

Institutional Factors That Contribute to Student Persistence

Views from Three Campuses

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A New Framework for Student Persistence

Although retaining students has always been important to institutions of higher education (Henderson, 1998; Rudolph, 1990/1962; Thelin, 2004), with the development of enrollment management as a distinct discipline over the past 30 years, scholarly contributions to understanding retention have grown (Henderson, 2001). During the same time, while both internal and external pressures have intensified the need for practical ideas for improving retention rates (Hossler, Ziskin, Moore, & Wakhungu, 2008), forging a bridge between the theoretical work on student retention and the effectiveness of specific programmatic initiatives has been challenging. Few research articles assessing campus retention programs (Patton, Morelon, Whitehead, & Hossler, 2006; Tinto, 2006-2007), for example, have been published. The sketchy empirical record limits practitioners and constrains policy makers from making rational, empirically grounded decisions about implementing new initiatives or maintaining existing ones. Researchers, too, are hobbled—not knowing how or in which institutional contexts these programs are implemented.

The relationship between student behaviors, institutional practices, and student persistence has become somewhat clearer, however, in recent work by Braxton and colleagues (Braxton, Hirschy, & McClendon, 2004; Braxton & McClendon, 2001-2002) and Hossler and colleagues (Hossler, 2005; Hossler, Ziskin, Kim, & Gross, 2007; Stage & Hossler, 2000). The list of institutional practices identified by Braxton and McClendon (2001-2002), often called policy levers (e.g., Pascarella & Terenzini, 1991), is based on earlier work by Ramist (1981) and includes (a) using recruitment practices that support the fulfillment of students' academic and social expectations of college, (b) implementing structures and practices shown to alleviate

students' experience of racial discrimination and prejudice on campus, (c) applying fair administrative and academic regulations, (d) directing students through academic advising toward satisfactory course experiences, (e) supporting and developing active learning strategies in the classroom, (f) providing workshop training in stress management and career planning, (g) supporting frequent and significant interactions between students and peers in orientation and residential life practices, and (h) providing need-based financial aid.

While all are grounded in theory and research, some of these policy levers have a stronger empirical record binding them to retention. Need-based financial aid, for example, has a long research trail showing its positive relationship with retention (for summaries of this literature see, for example, Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; St. John, 2000). Other levers (e.g., career advising), while well researched, present conflicting or debated results in the literature (Patton, Morelon, Whitehead, & Hossler, 2006; Peterson, 1993). Still others, like academic advising, are not well understood or documented (Hossler, 2005). Clearly, more thorough investigation into the direct and indirect role of these levers in the persistence puzzle is needed—particularly across multiple institutions (Braxton, 1999).

Behind this gap in the research literature lies a question: How do researchers even begin to assess the extent or quality of these policy levers? Braxton (1999), while detailing the components of each lever, leaves to the individual researcher the task of developing and implementing a process for evaluation. If we take just one of the policy levers as an example—supporting frequent and significant peer interactions among students—complicating questions immediately arise. What are the different ways individual schools provide students with such opportunities? What is meant by “frequent” or “significant” in the eyes of students? To address

such questions, researchers need techniques that measure the impact of policy levers across widely varying implementations, institutional contexts, and student bodies.

To illuminate the experiences of students with a variety of campus policy levers and the impact of these levers on students' retention, this study looked at three higher education institutions with diverse missions, demographics, histories, and locales. This paper extends the dialog in the literature on the role of institutional practices in student retention by discussing 1) outcomes from the second year of a pilot study examining the links between campus initiatives and persistence and 2) an assessment of the study's methodological techniques for instrument design/revision and data analysis.

The Theoretical Framework

In higher education scholarship, student persistence is most prominently viewed through the lens of the evolving theoretical understanding of the processes affecting students' decisions whether to persist or to depart. For decades, researchers have been extending, critiquing, and refining the empirical base supporting Tinto's influential model of student departure (Astin, 1993; Braxton, Sullivan, & Johnson, 1997; Hurtado, 1997; Jalomo, 1995; Murguia, Padilla, & Pavel, 1991; Nora, Attinasi, & Matonak, 1990; Nora & Cabrera, 1996; Pascarella & Terenzini, 1991; Porter, 1990; Rendón, Jalomo, & Nora, 2000; Tierney, 1992). The pervasive discourse surrounding Tinto's interactionalist model of student departure has been cited frequently in our field both as an example of theory building (Pascarella & Terenzini, 2005) and as a cautionary tale (Bensimon, 2007).

As scholars of higher education continue to build theory surrounding persistence, identifying propositions within the interactionist model for which more certain evidence is available, more specialized studies have emerged. Research has shown, for example, that the students' commitment to the institution at the end of their first year of college—what Tinto (1993) calls “subsequent institutional commitment”—is a strong predictor both of students' intent to persist (Bean, 1983) and of actual student persistence (Strauss & Volkwein, 2004). Braxton and colleagues (Braxton et al., 2004; Braxton & McClendon, 2001-2002) laid the groundwork for further exploration of social integration as a factor contributing to subsequent institutional commitment. In turn, Tinto and colleagues (Tinto, 1998; Tinto, Russo, & Kadel, 1994) examined the link between academic integration and subsequent institutional commitment. These explorations have intermittently attempted to incorporate indicators of relevant institutional practice, but the emphasis has remained primarily on the theoretical constructs.

Refining the theoretical representations of students' persistence decision processes and empirically grounding these premises in how institutional policy levers shape students' journeys through institutions are necessary tasks for higher education research on student success. Articulating these connections and filling the remaining knowledge gaps make new inquiry into how institutions can and do affect students' institutional commitment particularly relevant. Perna and Thomas (2006) recommend a new conceptual framework for research on student success:

Given the range of disciplinary approaches that are used and the applied nature of the research, researchers in the field of education are well positioned to lead efforts that not only reflect the orientations of academic scholars but also address the need of policymakers to identify practical ways to improve student success. (p. 24)

Our pilot study of retention practices at three institutions builds on this conceptual framework by engaging with theory on the way to informing practice. Following a brief review of previous research on the institutional role in student persistence, this paper traces three dimensions of our effort: first, the quality and potential of a new student survey as revealed through regression analyses on fall-to-fall student persistence at the three institutions; second, the implications of the findings for these and other institutions; and third, the problems and questions complicating and shaping the study of the institutional role in student persistence.

The Role of Institutional Policy Levers in Student Persistence

Students' experiences and decisions are obviously shaped by campus policies and practices, yet empirical evidence elucidating these complex interactions is lacking (Tinto & Pusser, 2006). Some scholars (e.g., Bensimon, 2007) have criticized student retention research for clouding the role of institutions by focusing too narrowly on student characteristics. Studies like that by Dowd et al. (2006) on the role of institutional policies and practices in the success of high-achieving students of color suggest the potential of further inquiry into the institutional role in student persistence. Such research could enable institutions, practitioners, and policy makers to move beyond student-focused "inputs" (Astin, 1994) and the companion belief that "demography is destiny" (Engle & O'Brien, 2007).

While research has been conducted on the benefits to students of a number of specific educational programs, few studies have directly examined how these programs shape persistence. Fewer still have explored the interactions among the various policy levers (as recommended by Braxton, Hirschy, & McClendon, 2004) or how the interactions play out in

differing institutional contexts (Crook & Lavin, 1989; Pascarella & Terenzini, 2005). The remainder of this literature review explores the research on the policy levers and the discussions of their impact on retention and/or in various institutional settings.

Recruitment Practices

Little of the considerable research literature on recruitment practices concerns a connection with retention. Opp (2001) examined the role of recruitment practices in higher minority student enrollments at two-year colleges. Horn and Flores (2003) looked at recruitment in the light of court cases barring race-based admissions. Oneida (1990) found a disconnect between recruitment promises and levels of support on campus for minority students. Williams, Cruce, and Moore (2006) observed that student precollege expectations shaped primarily by college sources were more likely to match those of the institution's faculty than expectations shaped by other sources such as parents, friends, or high school counselors. Wiese (1994) examined how understanding the institution-student fit cultivated during the recruitment process can impact students' subsequent satisfaction. Others explored the relationship between fit and retention (James, 2000; McInnis & James, 1995; Villella & Hu, 1990; Yorke, 1999). Little of this literature addresses the role of admissions policies and procedures in retention.

Campus Racial Climate

The role of perceived discrimination in student acculturation and persistence is well documented in studies of minority students (Hurtado, 1992, 1994; Hurtado, Carter, & Spuler, 1996) and White students (Cabrera & Nora, 1994; Eimers & Pike, 1997; Nettles, Thoeny, & Gossman, 1986; Nora & Cabrera, 1996). While several studies have found racial discrimination on campus detrimental to student persistence (Cabrera, Nora, Terenzini, Pascarella, & Hagedorn,

1999; Eimers & Pike, 1997; Nora & Cabrera, 1996; Tracey & Sedlacek, 1987), Cabrera et al. (1999) suggest practices to improve the campus racial climate—such as encouraging acceptance of diverse groups, collaborative classrooms, and a multicultural curriculum. Although they have been shown to impact students’ sense of security and integration, these practices have not been thoroughly explored in respect to their role in retention.

Administrative and Academic Regulations

Very little research exists on the relationship between retention and academic or administrative regulations. One study in the U.K. (Johnston, 1997) asked students about possible interventions that might have helped them stay at their university. Almost three-quarters of the students felt the university had done all it could, but 26 percent had suggestions from which several themes emerged regarding the fairness of the institution’s policies:

- students’ unwillingness to come forward with concerns or complaints in case such actions rebounded on them
- students’ insufficient knowledge of institutional procedures and policies, particularly regarding academics
- the institution’s misrepresentation of minimum entry requirements, for example, stating a requirement for standard grade level knowledge but in practice requiring a higher level of competency (p. 13)

University administrators surveyed by Johnston also noted several issues related to fairness, most frequently citing the need for “more comprehensive pre-course information” to make students more aware at the outset of university requirements, policies, and procedures. They also noted

the need for fewer conflicts among exam schedules so that students would have a more balanced workload.

Academic Advising

Metzner (1989) found that students with more positive perceptions of their advising had higher GPAs, higher levels of satisfaction with their educational experience, and more positive perceptions of the utility of their degree. They were also less likely to intend to leave. Poor advising, however, was associated only with lower satisfaction with the institution. Mohr, Eiche, and Sedlacek (1989) found students' negative perception of advising and teaching to be a significant predictor of dropout among college seniors. Elliott and Healy (2001) found that although students ranked high quality academic advising as the most important of the 11 policy levers they studied, the perceived quality of advising did not have a significant impact on student satisfaction with the college. While researchers and practitioners have been discussing the value of academic advising for over 150 years (Titley & Titley, 1982), there has been surprisingly little research into what exactly makes for high quality advising. Although Spreng and Mackoy (1996) showed that quality of service and satisfaction with service are two empirically different constructs, satisfaction has been a proxy for quality in much of the literature on advising.

Active Learning Strategies

Active learning (with labels such as problem based, cooperative, or collaborative learning) has in recent years received much attention in the literature. Prince's (2004) meta-analysis of research on the topic found several important challenges to studying these strategies: varied definitions of what constitutes active learning, lack of controls for differences in implementation, persistent challenges with codifying "learning" as a construct (e.g., grades,

problem solving skills, lifelong learning), and conflicts discerning between significant differences and practical or relevant ones. Active learning flourishes in certain disciplines, particularly the sciences, where interactive learning approaches are seen as more innovative (Prince, 2004). Evidence that students who use active learning perform better on tests and are more likely to complete courses successfully (Felder, Felder, & Dietz, 1998; McConnell, Steer, & Owens, 2003) has led to projections of greater student retention overall via these strategies.

Stress Management and Career Planning Programs

Acknowledging and negotiating the stress of college life has been shown to be important to student success (Parker, Summerfeldt, Hogan, & Majeski, 2004; Pritchard & Wilson 2003), while student satisfaction has been related to self-efficacy in managing stress levels (Coffman & Gilligan, 2002-2003; Sandler, 2000). Such research is perhaps the reason a majority of first-year experience textbooks include sections on stress management. Career planning has also been linked to student retention (Noel, Levitz, & Saluri, 1985), while self-efficacy in career decision making has been tied to student integration and (through Tinto's model) to persistence (Peterson, 1993; Sandler, 2000). Although objective measurement of self-efficacy is challenging, self-efficacy seems to link the seemingly disparate subjects of stress management and career planning, as programs in either subject often try to build students' self-confidence and reinforce their internal locus of control.

Peer Interactions

Student orientation programs and the residence halls are both important sites for students to meet and form bonds outside the classroom. As with several of the other constructs discussed above, the link between peer interactions and retention is seen through Tinto's retention theory,

which views these relationships leading to stronger ties between students and their institution.

There is a long history of the impact on student gains, integration, success, and retention of both orientation (Boudreau & Kromrey, 1994; Glass & Garrett, 1995; Murtlaugh, Burns, & Schuster, 1999) and residence life (Astin, 1999; Titus, 2004; Toutkoushian & Smart, 2001).

Financial Aid

Only recently have researchers started to more systematically study central questions and controversies in financial aid and student persistence, sometimes with conflicting results (Hossler, Ziskin, Gross, Kim, & Cekic, 2008). Singell and Stater (2006) found that financial aid had no independent effect on persistence but that merit aid attracted students with characteristics associated with a higher likelihood of persistence. Similarly, Braunstein, McGrath, and Pescatrice (2000) found that financial aid had an impact on the enrollment decision but not on the reenrollment decision. Cofer and Somers (2000), however, found that grants had a strong positive effect on persistence. A review of the distinctive effects of merit- and need-based aid revealed primarily positive relationships between either form of aid and persistence (Battaglini, 2004; DesJardins, Ahlburg, & McCall, 2002; St. John, 1998, 2004; St. John, Paulsen, & Carter, 2005; Singell, 2004; Somers, 1995, 1996; Turner, 2001). In their review of the literature, Hossler and colleagues (2008) found total aid received, grants received, and work-study each had a small positive impact on persistence.

Summary

Several themes emerge across the literature surrounding Braxton's policy levers. First, there is a sense of feast or famine regarding their empirical records. Some of the levers—such as advising, peer interactions, and financial aid—have long histories and many studies. Others—

such as stress management programs and academic regulations—have very short research histories or have not been studied directly and must be viewed through reflected theoretical lenses or telescopic arguments. For example, because stress has been shown to negatively impact grades, which are tied to persistence, programs that help students manage stress, it can be argued, will aid in retention.

The second theme across this literature is the continued use of variations on Tinto's model as a framework for understanding the impact of policy levers. Bensimon's (2007) discussion of the too-complete and long-standing influence of Tinto's model is realized when examining these levers. Much of the literature is framed in terms of student behaviors that promote or inhibit students' integration into the college's culture, limiting the inquiry in several ways: by inhibiting the inclusion of other theories in the dialogue; by keeping the discussion away from possibilities for institutional adaptation (Zepke & Leach, 2005); and by steering the conversation away from outcomes, quality, and best practices toward existence, usage, and satisfaction.

Finally, the literature reflects few attempts to trace practices all the way to retention—admittedly, a challenging and time-consuming methodological task. These levers may or may not be directly linked to eventual graduation or even within-year retention, but the failure to explore these linkages more likely stems from the practical difficulties of exploratory, longitudinal research—including subject attrition and the large requisite commitments of time and resources to longer projects. Without this kind of examination, however, practitioners are left only with studies of questionable relevance to their context.

Data and Research Method

Our research centers on this question: *How do students’ experiences with institutional policy levers (such as orientation, advising, etc.) affect student persistence?* To investigate the role of institutional practices and structures in combination with the behaviors of students in their persistence to the second year of enrollment at the same institution, we collected primary data on full-time, first-time, first-year students at three four-year colleges and universities in three states, which have the following pseudonyms in this paper: “Coastal University” and “Urban University” designating two commuter campuses and “Residential College” designating a historically Black college. The pilot study survey, administered as a written questionnaire completed in classes at the three institutions, contained items on the behaviors and experiences of students in their first year at these institutions as well as items on students’ attitudes and beliefs related to college. Institutional data on student background characteristics, precollege academic experience, and enrollment were merged with student questionnaire data. The response rates at Coastal University and Urban University were 60 percent and 43 percent, respectively, while Residential College had a response rate of just over 45 percent.

We used logistic regression to examine our research question because the outcome of interest is a dichotomous variable capturing persistence. In this case, using ordinary least squares would violate Gauss-Markov assumptions that the error term was normally distributed and the dependent variable continuous. The general logit model is provided in Equation 1, below, P is the probability that the student persisted in the same institution to the following year.

Equation 1: Logit Model

$$\ln\left(\frac{P_i}{1-P_i}\right) = x_i\beta + \varepsilon_i$$

Included in the model for each institution (see Equation 2 and Table 1, below) were specific variables—entered in two blocks: (a) student background characteristics (β_1), including gender, race/ethnicity, financial certainty, and combined SAT score; and (b) student experiences in college, including interactions with faculty, advisors, and other students, as well as perceptions and experiences regarding financial aid, orientation, first-year seminars, academic support, courses, family encouragement, and racial/ethnic or cultural diversity on campus (β_2).

Institution-Specific Factors

Factors were created from the responses to survey questions on students' experiences with specific institutional policy levers. These survey questions had been created following the first pilot study, in which few of the policy levers were found to be significant predictors of student persistence. Many of the questions in the first pilot study, however, had measured student participation only. Regarding orientation, for example, participants had been asked only whether they had participated in orientation activities. Before revising the survey, we searched the literature as well as communications from professional academic organizations associated with orientation programs to identify the common purposes and goals of orientation programs. We developed a set of survey questions to probe student participants' experiences relative to specific outcomes, including what they learned at their institution about being a successful student, whether they made social connections with their peers, and whether they learned how to get help with health, academic, and financial concerns.

To revise survey questions on academic advising, we consulted literature and professional organization reports on academic advising to determine the purpose and goals of these programs. We then developed a set of survey questions to find out participant experiences

with campus academic advising, including the student's certainty about receiving useful academic advising and the student's perceptions of academic advisor knowledge about specific course requirements, degree requirements, and the student's academic goals.

Similarly, we revised survey questions on career services after consulting literature as well as professional organization communications on career services programs to identify relevant goals of these programs. The resulting set of survey questions focused on respondents' knowledge of where to get information on career applications of their major(s), potential careers after graduation, and the location of the career center on their campus.

The second block of variables was composed of several factors created using exploratory factor analysis that encompassed student experiences and outcomes related to relevant services and programs (e.g., orientation, advising, and first-year seminar). Although we had a theory in place, we did not use confirmatory factor analysis to generate these factors because of the exploratory nature of this study with regard to institutional policy levers. The model for each campus included factors generated through exploratory factor analysis using only the responses of that institution's students. Preliminary examination of the emerging factors indicated low correlations between the factors. Therefore, the factors were considered unrelated and varimax (orthogonal) rotation was employed. The scree plot and eigenvalues greater than or equal to 1.00 were used to determine the number of factors to retain in each institution's model. All factor loadings above 0.3 were considered in determining factor solutions during each analysis.

Coastal University responses produced nine factors—orientation, advisor interaction, faculty interaction, student interaction, perception of bias, financial aid, social activities, perception of diversity, and quality of advising—displayed in Table 1 with their variables.

Table 1. Coastal University Factors and Variables		
Factor Name	Variables	Alpha (factor reliability)
Orientation	Learned how to be a successful student at this college	0.82
	Learned where on campus to get help with financial concerns	
	Learned about where to get help with academic concerns	
	Learned how to receive assistance with health-related issues on campus	
Advisor Interaction	Received support or encouragement from advisor	0.90
	Received academic feedback from advisor	
	Received academic assistance from advisor	
	Met with an academic advisor	
Faculty Interaction	Received academic support or encouragement from faculty	0.71
	Received academic assistance from faculty	
	Met with faculty during office hours	
	Received academic feedback from faculty	
Student Interaction	Received support or encouragement from students	0.84
	Received advice about program of studies and courses from students	
	Received academic assistance from students	
Perception of Bias	Observed racist behavior on campus	0.80
	Observed antigay/lesbian behavior on campus	
	Observed sexist behavior on campus	
Financial Aid	Has taken advantage of all federal and state aid programs for which student is eligible	0.69
	Is satisfied with financial services offered on campus	
	Has accurate knowledge about financial aid option on campus	
Social Activities	Has formed close personal relationships with other students	0.72
	Has socialized with students from different backgrounds	
	Is satisfied with social experiences on campus	
Perception of Diversity	Has had course experiences that enhanced understanding of the history, culture, or social concerns of people from diverse backgrounds	0.77
	Has had course experiences that included contributions from students with diverse backgrounds and perspectives	
	Has noticed the influence of multicultural perspectives in campus surroundings	
	Has socialized with students from different backgrounds	
Quality of Advising	Academic advisor has knowledge about requirements for specific courses	0.83
	Academic advisor has knowledge about degree requirements	
	Academic advisor has knowledge about student's academic goals	
	Is certain about receiving useful academic advising	

One factor (quality of advising) with a high alpha level (0.83) was not included in the logistic regression model for Coastal University. The questions in this factor showed a high item nonresponse rate, an observation that was unique to this campus among those participating in the study, and for this reason we left the factor out of the model.

The Urban University model has two factors, academic support and perception of bias, displayed in Table 2.

Table 2. Urban University Factors and Variables		
Factor Name	Variables	Alpha (factor reliability)
Academic Support	Times attended a workshop for building academic skills	0.47
	Times met with a faculty member during office hours	
	Times received assistance from the campus writing center	
Perception of Bias	How often observed racist behavior on campus	0.82
	How often observed sexist behavior on campus	
	How often observed homophobic behavior on campus	

A total of two factors, first-year experience seminars and academic support—displayed in Table 3—resulted from these analyses with Residential College responses.

Table 3. Residential College Factors and Variables		
Factor Name	Variables	Alpha (factor reliability)
First-year Experience Seminars	Learned about where to get help with academic concerns	0.53
	Made friendships with fellow students	
	Learned about where to get help with academic concerns	
	Learned about what it takes to be a successful student at this college	
Academic Support	Used services offered by a campus-sponsored tutoring program	0.86
	Heard an instructor recommend that students use academic support services	
	Attended a workshop for building academic skills	

We ran a Cronbach's alpha analysis, a numerical coefficient of scale reliability, for all the factors before using them in subsequent analyses. Applying Nunnally's (1978) standard for an acceptable reliability coefficient, we used factors with Cronbach's alpha coefficient greater than or equal to 0.7 in the analyses—with the exception of one factor: academic support, which had Cronbach's alphas of 0.47 (Urban University) and 0.53 (Residential College). Although the academic support factor had a value less than 0.7 for both institutions, it was included in the analysis because we considered it important to our conceptual framework for the institutional role in supporting student persistence. Furthermore, according to Kent (2001), Nunnally later revised his recommendation of suitable alpha levels to suggest that alpha levels as low as 0.5 can be appropriate in preliminary research.

Institution-Specific Models

The structure of the logistic regression model on persistence for the three institutions in this analysis is displayed in Table 4, below, with the factors and other variables included in the model for each institution. The persistence model is provided in Equation 2:

Equation 2: Persistence Model

$$Persistence = x_i\beta_1 + x_i\beta_2 + \varepsilon_i$$

Because the student body of Residential College is homogeneous in race/ethnicity and gender, we omitted those variables from that institution's model. We also removed the SAT variable as a measure for academic preparation from that model as all the students of Residential College were high achievers in high school.

To identify possible deficiencies in the models before running the regression analysis, we conducted multicollinearity and autocorrelation tests, which revealed no strongly correlated relationships among the independent variables or residuals. In addition, examination of a case-

wise listing of residuals revealed no extreme outliers to be unduly influencing the fit. Cut points for classification of cases in the logistic model were set for each model according to observed prior probabilities of the institution’s respondents who enrolled the second year at the same institution (Chatterjee & Hadi, 2006).

Table 4. Logistic Regression Model on Persistence for the Three Institutions		
Institution	Student Characteristics (Block One)	Institutional Practices (Block Two)
Coastal University		
	White	Orientation ^F
	Female	Advisor interaction ^F
	Certainty of funding	Faculty interaction ^F
	Combined SAT score (in 100s)	Student interaction ^F
		Perception of bias ^F
		Perception of diversity ^F
		Financial aid ^F
		Family encouragement
		Transition support
		Friends network
		Late assignments
		Staff respect for students
Urban University		
	Female	Work off campus
	21 years old or older	Transition support
		Friends network
		Connection with campus
		Family encouragement
		Class absences
		Perception of bias ^F
		Academic support ^F
Residential College		
	Certainty of funding	First-year experience ^F
		Academic support ^F
		Family encouragement
		Late assignments
		Work off campus
		Transition support
		Connection with campus
<i>Note:</i> ^F indicates a factor		

Results

Retention rates among the three institutions were all relatively high: 94 percent at Coastal University, 88 percent at Urban University, and 96 percent at Residential College. Despite the statistical challenges introduced by these high rates, meaningful models were estimated for each school. Results from the regressions reveal a unique constellation of factors influencing student persistence at each campus. The strongest predictor in each of the models—family encouragement—was the only variable significant at all three schools. Students who perceived greater family encouragement were more likely to stay enrolled at the same institution. Other variables that were important predictors of student retention at these schools were students’ satisfaction with support during transition and students’ perception of bias on campus. For both Coastal University and Urban University, students who perceived better transitional support were more likely to remain enrolled. Also, students who reported observing more incidents of racism, sexism, or homophobia on campus were more likely to remain. The specific models for each of the institutions are explored in more detail below.

Coastal University

Coastal University, a large, public, Western university, retained 94 percent of the students that participated in the survey. (This was higher than for the university’s entire first-year population, which had a spring-to-fall retention rate of 82.1%.) The 350 survey respondents (8% of the first-year population of the university) represented a 60-percent response rate. While the population of survey respondents resembled that of the university in terms of gender, some differences appeared regarding race. White students and students who did not indicate race in

their survey responses were overrepresented, while minority students were underrepresented.

The largest discrepancies were among Latino/a and African American students—the latter group making up 5 percent of the university population but only 2 percent of the study population.

Table 5, below, shows the complete regression results for Coastal University. Likelihood ratio chi-square tests suggest that both the overall model and the policy block are significant ($p < .001$ for both the block and the model), indicating the full model contributes to the prediction of student persistence at the university. The Nagelkerke R^2 indicates a modest amount of the overall variation in retention is explained by the variables ($R^2 = .31$). Moreover, although the model does not improve the prediction of students who reenroll (72.5% of this group were correctly predicted), it did correctly identify 83.3 percent of those not retained—a significant improvement over alternative methods of prediction.

Table 5. Coastal University Logistic Regression Results		
Variables	Odds Ratio	Sig.
Race (White)	0.34	*
Female	1.82	
Certainty of funding	1.09	
Combined SAT score (in 100s)	1.85	**
Orientation ^F	1.11	
Advisor interaction ^F	1.21	
Faculty interaction ^F	1.08	
Student interaction ^F	1.15	
Perception of bias ^F	2.11	**
Financial aid ^F	0.93	
Perception of diversity ^F	1.27	
Friends network ^F	0.65	
Family encouragement	4.58	****
Transition support	2.54	**
Late assignments	0.64	
Staff respect for students	0.73	
% correctly predicted: Persisters		72.5
% correctly predicted: Nonpersisters		83.3
Nagelkerke		0.309
* $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$		
^F represents a factor		
n=350		

A number of variables were significant predictors of students' retention at Coastal University. Regarding variables in the student demographic block, minority students were less likely to stay at the university into their second year ($\text{Exp}(\beta) = .34, p < .1$), while minority students with higher SAT scores were more likely to stay ($\text{Exp}(\beta) = 1.85, p < .05$) in comparison to White students and to minority students with low SAT scores. Counterintuitively, students who reported more observations of racist, sexist, or homophobic behavior on campus ($\text{Exp}(\beta) = 2.11, p < .05$) were more likely to persist than those who reported fewer of these observations. In addition, students who reported being more satisfied with the support they received from the institution in their transition to college ($\text{Exp}(\beta) = .254, p < .05$) were also more likely to be retained in comparison to their peers who felt less satisfied. Finally, the most powerful predictor of retention was students' perception of the support they received from their family ($\text{Exp}(\beta) = 4.58, p < .001$). Students with higher levels of perceived family support were much more likely to stay enrolled than those who reported lower levels.

The results of the regression point to some intuitive findings as well as some intriguing directions for future exploration. Family support makes a great deal of sense as a predictor for retention, for example, and stronger support for transitioning to college does as well. Interestingly, neither the factor for orientation nor the factor for first-year experience programs was a predictor for retention. Although the finding on perception of bias seems counterintuitive, it likely represents the responses of students more aware of events on campus and with higher levels of consciousness about diversity issues. Finally, because SAT scores also show significant negative effects on persistence, these results point to a need for Coastal University to make sure that both students of color and students with weaker academic preparation receive necessary support in their first year.

Urban University

At Urban University, a fairly large public university in a large Midwestern city, 88 percent of the survey respondents persisted between year one and year two of the study—slightly higher than the persistence rate for the first-year students in the sample (82.5%). A total of 184 valid first-year student responses were included in the analysis, representing 43 percent of the eligible students in the classes surveyed. Although a number of upperclassmen enrolled in the classes that completed the survey at Urban University, they were not included in this analysis. Compared to the university population, males and Asian students were slightly overrepresented among survey respondents, while females and White students were slightly underrepresented.

Both the overall regression estimation and the policy lever block were significant ($p < .001$ for both on the chi-square tests). The model accounted for 37 percent of the differences in retention among students according to the Nagelkerke R^2 ($R^2 = .37$). Like the model for Coastal University, discussed above, the model for Urban University does not improve the prediction of retention of students who reenroll (79% were predicted correctly; if all students were assumed to be retained, the model would be accurate 88% of the time). This analysis correctly classified 84 percent of nonpersisting students, however, thus contributing useful information for this institution. The full regression results are in Table 6, below.

Several demographic and policy-oriented variables were significant in the regression equation. Female students were less likely to be retained ($\text{Exp}(\beta) = .26$, $p < .1$) than male students. Nontraditional students (those 21 years old or older at the time of the survey) were over six times more likely to remain at the university ($\text{Exp}(\beta) = 6.51$, $p < .05$) in comparison to those less than 21 years old. Students who sought out more academic support services ($\text{Exp}(\beta) = .43$, $p < .1$), who worked more hours off campus ($\text{Exp}(\beta) = .65$, $p < .05$), and who had a larger network

of friends ($\text{Exp}(\beta) = .42, p < .05$) were significantly less likely to stay enrolled than their peers who utilized less academic support services, worked fewer hours off campus, and did not have an established social network. Like those at Coastal University, students at Urban University who felt more support with their transition to college ($\text{Exp}(\beta) = 2.34, p < .05$), who reported observing more incidents of discrimination on campus ($\text{Exp}(\beta) = 3.08, p < .1$), and who reported higher levels of family support ($\text{Exp}(\beta) = 3.14, p < .001$) were more likely to persist in comparison to their peers who felt less transition support, observed fewer incidents of discrimination on campus, and perceived less family support.

Variables	Odds Ratio	Sig.
Female	0.26	*
21 years old or older	6.51	**
Academic support ^F	0.43	*
Perception of bias ^F	3.08	*
Work off campus	0.65	**
Transition support	2.34	**
Friends network	0.42	**
Connection with campus	1.69	
Family encouragement	3.14	***
Class absences	0.68	
% correctly predicted: Persisters		79.1
% correctly predicted: Nonpersisters		84.2
Nagelkerke		37.7
*p<.10, **p<.05, ***p<.01, ****p<.001		
^F represents a factor		
n=184		

Urban University's results display some interesting similarities to and differences from those of Coastal University. Students were more likely to remain enrolled for many of the same reasons: satisfaction with support during transition, encouragement from family, and greater awareness of discrimination on campus. Some of the other variables are perhaps more relevant to the population of Urban University, where the student population is relatively nontraditional and

older and more likely to be retained. Students who work more, however, are less likely to continue their studies at the same institution—a topic meriting further exploration. Finally, students seeking more academic support were less likely to be retained.

Residential College

Survey responses at Residential College were the most challenging for which to fit a regression estimate due to the students' very high persistence rate (96%)—a rate consonant with the persistence rate of the overall study population (96.2%)—and with the homogeneity of the Residential College student population in race, gender, and ability. Nevertheless, a significant model was estimated (the likelihood ratio chi-square tests of the overall model and the policy block were significant at the $p < .1$ level). Although the model for Residential College explains less retention behavior than the models of the other institutions (the Nagelkerke R^2 was .198), it still accurately classified 80 percent of nonpersisters and 72 percent of persisters. The high “hit rate” for nonretained students demonstrates good model utility. This significant contribution is likely attributable to the higher percentage of the population that the 262 respondents represent: 46 percent of the total first-year population. The full results of the regression are in Table 7, below.

The regression equation also had fewer significant items than the other models. Only family encouragement ($\text{Exp}(\beta) = 2.49$, $p < .05$) was associated with higher persistence. Turning in assignments late ($\text{Exp}(\beta) = .48$, $p < .1$) was significantly related to student nonpersistence. Despite the challenges to model estimation associated with a high-achieving, homogeneous population, this study was able to provide a model to help the college better understand issues surrounding retention of first-year students. Even with the high rate of persistence at Residential

College, family encouragement was still shown to be quite important to student success. Late assignments may be an early warning signal of potential departure, as these students may have already begun withdrawing from academic responsibilities before actually leaving the institution.

Variables	Odds Ratio	Sig.
Certainty of funding	1.58	
First-year experience	0.44	
Academic support ^F	1.59	
Family encouragement	2.94	**
Late assignments	0.48	*
Transition support	0.51	
Connection with campus	2.09	
Class absences	0.68	
% correctly predicted: Persisters		80.0
% correctly predicted: Nonpersisters		72.2
Nagelkerke		0.198
*p<.10, **p<.05, ***p<.01, ****p<.001		
^F represents a factor		
n=262		

Discussion and Implications

For its lessons on specific institutional retention practices and research methods in persistence studies, this pilot study is useful to campus practitioners working to improve retention at their institution as well as to higher education researchers exploring students' persistence decisions. As evidence of the impact of institutional contexts on student interactions with policy levers and perceptions of policy levers, one finding important for practitioners as well as for researchers is that each institution had different regression results. This finding was also reflected in inconsistencies in the literature in exactly which practices influence student persistence. For practitioners, this highlights the importance of campus-specific research and

practices. For researchers, it speaks to the need for many studies across a broad range of institutions to see whether—even despite different contexts—consistent patterns emerge.

Lessons for Institutions

The significant role of family encouragement in retention was one of this study’s most interesting findings. While the exact meaning of family encouragement bears further exploration within both the personal and the institutional context, this finding has direct policy implications for institutions. One productive institutional strategy to improve this type of external support for students would be to help students’ families understand school policies and processes, the resources available to them, and the experiences their family member may have while enrolled. Schools already conducting some sort of family orientation could measure its quality and impact on their students’ perceptions of family support.

Findings on satisfaction with support during transition and perception of bias were significant at two of the campuses in our study and provide useful implications for campuses. Transition support is noteworthy not only for its significance but also for the fact that neither factor stemming from programmatic structures often associated with transition—first-year experience programs and orientation—was significant in the estimated regressions. This likely points to students’ receiving support for their adjustment to college from a number of sources, not just the traditional ones. Exploring further the experiences that students find helpful in their transitions would be worthwhile.

The discovery of a positive relationship between students’ experiences with bias and students’ persistence, discussed briefly above, seems counterintuitive. After all, an environment free of racism, sexism, or homophobia would at first glance seem more ideal for learning.

However, a long history of research shows that one of the impacts of college-going is that students become more open and less ethnocentric (see Feldman & Newcomb, 1969). More recently, diversity in classrooms (Chang, 1999) and in friend groups (Antonio, 2001) has been found to lead to greater developmental gains in college. Additionally, identity studies have noted that as college students develop their racial identities they often go through—in fact *should* go through—a period of heightened awareness of issues of discrimination (Cross, 1995; Helms, 1993; Torres & Hernandez, 2007) Finally, accurately identifying and coping with discrimination have been found to be important developmental skills in students' college success (Sedlacek, 2004). A keener awareness of discrimination or bias, viewed in this light, is an important and necessary developmental tool for success in college. Students who acquire this tool earlier have greater college gains and, therefore, may have a persistence advantage.

It is important to note here that the finding that a particular programmatic variable is not significant does not mean that the program is unimportant or that it does not contribute to student success at that university. A lack of variation or other form of restricted range in the variable's distribution would greatly reduce its ability to predict retention. If a great proportion of students all reported positive relationships with advisors, for example, advising would not show up as an important variable in the equation despite its very desirable outcome.

Finally, institutions and researchers should take away from this study the importance of understanding retention within the individual institutional context rather than simply applying a global or generic model of retention. They need to explore how students respond to and are served by specific policies within the framework of an institution's educational mission, student body, and unique conditions—particularly at special-mission institutions or those serving homogeneous student bodies.

Implications for Research

In addition to indicating a need for further research on generic as well as institution-specific models for retention, this study offers a further contribution to the research on persistence in higher education: the use of factors or indices. The factors held together in very similar ways across institutional contexts in this study, indicating that carefully constructed questions can lead to a reliable form of data reduction as well as a more nuanced understanding of student interaction with particular policy levers. While few of these factors were significant predictors of student persistence, many although nonsignificant were important contributors to the discriminating power of the model and their presence in the model often allowed the overall equation to correctly categorize a larger portion of nonpersisters. Further exploration into the construction and use of these factors is certainly warranted.

Concluding Remarks: Looking Forward

Reflecting on the results of this pilot study, we are encouraged to pursue this line of inquiry further. The ability to model student persistence within an institutional context and to identify policies and programs likely to enhance persistence within that context are two important contributions to the capabilities of institutions to support students' success. This study's findings and their implications for policy and programs suggest that these capabilities are not only attainable but that they also hold the potential for improving student persistence at the participating institutions. While it is important to remember the complexities that accompany efforts to support student persistence and, thus, not to interpret results simplistically, the findings

highlighted here provide an empirical basis and identify promising directions for institutions' efforts to enhance student persistence.

As we look forward to future research on policy levers and their impact on retention, four challenges seem prominent. The first of these is that the decision to exit a university is clearly complicated. The models capturing a significant part of a student's persistence decision are complex and layered, with each variable contributing only slightly, often indirectly, to the outcome variables. As with most educational research, a large portion of the variance in this research will likely remain unexplained—due in part to the fact that some aspects of individual decision making flout the rationality assumptions of the interactionist model. Beyond that, to examine specific parts of policy levers associated with good practice only magnifies this complexity. One could expect that each indicator of good practice would impact later retention decisions in small and subtle ways that may not be fully captured without very large sample sizes and advanced statistical techniques that allow for the assessment of indirect and partial effects.

This last challenge is compounded further by the multiplicity of sites and experiences captured by this work. As noted above, a mounting body of evidence shows that students experience these levers in very contextualized ways and that campuses implement these levers in myriad ways. Institutionally, the established patterns of the university, or *habitus* (Thomas, 2002; Zepke & Leach, 2005), serve as attractors for ways of thinking about students as well as their programs, success, and retention. Institutions, like those in this study, may have relatively high retention rates from the first to second year, but the issues they struggle with are likely to be quite different from those of schools where more students depart early in their collegiate experience. Students have widely varying expectations of themselves and their institutions and different interactions with policy levers by gender, race, age, and class—and they present to the

researcher the further complicating issues of self-selection and cultural capital. Research accounting for all of these issues requires very large samples of students and institutions as well as techniques for multilevel modeling.

While making the case for this research, we must also acknowledge the possibility that institutions may not play a large role in student success. If so, research in this area may be chasing a multifaceted—and, in some part, irrational—decision based on innumerable contextualized experiences and other decisions linked to questions such as how hard to study, whom to befriend, and how much to invest in the campus community. Moreover, each of these policy levers may be chasing the same effect. Broken down, the implementation of the programs associated with the policy levers relies primarily on two things: framing the college experience appropriately and making the college system “smaller” for students. From admissions procedures through orientation and first-year programs to advising (academic and career) and academic policies, the university tries to educate the college student about mutual expectations. Enhancing residence life, increasing student interaction, improving advising, and reducing discrimination, all promote connections between the student and others at the university—be they administrators, peers, or faculty. This connection, according to Light (2001), is the student’s most important experience. The effect of this experience humanizes the institution for the student—transforming the institution from a faceless place into a network of people the student can turn to. If programs are using different methods and arenas to accomplish the same task, we face statistical problems (multicollinearity, for example) attempting to assess their effects.

The final problem area in our work concerns how the research is structured—the dependence on a limited number of theories such as Tinto’s (as discussed above) and the operationalization of the constructs. A theory or empirical record has not been fully elaborated of

what makes for best practices with these policy levers, nor is there a consensus on how to study them. The extant literature is built on a number of single-institution studies that cannot take into account differences across campus cultures. Related to this, also discussed above, is the lack of variance when students within an institution experience a program in a consistent way. A program that all students judge effective may have an impact on student success that would not bear out in correlational analyses due to the little variation present in the measurement. More sensitive instruments may be helpful in capturing smaller variations or in compensating for this lack of differentiation but would not alleviate the problem entirely. At the least, we need to examine this issue and remember that lack of significance may not have a relationship to the success of an individual program.

By exploring ways to capture an assessment of program quality through a program's impact on student retention, we are beginning to address these last issues. We hope future research will continue in this vein as well as explore some of the other challenges to retention research detailed above. Forward movement on these issues will clarify the impact of programmatic initiatives for institutions, will shed light on best practices for policy makers, will lead to better services for students, and will also benefit higher education researchers by furthering thoughtful exploration of troubling methodological knots.

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