated. Correlation analysis indicated no issues with multicollinearity. Applying standard casewise deletion for missing data, a total of 289 cases were analyzed. The overall model was statistically significant ($p = .001$, $x^2 = 17.589$, $df = 3$, $n = 289$; Nagelkerke pseudo $R^2 = .062$).

Individually, however, only one index, academic preparedness, was statistically significant ($p < .001$); student perception of institutional commitment ($p = .226$) and social integration ($p = .351$) were not. As shown, for a 1 unit increase in academic preparedness, a 0.335 increase in the probability of getting a higher grade can be expected. For details, see Table 5.

Table 5. Results of Ordinal Logistic Regression Analysis[a]

Predictors of course grade	Estimate	Std. error	Wald x^2	p
Academic preparedness	.335	.081	17.020*	<.001
Perception commitment	.073	.060	1.465	.226
Social integration	-.031	.034	.869	.351

[a] **$x^2 = 17.589$, overall $p = .001$.** ***Significant with $\alpha = .01$.**

In order to better understand the impact of the significant variable of academic preparedness, a means table was prepared. Individuals with an academic preparedness score of 5 had about an 11% likelihood of getting an A, but a 33% likelihood of getting either an E or a W. Conversely, those that had an academic preparedness score of 11 had a 50% likelihood of getting an A and only a 5.7% likelihood of getting an E or a W. See Table 6 for the complete breakdown.

Table 6. Means Table of Academic Preparedness

Academic preparedness	A	B	C	D	EW
5	.1089	.1934	.2761	.0859	.3357
6	.1580	.2415	.2789	.0744	.2473
7	.1952	.2679	.2700	.0657	.2013
8	.2545	.2932	.2462	.0538	.1523
9	.3204	.3051	.2161	.0432	.1152
10	.3933	.3043	.1828	.0337	.0858
11	.5008	.2807	.1381	.0234	.0570
Total	.2964	.2898	.2253	.0487	.1397

Discussion

Based on the existing literature, it was expected that all three variables would significantly impact student performance in this course. However, only academic preparedness had a statistically significant impact on that variable. As can be seen in Table 6, the nature of that relationship is congruent with what would typically be expected; as a general rule, the more academically prepared a student was entering college (e.g. higher HS GPA, higher standardized test scores, fewer remedial courses at the university), the higher the likelihood of a good grade. Existing research suggests that student perception of institutional commitment to student success and student social integration aids in overall retention, however, this research fails to find such a connection as they relate to the acute measure of class grade.

There are other items that are worth discussion. First, the variance for the model, is relatively low at 6%. In any study such as this, there are factors beyond the scope of the survey; even the strongest and most in-depth survey would be unable to capture all environmental and latent factors. Second, it should be noted that the differences between the measure of student success used in the original studies (persistence) and that used here (performance in a single class) are not insignificant. Success in a single course does not guarantee persistence or graduation; in a similar manner, failure in a single course does not preclude success at the college level overall. As such, the finding of no significant relationship between perception of commitment and social integration to student grade in a course should not be taken as reflective on student persistence.

Implications and Future Research

The application for the outcomes of this research is essentially identical to other, comparable studies. Universities, and those employed by them, seek not only to educate

students, but to set students up for success in the best and most efficient manner possible. This laudable drive has led universities to experiment with the creation of social and residential programs and also to place greater emphasis on faculty and staff as mentors and advisors rather than just teachers. Others have altered the weight of or even eliminated standardized test scores for the admissions process.

Unfortunately for those seeking evidence of a need for new and creative methods of student support, the findings of this study do not provide corroboration for this approach. The students' perception of the professors' and institution's commitment to their success and wellbeing had no statistical impact on their performance in the course, nor did their social integration. In fact, while the social integration variable was found to not be statistically significant on course grade, it is worth noting that the direction of this impact was inverse to student grade in the course. In other words, it was seen that as students' social integration increased, their performance in the course dropped, albeit in a manner that is not statistically significant.

The only variable of note was the combination of high school GPA, standardized test scores, and need for remediation. In other words, those students who were academically and intellectually capable tended to succeed at a greater rate than those who were not, regardless of their feelings about the institution or the nature of their social circle.

This current survey of students in a single course from a single institution is clearly not exhaustive, nor was it meant to be. Future research could explore new methods of collecting this information from students, measure student motivation, track graduation rates of said students, expand to other institutions, or gather information from a wider range of students.

The implications of this single study are clear and are

in line with a large portion of the body of preexisting research: as much as academia may want to place emphasis on cultivating a caring body of faculty and student social integration, the best predictor for student academic success is still ability and preparedness. As such, in order to work to better ensure student success, factors of academic preparedness should continue to take priority when considering student admissions. Additionally, this research suggests that institutions of higher education might be better served in this regard by allocating resources to assist surrounding school districts in their academic preparation of students or by providing additional academic resources (e.g. tutoring) for those university students who are struggling academically or are at an academic disadvantage.

References

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, *25,* 297–308.

Atkinson, R. C. & Geiser, S. (2009). Reflections on a century of college admissions tests. *Educational Researcher, 38*, 665-676.

Bloemer, W., Day, S., & Swan, K. (2017). Gap analysis: An innovative look at gateway courses and student retention. *Online Learning, 21*(3), 5-14.

Braxton, J. M., Doyle, W. R., Hartley, H. V., Hirschy, A. S., Jones, W. A., & McClendon, M. K. (2014). *Rethinking college student retention*. San Francisco: Jossey-Bass.

Braxton, J. M., Hirschy, A. S., & McClendon, S. A. (2004). *Understanding and reducing college student departure.* ASHE-ERIC Higher Education Report *30*(3).

Braxton, J. M., Sullivan, A. S., & Johnson, R. M. (1997). Appraising Tinto's theory of college student departure. *Journal of College Student Retention: Research, Theory, & Practice, 3*(1), 91-118.

Burton, N. W. & Ramist, L. (2001). *Predicting success in college: SAT studies of classes graduating since 1980*. (Research Report 2001-2). New York, NY: The College Board.

Camara, W. (2013). Defining and measuring college and career readiness: A validation framework. *Educational Measurement: Issues and Practice, 32*(4), 16-27.

Campbell, D. B. & Fleming, J. (2000). Fear of success, racial identity, and academic achievement in black male college students. *Community Review, 18*(5), 5-18.

Chapman, D. W. & Pascarella, E. T. (1983). Predictors of academic and social integration of college students. *Research in Higher Education, 19*, 295-322.

Connolly, S., Flynn, E. E., Jemmott, J., & Oestreicher, E. (2017). First year experience for at-risk college students. *College Student Journal, 51*(1), 1-6.

Flynn, D. (2014). Baccalaureate attainment of college students at 4-year institutions as a function of student engagement behaviors: Social and academic student engagement behaviors matter. *Research in Higher Education, 55,* 467-493.

French, A. (2017). Toward a new conceptual model: Integrating the social change model of leadership development and Tinto's model of student persistence. *Journal of Leadership Education, 16*(3), 97-117.

Hiss, W. C. & Franks, V. W. (2014). *Defining promise: Optional standardized testing policies in American college and university admissions*. Arlington, VA: National Association for College Admission Counseling.

Hopper, M. (2011). Student enrollment in a supplement course for Anatomy and Physiology results in improved retention and success. *Journal of College Science Teaching, 40*(3)*,* 70-79.

Kluger, A. N. & Koslowsky, M. (1988). Commitment and academic success. *Social Behavior and Personality: An*

International Journal, 16(2),121-125. doi.org/ 10.2224/ sbp.1988.16.2.121

Korbin, J. L., Patterson, B. F., Shaw, E. J., Mattern, K. D., & Barbuti, S. M. (2008). *Validity of the SAT for predicting first-year college grade point average* (Research Report 2008-5). New York, NY: The College Board.

Kot, F. C. (2014). The impact of centralized advising on first-year academic performance and second-year enrollment behavior. *Research in Higher Education, 55*, 527-563.

Littlepage, B. & Hepworth, D. (2016). Influence of social integration on class success. *Journal of Continuing Higher Education, 64*(3), 162-171.

Lundquist, C., Spalding, R. J., & Landrum, R. E. (2002). College student's thoughts about leaving the university: The impact of faculty attitudes and behaviors. *Journal of College Student Retention: Research, Theory & Practice, 4*(2), 123-133.

Lundy-Wagner, V. (2012). Classifying ethnicity, race, and gender: An intersectional critique of bachelor's degree completion research. *Interactions: UCLA Journal of Education & Information Studies, 8*(2), 1-23.

Mattern, K. D. & Patterson, B. F. (2009). *Is performance on the SAT related to college retention?* (Research Report 2009-7). New York, NY: The College Board.

Montgomery, J. C., Jeffs, M., Schlegel, J., & Jones, T. (2009). The first-year introduction program as a predictor of student academic performance. *Journal of Applied Research in the Community College, 17*(1), 60-64.

Moore, R. (2007). Academic motivation and performance of developmental education biology students. *Journal of Developmental Education, 31*(1), 24-34.

Pascarella, E. T., Seifert, T. A., & Whitt, E. J. (2008). Effective instruction and college student persistence:

Some new evidence. *New Directions for Teaching and Learning, 115*, 55-70.

Pascarella, E., & Terenzini, P. (1991). *How college affects students*. San Francisco: Jossey-Bass

Schenker-Wicki, A., & Inauen, M. (2012). The economics of teaching: What lies behind student-faculty ratios? *Higher Education Management and Policy, 23*(3), 31-51.

Severiens, S., Meeuwisse, M., & Born, M. (2015). Student experience and academic success: Comparing a student-centered and a lecture-based course programme. *Higher Education, 70*(1), 1-17. doi:10.1007/s10734-014-9820-3

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Education Research*, *45*(1), 89-125.

Tinto, V. (1987, November). *The principles of effective retention*. Presentation at Fall Conference of the Maryland College Personnel Association, Largo, MD.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.

Vanthournout, G., Gijbels, D., Coertjens, L., Donche, V., & Van Petegem, P. (2012). Students' persistence and academic success in a first-year professional bachelor program: The influence of students' learning strategies and academic motivation. *Education Research International,* 1-10. doi:10.1155/2012/152747

Vare, J. W., DeWalt, M. W., & Dockery, E. R. (2004). Making the grade: Predicting retention in undergraduate teacher education. *Journal of College Student Retention, 5,* 275-292.

Westrick, P., Le, H., & Robbins, S. B. (2015). College performance and retention: A meta-analysis of the predictive validities of ACT scores, high school grades, and SES. *Educational Assessment, 20*(1), 23-45.

Wolfe, J. S. (1993). Institutional integration, academic success, and persistence of first-year commuter and resident students. *Journal of College Student Development, 34*, 321-326.

Wyatt, J., & Bloemker, G. A. (2013). Social and emotional learning in a freshman seminar. *Higher Education Studies, 3*(1), 106-114.

Zwick, R. (2013). *Disentangling the role of high school grades, SAT scores, and SES in predicting college achievement* (ETS RR-13-09). Princeton, NJ: ETS.

Zwick, R. & Himelfarb, I. (2011). The effect of high school socioeconomic status on the predictive validity of SAT scores and high school grade-point average. *Journal of Educational Measurement, 48*(2), 101