

## Exploring the Relationship between Student Involvement and First-to-second Year Retention at Four-year Postsecondary Institutions

*Min Xiao*  
*Kelly D. Bradley*  
*Jungmin Lee*  
University of Kentucky

*Increasing students' involvement on campus is one of the best practices to increase college student retention. Using data from the Education Longitudinal Study of 2002, this study investigated the relationships between first-to-second fall retention and student involvement indicators. Logistic regression analysis was employed to explore the relationships. The sample included 6,283 first-time, first-year undergraduate students who were enrolled in public or not-for-profit private four-year postsecondary institutions across the country in the fall of 2004. Results show that student-advisor interaction, student-faculty interaction, extracurricular activities participation, and library utilization were positively associated with first-to-second fall retention. Recommendations for future research and implications for practitioners are discussed.*

*Keywords:* retention, first-year students, ELS, postsecondary

The number of students going to college increased from 13.2 million to 16.8 million between 2000 and 2017 reported by Integrated Postsecondary Education Data System (IPEDS). These days, college education is essentially a prerequisite for social mobility (Bowen et al., 2009) and has been linked to developmental outcomes, including learning skills, cognitive competence, and psychological maturity after completing undergraduate-level learning (Pascarella & Terenzini, 2005). Given this importance, it is alarming that nearly 20% of students at four-year universities across the country were not retained after their first academic year (IPEDS, 2017a), and 40% had not graduated within six years (IPEDS, 2017b). These substandard outcomes increase concerns regarding the quality of undergraduate education.

During the first year in college, students face many challenges associated with their transition from high school to college both socially and academically (Salinitri, 2005). First-year retention has become a critical issue for postsecondary education institutions as well (Barefoot, 2000; Billson & Terry, 1982; Horn, 1998; Morrow & Ackermann, 2012; Tinto, 1999), which affects the following years' retention as well as graduation (Schnell & Doetkott, 2003). Most institutions provide resources and programs to support first year student success but increasing support programs alone do not contribute to a higher retention rate (Tinto, 2012). These programs and resources can only be impactful to retention rates when students utilize them. Student involvement is a key element to success.

Astin (1984, p.518) defined involvement as "the amount of physical and psychological energy that students devote or invest to the academic experience". He also emphasized that involvement

is more behavioral in nature: what and how students do on campus define student involvement. In earlier work, Austin (1970) proposed the Input-Environment-Output model that attempts to explain the interactions among students' inputs, environments, and students' outputs. Grounded in this theoretical framework, our study explores an association between student involvement on campus and their first-to-second fall retention at four-year postsecondary institutions across the country.

### **Literature Framework**

The Input-Environment-Output Model (I-E-O Model) proposed by Astin (1970) is often used to explain how college affects students and to understand the relationship among student input, student output, and college environment. *Student input* refers to the characteristics and experiences that students bring with them upon entering college. *Student output* refers to student outcomes impacted by college education in various areas such as academic achievement, knowledge, skills, and attitudes. *College environment* can be either tangible (i.e. classrooms, library, residential halls) or intangible aspects (i.e. student demographics, teaching pedagogy, administrative policies) of a college that affect student development. Applying the model leads to the investigation of two relationships: (a) the influence of college environment on student outputs and (b) the influence of student inputs on outputs through the student's interaction with the college environment.

To further explain these two impacts in the I-E-O model, Astin (1984) introduced a theory of student involvement. Student involvement is defined as the amount of physical and psychological energy that students spend on academic and social, on-campus activities through interacting with their college environment. These interactions include but are not limited to faculty and peer relationships and participation in on-campus activities. As students increase their involvement in on-campus activities, it is expected to lead to personal growth, positive developmental outcomes, learning gains, and subsequently retention. Astin claims that most forms of student involvement are associated with positive changes in student academic, social, and psychological development for first-year students, even though some forms of student involvement, for instance intercollegiate athletics, have an unclear association (Pascarella & Terenzini, 2005). Below, the relationships between various forms of involvement and first-to-second fall retention are reviewed to build an empirical basis for investigating the relationship between student involvement and retention and for the selection of student involvement indicators.

#### **Student-Faculty Interaction**

Student-faculty interaction has been shown to provide students with a higher level of satisfaction than other types of involvement (Astin, 1984). This interaction, which has been linked to positive academic gains (Jacobi, 1991), can take place in either a formal or informal setting, in or outside the classroom. Tinto (1975) emphasized that the informal interaction between student and faculty increases social and academic integration for students. Similarly, Pascarella and Terenzini (1977) investigated relationships between informal student-faculty interaction and college persistence in the first year and found that students who persisted have a higher frequency of interacting with faculty compared to those who did not persist. In a more recent study, Tinto (2012) proclaimed

that all students could benefit from academic and social relationships with faculty in their first year, as students who engage with faculty become more committed to their academic institution.

### **Student-Advisor Interaction**

Academic advisors play an essential role in students' first-year learning and retention (Cuseo, 2003; Fosnacht et al., 2017; Swecker et al., 2013). High-quality advising promotes student satisfaction with their institution, improves the effectiveness of educational or career planning, and increases utilization of institutional support service (Cuseo, 2003). Notably, high-quality advising and advising-related factors are positively related with student retention. Fosnacht and his colleagues (2017) found that the frequency of multiple types of student-advisor interactions could be an accurate measure for college completion and persistence. Similarly, Swecker et al. (2013) found that the odds of student retention increase by 13% per the number of in-person meetings students have with an advisor.

### **Library Utilization**

The usage of library is an illustration of the academic and social interaction between students and their colleges' physical environment (Hagel et al., 2012; Mallinckrodt & Sedlacek, 2009; Soria et al., 2014). A college library provides a location for students to meet with faculty and peers outside of the classroom (Mallinckrodt & Sedlacek, 2009) and to interact with librarians and other support staff (Hagel et al., 2012). The use of libraries is a strong predictor of retention for students with low GPAs (Churchill & Iwai, 1981) and for students in general (Mallinckrodt & Sedlacek, 2009). Soria et al. (2014) found that students who used a library at least once in their first year had higher GPAs and were more likely to be retained compared to students who never used a library. Churchill and Iwai (1981), Mallinckrodt and Sedlacek (2009), and Soria et al. (2014) all reported that library utilization is strongly related to retention for all first-year students and particular student subgroups (i.e. students with low GPAs, African-American students).

### **Extracurricular and Sports Participation**

The term extracurricular activities is defined as academic and non-academic activities occurred outside of the regular curriculum and supported by the institutions (Bartkus, et al., 2012). Bartkus and his colleagues suggested that voluntary participation and not awarding academic credits are also the main features of extracurricular activities. Extracurricular participation as "out-of-class experience" is associated with student learning and their social, intellectual, and emotional development (Kuh, 1995). Involvement in extracurricular activities (i.e. club, student organizations) reflects the interaction between students and their peers or even faculty (Nora, 1987). The result of Nora's study showed first-year students who participate in extracurricular activities frequently or who participate in a variety of activities have a higher level of commitment to their institutions. Waller and Tietjen-Smith (2009) stated that students who participate in extracurricular activities have a higher level of satisfaction with learning in their institutions, which may increase their retention.

Participating in sports-related activities has also been shown to have a positive impact on social integration and student retention. Artinger et al. (2006) found that social benefits of participating

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in intramural sports were heterogeneous across different student sub-groups but emphasized the linkage between participation and retention overall. In Kampf and Teske's study (2013), the use of collegiate recreation facilities was found to have a positive impact on retention. Jones (2010) also suggested that attending home football games had a positive and significant association with freshmen retention rates. In contrast, Astin (1984) noted that students who are highly involved in athletic activities might isolate themselves from other peer groups because of their commitment to their athletic team. Also, their learning and personal development might be negatively affected due to time spent on athletic activities. Pascarella and Terenzini (2005) suggested that the relationship between participation in intercollegiate athletics and retention varies across different student groups and types of sports.

### **First-Year Retention and Student Involvement**

Retention is defined as "a measure of the rate at which institutions reduce friction that stands in the way of a student's continued enrollment" (Habley et al., 2012, pp.7-9). According to IPEDS (2019), retention rates refer to "the percentage of first-time, full-time undergraduate students who return to the same institution in the following fall." Notably, this first-to-second fall retention definition does not take into account students who take a semester or more off and then return to the same institutions to continue their learning (i.e., stop-out students), part-time students, or students who transfer to other institutions to continue their undergraduate education (Habley et al., 2012, p.5; Sandberg, 2015).

Both institutional leadership and researchers alike emphasize the importance of first-to-second fall retention, supported by the fact that a significant number of students do not return to their first institutions in their second year (Fike & Fike, 2008; Noble et al., 2007; Scales, 1960; Tinto, 1982). Schnell and Doetkott (2003) noted that first-to-second fall retention has a long-term influence on the following years' retention, especially on their second-to-third fall retention. First-to-second fall retention also impacts graduation (Astin, 1996; Tinto, 2012). From the start, college freshmen have to deal with the transition from high school to college and are likely to face challenges exceeding their anticipations (Salinitri, 2005; Tinto, 2012). Once in college, students have to acclimate to professor and peer relationships, become familiar with when and how to seek help, and learn how to manage time and money (Salinitri, 2005). As Tinto (1975) points out in his student departure model, social integration can be even more important for student retention than academic integration. Participating in campus activities is a common way for first-year students to construct social relationships with peers, faculty, and staff. It also serves to enhance the sense of belonging in the first year (Hoffman et al., 2002).

Astin's I-E-O model, coupled with student involvement theory, provides the conceptual framework for this study. Here, output refers to first-to-second fall retention. Student involvement is known as the interaction with the environment measured through the quantity of physical and psychological energy. This study is limited to the physical measure. Student characteristics, such as educational experience, family background, and demographics are considered as the inputs. More detailed information about variables, data source, and data analysis are described in the following section.

### **Methodology**

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This study utilizes the Education Longitudinal Study of 2002 (ELS:2002), which was designed to understand the transition of young people in the United States from high school to postsecondary education and, subsequently, life after graduation (NCES, 2004). ELS:2002 is representative of students who were high school sophomores in the United States in 2002 and covers a span of ten years. 16,197 high school sophomores participated in the first round of the survey. Approximately 82% of these students graduated from high school between the fall of 2003 and the summer of 2004. Over one-half of the initial participants were enrolled in their first postsecondary institutions between July and December in 2004. The target population for this study was first-year, first-time undergraduate students enrolled in public or private not-for-profit four-year institutions in the United States in the fall of 2004. Our sample includes 6,283 first-year students enrolled in four-year, nonprofit institutions (both public and private) in the fall of 2004.

### **Variables**

In this study, the first-to-second fall retention is a response variable. It refers to a student re-enrolling in the fall of 2005 at the institution the student was first enrolled in during the fall of 2004. Control variables in this study included gender, race or ethnicity, the highest education level of parents, sectors of postsecondary institutions enrolled, full-time/part-time status, high school GPAs, and first-year college GPAs. Given the response variable and control variables were categorical variables (except high school GPAs and first-year college GPAs), dummy coding was applied. For the *retention* variable, students who continued enrolling in the fall of 2005 were coded as 1, and those who did not return were coded as 0. For the control variables, male students were coded as 1; female students, as the reference group, were coded as 0. Similarly, the dummy variables of students' race or ethnicity were named as Black, Latino, Asian, and Other (including the classifications of Native and multi-racial), with White serving as the reference group. First-generation students were classified as having neither parent earning a bachelor's degree, and the reference group consisted of the students with at least one parent having a bachelor's degree. *Public four-year Institutions* variable was connected to those students who were enrolled in a public four-year institution; the group containing students enrolled in a private, four-year, nonprofit institution was the reference group. *Full-time status* was the dummy variable for students who registered for 12 credits or more per semester, with the reference group being part-time students.

There were six key explanatory variables: student-faculty interaction (Faculty), student-advisor interaction (Advisor), library utilization (Library), intramural sports participation (Intramural Sport), intercollegiate sports participation (Intercollegiate Sports), and extracurricular activities (Extracurricular). These explanatory variables were ordinal on a three-point scale coded as 1 = "never", 2 = "sometimes", and 3 = "often."

### **Data Analysis**

The data were analyzed with IBM SPSS Statistics 24. Logistic regression was employed because it is useful in exploring the relationship between a dichotomous dependent variable and more

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than two independent variables (Hosmer & Lemeshow, 1989, p.1; Peng et al., 2002). The equation of the multiple logistic regression in this study is shown below:

$$\text{Logit}(p) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \dots + \beta_ix_i + \varepsilon_i$$

where  $p = \left(\frac{p}{1-p}\right)$  is the estimated probability of the student being retained in the 2005 Fall semester,  $\beta_1, \beta_2, \dots, \beta_i$  are the regression coefficients which illustrate the relationships between the response variable and each explanatory variable or control variable,  $x_1, x_2, \dots, x_i$  represents explanatory variables and control variables respectively, and  $\varepsilon_i$  is the error term.

The multi-collinearity diagnostics were conducted prior to carrying out the logistic regression. Tolerance statistics were all between .64 and .97, much higher than 0.10. Variance inflation factor (VIF) statistics were all between 1.03 and 1.54, much less than 10. Thus, it was concluded that there was no evidence of multicollinearity.

### Results

The final sample consisted of 6,283 first-year students enrolled in four-year, nonprofit institutions (both public and private) in the fall of 2004. Table 1 shows that over 66% of students were enrolled in public four-year institutions; 95% were full-time students; about half were male; two-thirds of the students were White; and about 40% were first-generation students. Cumulative high school GPAs of two-thirds of the students were between 3.01 and 4.00. The average first-year college GPA was 2.84 (SD = 3.90). The First-To-Second Fall Retention rate was 78.60%.

Table 1  
*Descriptive Statistics* (n = 6,283)

Variables	N	%
First-To-Second Fall Retention	4,937	78.60
Male	2,846	45.30
Black	662	10.50
Latino	521	8.30
Asian	755	12.00
Other	306	4.90
White	4,039	64.30
Public Four-year Institutions	4,159	66.20
Full-Time Status	6,019	95.80
First Generation students	2,498	39.80
9 <sup>th</sup> -12 <sup>th</sup> grades GPA > 3.0	3,982	66.40
	M	SD
The First Year College GPA	2.84	0.82

**Multiple Logistic Regression**

Five involvement-related variables were associated with first-to-second fall student retention with statistical significance (Table 2). Student-faculty interaction, student-advisor interaction, studying at a library, and extracurricular activities were positively associated with the retention, indicating that as students increased involvement in one of these activities, they were more likely to be re-enrolled in their second year. Whereas a negative association between intercollegiate sports and first-to-second fall retention indicated that this group of student athletes was less likely to re-enroll in their second year. Participating in intramural sports did not illustrate any significant effect.

Most control variables were found to have a statistically significant association with retention. The odds of retention for male students are 1.26 times greater than the odds of retention for female students. Full-time students were 2.27 times higher in the odds of being retained than part-time students. The odds of retention for students enrolled in public four-year colleges were 1.26 times greater than the odds for students in private four-year colleges. First-generation students were less likely to continue at the institution compared to non-first-generation students. Students who had a higher high school GPA were also more likely to be retained. With every one-point increase in first-year college GPA, the retention probability increased by 0.68, when other things were held constant.

It was of interest that the association of first-to-second fall retention was different across race compared to white students, controlling for other variables. More specifically, the odds of retention for Asian students were 1.76 times greater than the odds for white students. Students who identified as black, Latino, or other races were not found to demonstrate statistically significant difference in retention from white students.

Table 2  
*Logistic Regression Results*

Variables	B	S.E.	Odds Ratio
Male	0.23**	0.07	1.26
Black	0.21	0.11	1.23
Latino	0.16	0.13	1.17
Asian	0.56***	0.13	1.76
Other	-0.20	0.16	0.81
Public Four-year	0.23**	0.08	1.26
Full-Time	0.82***	0.17	2.27
First-Generation	-0.27***	0.07	0.75
High School GPA	0.17***	0.03	1.18
The First Year College GPA	0.68***	0.04	1.98
Faculty	0.14**	0.05	1.15
Advisor	0.25***	0.04	1.28
Library	0.09**	0.03	1.09
Intramural Sport	0.04	0.03	1.04
Intercollegiate Sports	-0.08***	0.04	0.92
Extracurricular	0.17***	0.04	1.18

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Constant	-3.67***	0.298	0.02
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*Note.* \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### Discussions

The primary purpose of this study was to explore the relationship between student involvement and student retention as well as to identify the best practices for first-to-second fall retention. One of the key findings suggests that student-faculty interaction, student-advisor interaction, library utilization, and extracurricular activities appeared to be associated with retention. In particular, students who frequently interacted with their advisors demonstrated a higher rate of re-enrollment. One possible explanation is that the content or context of involvement may matter. This is supported when considering that student-advisor interaction in this study refers to the frequency of students talking about an academic plan with their advisor.

The findings also suggest that students who participated in the four involvement practices (i.e., student-advisor interaction, student-faculty interaction, extracurricular activities, and library utilization) more frequently were more likely to be retained. However, participation in sports was not a strong predictor for retention and being frequently involved in intercollegiate sports revealed a significant negative association with first-to-second fall retention. Participation in intramural sports was non-significant.

Most control variables were found to be significantly associated with first-to-second fall retention, including the highest education level of parents, gender, full-time or part-time status, cumulative GPA in high school, and first-year college GPA. Notably, full-time status and first-year college GPA had the strongest associations with retention. It was also interesting, except for Asian students, that race was found to be statistically insignificant. The findings illustrate that the activities students participate in and the relationships they build are better predictors of retention than student demographics, at least with the proxy variables included in this study.

Given that student-advisor interaction is the strongest predictor for the first-to-second fall retention, institutions should pay more attention to providing advising services and ensuring that those services are high-quality (Cuseo, 2003; Drake, 2011; Kot, 2014). In general, advisors play significant roles in facilitating academic and social involvement for students and thus, their overall success in college. Advisors support students in academic areas and connect students to other student services in and outside of institutions as needed. The support that advisors provide helps first-year students embark on a successful transition from high school to college and increases the likelihood that they will continue their college education until graduation. High-quality advising could be encouraged by providing incentives, such as funding or promotion opportunities, to advisors who demonstrate high-quality advising (Cuseo, 2003; Kot, 2014). Cuseo suggested, incentivized or not, the quality of advising services should be assessed in regard to students' academic achievement, retention rates, graduation rates, and satisfaction. It is also necessary to provide professional development programs for advisors, especially for those who have a "poor advising performance" based on advising assessments (Cuseo, 2003) or those with little to no experience. Finally, institutions should also consider offering incentives to students who meet with an advisor frequently (Kot, 2014).



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Relying on a single involvement practice is insufficient to assure retention and students' successful transition from high school to college. Institutions should design a comprehensive program or a set of strategies to deal with first-year retention issues (Tinto, 2012). As an example of such strategies, a first-year seminar can facilitate first-year students to understand academic requirements and how to succeed in the first year and beyond (Goodman & Pascarella, 2006; Hendel, 2007). Successful first-year initiatives combine activities with institutional support. Requiring students to meet with their advisors regularly and providing students opportunities to meet and engage with their peers and faculty are other potential strategies. Finally, seminars or other experiences that provide information about financial aid, student organizations, and activities and facilities on campus are helpful. Getting students engaged often and early with their institution and the community can be a game changer in student retention. All of these aforementioned programmatic approaches and strategies will diminish the likelihood of a student deciding to leave.

### **Conclusions**

While this study used data from the years of 2004-2005, many of the findings are still relevant. It is true that they may be less generalizable, especially considering today's student population has a growing number of non-traditional students. Even so, the results still provide insights into the relationship between student involvement and student retention. The importance of student involvement on retention has consistently been substantiated and emphasized over the past few decades (Astin, 1984; Berger, & Milem, 1999; Braxton et al., 2013; Connolly et al., 2017; Pascarella, & Terenzini, 2005; Tinto, 1987). Student involvement, particularly interacting with advisors and faculty members, may have even a greater impact on today's non-traditional students as many of them spend less time on campus and have fewer academic support systems. This study was not comprehensive in exploring all types of involvement, with the most obvious omissions being peer interaction and residential status. Future studies could delve into these areas. Finally, the data regarding the frequency of participating in activities was based on student self-reported data, so we are relying on student memories and understanding of the frequency categories. Even if the information collected is not perfect, it is still the students' perceptions of their activities and frequencies, giving it relevance within this framework. These limitations should be considered, but they should not downplay the value of the results and the implications for today's college students and their institutions.

This study reveals the relationships among first-to-second fall retention, involvement, and student characteristics grounded on Astin's I-E-O model. The results suggest that interacting with academic advisors, meeting with faculty, participating in extracurricular activities, and using libraries for academic purposes have a positive impact on retaining students. The student-advisor interaction is the one of the best involvement practices for retention. Furthermore, students have higher likelihood to re-enroll in the second year as they participate more frequently. The results suggest student characteristics (i.e. first-generation status, full-time status, high schools GPAs) are significantly related to retention as well.

Future research should explore the relationship between involvement and retention for various student subgroups such as adult students, transfer students, and part-time students. More objective measures for involvement could also be created and employed.

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The findings of this study confirm that student involvement can lead to retention. Based on these results, it is recommended that student service professionals in four-year postsecondary institutions encourage students to engage more socially and academically. Furthermore, college administrators and student service professionals should pay special attention to the types of involvement highlighted here and make sure that their institutions provide quality service in these areas. By engaging the student and helping the student connect with the institution, the student is likely to remain and find success.

**Author Notes**

**Min Xiao** is an Education Sciences doctoral student in the Department of Educational Policy Studies and Evaluation at the University of Kentucky. She earned her M.S. in Research Methods in Education from the University of Kentucky in 2018. Her research interests focus on first-year student success, application of quantitative methods, measurement, and program evaluation.

**Kelly D. Bradley, Ph.D.** is Professor, Chair of Educational Policy Studies and Evaluation, and Program Chair of Research Methods in the College of Education at the University of Kentucky. Her research focuses on the application of quantitative methods and measurement, specializing in Survey Research and the Rasch model.

**Jungmin Lee** is Assistant Professor of Higher Education at the University of Kentucky. She studies effects of higher education policy; the role of academic preparation including dual enrollment and high school coursework on student success; and international student experience in the U.S. institutions.

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