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RELATIONSHIP BETWEEN FIRST-YEAR STUDENT RETENTION,
NONCOGNITIVE RISK FACTORS, AND STUDENT ADVISING

by

R. David Roos

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF EDUCATION

in

Education
(Curriculum and Instruction)

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Logan, Utah

2012

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ABSTRACT

Relationship Between First-Year Student Retention, Noncognitive Risk
Factors, and Student Advising

by

R. David Roos, Doctor of Education

Utah State University, 2012

Major Professor: Ann M. Berghout Austin, Ph.D.
Department: Family, Consumer, and Human Development

It is well established that such student precollege cognitive measures as high school GPA and test scores (ACT, SAT) have a certain predictive value in student retention. While research is replete with evidence of the value of student advising in a college's retention strategy, there is a gap in the literature on the impact of using noncognitive survey information by advisors to better target student deficiencies. The primary goal of this study was to explore the relationship between retention and exposure to noncognitive risk factor information for students and advisors. One thousand fifty-four freshmen students enrolled in a first-year experience (FYE) course at Dixie State College were given the Student Strengths Inventory (SSI) survey that measures six different noncognitive risk factor variables. By using a regression discontinuity design, students were initially divided into two sample groups using an index score generated by combining the high school GPA and ACT (or equivalent) test score. Students who fell

below the cutoff point were further subdivided by random sampling into three groups: (a) students who received their survey results with no further action, (b) students selected for general advisement, and (c) students selected for targeted advisement using the survey results. When comparing the retention rates from fall semester 2009 to fall semester 2010, the retention rates varied as predicted by the researcher; however, these differences in retention could not be attributed to the usage of the survey with one exception: when the treatment group was filtered only to include first-generation students, usage of the survey results was statistically significant in contributing to a 62% retention rate, the highest of any of the sample groups studied.

(103 pages)

PUBLIC ABSTRACT

Relationship Between First-Year Student Retention, Noncognitive Risk
Factors, and Student Advising

by

R. David Roos, Doctor of Education

Utah State University, 2012

Major Professor: Ann M. Berghout Austin, Ph.D.
Department: Family, Consumer, and Human Development

This study was undertaken by David Roos, a USU doctoral student and an employee at Dixie State College, in fall semester 2009. The purpose of the study was to measure the possible impact that nonacademic student information would have on retention when used by advisors and shared in an advising session with students. This information was gathered using an in-class survey that identified nonacademic or “noncognitive” risk factors not apparent by looking at a high school transcript or reviewing a student’s demographic background. Such factors as college commitment, self-efficacy, and resiliency were measured using a survey instrument called the Student Strengths Inventory (SSI).

With the assistance of course instructors, the 48-question survey was administered to 1,054 students enrolled in the college’s First Year Experience (FYE) course during the first week of October 2009. The results were tabulated and individual “student strengths profiles” were made available to students. These profiles showed each individual student his/her strengths and weaknesses relative to the likelihood of staying enrolled and persisting to graduation.

The researcher thought that student retention could be increased by making the survey results available to advisors and asking them to utilize this information to help students develop an individualized action plan to address the areas of concern. To test this hypothesis, 200 students were randomly selected to either participate in a general advising session or a more targeted advising session where the survey results were discussed and an action plan created.

In fall semester 2010, the retention rates were calculated and the students in the targeted advising sample group did, in fact, reenroll at a higher rate (49% vs. 43%), although this

difference was not statistically significant. On the other hand, an important, statistically significant finding was that first-generation students were retained at a much higher rate (62%) within the targeted advising group than first-generation students who did not receive targeted advising.

Although additional research is needed, the possible benefit for individual students and for colleges and universities is that targeted advising represents a powerful tool for advisors and others to assist first-generation students, a group who are at greater risk of dropping out than the overall freshmen population.

ACKNOWLEDGMENTS

I would first like to acknowledge and honor the commitment and support of my wife, Angie. I would not have embarked on this academic quest and marathon without her blessing and taking up the slack in meeting family responsibilities. Second, I could not have succeeded without the patience and wisdom of my doctoral chair, Dr. Ann Austin. She understands the challenge of earning a doctorate over distance education and was always available by e-mail, phone, or Skype to provide direction. Third, I wish to thank Utah State University and especially the College of Education and School of Teacher Education and Leadership for making it possible to pursue a doctoral degree from a distance. There is no other way that I could have accomplished this task with my work and family responsibilities. Finally, I wish to thank Dr. Gary Straquadine for planting the seed for my dissertation topic, and Drs. Paul Gore and Wade Leuwerke, cofounders of the SSI survey, for their untiring assistance in helping me understand the data and discovering the impact of the results on the first-generation students.

R. David Roos

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CHAPTER I

INTRODUCTION

According to the Center for the Study of College Student Retention (2008), nearly 50% of students entering higher education will not earn a degree. This is a significant problem for both students and higher education institutions. Students who leave college before graduating paid tuition that may not be easily made up through employment and a person who lacks a college degree will likely experience diminished lifetime earnings. According to the U.S. Census Bureau (2007), students with a bachelor's degree earned more than twice that of high school graduates, equating to more than one million dollars over a typical career. Students who drop out early also lose out on other benefits of a college experience, including networking opportunities, an increased breadth of knowledge, and critical thinking skills.

Dropping out of college is not a new problem, and institutions continue to try different strategies to improve student retention. But according to a recent report by the American College Testing Program (2010), the average retention rates across the U.S. have not improved appreciably over the past decade (as shown in Figure 1). While 4-year colleges have seen a slight increase of 1% over the prior year, private institutions have actually experienced a 6% decline, and, in fact, have decline by 4% over the past decade. The picture is no better when reviewing the report's 5-year graduation rates. Over the past decade, the graduation rates for 4-year institutions have dropped from 58% in 1989 to 57.2% in 2010, while the graduate rates for private institutions have dropped from 48% to 43% over the same time period. While some students do find alternate ways of

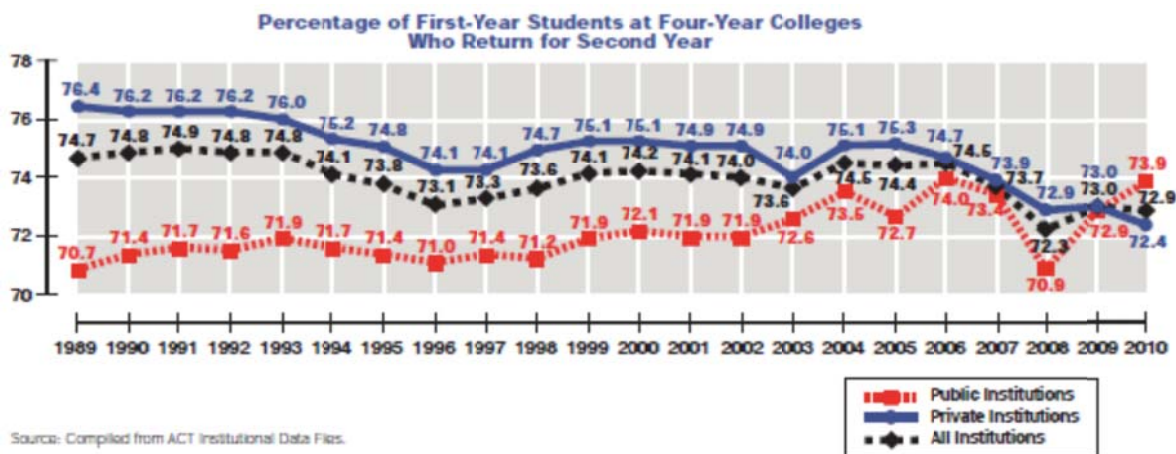


Figure 1. Historical data on first year student retention. (American College Testing Program, 2010. Reproduced with permission. See Appendix H.)

achieving their career goals, others miss out on career opportunities due to their limited education and lack of credentials. This problem has been exacerbated by recent economic difficulties. As Linn (2009) pointed out, “The deep recession that began in 2007 is doing more than costing millions of jobs. It is transforming the economy and forcing many workers to seek entirely new careers. For many, that will mean moving away from blue-collar jobs toward white-collar work” (p. 1).

In addition to the negative impact on the student, society suffers as well, looking to colleges and universities to train their populace to meet the demands of a changing world. According to the National Center for Public Policy and Higher Education (2008), a growing number of Americans believe that earning a college degree is not only important, but absolutely vital to succeed in today’s economy. According to a recent survey conducted by the Center, the number of people who think that a young person can succeed without college has dropped from 67% in 2000 to 49% in 2008. From the

public's point of view, in other words, a college education has become an essential part of being considered for a high quality job, as demonstrated by the response graph illustrated in Figure 2.

On a global scale, this need is even more evident as various reports have recently shown how the United States is slipping behind other countries in educational attainment and degree completion. According to a report published by the Chronicle of Higher Education (2008), the United States continues to lag behind other countries on measures of enrollment and degree completion, especially with younger students. While the U.S. ranks second (out of 30 nations) in adults ages 35 to 64 who hold at least an associate degree, the country now ranks 10th among adults in the 25 to 34 age range. Other studies have shown how U.S. students are lagging further behind their counterparts in other

The majority of Americans believe employers are less likely to hire people without degrees even though they could do the job.

Do you agree or disagree that a lot of employers hire college graduates for jobs that could be done as well or better by people without a college degree?

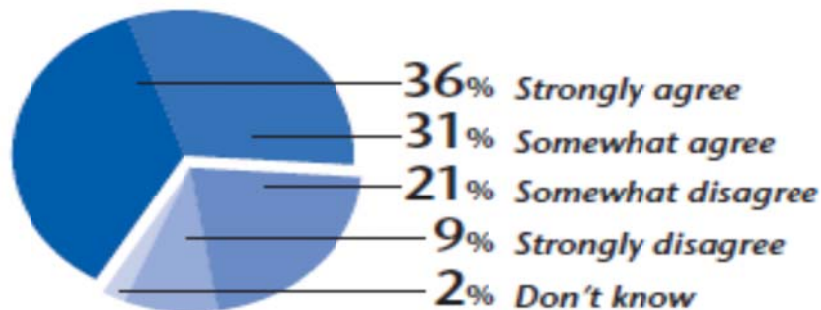


Figure 2. Response to question about employer hiring preferences (Source: The National Center for Public Policy and Higher Education, 2008).

countries in terms of earning such degrees as doctoral degrees, engineering, and science degrees.

In addition to the societal and global needs of addressing retention, the institution has a financial imperative to retain more of its students. This has become more obvious as institutions across the U.S. have received lower appropriations from state funding sources and legislatures have imposed budget cuts. In Utah, for example, higher education experienced a 4% across-the-board budget cut in 2010, this on top of a 17% budget cut that took place in 2009 (Leonard, 2010, p. 1). Without additional funding sources, many institutions have had no alternative but to discontinue programs, layoff or furlough faculty and staff, and significantly raise tuition. To address these financial difficulties, the cost effectiveness of focusing on retention was summarized by Astin (1975) who stated that “in four-year institutions, any change that deters students from dropping out can affect three classes of students at once, whereas any change in recruiting practices can affect only one class in a given year. From this viewpoint, investing resources to prevent dropping out may be more cost effective than applying the same resources to more vigorous recruitment” (p. 2). In other words, a student who remains with an institution for four years will generate the same tuition income as four students who leave after one year. Another financial benefit pointed out by Levitz (1993) is that graduating students are much less likely to default on their student loans than students who drop out—due, in large measure, to the fact that graduates are more likely to find gainful employment (p. 4).

Given the financial and societal implications, it is not surprising that student

retention has risen to the top of many college and university agendas. According to Seidman (2005), student retention is one of the most widely studied topics in higher education, with considerable attention being paid to developing and testing the various theories of student retention that seek to explain why some students leave while others persist. Both student and institutional attributes have been identified which contribute to student dropout and persistence. While such academic information as high school GPA and test score achievement have long been collected and their correlation with student retention substantiated, only in recent years have nonacademic risk factors been identified through appropriate survey instruments. Such instruments as the Student Readiness Inventory (SRI) created by researchers at the American College Testing Program (2009), have demonstrated that nonacademic or “noncognitive” risk factor information can further identify and predict student drop-out behavior, especially when coupled with the academic student information. The challenge for the institution then is to not only identify these factors, but develop and implement creative and productive ways to use this additional information to better identify at-risk students and take appropriate action to help them overcome the barriers that may preclude them from earning a college degree. This study sought to measure the impact on first-year retention of one such initiative, utilizing the information gleaned from a recently created survey instrument, the Student Strengths Inventory (SSI) in conjunction with targeted student advisement.

Significance of the Study

According to ACT (2007), “How we educate and train our youth to be successful

postsecondary students and workers is one of the most critical questions of our time. We cannot compete globally without a high percentage of our citizens succeeding in college and in the workplace” (p. 1). While the foundational theories of retention include such noncognitive factors as Tinto’s (1993) precollege characteristics and goals and commitments, or Astin’s (1993) cognitive-psychological or cognitive-behavioral dimensions, there is a gap in the theory about specific measures being taken by campuses in using this information to affect positive change related to retention rates, or in measuring the impact of such measures. As Robbins and colleagues (2008) noted, “Surprisingly, there is little empirical research that examines the relationship between student risk, resource and service utilization, and college outcomes. Further, we have limited information on the effectiveness of postsecondary intervention programs” (p. 103). This study examines the relationship between first year student retention, and the utilization of nonacademic risk factor information by both students and their advisors to target specific self-defeating behaviors and attitudes. As shown by the various retention rates of populations within the study, there is a measurable increase in retention when this added information is utilized. The significance of these findings lies in the fact that when advisors have a more complete picture of the student, including their academic and nonacademic risk factors, they are able to give more focused advising, which when followed, is shown to have a positive impact on the student’s decision to stay enrolled. This in turn impacts the college’s financial bottom line, and the performance measures by which it is compared with its peer institutions. The results of this study could be the basis for broader usage and acceptance by other campuses of noncognitive surveys and

advising interventions which target the risk factors identified.

Statement of the Problem

Over the last several decades, colleges and universities have continued to experience challenges in retaining students. The retention research is extensive, exploring both the cognitive and noncognitive attributes which predict whether or not a student will persist or drop out of school. The impact of this decision not only affects the student, but has societal and global implications, along with financial implications for the institution. The need to better address the retention problem has been underscored recently by the drastic budget cuts taking place across the nation which have impacted access to student support services. As reported by the National Education Association (2010), “Students are being turned away from higher education in great numbers due to faculty layoffs. They are also unable to register for classes they need to graduate, and are not receiving basic campus services due to job losses to everyone from tenure-track professors and adjuncts to counselors, library and health care aides” (p. 1). This report also described how 12 states have capped enrollments at their largest universities, and that in California, for example, more than 2,500 faculty positions have been eliminated, or 10% of faculty members across the system’s 23 campuses. In working to address the retention problem, higher education is grappling with an issue which has not seen significant change for decades. As Braxton, Hirschy, and McClendon (2004) reported, one out of every four students who enter a 4-year public institution will depart during their first year. This number is even higher at community colleges, where nearly 50% of students will leave

during their first year. To better understand this phenomenon, researchers including Tinto, Astin, and Bean have worked to identify student risk factors and created models to better describe their interaction with behavior and campus environment. As described in his book *Leaving College: Rethinking the Causes and Cures of Student Attrition*, Tinto (1993) described how students enter institutions with precollege characteristics, goals, and commitments, and it is their interactions with the academic and social systems of a campus that influence whether the student will stay or discontinue enrollment from the institution. Students who have positive interactions and are consequently better integrated both academically and socially into an institution will have a greater likelihood of being retained, while negative experiences can lead to withdrawal. In theory this sounds relatively straightforward, but how does an institution translate this into specific retention initiatives, especially given the fact that a student's decision to leave can be based on a number of variables or factors? Braxton and colleagues (2004) described this problem as the "departure puzzle," consisting of "ill-structured problems that defy a single solution and require a number of possible solutions that may not alleviate the problem" (p. 2). While the problem is multifaceted and cannot be resolved by a "magic bullet" answer, specific initiatives must be tried and measured for possible impacts on retention.

Purpose of the Study

Astin (1975) put it well when he wrote, "Dropping out of college is a little like the weather: something everyone talks about but no one does anything about. This predilection for talk over action is reflected in much of the research on dropouts, which

has focused more on counting, describing, and classifying them than on seeking solutions to the problem” (p. 1). The purpose of this study was to measure the relationship between first-year student retention, noncognitive risk factor information, and student advising. With student retention as the dependent variable, academic, demographic, and noncognitive variables were used as independent variables to examine the existence of any predictive relationships. The SSI was used to identify noncognitive risk variables, and this information was used in conjunction with student advising to measure their effectiveness in improving student retention. The results can be utilized by college administrators to invest in the SSI as an ongoing tool to assist advisors to better identify and advise their most at-risk student populations.

Research Questions

1. What are the predictive relationships between the precollege and noncognitive independent variables and the retention dependent variable?
2. Do the retention rates differ between the sample groups, and can this difference be partially explained by the usage of the SSI survey by advisors?
3. Are there any subpopulations that experienced an increase in retention and can this increase be partially attributed to the usage of the SSI survey by advisors?

The following null hypotheses were constructed from the above research questions.

1. There are no predictive relationships between the precollege and noncognitive independent variables and the retention dependent variable.
2. There are no differences in retention between the sample groups, and/or this

difference cannot be explained partially by the usage of the SSI survey by advisors.

3. There are subpopulations that experienced an increase in retention that is partially attributable to the usage of the SSI survey by advisors.

Limitations of the Study

The following factors limit the generalizability and validity of the study.

1. The selected sample only represents students from one 4-year college in southern Utah during a single time period, fall 2009 to fall 2010.

2. Students who were randomly selected for both general and targeted advising were not required to attend advising meetings. As a result, some students declined to meet with an advisor as requested.

3. The sample sizes for the students who actually came in for targeted and general advisement were small: 59 for targeted advisement and 60 for general advisement.

4. The sample sizes for the first-generation students who received advisement are small: 18 for targeted advisement, and 22 for general advisement.

5. The impact of specific ethnicity information was not measured due to the low numbers of non-white participants in the randomly selected groups.

6. The survey instrument (SSI) utilized does not have a long track record of use in higher education, and its validity is still being measured.

Definition of Terms

The definitions used within this study are highlighted in Table 1. In addition to the terms listed in the table, specific definitions within the SSI survey instrument will be highlighted later and described as part of the survey explanation in the methods section of this document.

Table 1

Significant Retention-Related Terms and Definitions

Word	Definition
First-year student	A student who has completed less than the equivalent of one full year of undergraduate work; that is, less than 30 semester hours in a degree program (National Center for Educational Statistics [NCES], 2010).
Retention	An institutional measure of the rate at which students persist in their educational program. Retention is measured as a percentage rate of first-time degree-seeking undergraduates from the previous fall who are again enrolled in the current fall (NCES, 2010).
At-risk student	A student having one or more family background or other factors that have been found to predict a higher rate of higher educational attrition at some time in the future (NCES, 2010).
Cognitive factors	Intelligence, knowledge, and academic ability that a student brings to academic environment. These factors may be measured by such variables as course selection and completion in high school, aptitude, or extracurricular involvement in academic-related areas (Swail, 2005).
Noncognitive factors	A student's family background characteristics, affects, attitudes, interests, social sensitivity, and interpersonal competence, coping skills, creativity, and personal values (Messick et al., 1979).

CHAPTER II

REVIEW OF THE LITERATURE

The subject of student retention and persistence has been an issue facing higher education for decades. As Johnson (2000) wrote,

Every year prospective college students receive volumes of materials from a variety of institutions, and every year college administrators fund research and research-based interventions in order to cut down on the rate of student departure. Yet nearly one out of every four college freshmen leaves the institution he or she carefully chose to attend. The departure of these students from college, in spite of their own preparation and the efforts of the institutions to retain them, constitutes a puzzle. (p. 157)

The purpose of the literature review will be to orient the reader to foundational retention theory and models, followed by research that focuses on the role of noncognitive factors in predicting student success.

Search Methods and Information Sources

To narrow down the online search from the voluminous amount of research relating to retention, such key words as the following were used: student retention theory, retention models, enrollment management, student attrition, student persistence, retention interventions, and cognitive/noncognitive risk factors. A subscription was purchased by the researcher to the online library “*Questia*,” which includes a large database of academic journals, books, and magazines. In addition, the following specific journals were utilized: *Journal of College Student Retention: Research Theory and Practice*, *Journal of Higher Education*, *Colleges and Universities*, and the *Chronicle of Higher Education*. USU library resources which were accessed include the Academic Search

Premiere, ERIC via Ebsco Host, and Electronic Theses and Dissertations. Finally, hard copies were obtained from the Dixie State College library of Tinto's 1993 book *Leaving College* and Braxton's 2000 edition of *Reworking the Student Departure Puzzle*.

Given the significant impact which student attrition has on higher education institutions and society at large, a number of theories have emerged to explain and predict student behavior, with several researchers coming to the forefront in creating models which have reached paradigmatic status in the retention literature. Three such researchers will be highlighted to represent the foundational retention literature and current thinking on student attrition: Vincent Tinto, Alexander Astin, and John Bean.

Vincent Tinto and the Model of Institutional Departure

Over the past several decades, much of the research and theory have built upon the early work of Spady (1971) and Tinto (1975), who used as their point of reference the early work of Durkheim (1951) and his theory on suicide. The impact of Durkheim on Tinto's retention theories are clear as Tinto (1993) outlined his usage of Durkheim's theory in his book *Leaving College*. Although there are different types of suicidal behavior, the one which seems to resonate with Tinto is *egoistic* suicide, where "the individual is unable to become integrated into society due to values which may deviate from society, or from insufficient personal affiliation between the individual and other persons in society" (p. 102). As described, individuals who find themselves isolated or disconnected from society or possessing values that deviate from society are then more apt to commit suicide. Correlating this to the college situation, students who are not

integrated into an educational institution socially or academically will be more apt to “disconnect themselves” and end their relationship with the school by dropping out. Using this rationale along with other elements Durkheim’s suicide theory, Tinto created his “model of institutional departure,” which is now widely held as an exemplary framework for understanding student departure. Within this theory, he postulated that there are three dimensions that have an effect on student departure and retention: (a) precollege characteristics, (b) goals and commitments, and (c) institutional experiences. These dimensions are longitudinal in nature and describe the student’s attributes as they move from a precollege life to the on campus experience. Within these three dimensions, Tinto identified student characteristics which help to explain student behavior along this spectrum. These attributes are delineated in Table 2.

Table 2

Student Attributes Within Each Dimension

Dimension	Attributes	Measurement
Precollege characteristic	Family background	Social status, parental education, size of community
	Personal attributes	Gender, race, physical handicaps, first-generation
	Skills	Intellectual, social
	Financial resources	Financial aid, other resources
	Dispositions	Motivations, social preferences
Goals and commitments	Precollege education and achievements	High school GPA, placement exams, knowledge of college
	Intentions	Level of dedication to attain educational goals
Institutional experiences	Goals and institutional commitment	Degree of dedication to goals and to the institution
	College academic performance	Receiving passing grades in courses
	Faculty/staff interactions	Inside and outside of the classroom
	Peer group interactions	Social experiences, extracurricular activities, outside commitments

In addition to identifying student attributes, Tinto's (1993) theory included two constructs, academic integration and social integration, which according to the theory are needed for the student to become acclimated to the institution. Academic integration represents the extent to which students are doing reasonably well in their classes (academic achievement), perceive their classes to be relevant and have practical value (e.g., prepare them for careers), and are satisfied with their majors. Social integration refers to students' levels of social and psychological comfort with their colleges, association with or acceptance with others in common causes, both intellectual and social. These two clusters of behaviors influence students' overall performance and affective responses to the college experience (Kuh & Love, 2000). According to Tinto's model, a student who does not achieve some level of academic or social integration is likely to leave school. Tinto's (1993) most recent version of his retention model includes another explanation of student departure: failure to negotiate the rites of passage. According to this feature of the model, students would remain enrolled if they separated themselves from their family and high school friends, engaged in processes by which they identified with and took on the values of other students and faculty, and committed themselves to pursuing those values and behaviors. Tinto's longitudinal model of institutional departure is provided in Figure 3.

In recent years and despite its paradigmatic status, Tinto's theory of student departure has come under closer scrutiny and critical review. Braxton and Lien (2000), for example, conducted an empirical study of Tinto's primary propositions by evaluating peer reviewed studies covering both multi-institutional and single institution research.

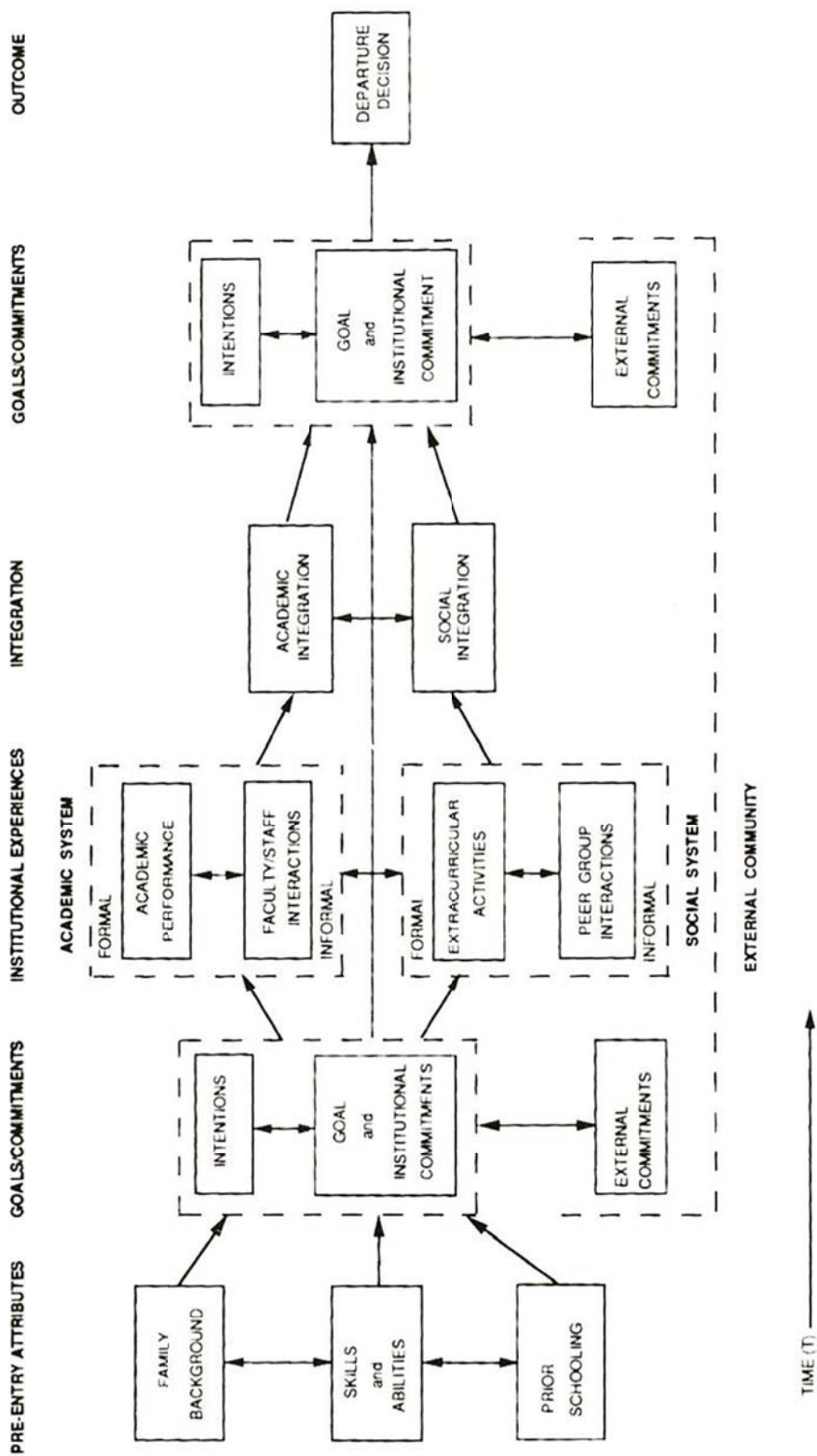


Figure 3. Tinto's longitudinal model of institutional departure. (Reprinted from "Leaving College," by V. Tinto, 1993, p. 114. Reproduced with permission. See Appendix H).

These research studies were categorized according to the specific proposition within Tinto's theory. Braxton and Lieu discovered that in the aggregate, assessment of empirical evidence regarding the 13 propositions indicated only partial support for the theory. The researchers cited problems with "internal consistency in multi-institutional or single-institutional assessments, in both residential and commuter universities, and across female and male students" (Rendon, Jalomo, & Nora, 2000, p. 127). To put it bluntly, they wrote "Tinto's interactionist theory of college student departure needs revision" (Braxton & Lien, 2000, p. 11).

In summarizing Braxton and Lein's work, Seidman (2005) noted that while the research was unable to empirically support nine of the propositions made by Tinto, they were able to identify single-institution studies that supported four of the propositions and found them to be "logically interconnected." The four propositions are defined as:

1. Students bring to college different entry characteristics which will impact their initial commitment to the institution.
2. A student's initial commitment to the institution will impact the student's future commitment to the institution.
3. Students' continued commitment to the institution is enhanced by the level of social integration they realize early on.
4. The greater the level of commitment to the institution, the higher the likelihood of the student being retained through graduation.

In addition to concerns over the lack of empirical evidence to support all of Tinto's claims, such researchers as Attinasi (1989), Kraemer (1997), and Tierney (1992) and

have questioned the validity of the model to fully and appropriately capture the experiences of nonwhite students, given that the model is based on an “assimilation/acculturation” framework. Tierney in particular is critical of Tinto’s model. As noted by Rendon and colleagues (2000), Tierney argued,

Social integrationists such as Tinto tend to use anthropological terms in an individualist, rather than collective manner. Individuals attend college, become integrated or not, leave or stay, fail or succeed. Absent from the traditional social integrationist view are the distinctions among cultures; differences among students with regard to class, race, gender, and sexual orientations. (p. 144)

Tierney’s main contention seems to be that while traditional retention theories have been useful in providing a foundation for the study of persistence, they do not go far enough in understanding the impact of race, class, and gender on the study of retention. This can be problematic when retention researchers view issues related to the retention of minority students as similar, if not identical to those of majority students. As Rendon and colleagues (2000) summarized, “What transpires is an almost universalist entrenched view that Tinto’s...departure model, with all its assumptions, is complete, appropriate, and valid for all students regardless of their varied ethnic, racial, economic, and social backgrounds” (p. 130).

Possibly in response to these criticisms, Tinto (1993) added to his theory the idea that college administrators should pay more attention to subgroups or “enclaves” on campus and better understand their particular needs. Specifically, he observed that one way students manage cultural distance is to join enclaves or affinity groups that have values, attitudes, beliefs, and assumptions similar to those of the students’ cultures of origin, or those the students find appealing. Enclave membership is critical for fitting in,

for developing a sense of belonging to one or multiple groups and perceiving that there are people there with similar values, assumptions, perspectives, beliefs, and meaning-making systems. Students with close friends who are doing well academically and like college life are more likely to persist (Kuh & Love, 2000, p. 207). In reviewing the foundational retention literature, it is clear that Tinto's (1993) model of student departure is one of the most studied in the field of higher education and is widely held as the paradigm for understanding student behavior as it relates to their persistence or dropping out of school.

Alexander Astin and the Input-Environment-Outcome Model

Another well-known researcher in the field of retention studies, Alexander Astin took a different approach than Tinto in looking at the process of college student retention and development. Astin's original work, *Four Critical Years*, focused on what he called the input-environment-outcome [I-E-O] model. "Inputs refer to the characteristics of the student at the time of initial entry to the institution; environment refers to the various programs, policies, faculty, peers, and educational experiences to which the student is exposed; and outcomes refers to the student's characteristics after exposure to the environment" (Astin, 1993, p. 7). Astin's I-E-O model is illustrated in Figure 4.

To elaborate on this model, Astin's research points repeatedly to the need for students to become involved on campus, and that this an important component of their propensity to stay enrolled. In his book, *Achieving Educational Excellence*, Astin (1984, p. 133) offered five postulates relating to student involvement.

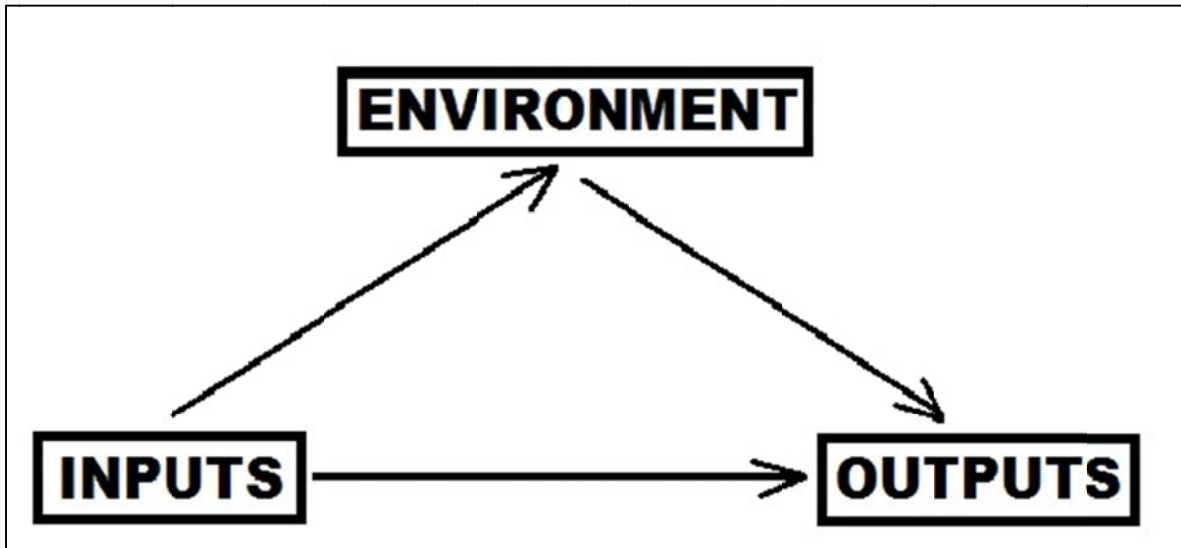


Figure 4. Astin's I-E-O model. (Astin, 1993, p. 18. Reproduced with permission.)

1. Involvement requires the investment of energy (psychological and physical).
2. Students invest varying amounts of energy in the tasks facing them.
3. Involvement has both qualitative and quantitative features.
4. The amount of learning is proportional to the quality and quantity of involvement.
5. The education effectiveness of a policy or practice depends on its capacity to stimulate involvement.

As York (1999) stated, in referring to Astin's postulates,

What Astin does here is to focus attention on the commitment of the student and on the capacity of the educational environment to convert that commitment into valued outcomes. In so doing, he leads in the work of other theorists who have sought more explicitly to address the issues of persistence and non-completion. (p. 10)

This theme of student involvement and its importance is a common thread through much of Astin's writings. Put simply, Astin proposed that students who are involved devote

significant energy to academics, spend time on campus, participate actively in student organizations and activities, and interact with faculty. On the other hand, uninvolved students neglect their studies, spend little time on campus, abstain from extracurricular activities, and rarely initiate contact with faculty or other students (Astin, 1984). As described, the most persuasive types of involvement are academic involvement, involvement with faculty, and involvement with student peer groups.

John Bean and the Psychological Model of Student Attrition

Also contributing to foundational retention theory and research, Bean and Eaton (2000) created the “psychological model of student retention.” This model was influenced by the attitude-behavior theory of Fishbein and Ajzen (1995), as well as approach-avoidance theory, self-efficacy theory, and attribution (locus of control) theory. The primary theme of their model is that student departure is the result of the premeditated intention to leave. As described by Bean (2005, as cited in Seidman, 2005, p. 218), “Intention is based on prematriculation attitudes and behaviors that affect the way a student interacts with the institution. On the basis of this interaction, the student develops attitudes towards their experiences and norms related to student behavior.” As with Tinto’s (1993) model, Bean’s model is longitudinal in nature and reflects the student’s attitudes and behaviors as they navigate the educational experience. The model is also summarized by Bean and Eaton (2002) as follows:

An individual enters an institution with psychological attributes shaped by particular experiences, abilities, and self-assessments. Among the most important of these psychological factors are self-efficacy assessments (“Do I have confidence that I can perform well academically here?”); normative beliefs (“Do

the important people in my life think attending this college is a good idea”); and past behavior (“Do I have the academic and social experiences that have prepared me to succeed in college?”). (p. 75)

The student then interacts with the institution (its bureaucratic, academic, and social realms) while continuing to interact with people (parents, spouses, employers, and old friends) who are outside of the institution. These interactions include staff from various departments, their faculty, both inside and outside the classroom, and also with other students. As Bean and Eaton (2002) summarized:

The interactions within each realm do not directly and magically result in academic and social integration. While interacting with the college environment and its many different features, the student engages in a series of self-assessments that can be described by several psychological processes. These self-assessments help students connect particular experiences they have had at the institution with their general feelings about college. (p. 75)

To better understand their model, a graphical representation is provided in Figure 5. The model depicts the student’s psychological processes as they interact with and respond to their environment. Similarities can be seen with Tinto’s (1993) model, such as the precollege attributes which the student brings with them to college and which informs their attitudes and predisposition to stay enrolled or drop out. It is interesting to note that Tinto only included environmental factors into his model in 1993 after Bean had demonstrated their importance in better understanding the student dropout picture.

There are numerous reasons why a student might leave college before graduation. As can be seen, theoretical models seek to describe these behaviors and classify the groups of variables that are assumed to relate to the general underlying causes. Any list of factors associated with student retention will only be an incomplete list. As described by Bean (2003):

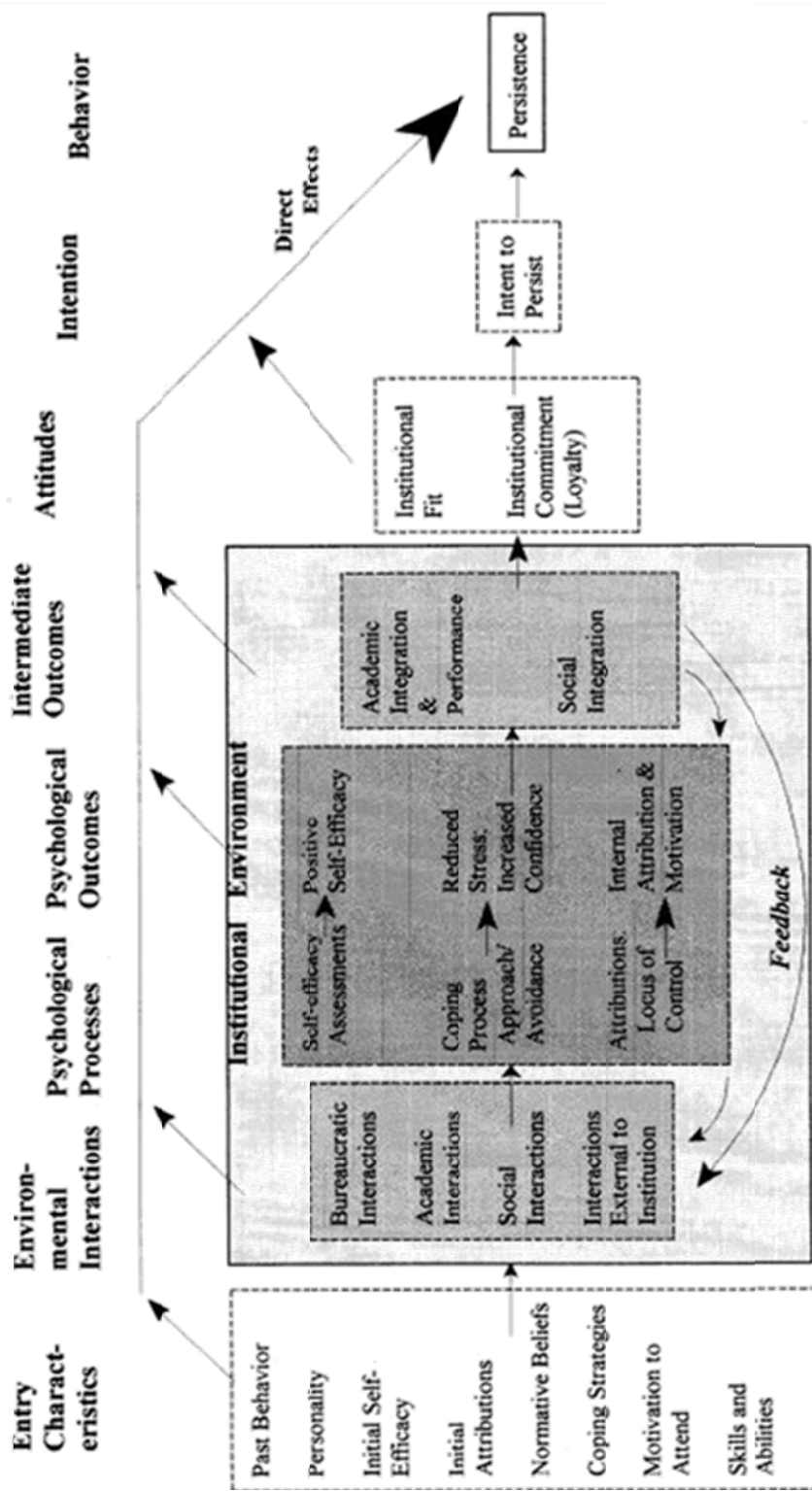


Figure 5. A Psychological model of student retention (Bean & Eaton, 2002. Reproduced with Permission. See Appendix H).

The specific factors affecting retention decisions at colleges and universities vary from institution to institution and according to gender, age, and ethnicity.... It is unlikely that an institution can find a single, simple program that increases student retention, or that a single identifiable group is responsible for low retention rates. (¶ 29)

While the variables impacting the retention decision are complex and numerous, Table 3 illustrates the primary factors that have been shown to positively correlate to the student's decision to persist or drop out. Table 3 also shows the problem with giving any retention theory or model the stature of being a paradigm, as student behavior and their reasons for early departure cannot be captured in a single equation. Hence there is a need to isolate the student and institutional attributes that are related to this complex puzzle, and search for statistical validity.

Table 3

Examples of Specific Factors Affecting Retention Decisions

Factor	Variables
Background	High school GPA, test scores (ACT, SAT, CPT), parental support, parents' education, college preparatory curriculum, class rank.
Organizational	Financial aid, orientation programs, rules and regulations, supportive environment, retention-specific programs (learning communities, first year experience, retention offices).
Academic	Course offerings, faculty interaction, academic advising, tutoring centers, campus resources (library, computer, athletic, campus life programs).
Social	Close friends on campus, peer culture, social involvement (e.g., service learning, clubs), informal contact with faculty, identification with a group on campus, social integration.
Environmental	Continued parental support, little opportunity to transfer, financial resources, family responsibilities, employment, marriage
Noncognitive	Academic engagement, self-efficacy, educational commitment, resiliency, social comfort, campus engagement.

Research Related to Noncognitive Retention Variables

Much of the literature relating to noncognitive student variables seems to focus on validating the predictive nature of these variables in relation to student retention. Perhaps the most comprehensive study that identifies significant noncognitive variables is the meta-analysis conducted by Robbins, Le, and Lauver (2005). They specifically examined the relationship between noncognitive variables or “psychosocial and study skill factors” (PSFs) across 109 studies. Nine broad constructs of PSF’s were categorized from the literature: achievement, motivation, academic goals, institutional support, social involvement, academic self-efficacy, general self-concept, academic-related skills, and contextual influences. Results indicated moderate relationships among retention and academic goals, academic self-efficacy, and academic-related skills. According to this study, academic self-efficacy and achievement motivation were the best predictors. The study also found that there are incremental predictive contributions by noncognitive risk factors above that of such cognitive predictors as high school GPA, socioeconomic status, or standardized test scores (Robbins et al., 2005).

Another study designed to validate the predictive nature of noncognitive variables, Noble, Davenport, Schiel, and Pommerich (1999) used ACT-provided data to sample 5,489 students from 106 schools who had completed a survey about their perceptions of themselves, their homes and their school environment. The intent of the study was to examine the relationships between students’ noncognitive characteristics and their performance on the ACT test. To measure this relationship, stepwise multiple regression models were developed to explain the five ACT test scores

(English, mathematics, reading, science reasoning, and composite) as a function of high school academic and noncognitive variables. Descriptive statistics were also used to show the means and standard deviations of each variable. The final results showed that 47% to 65% of the variance in ACT scores was explained by cognitive variables, while less than 15% of additional variance was due to noncognitive variables. However, by themselves students' noncognitive characteristics explained 31% of the variance in high school GPA and 21% and 12% of the variance in the number of years of mathematics or science courses taken respectively. According to Noble and colleagues (1999), these results suggest that noncognitive variables impact students' choices of high school course work and the grades they earn in those courses, which, in turn, are strongly related to ACT scores.

A study that focused on the noncognitive variable of self-efficacy, Gore (2006) sought to demonstrate a relationship between a student's self-efficacy and their GPA and persistence in college. More specifically, he wanted to know if this variable accounted for student persistence beyond the traditional measures of GPA, placement scores, or other cognitive variables. Participants for this study were 629 first-year college students enrolled in a First Year Experience course at a large public Midwestern university. In addition to using the ACT test score results, the students were also given the College Self-Esteem Inventory (CSEI) survey instrument (Solberg, O'Brien, Villareal, Kennel, & Davis, 1993) to measure their beliefs in their abilities to successfully complete college-related tasks. In addition, student GPAs were obtained and an ASC (academic self-confidence) index score was created.

Heirarchical linear regression was used to evaluate the degree that ACT composite, CSEI, and ASC scores predict college GPA. Separate analyses were conducted using first to second semester and first- to second-year retention as the dependent variables. Results from the analysis indicate that self-efficacy is a fairly weak predictor at the beginning of the first semester of college. Bivariate effects between CSEI scores and GPA's ranged from .00 to .13. The strength of measuring self-efficacy emerged however when looking at correlations between the end-of-semester CSEI scores and GPA, where the correlations increased to .21 to .35. From the study, the author maintained that the first semester of college is a critical time for promoting academic self-efficacy beliefs in incoming first-year students, and that it is a predictor in gauging student propensity for academic persistence.

Sedlacek and Ting (1999) further validated the usage of noncognitive student variables in predicting success by creating the Noncognitive Questionnaire (NCQ), which is now in use by a number of colleges and universities to make admissions decisions and to provide counseling. According to the authors, this survey was designed to assess psychosocial aspects of students that influence college success. After revising the survey, a study was done at a southeastern public land-grant research university, with a total of 894 students participating (519 males and 363 females). To examine the construct validity, the researchers used principle component factor analysis to ascertain if the NCQ-2 (revised version) loaded on the proposed noncognitive dimensions (Sedlecek & Ting, 1999). Using student retention as the dependent variable, the authors employed step-wise multiple regression to predict student retention. The independent variables

which were used as predictors included: living in a multicultural society, knowledge acquired in a field, leadership experiences, positive self-concept, preference for long-term goals, realistic self-appraisal, strong support person, high school coursework, and study method. The variables that added to prediction in the analyses and the overall multiple correlation coefficients were high school coursework, positive self-concept, preference for long term goals, and study method and effectiveness. The overall variance predicted for this study was .38.

Summary of Review

As the previously reviewed research studies have demonstrated, noncognitive risk factors do have value in helping to predict student attrition. This is not surprising, given the fact that a number of these variables are included in the foundational models created by Tinto (1993), Astin (1984), and Bean and Eaton (2002). The research literature is replete with studies which prove a statistical relationship between retention and both cognitive and noncognitive preenrollment data (Seidman, 2005). An obvious gap in the literature is the “so what” question. So what do institutions do with this information? Can this additional knowledge about a student and their predisposition to either persist or drop out be used to influence their behavior? Can retention rates improve if advisors provide more targeted guidance to their students based on their knowledge of the student’s noncognitive (and cognitive) risk factors? An even more compelling question is this: Will students self-correct if they are provided with this information without any additional intervention? In reviewing the literature on noncognitive risk factors, these questions

remain unanswered, and very few studies could be found which would indicate that an institution has proactively used this information to positively impact retention rates. This is the focus then of this quantitative research study: To determine the value of using noncognitive variable information gained through the identified survey instrument, and target the risk factors influencing student attitudes and behaviors, thereby increasing first-year retention rates.

CHAPTER III

RESEARCH METHODOLOGY

This study examined the retention rate for fall semester 2010 first-year freshmen students enrolled in the first-year experience courses in fall semester 2009 at Dixie State College. Nonacademic risk factors using the SSI survey were measured, and this information was combined with other precollege variables in an effort to find an explanation for retention. The primary goal of this research was to determine if better application of intervention for noncognitive risk factors combined with appropriate mentoring would increase students' retention rates. While all of the students in the sample had the opportunity to review their survey results, a smaller subgroup was invited to review their results with an academic advisor. The following research questions guided this study.

1. What are the predictive relationships between the precollege and noncognitive independent variables and the retention dependent variable?
2. Do retention rates differ between the sample groups, and can this difference be partially explained by the usage of the SSI survey by advisors?
3. Did any subpopulations experience an increase in retention and can this increase be attributed partially to the usage of the SSI survey by advisors?

The following null hypotheses were constructed from the above research questions.

1. There are no predictive relationships between the precollege and noncognitive independent variables and the retention dependent variable.
2. There are no differences in retention between the sample groups, and/or this

difference cannot be partially explained by the usage of the SSI survey by advisors.

3. There are no subpopulations experiencing an increase in retention that may be attributed partially to the usage of the SSI survey by advisors.

Sample

The participants for this study were selected from the fall 2009 traditional-aged freshmen class who were enrolled in the first-year experience (FYE) courses at Dixie State College (DSC) and who took the SSI survey. FYE courses had not been taught previously at this institution.

Measures

Dependent Variable

Retention was the dependent variable in this study and was measured by the fall semester 2010 enrollment status of the students.

Demographic Variables

Demographic data were collected using the college's student information system (Banner). Parent education was collected using the SSI survey. Specific data elements are highlighted in Table 4, along with the coding system for each variable.

Noncognitive Risk Variables

Data regarding the population's noncognitive risk variables were gathered using

Table 4

Independent Variables and Coding for Analysis

Independent variable	Retrieved from	Coding logic
High school GPA	Banner system	Used actual data
ACT or equivalent	Banner system	ACT composite score or converted to SAT or CPT score
Mother's education	SSI survey	1 = some college experience 0 = no college experience
Father's education	SSI survey	1 = some college experience 0 = no college experience
First generation	SSI survey	1 = first generation 0 = nonfirst generation
Major	Banner system	Each major assigned a number
Degree	Banner system	Each degree assigned a number
Gender	Banner system	1 = female 0 = male
Ethnicity	Banner system	1 = White 0 = Minority
Advising with survey	Random sample	1 = yes 0 = no
Financial need	Banner system	Calculated by Department of Education

the SSI survey. Students completed the SSI in the first week of their FYE class in cooperation with FYE faculty and as part of an in-class assignment. Noncognitive risk variables included academic self-efficacy, academic engagement, campus engagement, resiliency, social comfort, and educational commitment. To clarify the noncognitive risk factors, Table 5 is provided. Factor definitions and a sample question from the survey are included.

SSI Survey Instrument

The instrument used to measure the sample population's noncognitive risk factors was the Student Strengths Inventory (SSI). Dixie State College was part of a pilot project

Table 5

Noncognitive Risk Factors as Defined by the Student Strengths Inventory

Scale	Definition	Sample question
Academic self-efficacy	An individual's confidence in his or her ability to achieve academically and succeed in college	I will excel in y chosen major
Academic engagement	The value an individual places on academics and attentiveness to school work	I turn my homework in on time
Campus engagement	Involvement in campus activities and attachment to the college/ university	Being active in extracurricular activities is important to me
Resiliency	An individual's approach to challenging situations and stressful events	I manage stress well
Social comfort	An individual's comfort in social situations and ability to communicate with others	I am comfortable in groups
Educational commitment	An individual's dedication to college and the value placed on obtaining a degree	I see value in completing a college education

Source: SSI Survey Student Results (see Appendix B).

to utilize the survey in 2009. According to the survey's authors, the SSI was developed using a "combination of rational and factor analytical methods to provide homogeneous and objective measures of six factors suggested by the literature to be predictive of college student success and retention" (Gore, Brown, Leuwerke, & Metz, 2008). The six factors are described in Table 6. Preliminary validity was established by Gore and colleagues, who found that the SSI sustains "moderate to high correlations (p. 7) with the Student Readiness Inventory (American College Testing: ACT). As shown in Table 6, Cronbach's alphas for the six subscales are moderately high and range from .80 to .89. Correlations among subscales are sufficiently low to suggest that each subscale measures a separate construct.

Table 6

SSI Scale Descriptive Statistics, Correlations, and Reliability Estimates

Education commitment	Resiliency	Social comfort	Campus engagement	Academic engagement	Educational commitment
Resiliency	.09				
Social comfort	.26	.27			
Campus engagement	.41	.13	.40		
Academic engagement	.47	.18	.17	.28	
Cronbach's	.89	.81	.83	.88	.80
Scale mean	43.23	31.57	36.69	34.39	35.80
Standard deviation	5.41	6.79	6.52	7.60	6.19

Note. All correlations > .09 are significant at $p < .01$

In fall 2010, the data from the eight school pilot study ($N = 8,000$) became available as first-year students returned to enroll. The efficacy of the SSI survey to further predict student attrition is demonstrated in Table 7 (Leuwerke, 2010).

Research Design

Population selection for this study followed a regression discontinuity (RD) design (Imbens & Lemieux, 2008). The RD design allows the researcher “to assign the treatment or program to those who most need or deserve it (para. 12).” In this particular study, the students in greatest need of “treatment” were identified through their high school GPA and composite ACT test scores (Seidman, 2005). By utilizing a combination of these data points, a line was drawn and is described below to further pinpoint the group of students who would be part of random sampling and further action.

Table 7

Student Strengths Inventory (SSI) Prediction of Academic Outcomes

Predictor	Attrition percentage accurately identified
Random	28.5
ACT composite score	28.7
ACT + High school GPA	50.9
High school GPA + SSI risk	65.5

Calculating the Cutoff Point and Sample Size

In order to divide the FYE population, an index was created using the same logic currently being utilized at Dixie State College for scholarship consideration and which is based on high school GPA and a composite test score (ACT, SAT, or Accuplacer). Equivalent ACT scores were calculated for students who submitted SAT scores using a concordance table available on the ACT website (see Appendix E). A cross-walk between the Accuplacer and the ACT test was also utilized (see Appendix G). By multiplying the GPA by 10, the two values are weighted approximately the same (e.g., a perfect GPA or 4.0 multiplied by 10 equals 40, while a perfect ACT score equals 36). The equation then follows: $\text{Index Score} = \text{HSGPA} * 10 + \text{Test Score}$. This procedure is justified by Robbins, Allen, Casillas, Peterson, and Le (2006), who stated that ACT scores and high school grades should approximately carry the same weight if an institution wants its admissions criteria to reflect likelihood of persistence to year two of college.

To establish the cutoff point, an average GPA and ACT score was calculated from the freshmen classes from years 2006 through 2009. Students who were missing either of

these data points were not included in the calculations. Using these average scores, an index score was created as previously described ($\text{GPA} \times 10 + \text{ACT}$). The index score was then averaged over the 4-year period to create a final index score of 53.01. To measure how the index score would impact each of the freshmen classes, a percentage above the line and a percentage below the line was calculated. These calculations are shown in Table 8.

Prior to applying this index line to the sample population, students who were not classified as first-time freshmen for fall semester 2009 were removed from the sample (e.g., sophomores, nondegree seeking students, etc.). Students who did not take the survey (e.g., absent, added the course late, instructor did not participate) were also removed from the sample. After filtering out these students ($n = 219$), there were 864 students remaining in the sample population. Using the index score to split the population, 420 students were above the line (not needing treatment) and 444 students were below the line (in need of treatment).

Table 8

DSC Freshmen Enrollment Data (2006-2009)

Variable	Fall '06	Fall '07	Fall '08	Fall '09
Count (<i>n</i>)	2,603	2,393	2,512	3,324
Average GPA	3.179	3.172	3.131	3.088
Average ACT	20.572	20.516	20.455	20.222
Average index score	54.24	54.89	50.37	52.57
Above the line (%)	50.26	44.96	64.65	52.10
Below index score (%)	49.48	55.03	35.35	47.90

Defining the Samples, Treatment, and Hypotheses

As per the regression discontinuity (RD) design, the students who were above the line were not targeted for treatment. Of the students below the line, two random samples were drawn from the population using an online random number generator (www.randomizer.com). In order to select a manageable size for advisors, 100 students were selected for general advisement, and 100 students were selected for advisement that included the survey results.

Students were contacted initially by e-mail with the explanation that they were being invited to meet with an academic advisor, and would be notified that they would be contacted by phone to set up an actual appointment time. A follow-up phone call was made by the assigned advisor. After initially meeting with some resistance by students, the advisors were provided with campus lunch coupons which they offered as incentive for meeting. Out of the 100 students invited to receive general one-on-one advisement, 60 actually met with an advisor. Of the 100 students invited to receive targeted one-on-one advisement, 59 out of 100 students met with an advisor. Both sample groups received the written results of their SSI survey, but only one group met with an advisor to discuss these results in greater detail and to receive an action plan depending on their scores. Table 9 lists the samples, the treatments, and the predicted retention.

Advisor Training and Protocols

To ensure that college advisors were uniform in their approach to both general advisement and advisement based on the noncognitive survey results, training was

Table 9

Samples, Treatments, and Hypotheses

Sample	Description	Hypotheses
1	Below the line. Not advised.	Retention rate will be lowest.
2	Below the line. General advisement.	Retention rate will be higher than #1.
3	Below the line. Targeted advisement using the SSI survey results.	Retention rate will be higher than #2 and will nearly match #4.
4	Above the line. Students not in need of treatment as per RD design.	Retention rate will be higher than #3.

conducted with the advisors prior to their meeting with students. Attendees included the researcher, the director of advisement, and two general academic advisors assigned to participate in the study. The assigned advisors were full-time staff from the general advising office. In order to control for advisor variability, both advisors were randomly assigned 50 students from the general advising sample and 50 students from the targeted advisement sample. They were each responsible for contacting their assigned students and setting up their own appointments. Prior to meet with their assigned students, they were provided with training to ensure that “general” advisees and “targeted” advisees would be advised in a consistent manner. The following delineation was made between the general advising sessions and the “targeted” survey advising sessions.

General Advising Session

Advisors were instructed to obtain feedback from the student on how their semester had gone so far and respond to any concerns. They were also to discuss with the student their chosen major and future goals, and to assist the student in creating a class

schedule for the following term. Students would also be encouraged to meet with their major advisor regularly and seek help as needed.

Targeted Advising Session

In addition to covering the points from the general advising session (above), advisors were instructed to discuss the results of the SSI survey with the student and obtain feedback on the perceived validity of the results. More specifically, they were to point out both the high scores and the low scores and discuss ways to address them. From this discussion, they were to create an “action plan” targeting specific behaviors, resources, or actions which the student could take to address the high/low scores on the survey. Advisors were also encouraged to inform students that the survey is simply a tool which may or may not be valid, depending on how candidly the student responded. An advisor training document was created and is presented as Appendix F.

Administering the Survey

The SSI survey instrument was provided to the FYE faculty at training meeting prior to fall semester 2009. Faculty were given training on how to administer the survey, and a script was also provided (see Appendix A). Instructors were asked to distribute the survey no later than the second class period. Students were given 15 minutes to complete the survey, and the survey bubble sheets were returned to the instructor, who mailed the survey back to the researcher via campus mail. Out of 45 instructors, 37 actually participated and returned their student surveys. The researcher then mailed the completed surveys to the C-Sync company for processing. Survey results were mailed back to the

researcher within 2-3 weeks, and results were disseminated back to the students through their instructor. The instructors were invited to use the survey results as a discussion item in their classes, but to not use the results in an individual advising session with an action plan. Also, the random samples described previously did not include students whose instructors did not participate in the survey. Following the dissemination of the survey results, the advisors began contacting students beginning on October 1, 2009. The appointments took place during the month of October, with a deadline of November 1.

SSI Survey Results

The survey data were compiled by the company (C-Sync) and results were then made available to the students, advisors, and the survey administrator. The student report provided a graph of student's strengths and areas of concern, followed by recommended actions to be taken. The report was designed not only make recommendations as a result of low scale scores, but also to recommend proposed action on high scores. For example, a student scoring high on the "social" scale is recommended to use their talents by volunteering to help out with student campus activities. Space was also reserved at the end for an "action plan" that the student could create alone or in coordination with their advisor. As part of this study, an action plan was created for each student who met with their advisor as part of the "targeted" student sample. Advisors were also provided with a report (see Appendix C) with similar information as the student report, but with the exception that it also assigned a probability of retention and a probability of academic success score for each student. This information was not shared with the students, and in

the training, advisors were cautioned about how much weight to give the scores. A separate report was provided to the survey administrator in the form of an excel spreadsheet that included demographic data and the students' average scores on each noncognitive variable. This spreadsheet was used as the starting point for identifying the sample groups and assigning the random samples described above. An example of this report is provided in Appendix D.

Accounting for Other Variables

As discussed previously, the enrollment decision is based on a number of factors and it is difficult to isolate one variable or group of variables and measure their impact on retention. Also, there are specific factors that can skew results if not accounted for in the study execution. Table 10 shows these and other factors identified by the researcher along with steps taken to mitigate their negative impact on the accuracy of the study.

Methodology Assumptions

1. Faculty will actually follow the instructions, and will present the survey to their students in such a way as to elicit the most candid and accurate responses.
2. Faculty will use the survey results as a discussion item in their classes, but will not conduct individual training sessions which could skew the results of the study.
3. Advisors will follow the training and the protocols established to differentiate between the general and targeted advising sessions, and will not show bias in their demeanor with the students (e.g., knowledge of retention probability).

4. Advisors will actually contact the students assigned to them, and students will accept the invitation to come in and discuss their results with their advisor.

The survey instrument is valid and reliable.

Table 10

Extraneous Variables That Could Impact the Study

Variable	Control
Advisor	To account for advisor differences, the general and targeted random samples were split evenly between the two advisors, and training was provided to guide them in conducting two separate types of advising sessions.
Students	Students who skipped questions or who answered the questions randomly (as identified by the vendor) were excluded from the study. Students who took the survey but were not first-time freshmen were also excluded. Demographic data was also checked to verify that sample demographics were proportional to overall student population demographics.
Faculty	Faculty who used the survey results as part of their FYE class were instructed to not conduct one-on-one advising sessions or create action plans with individual students. Faculty were also provided training on how to present the survey to the students.
Timing	The advising sessions needed to take place early enough in the semester that they could still have an influence on the student enrollment decision. Although retention was measured from fall to fall, attrition also takes place from fall to spring.

CHAPTER IV

STUDY RESULTS

Data Analysis Overview

The purpose of this study was to examine the relationships between cognitive and noncognitive variables and the dependent variable of student retention in college. More specifically, the relationship of advisor usage of noncognitive risk information and the relationship with retention was explored. The retention rates were established by reviewing the third week enrollment report that was created each semester by the college's institutional research office for reporting to the state board of regents. Using SPSS, a correlation matrix was created for each sample group looking for statistically significant correlations where the Pearson's product moment $r < .05$. These variables were input into a logistic regression analysis to measure the strengths of various combinations, looking for the highest R^2 . In addition to logistical regression, a chi-square goodness-of-fit analysis was used to test the null hypotheses that there was no relationship between retention rate and the treatment variable (usage of SSI survey results). Given the small sample sizes, bootstrapping or combining some of the independent variables were used to add strength to the correlations. The independent variables included high school GPA, ACT (or equivalent), first-generation code, degree type, major, gender, and six noncognitive indicators. Using the regression discontinuity design described previously, four separate sample groups were identified.

1. Students above the cutoff line and not advised.

2. Students below the cutoff line and not advised.
3. Students below the cutoff line who received general advisement.
4. Students below the cut-off line who received advisement using the SSI survey results as the focal point.

Demographic Comparisons

As gender reached statistical significance in the study, this variable was analyzed to ensure that the sample groups were evenly represented as shown by Table 11. Ethnicity was also analyzed to ensure that the samples contained proportions which were similar to the 85% Caucasian student population at the college. In reviewing this variable, 88% of the student sample ($n = 864$) were Caucasian. Within the general advisement group ($n = 60$), 78% were Caucasian as compared to 90% within the targeted advising group ($n = 59$). A more detailed analysis of ethnicity was not conducted due to the small numbers ($n < 20$) of students within each minority (Black, Hispanic, Asian, Native American) group in the general and targeted advising samples. The average age of the

Table 11

Gender Within Groups

Sample	Description	Males	Females	% females
1	Below the line. Not advised.	163	158	49
2	Below the line. General advisement.	33	25	43
3	Below the line. Targeted advisement using the SSI survey results.	28	27	49
4	Above the line	186	234	55

sample group was 18.9 years. This compares favorably to the overall freshman cohort at 18.6 years.

Analysis Results

Research Question One

What are the relationships between the precollege and noncognitive independent variables and the retention dependent variable?

To evaluate research question one, SPSS (v.18) was used to establish a Pearson's product moment correlation coefficient between the independent variables and the dependent variable. The entire sample population ($N = 864$) was used in this analysis. The independent variables other than the noncognitive variables are displayed in Table 12.

Table 12

Correlations, Independent Variables (Excluding Noncognitive) and Fall 2010 Enrollment

Variable	Fall '10	Gender	HS GPA	ACT	Ethnicity	Degree	Major	First generation
Fall '10								
Gender	.19**							
HS GPA	.16**	.15**						
ACT	.08*	-.04*	.43**					
Ethnicity	-.04	-.01	-.26**	-.28**				
Degree	.08*	.05	-.06	.02	.09*			
Major	.02	.01	.01	.02	.01	.25**		
First generation	.03	-.06	-.16**	-.22**	.25**	.05	-.04	

Note. Gender, HS GPA, ACT and degree correlate positively with fall 2010 enrollment.

* $p < .05$.

** $p < .01$.

The students' noncognitive scores as measured by the SSI were also evaluated for correlation and statistical significance using SPSS, with the results displayed in Table 13. As indicated from Table 13, academic engagement is the only noncognitive variable to correlate significantly with fall 2010 enrollment. After identifying the variables which correlated positively with fall 2010 enrollment, the first research question was evaluated further by utilizing logistic regression analysis to measure the strength of the variables in predicting the dependent retention variable. Logistic regression was selected due to the fact that the dependent variable is binary and there are only two possible outcomes: 1 = student is enrolled in fall 2010, or 0 = student is not enrolled in fall 2010. Using SPSS, the variables identified earlier were input into the analysis, with gender entered as a categorical variable, with the results displayed in Table 14. By using the significant variables from the logistic regression analysis, the predictive equation is as follows:

$$Y = -1.67 + .39(\text{HS GPA}) - .70 (\text{Gender}) + .06(\text{Degree})$$

Table 13

Correlations, Noncognitive Variables, and Fall 2010 Enrollment

Variable	Fall '10	Acad. eng.	Self eff.	Ed. comm	Resiliency	Soc. com.	Camp. eng.
Fall '10							
Acad. eng.	.08*						
Self eff.	.02	.41**					
Ed. comm.	.05	.06	.48**				
Resiliency	-.01	.21**	.34**	.21**			
Soc. com.	-.05	.15**	.31**	.19**	.25**		
Camp. eng.	.01	.13**	.25**	.24**	.04	.43**	

* $p < .05$.

** $p < .01$.

Table 14

Regression Predicted Values and Significance

Variable	Predicted value	Significance
High school GPA	.39	.01
ACT	.02	.27
Gender	-.70	.00
Degree	.06	.04
Academic engagement	.01	.14
Constant	-1.668	.001

$p < .05$.

In seeking to answer research question one, the significant predictive relationships between the independent variables used in the study and the dependent variable (fall 2010 enrollment) are limited to HS GPA, gender, and selected degree. The other independent variables which were tested did not rise to the level of statistical significance.

Research Question Two

Can the different retention rates between the sample groups be explained by the usage of the SSI survey by advisors?

To evaluate research question two, the enrollment status of the fall 2009 sample group was measured in fall semester 2010 using the third week data file reported to the Utah Board of Regents. As described in the methodology section, the researcher hypothesized that the retention rate would progressively improve from group one (below the line, no advising) through group four (above the line), and that the retention rate in group three (targeted advising) would be partially attributable to the usage of the SSI survey. Based on this analysis, the following fall semester 2010 retention rates were calculated and are displayed in Table 15 by sample group. As can be seen, the retention

Table 15

Samples, Treatments, and Fall 2010 Retention Rates

Sample	Description	Retention rate (%)
1	Below the line. Not advised.	45
2	Below the line. General advisement.	46
3	Below the line. Targeted advisement using the SSI survey results.	59
4	Above the line. Students not in need of treatment as per RD design.	59

rates followed the researcher's hypothesis of progressively improving retention rates.

To measure the possible effect of the SSI survey on group 3, the statistical analysis focused on group two (general advisement) and group 3 (targeted advisement). A dummy variable was created to differentiate between these two groups: 1 = Received targeted advisement, or 0 = Received general advisement. Coupled with the binary values for fall 2010 retention, a chi-square analysis yielded the following results (see Table 16).

As Table 16 data indicates, the SSI Treatment variable fails to reach significance ($p < .05$) and so we fail to reject the null hypotheses for research question two. To better understand what may be causing the significant difference in the retention rates between groups 3 and 4 (46% versus 59%), Table 17 compares the independent variables that correlated positively with fall 2010 enrollment in the overall sample.

To further explore whether the mean scores were significantly different, independent samples t tests and chi-square analyses were calculated using SPSS. The t tests were run for the variables ACT, GPA, and average academic engagement, and chi-square analysis were run for the variables female, Caucasian, pursuing BS degree, and

Table 16

Chi-Square Results, SSI Survey Versus Fall 2010 Enrollment

Variable	Value	df	Asymp sig (2-sided)	Exact sig (2-sided)	Exact sig (1-sided)
Pearson chi-square	2.175	1	.140		
Continuity correction	1.665	1	.197		
Likelihood ratio	2.182	1	.140		
Fisher's exact test				.197	.098
Linear-by-linear association	2.157	1	.119		
N of valid cases	119				

$p < .05$.

Table 17

Significant Independent Variables, Group 3 and Group 4 Comparison

Variable	Targeted advisement	General advisement
Average ACT	18.51	17.84
Average high school GPA	2.84	2.77
Female (%)	49	43
Average academic engagement	63.88	63.43
Pursing BS degree (%)	44	21
First generation (%)	32	41

first generation due to the fact that the latter variables are categorical. The results of the independent t tests are displayed in Table 18. The null hypothesis (H_0) for the above variables is that the means of the variables for the two groups are not significantly different. Also, the assumption is made that the variances are approximately equal on the dependent variable. As shown, the t test results are not significant and the null hypothesis cannot be rejected. So while there is a slight difference between the means of these variables, they are not statistically different. The chi-square test was run for the categorical variables, and the results are displayed in Table 19.

Table 18

Independent Samples t Test, ACT, GPA, and Academic Engagement, Groups 3 and 4

Variable	Sig. (Levene)	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Average ACT	.332	1.098	113	.275
Average GPA	.528	.662	116	.509
Average academic engagement	.584	.087	117	.931

$p < .05$.

Table 19

Chi-Square Test, Female, Pursuing BS, and First Generation, Groups 3 and 4

Variable	Value	<i>df</i>	Pearson sig. (2-sided)
Female	.698	2	.705
Pursuing BS	6.775	1	.009*
First generation	1.143	1	.285

Note. Pursuing a BS degree is statistically significant at $p < .01$, while the other differences between the other categorical variables are not significant.

* $p < .01$.

Research Question Three

Are there any subpopulations that experienced an increase in retention and can this increase be partially attributed to the usage of the SSI survey by advisors?

A number of subpopulations could be identified within the fall 2009 freshmen sample, to include ethnic minorities, low-income students, and first-generation students. These three groups will be evaluated in turn. Table 20 shows the breakdown by ethnicity between the targeted group (SSI survey) and the general group (general advisement).

Table 20

Targeted Versus General Group, Ethnicity Comparison

Ethnicity	Targeted group	General group
White/Caucasian	53	47
Hispanic/Latino	6	7
Black/African American	1	2
Native American/Pacific Islander	1	3
Asian	0	0

Given the small number of minority students in each category, further review of this subpopulation was not pursued and their data was included with the White/Caucasian data. Another possible subgroup, the low income student, is more difficult to identify given the information available in the college's student information system. The best identifier available to the researcher was the student "financial need" reported by the Department of Education after the student has completed the financial aid application (FAFSA). This financial need is an estimated dollar amount based on family income, number of family members, proximity to the school, and whether or not the student is paying in-state tuition. The financial need amount can range from 0 to over \$40,000. Using this amount as a basis for identifying the "more needy" student, the following Table 21 reflects the financial need amounts in \$10,000 increments. Using SPSS, a correlation analysis was run to measure any significant relationship between this value and fall 2010 enrollment. The correlation was not significant ($p = .329$).

To measure the value of the SSI survey with the "more needy" students, an arbitrary cutoff point was set at \$20,000. Students showing this amount of need (or more)

Table 21

Targeted Versus General Group, Financial Need Break Down

Category	Targeted group	General group
\$0 - \$10,000	13	6
\$10,000 - \$20,000	11	15
\$20,000 - \$30,000	16	14
\$30,000 - \$40,000	5	7
Unknown	14	18

Note. Unknown category represents students who did not complete the FAFSA.

were considered the “lower income” subpopulation. After removing the students not considered more needy, 42 students remained in the population, with 21 students in each group (targeted sample and general sample). The retention rate between the more needy students was 59% in fall 2010 for those who received treatment compared to 45% in the general advising group. To measure whether this difference could be partially attributed to the treatment, a chi-square analysis was run using SPSS. As shown in Table 22, the treatment group failed to reach statistical significance.

A final subpopulation tested for possible statistical significance between the targeted and general advising groups was the first-generation student. The 2010 retention rates for the two groups were as follows: 62% ($n = 18$) in the targeted advising group and 26% ($n = 22$) in the general advising group, or a 36% difference. The retention rate of the first-generation students in the overall sample ($n = 252$) was 49%, or a 13% lower rate than the targeted group. Using a chi-square analysis, it was determined that the difference between the retention rates between the targeted and general advising groups was statistically significant. The results are displayed in Table 23.

Table 22

Chi Square Results, Financial Need, Treatment Versus Fall 2010 Enrollment

Variable	Value	df	Asymp sig (2-sided)	Exact sig (2-sided)
Pearson chi-square	2.471	1	.116	
Continuity correction	1.581	1	.209	
Likelihood ratio	2.499	1	.114	
Fisher's exact test				.208
Linear-by-linear association	2.412	1	.120	
<i>n</i> of valid cases	42			

Table 23

Chi-Square Results, First-Generation Students

Variable	Value	df	Asymp sig (2-sided)	Exact sig (2-sided)
Pearson chi-square	5.105	1	.024	
Continuity correction	3.768	1	.052	
Likelihood ratio	5.240	1	.022	
Fisher's exact test				.031
Linear-by-linear association	4.977	1	.026	
<i>n</i> of valid cases	40			

$p < .05$.

Correlations between the independent variables and the dependent variable were calculated for the first-generation subgroup. While HS GPA, gender, ACT, degree, and academic engagement were significantly correlated with fall 2010 retention in the larger sample (see research question one), these variables were not significantly correlated in the first generation student subgroup; however, self-efficacy, resiliency, and educational commitment were significantly correlated as shown in Table 24.

Table 24

First-Generation Significant Correlations for the Variables Fall 2010, Self-Efficacy, Resiliency, and Educational Commitment

Variable	Fall '10	Self-efficacy	Resiliency	Educational commitment
Fall '10				
Self-efficacy	.42**			
Resiliency	.41**	.45**		
Educational commitment	.37*	.70**	.51**	

* $p < .05$.

** $p < .01$.

Because the correlation between self-efficacy and educational commitment was unacceptably high (.70), educational commitment was dropped from the analysis. A binary logistic regression analysis was run using self-efficacy and resiliency as the independent variables and fall 2010 as the dependent variable. The variables failed to reach statistical significance ($p < .05$). Self-efficacy and resiliency were combined to form another variable titled SE-Res. Educational commitment was not included in this new variable because its correlation with self-efficacy was too high (.70). Using SE-Res in the equation, the logistic regression equation reached statistical significance as shown in Table 25. Note that the Cox & Snell R^2 in Table 24 is a “pseudo- R^2 ” intended to approximate an R^2 in linear regression and to show how much of the variability in the data is explained by the model. For research question three, the null hypotheses is rejected.

Table 25

First-Generation Regression Analysis

Variable	Coefficient	Sig.	Cox & Snell R^2
SE-Res	.024	.004*	.234

* $p < .05$.

CHAPTER V

DISCUSSION AND CONCLUSIONS

The purpose of this study was to explore the relationship between first-year retention, students' noncognitive risk factors, and student advisement. Other student variables were collected and correlated with the dependent variable (retention) to further validate the research done by Astin (1975), Bean (2000), and Tinto (1993) on student precollege and demographic data in predicting retention. Utilizing a regression discontinuity design, the sample group from the fall 2009 freshmen class at Dixie State College was categorized using a cutoff score, with a random sample of students "below the line" targeted for advising utilizing the results from the SSI survey. The primary question to be answered was recognizing the predictive nature of both cognitive and noncognitive student variables, could this information be used by advisors to target specific interventions to positively impact retention? While seeking to answer this question, the researcher also recognized the existence of subgroups within the sample population, and hypothesized that these subgroups may respond differently to the treatment being introduced by the study.

Summary of Results

Research Question One

What are the predictive relationships between the precollege and noncognitive independent variables and the retention dependent variable?

The Pearson's product moment correlations in SPSS revealed that gender, HS

GPA, ACT, degree, and academic engagement correlated significantly with fall 2010 enrollment. The remaining variables including major, first generation, self-efficacy, educational commitment, resiliency, social comfort, and campus engagement were tested and failed to correlate significantly with fall 2010 enrollment. When the significantly correlated variables were entered into the binary logistic regression model, only HS GPA, gender, and degree reached a level of $p < .05$ significance. Interestingly, the strongest predictor in this analysis was gender, followed by HS GPA, and then degree.

Research Question Two

Can the different retention rates between the sample groups be explained by the usage of the SSI survey by advisors?

After dividing the FYE sample into four different groups as per the regression discontinuity design, the retention rates from fall 2009 to fall 2010 did in fact differ as hypothesized by the researcher, with the students below the cut-off point (without advisor contact) having the lowest retention rate (45%), and the students above the cut-off point having the highest retention rate (59%). The “targeted advising” sample equaled this rate at a retention rate of 59%. Initial results seemed to confirm the goals of regression discontinuity, where the applied treatment raised the population “needing treatment” to the same level as the population above the line. To measure the significance of the treatment between the targeted and general advising groups, a chi-square analysis was calculated in SPSS. The resulting Fisher’s Exact Test failed to show significance ($.05 < p < .098$), so the hypothesis could not be rejected for research question two. To further explore what may have caused such a significant difference in the retention rates between

these two groups (59% vs. 46%), a comparison was made between the independent variables which correlated positively with retention. While there was a difference between the mean scores, when independent t-tests and chi-square analysis (for the categorical variables) were applied, only “degree” reached statistical significance. To clarify, “degree” refers to the type of degree the student is pursuing. At Dixie State College, the degree choices include associate of science, associate of arts, bachelor of science, bachelor of arts, and a number of applied science degrees and certificates.

Research Question Three

Are there any subpopulations that experienced an increase in retention from fall 2009 to fall 2010 and can this increase be partially attributed to the usage of the SSI survey by advisors?

As Tinto (1993) observed, campuses should pay more attention to the subgroups or “enclaves” which make up a campus. As the extant retention literature and research has demonstrated, students who are more at risk of dropping out after the first year of college can be identified within specific subgroups to include minorities, financially needy, and first-generation students. These groups were also identifiable in the data set. As described earlier, given the homogenous nature of the sample population and the small number of ethnic minority students in the two random samples (general and targeted advising), further analysis of the minority subpopulation was not possible due to the small sample size.

Financially needy students were identified using Department of Education estimates of need, with the estimated amounts ranging from zero to \$40,000. After

dividing the samples up into increments of \$10,000 and tabulating the students in each group, a correlation analysis was done with the dependent retention variable. The resulting correlation was not significant. The more needy students (\$20,000 or higher) were included in a chi-square analysis to evaluate whether the treatment (SSI survey) caused any statistical difference between the general and targeted advising group and retention. Again, this statistical test failed to reach significance.

First-generation students represented the final group identified and were of particular interest, given that, within this group, the retention rate between the general advising group and the targeted advising group differed by 36%. Utilizing a chi-square analysis, the resulting Fisher's Exact Test showing statistical significance ($p = .025$). A correlation analysis was also conducted between the independent variables and the dependent variable, with self-efficacy, resiliency, and educational commitment having statistically significant correlation coefficients of .42, .41, and .37, respectively. A binary logistic regression model was then run in SPSS, and results showed that when self-efficacy was combined with resiliency, the resulting variable was significant in predicting fall 2010 enrollment. The null hypothesis for research question is, therefore, rejected.

Discussion

Research Question One

As described previously, correlations between the dependent variable and most of the noncognitive variables from the overall sample were not significant. This was unexpected. Of the six noncognitive variables identified by the survey, only Academic

Engagement correlated significantly with fall 2010 continued enrollment. This analysis failed to confirm the findings of Gore (2009) and the research conducted on the efficacy of the SSI. A number of factors could explain this finding, to include the open admission demographic that Dixie State College serves (average ACT = 20), and the possibility that a larger number of students than expected did not take the survey seriously or respond as candidly as possible.

Another surprising finding was the lack of statistical significance of the ACT score. Although it correlated positively with fall 2010 continued enrollment, it failed as a predictor when included in the logistic regression model (sig = .266). This finding fails to support research done by ACT (2009), which identified the ACT composite score as being 16% effective in predicting the dropout rate at 4-year institutions. Perhaps the fact that DSC still has a strong community college mission and the majority of students enroll with the intent to transfer has diluted the predictability of some of the independent variables. While the ACT score did not reach the expected significance, the regression model confirmed the validity of other variables in predicting retention, including HS GPA, gender, and degree. The significance of the “degree” variable was an unexpected finding, and perhaps rose to the level of significance in this particular population due to the fact that a student who chooses bachelor’s degree rather than associates degree or certificate at DSC is likely to be a more serious student and have a stronger academic intent and commitment. As compared to a university, where a bachelor’s degree is often the default degree type for new freshmen as they apply and matriculate, students at DSC can choose from a number of different degree pathways. When a student must make a

conscious choice between seeking a bachelor's degree or choosing other degree types, perhaps they are also showing their level of educational commitment and longer term goals, and this in turn strengthens this particular independent variable's predictability with respect to the retention dependent variable. This observation is similar to research done on the "undeclared" student who has yet to select a major and which, according to some research, is more at risk of dropping out. Some studies have shown that students who have a hard time selecting a major or who have low aspirations are more likely to leave college (e.g., Astin, 1975; Noel, Levitz, & Saluri, 1985).

In addition to the significance of the "degree" variable, another variable that surprisingly reached significance was "gender." The reason for this being a surprise to the researcher is that gender was not identified widely in the retention research as being a significant predictor for retention. Although Tinto (1993) included gender as one of the "personal attributes" in his model of institutional departure, he did not elaborate on it. Nor do other noted retention experts that were a part of the researcher's literature review. Perhaps this is related to the fact that the male-to-female ratio was 57% males attending universities in 1972 and dropping to 50% by 1987. In subsequent years, the percentage continued to drop, and by 2010 the percent of males attending universities had dropped to just 43% (NCES, 2010). During the time period when the male-to-female ratio was 50:50, much of the greatest thinking on retention, in the researcher's opinion, was taking place by Tinto, Astin, Bean, and others. Tinto's model of institutional departure was published in 1993. Gender would not have been as strong of a predictor during a time when the ratio was evenly split; however, at the time of this study, the ratio between

males and females at Dixie State College was 47:53 (Institutional Research Report, 2009). Also during the time period of the study, the female retention rate was 59% compared with a 54% male retention rate.

Research Question Two

As described previously, a primary goal of this study was to determine if knowledge of noncognitive risk factors by advisors and students would have a positive effect on retention. The researcher felt that as students became aware of these tendencies within themselves, they would perhaps self-correct and with the help of their advisor, take appropriate action to mitigate these risk factors and remain enrolled the following fall semester. Just as with the “Johari Window” theory, which stipulates that we each have a “blind spot” and have characteristics unknown to ourselves, the hope was that students would become more aware of their own retention blind spots. The results of the study failed to confirm this hypothesis. As Tinto (1975) suggested, retention is not a one-time fix but needs to be addressed long-term if it is to be impacted. In retrospect, the conversation with the students in the target group was a moment in time, and although an action plan was developed based upon their results, there was no organized “return and report” component. Anecdotally, advisor feedback indicated that students from the sample group were not generally excited to meet with them, and sometimes needed an additional incentive (free lunch) to actually show up. Another advisor observation was that students were at times skeptical about the survey results, and were often unwilling to buy into the possibility that the results reflected valid areas of concern for their ongoing persistence in school. Still, a number of students were also reported by advisors as being

appreciative and open to the suggestion that they had risk factors that they previously were unaware of, and seemed receptive to the recommendations given. This anecdotal information leads the researcher to believe that the reason the hypotheses for question two was not confirmed may have had more to do with the group of students selected rather than the value of noncognitive information to impact retention in a positive manner. In addition to the first-generation students previously identified, perhaps there are other groups of students who would respond more favorably to this information, such as students with higher academic commitment (as evidenced by higher GPA's and test scores). Students with lower index scores may already come into the advisor interview with attitudes or lower commitment levels that color their thinking on the information being shared, and may lead them to discount it or not act on it as readily as other student groups.

Research Question Three

Although admittedly a small sample, the difference in retention rates of first-generation students between the general advising group and the targeted advising group was quite large, and is the most significant finding of this research study. As the extensive retention research has shown, a student's decision to stay enrolled is impacted by a number of variables, tendencies, and predispositions. As Braxton (2000) pointed out, the departure decision is a complex puzzle made up of a myriad of factors, many of which are outside the institution's control. While a number of other variables are also at work, the chi-square analysis previously discussed shows that there seems to be at least partial confirmation that the SSI survey results, and the conversation between the advisor

and student, may be a factor for this population in explaining the difference in retention rates. The researcher's own experience with first-generation students confirms that they are often in greater need of answers and advice not available from the home. Although an unexpected turn in the research, it is not surprising to the researcher that this group would be more receptive to feedback and more willing to follow the action plan suggested by the survey results.

The retention rate of the targeted advising first-generation students is even more impressive when one considers the vast amounts of research studies which clearly show that this group struggles and almost always has a lower retention rate than the freshmen cohort or students whose parents have college experience. Specifically, a study conducted by Ishitani (2003) shows that after controlling for factors such as race, gender, high school GPA, and family income, the risk of attrition in the first year among first-generation students was 71% higher than that of students with two college educated parents (p. 433). Choy (2001) also noted that at 4-year institutions, first-generation freshmen students are twice as likely as students whose parents had a bachelor's degree to leave before their second year. This differs from the observed retention rates described earlier where the retention rate of the first-generation students in the treatment group exceeded the retention rate of all of the other sample groups in the study. Interestingly the first-generation retention rate in the targeted advising group also exceeded the retention rate of the fall 2009 freshmen cohort reported by the college to IPEDs (62% vs. 54%).

Recommendations for Further Study

Based on the findings and conclusions of this study the following suggestions are offered.

1. This study should be replicated adding the requirement of follow-up visits by students in targeted advising group to verify the recommended action plan was followed. Students could be provided with the added incentive of extra credit in their FYE course.

2. A separate study should take place with students who are above the index score to test the hypothesis that they would be more receptive to meeting with an advisor and discussing the SSI survey results than the more “at-risk” students, with their subsequent retention rate measured.

3. Additional questions should be added to the SSI survey to better identify future goals and intentions, such as transferring or leaving college to serve church service missions, and these students should be excluded from the study.

4. This study should be replicated with a larger sample of first-generation students to verify the results and the apparent receptiveness of this group to SSI survey feedback.

Conclusion

Retention research and literature is replete with evidence that the more that institutions know about their students, including their cognitive and noncognitive risk factors, the better equipped they are to target these factors with appropriate support programs and advising. This study sought to measure the usage of noncognitive

information by advisors to increase retention. While the retention rate was higher with the targeted advising group, this increase could not be attributed to the usage of the survey results. When the first-generation students were isolated, however, the usage of the survey did reach statistical significance. As described previously, this particular subgroup had the highest retention rate of any of the groups studied. This finding has been of special interest for the researcher who has retention responsibilities at the college and can see the potential of further utilizing the survey with a larger sample of first-generation students to seek to replicate the results, and more importantly, make a difference in the futures of a group of students who are charting new educational paths. If this finding is further validated, institutions would do well to use it to add to their collection of predictive tools and intervention measures with this particular student population.

In addition to the significant difference in retention rates and the statistical confirmation that the SSI survey information contributed to this difference, it is interesting to take note of the two noncognitive risk factors that were significant as well—self-efficacy and resiliency. This seems to confirm statistically what the researcher has experienced in his own interactions with first-generation students who must at times defy the odds to attend college. Self-efficacy is defined by Bandura (1986) as “people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave” (p. 1). For a student to choose to attend college without an example from their parents undoubtedly requires a self-belief and courage to chart a different path.

The characteristic of “resiliency” also matches well with what the researcher knows of this student group, and of the need for them to bounce back from adversity or challenges to persist in college, often without the support or persuasion from parents. While these characteristics obviously do not describe all first-generation students, they seem to describe accurately the traits needed by those students who remained enrolled in college through their first year of school.

This study should be replicated with other student demographics, larger sample sizes, and with more intrusive follow-up to ensure that the action plan targeting the student’s risk factors is followed. Such additional research should clarify and quantify the true potential of this added information in assisting students, and especially first-generation students, to better understand themselves and what is needed to improve their chances for success in achieving their academic goals and aspirations.

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APPENDICES

Appendix A

Faculty Survey Script

Faculty Script

Please read to your students after handing out the survey:

The Student Strengths Inventory is an instrument that measures your attitudes toward education and campus life in six areas that are critical to success in college. The survey measures things such as academic self-confidence, attitudes towards college, your commitment to earning a degree, and expectations for campus engagement.

The survey should take around 10 minutes. Please take the next few minutes to carefully complete it. Your candid responses will greatly assist the college in allocating student services resources to support your education. In a couple of weeks you will receive your survey results back. The results may also be used by your instructor or advisor in seeking to help you better succeed in college.

The front of the instrument asks for demographic information. Complete these questions to the best of your ability. The inventory items are on the back of the instrument. Read each item carefully and indicate how well it describes you. This is not a test, so there are no right answers. For item #49, please respond to this question:

**#49 – My current plans include returning to Dixie State College next Fall semester.
Answer 1 if Yes, 2 if No**

(Note: You may want to write the above question on the whiteboard)

Possible Student Questions:

- What should I use for my ID number? (Leave blank if you don't know your Dixie assigned number)
- What if I don't know my GPA, ACT/SAT, parents' educational level? (Leave blank if you don't know).
- What does item "X" mean? (Refrain from engaging students on interpretations of individual items. Encourage them to use their own interpretation of the meaning of the question.
- Will I see my results? (Yes, they will be handed back to you in class)

Appendix B

Student Survey Results Example



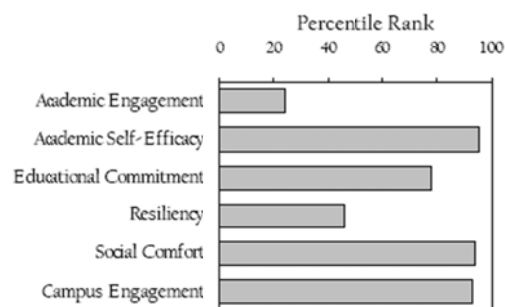
Student
Success
Center

Student Strengths Profile

FIELDS, KENDALL

The Student Strengths Inventory (SSI) measures your attitudes towards education and other activities that are critical to your college success. Your score in each of six areas is presented in the adjacent graph. Your scores are presented as percentile ranks. For example, if your score is 65, that means that you scored at or above 65% of other incoming first-year college students.

A description of your scores and suggested next steps are presented below. By taking advantage of this information and developing a plan of action you will be better prepared to succeed in college and beyond.



Academic Self-Efficacy

Your confidence that you can achieve academically and succeed in college

95 - High

Your responses suggest that you are very confident in your ability to be a successful college student. You believe that you can attain a high grade point average in required courses as well as perform well in your major. Having high confidence in your academic abilities is a valuable asset and will support your efforts to be successful in college and beyond.

What's Next

- Continue to challenge yourself to set high performance goals
- If your performance falls short of your expectations talk with your professor or visit the Student Success Center

Next Steps

Use Your Strengths

- Your skills will help you achieve college and workplace success
- Find opportunities to further develop these skills and to apply them at school and in your community

Look for Opportunities to Improve

- Low scores are an opportunity for growth
- Identify strategies to improve areas with low to moderate scores

Identify Your Resources

- There are many resources on and off campus that can help you succeed
- Take advantage of resources such as your academic advisor, professors, RA, friends and family, the tutoring center, recreation services, campus clubs and organizations, and the career center

Personal Development Plan

Students with specific goals are more likely to experience positive outcomes. Use the space below to set personal and achievable goals.

I will..

1. _____

2. _____

3. _____

4. _____

Appendix C

Advisor Survey Results



Student Strengths Profile™ Advisor Report

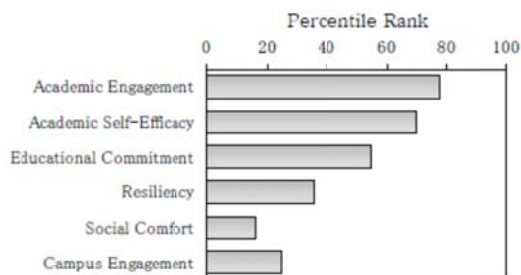
Name STUDENT, MICHAEL

ID Number: 987654321

Student Success Indices

<i>Probability of Retention</i>	58
<i>Probability of Academic Success</i>	89

Success Indices are based on colleges and universities with widely varying retention rates and academic expectations. Use caution when interpreting these values at your institution.



Academic Engagement

Your commitment to school work and the value you place on academics

77 - High

Your responses indicate that you take school work very seriously. You are conscientious and responsible about completing your assignments and attending classes. Strong academic performance is important to you. If you ever experience any trouble with coursework or completing work on time talk with your professors or advisors to get back on track.

What's Next?

- Institutions can customize What's Next statements to promote targeted referrals.
- Visit the Learning Assistance Center: www.SSU.edu/lac to learn about opportunities tutoring other students on campus.

Academic Self-Efficacy

Your confidence that you can achieve academically and succeed in college

70 - Moderate

Your responses suggest you have moderate levels of academic confidence. Success is partly a function of confidence. Having some positive academic experiences is the best way to develop realistic levels of self-confidence. Consider talking with your professors or seeking help from a tutor to support your academic efforts.

What's Next?

- Talk with your professors or visit the Learning Assistance Center: www.SSU.edu/lac to find help to support your academic efforts.
- Evaluate positive academic outcomes and build upon the efforts that have been successful in the past.

Educational Commitment

Your dedication to obtaining a college degree

55 - Moderate

Your responses indicate that you are moderately committed to the goal of attaining a college degree. You believe college is somewhat important for your future and that a college degree might further your career goals.

What's Next?

- Visit the Gateway Student Success Center to identify potential occupations for individuals with a degree from SSU.
- Speak with your professors or individuals in your field(s) of interest about the value of an SSU education.

Appendix D

Sample of Electronic Roster Report

Roster Report University of Tennessee

<i>ID</i>	<i>Last_Name</i>	<i>First_Name</i>	<i>DOB</i>	<i>Gender</i>	<i>Academic Engagement</i>	<i>Academic Self-Efficacy</i>	<i>Educational Commitment</i>	<i>Resilience</i>	<i>Social Comfort</i>	<i>Campus Engagement</i>	<i>Validity Concern</i>	<i>ACTuse</i>	<i>Ret Probab</i>	<i>Acad Succ Prob</i>	<i>Index Flag</i>
000302798	ABDELNOUR	MARLEEN	05/01/91	Female	98	88	55	98	92	93	0	23	92	92	0
000296324	ACKLIN	INDIA	09/09/80	Female	0	2	1	18	0	14	0	25	31	25	0
000303225	ADAMS	CLINTON	05/31/81	Male	19	8	3	41	16	29	0	29	50	73	0
000304863	ADAMS	JAMES	12/09/80	Male	40	21	6	66	33	49	0	20	46	70	0
000302287	ADAMS	JOSHUA	05/10/81	Male	40	21	6	66	33	49	0	25	57	87	0
000302682	ADAMS	NICK	09/21/80	Male	35	17	6	61	28	44	0	26	56	85	0
000303854	ADAMS	PHILLIP	12/08/80	Male	51	30	10	76	47	59	0	20	54	81	0

Appendix E

ACT-SAT Concordance Table



ACT–SAT Concordance

The ACT and SAT are different tests that measure similar but distinct constructs. The ACT measures achievement related to high school curricula, while the SAT measures general verbal and quantitative reasoning.

ACT and the College Board have completed a concordance study that is designed to examine the relationship between two scores on the ACT and SAT. These concordance tables do not equate scores, but rather provide a tool for finding comparable scores.

You can find the concordance tables and guidelines for proper use on our website at www.act.org/aap/concordance.

ACT Composite Score	SAT Score Critical Reading + Math (Single Score)	SAT Score Critical Reading + Math (Score Range)	ACT Combined English/Writing	SAT Score Writing (Single Score)	SAT Score Writing (Score Range)
36	1600	1600	36	800	800
35	1560	1540-1590	35	800	800
34	1510	1490-1530	34	770	770-790
33	1460	1440-1480	33	740	730-760
32	1420	1400-1430	32	720	710-720
31	1380	1360-1390	31	690	690-700
30	1340	1330-1350	30	670	660-680
29	1300	1290-1320	29	650	640-650
28	1260	1250-1280	28	630	620-630
27	1220	1210-1240	27	610	610
26	1190	1170-1200	26	590	590-600
25	1150	1130-1160	25	570	570-580
24	1110	1090-1120	24	550	550-560
23	1070	1050-1080	23	530	530-540
22	1030	1020-1040	22	510	510-520
21	990	980-1010	21	490	480-500
20	950	940-970	20	470	470
19	910	900-930	19	450	450-460
18	870	860-890	18	430	430-440
17	830	820-850	17	420	410-420
16	790	770-810	16	400	390-400
15	740	720-760	15	380	380
14	690	670-710	14	360	360-370
13	640	620-660	13	340	340-350
12	590	560-610	12	330	320-330
11	530	510-550	11	310	300-310

College readiness leads to college success.

Appendix F

Advisor Training Points

Advisor Training Points

- Introductory explanation of the SSI Survey and the survey results.
- How to interpret the survey results.
- Recognizing the limitations of the survey.
- Importance of engaging the student in a meaningful dialogue
- Appropriate language to use when meeting with student.
- Importance of completing an action plan from the survey results.
- Differentiating between General Advising and Targeted Noncognitive advising.
- Set a deadline for conducting initial advising and follow-up advising.
- Discuss the importance of making assignments and follow-up with students.
- Ensure that advisors know how to log in their student appointments into the database.
- Questions?

Note: The training will be created in consultation with the director of advisement, and as a follow-up to preliminary meetings with advisors to get their feedback and buy-in to the importance of this program, and why they are being asked to provide two different types of advising experiences with their students.

Appendix G

ACT to Accuplacer Conversion Chart

ACT to Accuplacer Conversion Chart

ACT English	ACCUPLACER Sentence Skills	ACT Math	ACCUPLACER Arithmetic Skills	ACT Composite	ACCUPLACER Reading Skills
1-9	1 st	1-11	2 nd	1-11	1 st
10	2 nd	12	7 th	12	6 th
11	7 th	13	19 th	13	11 th
12	12 th	14	26 th	14	17 th
13	18 th	15	40 th	15	24 th
14	26 th	16	52 nd	16	35 th
15	44 th	17	70 th	17	49 th
16	45 th	18	86 th	18	58 th
17	52 nd	19	89 th	19	66 th
18	60 th	20	93 rd	20	76 th
19	68 th	21	96 th	21	84 th
20	71 st	22-36	99 th	22	88 th
21	77 th			23	92 nd
22-23	84 th			24-26	95 th
24	87 th			27	98 th
25	90 th			28-36	99 th
26	92 nd				
27	94 th				
28-36	99 th				

Source: P.B. Smittle (1992). *Success and Retention Predictors for Community Colleges*. Unpublished doctoral dissertation, Grambling University, Grambling, LA. Sample size is 1,866. From Sante Fe Community College, Gainesville, FL.

Appendix H

Permission to Reprint Figures Cited in Text

Figure 1 -

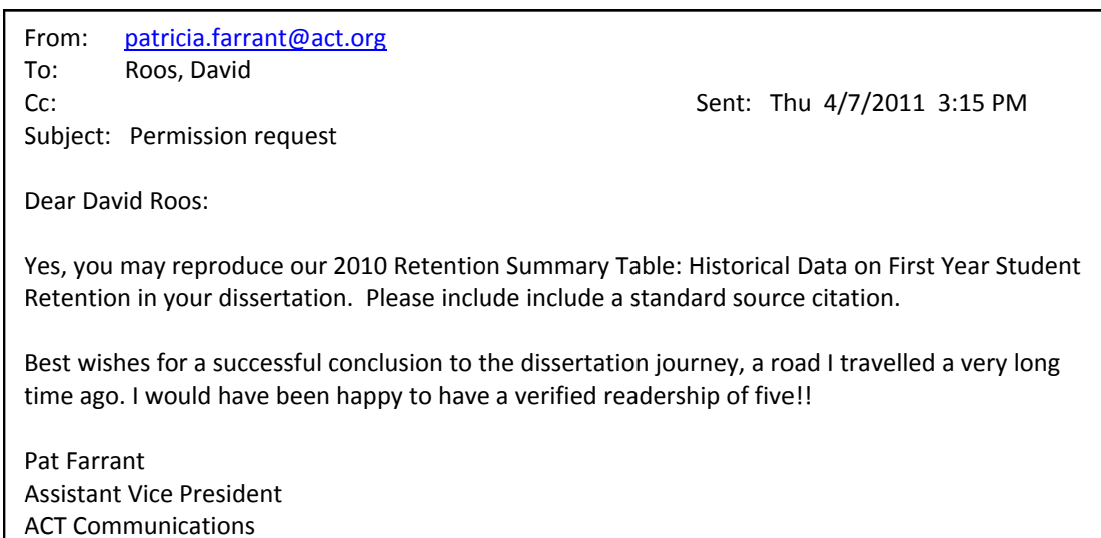


Figure 3 -

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David Roos
 Dir, Enrollment Services
 Dixie State College of Utah
 225 S 700 East
 St George, UT 84770

Date: May 02, 2011
 Grant Number: 105027
 Request Date: 04-06-2011
 Reference Number: 0049535448

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Figure 4 –

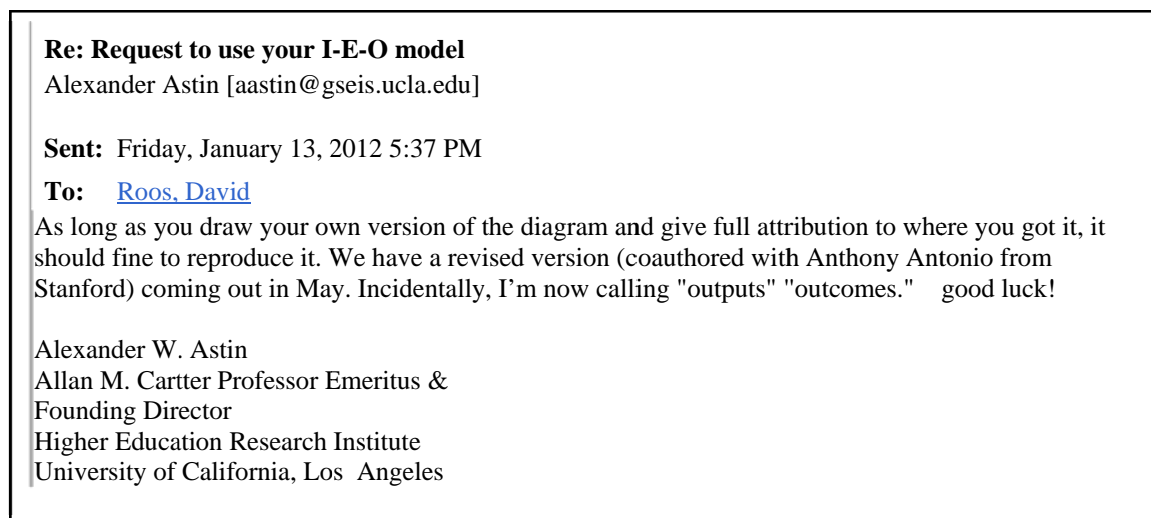
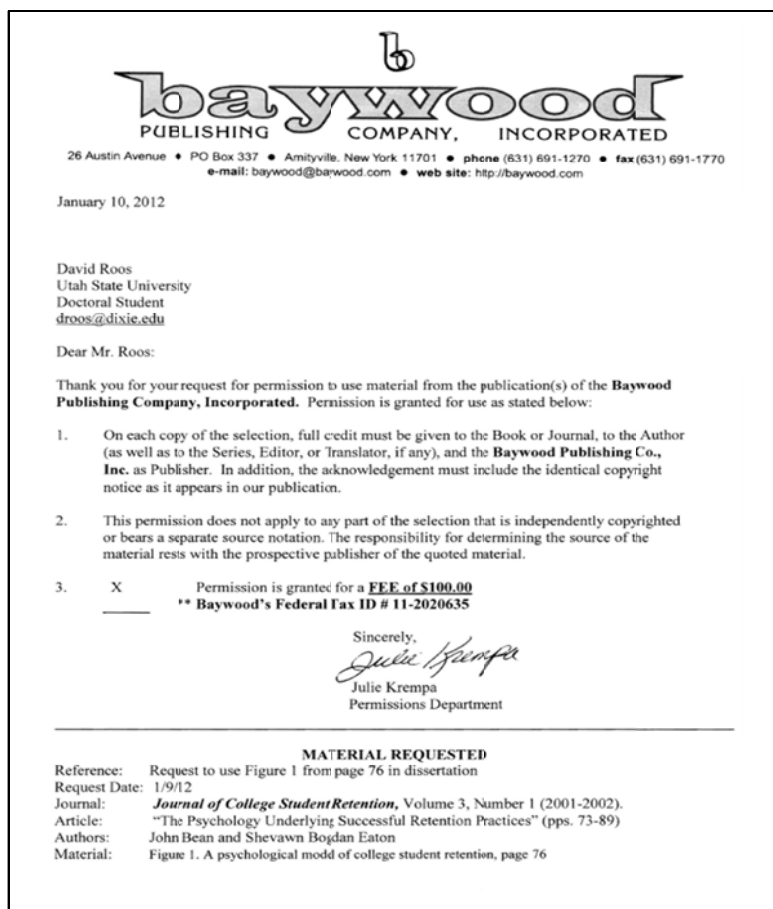


Figure 5 -



VITA

R DAVID ROOS

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EDUCATION

- Doctorate in Curriculum & Instruction (Ed.D). Utah State University. Spring 2012.
- Master of Business Administration, Utah State University, June 1989.
- Bachelor of Science, Management Information Systems, Utah State University, June 1988.

RESEARCH

Dissertation: Relationship between first-year student retention, advising, and non-cognitive risk factors. Successfully defended: 12/15/2011

WORK EXPERIENCE

- 2001 – Present. Executive Director of Enrollment Management. Dixie State College. Responsible for all aspects of recruitment, admissions, financial aid, registration, records, international admissions, and veterans services at DSC. Ensure that we provide a seamless and integrated service to our students as they move from prospective students to enrolled status. As the chair of the strategic enrollment management committee, have initiated multiple strategies which have targeted our enrollment and retention goals, with unprecedented growth over the past two years. Collaborate regularly with faculty, department chairs, and deans, to formulate and revise policies, and resolve issues relating to scheduling. Have taken a leadership role in upgrading to our student information system, and in leveraging technology to improve services. Have played an integral role in growing our international student population, to include traveling overseas to build relationships with foreign high schools and universities, with current projected growth at 100% over prior year.

- 1997 – 2001. University Registrar. Utah State University. Supervised a large staff in providing registration, records, and graduation services to USU students. Implemented a campus-wide reporting program to make reports more readily available to faculty and campus administrators, and worked closely with the athletic department to ensure compliance with NCAA regulations. Worked closely with Distance Education to providing coursework and registration services to students throughout Utah and overseas. Responsible for removing the need for paperwork in the enrollment process.
- 1994 – 1997. Director of Admissions & Records / Assistant Registrar. Dixie College. Supervised and provided leadership for the admissions and registration functions at Dixie College. With the advent of the internet, was among the first in the state of Utah to implement an online registration system.
- 1989 – 1994. Human Resources Management Specialist. U.S. Department of Defense (Germany). Gained extensive experience in all aspects of human resource management, to include job reclassification, establishment of new positions, performance appraisals, and training supervisors on disciplinary procedures and leadership practices. Traveled throughout Germany in providing leadership training to new supervisors.

TEACHING EXPERIENCE

- 1990-1993. **City Colleges of Chicago**. Introduction to Business. Income Tax Preparation.
- 1994-1997. **Dixie College**. American Sign Language (ASL-1010). Intro to Algebra. (Math-900)
- 1997-2001. **Utah State University**. Intro to Computers (CIS-1200). Business Operations (BU-3100).
- 2001-2003. **College of Southern Nevada**. Marketing Concepts (MKTG-2300)
- 2001-2011. **Dixie State College**. Intro to Algebra (Math-0990). Success Skills (ASC-1010). Elements of Effective Comm (Comm-1010).