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A study of the relationship between college student experiences and achievement

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A STUDY OF THE RELATIONSHIP BETWEEN COLLEGE STUDENT EXPERIENCES AND ACHIEVEMENT

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Carlane Jarice Pittman

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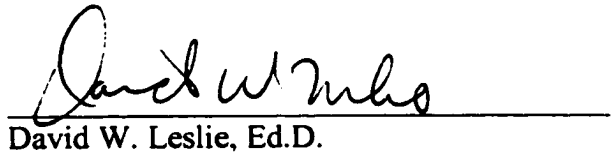

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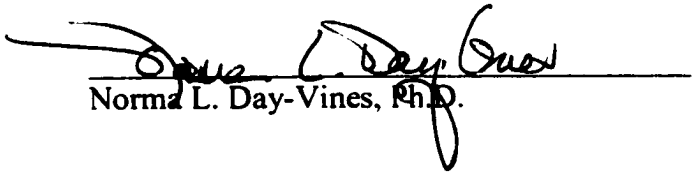

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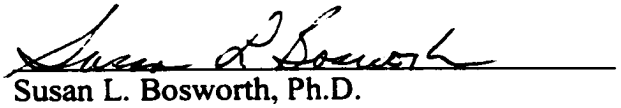

Susan L. Bosworth, Ph.D.

Dedicated to my parents, Carlton and Cecelia Pittman

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A STUDY OF THE RELATIONSHIP BETWEEN

COLLEGE STUDENT EXPERIENCES AND ACHIEVEMENT

ABSTRACT

The purpose of this study is to determine if a relationship existed between college student experiences and achievement. One selective institution in the mid-Atlantic region was studied. For this study, senior students' experiences at one college were studied in-depth. More specifically, this study sought to understand the experiences of high-achieving students at the State University. This study examined four different groups of seniors: (a) Group I - students who were not selected as Roosevelt Scholars or members of Phi Beta Kappa, (b) Group II - Roosevelt Scholars only, students who were identified as high achievers at their entry into college, (c) Group III - Phi Beta Kappa only, students who were recognized for their high achievement during their senior year, and (d) Group IV - Roosevelt Scholars and Phi Beta Kappa. The conceptual framework was based on Astin's I-E-O model and Pace's notion of the quality of effort. This study found that a relationship existed between college experiences and achievement. High-achieving students who were recognized during their senior year, Groups III and IV, navigated their experiences differently in terms of time spent and quality of effort. They tended to focus their efforts on more academically oriented activities compared to Groups I and II, who were more focused on socially oriented activities.

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A STUDY OF THE RELATIONSHIP BETWEEN COLLEGE STUDENT EXPERIENCES AND ACHIEVEMENT

CHAPTER I

INTRODUCTION TO THE STUDY

Some students come to college with high grade point averages, scholastic test scores in the top percentile, and high-class ranks. These high achieving students do not always maintain their high achievement status in college, while others will excel beyond expectations. The problem then becomes, what factors of the highest achievers' college experiences influence whether or not they excel in college? The literature demonstrated that high school grade point average (GPA) and test scores are the most effective predictors of students' achievement in college (Pascarella & Terenzini, 1991). If college achievement is greatly influenced by precollege factors, why then is there so much variance in achievement in college? One might argue that this variance is due to diverse experiences that one has while in college. If experiences are significant factors in students' achievement, then what types of experiences are related to achievement? To study college experiences, Astin's involvement theory was used. Astin's theory is based on the I-E-O model. *I* represents precollege inputs and student characteristics. *E* represents environment such as policies, peer groups and experiences. This study specifically focused on student experiences in the college environment. *O* represents outcomes that occur as a result of the environment. This chapter briefly introduces the study and the existing problem. Then it describes the limitations and delimitations, conceptual framework, definition of terms, and summary.

Research shows that the types of experiences to which students are exposed in college theoretically influence the level of their success and satisfaction throughout college (Astin, 1993; Pascarella & Terenzini, 1991). Previous work in this field predicts that input characteristics [such as high school achievement and SAT scores] in conjunction with students' college experiences produce varied outcomes. These interactive relationships have been largely unexplored. The central focus of this research study was to investigate what might account for differences in high achievers' *outcomes*. Some high achievers' precollege characteristics accurately predicted such outcomes. Others achieved above or below their predicted levels. Theoretically, these false negatives and false positives would differ in terms of their college experiences. A descriptive study was designed to compare and contrast the experiences of students whose outcomes varied. The first question was, what are the experiences of high-achieving students and how do those experiences affect their level of achievement? Because students' experiences can span a wide range of opportunities, this study examined the most salient inputs, experiences, and outcomes as related to achievement.

Specifically, the question addressed started with Pace's (1982) point that the effort in which the student becomes involved on campus and the opportunities which the institution provides yields stronger outcomes. Involvement in various experiences has been shown to positively affect student achievement. This finding can be seen in Astin's work where he confirmed that students learn most effectively when they are more involved in activities. The second question was whether, involvement in collegiate experiences impact achievement? This study showed a relationship between involvement in various experiences and college achievement.

The Problem

This study was designed to examine whether a relationship existed between high-achieving students' experiences and their achievement in college. There is little research on high-achieving college students, and on the relationship of these students' experiences to achievement and other outcomes. While the literature does suggest that a relationship exists between students' involvement and achievement, this does not necessarily translate to the experience of high achievers. Some literature supports a positive relationship between residential life, and interactions with peers and faculty to a students' achievement (Pascarella & Terenzini, 1991). Unfortunately, many of these studies were later found to be inconclusive because they did not statistically control for students' background factors and did not focus on high-achieving learners which was the purpose of this research.

Sometimes, the needs of high-achieving learners are not identified because they are considered self-motivated and able to achieve without institutional support. However, students identified as high achievers at the time of admission do not consistently remain high achievers throughout their collegiate experience. Comparing and contrasting the experiences of high-achieving students might help practitioners compare the experiences of those who achieve above or below their predicted performance with those who perform as predicted. Evidence that would explain these varied patterns could provide rationales for strategies that would support high achievers. This study described the characteristics of high achieving groups and identified patterns of student experiences that mediated varying achievement outcomes.

This study specifically investigated the characteristics and experiences of students who are identified as high achievers at their entry into college, Roosevelt Scholars, and students who were recognized for their high achievement during their senior year by induction into Phi Beta Kappa. Research suggested that students' entry-level characteristics are the most predictive determinants of college success. However, at State University only 43% of the Roosevelt Scholars were selected for Phi Beta Kappa during their senior year and 38% of all who achieved Phi Beta Kappa who were not previously identified as high achievers.

It is also important to look at satisfaction as it is related to students' achievement. According to research, the more satisfied students are in college, the better they perform academically (Pace, 1982). So, how does the satisfaction level of high–achieving students relate to their achievement and differ from other students' achievement and experiences?

Lastly, colleges have established educational goals that they would like students to attain upon graduation. Attainment of educational goals is used in many studies as an indicator of achievement (Schraw, Horn, Thorndike-Christ & Bruning, 1995). This study examined general education goals set forth by the institution as an outcome measure to determine if any differences existed between the achievement groups.

Limitations and Delimitations

This study was limited in several respects. First, one of the main measures that determined students' achievement group placement is grade point average (GPA). College GPA is only one measure of overall student achievement, though it is one of the

most common means of determining achievement in college (Pascarella & Terenzini, 1991). Secondly, the results were not generalizable to other four-year institutions since only one highly selective institution was studied.

Since this study focused on the pre-existing data on college seniors' responses to a Senior Survey, interviewing a small sample of students within each achievement group might have allowed one to draw further conclusions.

As with any literature on the impact of student experiences in college, it is difficult to determine what actually precipitates change in college students. Due to many mitigating factors in college, it might be difficult to pinpoint what experience directly affects an outcome. Cause and effect remain uncertain in this fundamentally correlational study.

The institution in this study is an anomaly because most of the learners come to this college with records of high precollege achievement. Because of the high standards and academic rigor of this particular institution, its students are more homogeneous than those at less selective institutions. Finally, most of the existing research on the impact of college on students was conducted on Caucasian students in the age range from 17-21 years. Students of color remain substantially underrepresented in the student body. Research examining more diverse students might illuminate where and if student experiences are similar or different.

Conceptual Framework

This study used Astin's involvement theory to hypothesize that interactions occurred between input characteristics and experiences to produce varied outcomes.

Pace's work was also used to determine the quality of effort that high achievers commit to their experiences compared to others. The premise of Astin's theory is, "students learn by becoming involved" (Pascarella & Terenzini, 1991, p.50.) and Pace (1982) focused on "what students do in college" as being of primary importance to their achievement. Previous research demonstrated that learning takes place when students spend time and energy on specific tasks that are usually directly linked to their courses (Anaya, 1996, Pace, 1982, 1990). Pace (1982) examined the quality of student effort to understand why students achieve in college. He (1982) and Astin (1985, 1993) emphasized the importance of investment of energy in certain tasks in order to achieve in college. In essence, students who invested in activities tended to remain connected to the institution and were more likely to persist in attaining their degrees, expressed overall satisfaction, and were more likely to attend graduate school (Pascarella & Terenzini).

Definition of Terms

The definition of terms will follow the same order as the present study. *Input measures* were precollege measures such as high school rank, SAT scores, advanced placement hours, and transfer credit hours. *Student experiences* were the activities that take place within the confines of the institutional environment (Pace, 1984). The experiences specifically examined were living arrangements, peer interaction, interactions with faculty advisors, academic activities, and participation in cocurricular activities. *Outcomes* included post-graduate plans, cumulative GPA, academic and social satisfaction, and educational gains. *Post-graduate plans* indicate whether students planned to work, attend graduate school or had other plans after graduation. *Satisfaction*

was defined as the students' overall impression of their social and academic climate at the institution. Lastly, *educational gains* were defined as the goals that students have met as a result of their collegiate experience. The students' assessment of their skills and knowledge toward general educational goals and the institutions' contribution to their skills and knowledge constituted the educational gains portion of the Senior Survey.

Summary

The research on high-achieving college student experiences and its effect on achievement has not been adequately studied. It is known that certain students who enter college as high achievers do not necessarily maintain their status of high achievement. The research hypothesis was that diverse inputs and experiences interacted to affect outcomes. Chapter II provides an overview of the pertinent research on high-achieving students, an examination of students' experiences, and outcomes. The goal of chapter II is to illuminate the gaps in the literature on achievement and to provide a basis for this study.

CHAPTER II

LITERATURE REVIEW

It is known that high-achieving students enter college and sometimes do not maintain their status as high achievers. What is it about their experiences in college that might affect their achievement? High-achieving students enter college with exemplary grades, SAT scores in the top percentiles, and exceptionally high-class rank. Some of these students have even taken college-level courses while in high school in order to accelerate their academic progress. This would lead one to believe that these students should be the most academically prepared students and therefore most able to maintain their high-achieving status in college. In reality, some with less distinguished records achieve far above predictions.

According to Robinson (1997), research on high achievers has not been well documented and empirically researched. The goal of this review was to demonstrate the need for research on the experiences of high-achieving learners in college in order to increase understanding of why some students continue on their paths to academic success while others do not.

This study employed a backward mapping, descriptive technique by comparing and contrasting the experiences of high-achieving seniors' with those of other seniors. This review was organized using Astin's I-E-O model to better understand if a relationship exists between college student experiences and achievement. *I* stands for inputs, which are the characteristics and precollege measures that students possess before entrance into college. *E* stands for the environment in college or the experiences, which are described in this chapter. *O* stands for the outcomes, which are associated with those experiences. First, the input section explores the literature on high-achieving students. Then the experiences in five areas related to achievement are examined: living arrangements, peer interactions, interactions with faculty, academic activities, and out-of-class experiences. Then, a brief focus on the outcomes is explored: post college plans, GPA, self-expressed gains, persistence, and satisfaction. Finally, an overview of the conceptual frameworks that guided this research is presented.

High-Achieving Students

The Inputs

Identifying what students bring to college can help illuminate how students interact with their environment. Inputs in this study refer to high-achieving students as measured by their precollege credentials. According to numerous scholars, high school GPA and admission test scores are the most salient predictors of academic achievement in college (Anaya, 1996; Astin, 1993; Pascarella & Terenzini, 1991).

Increasingly, there has been a focus on meeting students' needs in order to enhance their growth and development. Measures can range from offering remediation to

students who need special academic assistance to continuing to challenge honors students (Kanoy, Wester, & Latta, 1990). High-achieving college students are usually identified before they matriculate. Previous research indicates that precollege measures such as high SAT scores, exceptional high school grades, and high-class rank allow one to predict college success (Pascarella & Terenzini, 1991). There is a great deal of literature on high-achieving or gifted learners in the precollege arena. However, less is known about these students in college.

Characteristics of High Achievers

One of the most comprehensive works on high-achieving students is a longitudinal study by Arnold (1995) in *Lives of Promise.* She examined high school valedictorians and salutatorians over a fourteen-year period. One of her main purposes was to understand how students' high school success translated to their college success. She found that only four out of eighty-one students did not complete college and that the mean grade point average for all students in her sample while in college was 3.60. These students also received numerous honors for their academic success. Additionally, Arnold found that many of these students were actively involved on campus and had strong peer circles.

Arnold (1995) also suggested that greater achievement might result from greater involvement in activities that were linked to their courses. Several researchers who studied the impact of college experiences on students supported this notion (Anaya, 1996; Astin, 1993; Pace, 1990; Pascarella & Terenzini, 1991). Arnold's research demonstrated that involvement is key to continued academic success for high-achieving students and

thus provides support for a potential relationship between student experiences and achievement.

Meeting the Needs of High-Achieving Students in College

Other researchers have attempted to understand the services that an institution provides for its high-achieving students. Robinson (1997) began her work by studying students shock of getting the first B grade, inexperience with asking for help, difficulty with integration of social and academic lives, and not being able to discern the amount of work needed to accomplish educational goals. She found that these experiences could potentially have a negative affect on students' academic achievement. Unfortunately, this was not established empirically in Robinson's study.

Comparing High Achievers with Other Students

The third type of research in this area compares high- and low-achieving students based on a certain construct such as methods of studying. However, again these types of studies do not provide an in-depth level of analysis of high-achieving students. An example of this is a study by Kanoy et al. (1990), where researchers investigated the differences between high- and low-achieving women and the effect placement and teaching had on them. Using Dweck's research from 1975, they examined the theory of the locus of control, which refers to whether the amount of control the student has in a given situation is based on internal or external points of reference. They found that students who were high achievers put forth more effort and were more *internal* compared to low-achievers who were more *external* and who did not put forth the effort required to accomplish the specified task. The students in Kanoy's et al. study differed in the following categories: (a) "willingness to take responsibility for achievement failures, (b)

cognitive complexity, (c) ability as a student, (d) effort put into academics, and (e) college GPA" (p. 134). As expected, high achievers exhibited greater levels in each of the categories. The last two, d and e, are germane for the present study, because Dweck's findings demonstrated that students who were identified as more *internal*, put forth more effort or were more involved in activities relating to their academics, and their achievement was enhanced. This finding is consistent with previous research (Astin, 1993). Kanoy's et al. research emphasized a relationship between student experiences and achievement for high-achieving students. To conclude, some variance in achievement may be accounted for by how students organize or regulate their efforts, but some variance in achievement may also be attributable to variance in student experiences.

College Experiences

If college student involvement is key, then what kinds of experiences in college constitute involvement? The next section explores some of the most salient experiences as related to achievement according to prior research. They were: residential life, peer interactions, interactions with faculty, academic activities, and out-of-class experiences.

Residential Life

"Living on or near campus while attending college is consistently one of the most important determinants of a student's level of integration or involvement in the social system of an institution" (Pascarella & Terenzini, 1991, p. 399). This portion of the chapter addressed the research on types of residence, residence hall interventions, and experimental residential halls.

Types of Residence

An extensive body of research on college residence as related to achievement has examined the influence of living on-campus versus the influence of other living arrangements (Astin, 1993; Bliming, 1989; Feldman & Newcomb, 1969; Hountras & Brandt, 1970; Pascarella & Terenzini, 1981). The types of residential arrangements that have been studied are: (a) a dormitory or residence hall (e.g., Centra & Rock, 1971; Pascarella & Terenzini); (b) fraternity/sorority housing (e.g. Feldman & Newcomb); and (c) off-campus housing, which includes living at home (e.g., Chickering & Kuper, 1971). To understand the relationship between students' residence and achievement and its overall effect, it is important to look at the commonalities and differences of the existing research.

Living On-Campus Compared to Living At Home. Bliming (1989) conducted a meta-analysis on the influence of residence halls on academic performance. He examined all peer-reviewed research studies, dissertations, and ERIC documents from 1966 to 1987. Bliming compared the experiences of students in different living arrangements to those of students living on-campus. In the 21 studies that examined living on-campus versus living at home and its affect on academic performance only ten of those studies statistically or methodologically controlled for variables such as prior ability. He also indicated that many of the differences found in the 21 studies were negligible. The remaining eleven studies showed a greater variance in the results and reported the strongest academic performance for students who lived in residence halls. Overall, it was reported that there was a slight but insignificant increase in the academic performance of students who lived on-campus as compared to those who lived at home.

Greek Housing. Living in fraternity or sorority housing has been shown to have a negative impact on achievement but the results are mixed (see Feldman & Newcomb, 1969, Terenzini, Pascarella, & Bliming, 1996). Out of the nine studies in Bliming's (1989) analysis, which compared students who lived in residence halls to those who lived in fraternity and sorority housing, there was a great deal of variance in the results.

In both Astin's (1993) and Bliming's (1989) research, they found that students who lived in fraternity or sorority housing tended to be less academically focused then other students. Pascarella, Edison, Hagedorn, Nora, and Terenzini (1996) found that there was a negative impact of fraternity or sorority memberships on educationally related outcomes such as achievement. For African American male students, there was a slight advantage in achievement on these outcomes. Caucasian males experienced more negative effects from living in a Greek residence hall than any other group.

Living On-Campus Compared to Off-Campus. Finally, only four studies in Bliming's (1989) analysis examined students who lived off-campus compared to on-campus, and only one of those studies reported that the grades of students who lived off-campus were better than students living on-campus. These results were inconclusive (Bliming, 1993). Pugh and Chamberlain's (1976) study examined different residential groups at Indiana University during the 1973-74 academic year. They looked specifically for influences on academic achievement measured by SAT score, high school rank, and the student's GPA for that semester. Pugh and Chamberlin found that the GPAs for students who lived in university housing tended to be slightly higher than for students who lived off-campus. When they controlled for aptitude there were small differences between students who lived in the residential groups studied. Due to the non-significant

relationships found, the authors questioned the benefit of purposeful residential placement of students and further, the future of the residential component on college campuses. This finding demonstrated the lack of significant relationships when looking at the effects of place of residence on achievement when controlling for precollege ability (also see Ballou, 1985; Whitney, Perrin, Casse, & Albertus, 1973).

Residential Hall Interventions

The second type of research on living arrangements examines the influence of residential grouping in residence halls on student achievement. Pascarella and Terenzini (1991) stated, "residence grouping provides a readily available laboratory for enhancing the academic and interpersonal quality of student life" (p. 389). These authors found that academic achievement is positively influenced when residence halls can be enhanced to create a "focused study environment" (p. 390), but this influence is small. The goal of residence interventions is to further enhance students' growth and development. Some of these interventions have attempted to cultivate peer relationships in an effort to improve academic performance (see Bliming & Hample, 1979). Pascarella and Terenzini reported that a significant difference in GPA was found even after controlling for variables that were related to prior academic performance. This conclusion is somewhat misleading because significant results were only found in the first year of this study. The lack of significant results was also evident in research that examined other types of residence hall interventions (e.g., DeCoster, 1968; Taylor, Roth, & Hanson, 1971).

However, the focus of the current study was to examine high-achieving students, and few researchers have investigated this particular group of students (see Bliming,

1993; DeCoster, 1968; Taylor & Hanson, 1971). For example, Terenzini et al. (1996) stated that there were only a few studies based on residence hall interventions that included high-achieving students, and the available results were inconsistent. DeCoster examined the differences in grades of high-achieving students who were assigned at random to residence halls compared to students who were purposefully assigned to a specific, homogenous hall. The students who were purposefully assigned to the homogenous living environment tended to receive better grades than their counterparts. Taylor and Hanson stated that high-achieving students did well despite their type of housing arrangements. DeCoster's lack of significant findings was consistent with later findings that also found non-significant results.

Experimental Residence Halls

Experimental residential halls are useful settings in which to research the effects of students' out-of-class experiences on a number of educational outcomes (Terenzini et al., 1996). One benefit of using residence halls as a test site is that it establishes a captive audience of students allowing the researchers to examine a number of variables. Some studies used the relationships between peers and faculty as mediators in an experimental residence hall (Pascarella & Terenzini, 1980, 1981). These studies indicated that slight increases in student's achievement were often attributed to the relationships developed with peers and faculty that occur because of living on-campus and the interaction that occurred (Chickering & Reisser, 1993; Pascarella, Bohr, Nora, Zusman, Inman, & Desler, 1993). Students who lived on-campus had more opportunity to interact with faculty and their peers. Pascarella and Terenzini (1980) investigated the effects on educational

outcomes of structured peer and faculty relationships for freshmen students who either lived in an experimental residential hall or Conventional Residence (CR). These researchers reported a non-significant but slightly positive relationship between academic achievement and living arrangements, which was consistent with research on experimental residential halls (see Pascarella et al., 1993; Taylor & Hanson, 1971). These authors stressed that the experimental residence halls cultivated stronger relationships between faculty and students as compared to students living in the conventional residence (CR). These results were consistent with previous literature on college residence, despite the scant reported evidence in support of these findings.

Interestingly enough, most of the empirical research comparing the influences of different residential living arrangements on academic achievement was conducted in the 1960s and 1970s. For example, in Bliming's (1989) study, there were only four articles that examined different residential arrangements from the 1980s. This trend was also evident in reviewing Pascarella and Terenzini's (1991) work where they only surveyed a few studies from the 1980s and the remaining ones were from the 1960s and 1970s. Since that time there has been a resurgence of literature on enhancing student's intellectual development through a purposeful residential component, which integrates classroom learning into the residence.

In Pascarella and Terenzini's (1991) seminal work, *How College Affects Students*, they looked at the empirical research on living arrangements from the 1960s through the 1980s. They concluded that even when previous achievement was held constant, the student's place of residence had a minimal influence on his academic achievement. There was little evidence to support systematic effects of residential living

on achievement (Bliming, 1989; Pascarella & Terenzini; Terenzini, Springer, Pascarella, & Nora, 1995). In many of the studies that examined residential living arrangements, significant results were found when they did not control for prior ability and studies which did control for prior ability, significant results were not found. While most researchers argued for the benefits of purposeful residential housing on students' achievement, in most cases there was only a minimal effect. One benefit of residential housing which has been fairly consistent in the literature were the interactions that take place with peers and faculty, which lead to academic success (Astin, 1993).

Although, there were a few articles on high-achieving students, the evidence was not conclusive, and additional research needs to be done in this area. Also, many of the studies from the 1960s and 1970s were conducted on Caucasian, male students. This is limiting because some of these findings might not hold true for students of different ethnic backgrounds and for women.

Peer Interaction

Peer interaction is the strongest influence on a student's growth and development in college when precollege measures are controlled (Astin, 1993; Feldman & Newcomb, 1969; Pascarella & Terenzini, 1991). This section will examine the research on peers and student achievement and the peer group.

Peers and Student Achievement

Chickering and Reisser (1993) stated, "friends and reference groups filter and modulate the messages from the larger student culture. They amplify, dampen, or distort the force of curriculum, instruction, codes of conduct, and institutional norms." (p. 392).

An example of naturally occurring groups might be friendships that form through classroom participation. Purposeful groups consist of students who were placed in a learning environment such as working in a team situation where peer interaction is intended to take place (Pascarella & Terenzini, 1991). Additionally, a great deal of the research on peers is embedded in the learning communities literature, since students tend to spend many hours of their day with other students in their residence. For example, in Pike, Schroeder, and Perry's (1997) study, they compared freshmen students who lived in residential learning communities (RLCs) to freshmen students who lived in traditional residential housing. They found that the involvement levels were higher for residents in RLC than traditional residences. Others have supported this finding (Pascarella & Terenzini, 1981; Pike, 1999). Also, these authors confirmed that student persistence for students who lived in RLCs were affected by peer interaction and support. As stated earlier, the interaction that takes place while in residence naturally fosters growth and development in an indirect way.

Peer Group

Astin's (1993) research further supports the importance of understanding peer interaction in determining the influences on students' educational pursuits. He asserted that the problem with understanding peer interaction is that prior research has not examined the characteristics of the peer group. In the past, basic measures of institutional selectivity were utilized to determine characteristics of the peer group such as student's entering test scores. Since selectivity has long been considered a measure of institutional quality, it can also be a measure of the peer group. This measure gives researchers an indication of the group's academic preparation.

Astin (1993) emphasized that the personality of the peer group is also essential in trying to assess its impact on students. In Astin's research, he developed a number of personality characteristics to attempt to add breadth to the current knowledge on peer groups and how they interact. Astin found that the measures of peer personality were correlated with institutional type. For example in the peer environments of private institutions, there were high ratings in the *Scientific Orient*ation and *Intellectual Self Esteem* measure. In the peer environments of public four-year colleges they had low ratings in *Intellectual Self-Esteem*, *Social Activism*, *Feminism*, and *Artistic Interests* but high ratings in *Materialism* and *Status*. The peer environments at certain types of institutions were homogenously grouped allowing one to make broad generalizations about the peer environments for specific institutions (Astin). Homogenous grouping is common in the literature because students who belonged to these groups tended to enhance each other's learning and development (Whitt, Nora, Edison, Terenzini, & Pascarella, 1999).

Interactions with Faculty

Faculty can greatly influence student achievement through their teaching, advisement, and out-of-class interactions. These out-of-class interactions can range from visiting a professor's home to informal meetings with a professor related to course material. Chickering and Reisser (1993) stressed that student development is enhanced when meaningful faculty and student relationships exist. Positive faculty and student relationships can occur when faculty act as leaders, express strong messages, and continually encourage students' talents (Chickering and Reisser). Kuh et al. (1991)

advocated the importance of an *involving college* as a mechanism for this interaction to occur. Many of the institutions Kuh et al. (1991) described had encouraged interactions between faculty and students in a unique way, for example, many institutions designed comfortable spaces on campus where faculty and students could meet and talk about issues. Others have created partnerships where students and faculty can live together in a residence hall to encourage continued contact between faculty and students. Kuh et al. (1991) did not empirically test the involving college concept so there is no clear evidence that an involving college concept has enhanced the progress of students in college.

Academic Activities Review

Activities which are closely linked to academics have been shown to enhance students' overall growth and development in a number of areas. For this study, the researcher was interested in examining factors that led to student achievement.

Active Learning

Active learning involves students in the learning process so they are not passive learners. This type of learning might include class discussions and presentations where students are not merely listening but talking and participating. One of the key principles of the *Seven Principles for Good Practice in Undergraduate Education* (Chickering & Gamson, 2000) is to "encourage active learning." Active learning is important because students must become engaged for meaningful learning to take place (Schroeder & Hurst, 1996). Faculty are also encouraged to involve students in the active learning process and not to succumb to the traditional role of being a "sage on the stage." Instead, they should work toward by being a "guide by the side," where active learning is cultivated through

the interaction between faculty and students (Stark & Lattuca, 1997). Chickering and Gamson would argue, "they [students] must make what they learn part of themselves" (2000). This idea of active learning also corresponds to Astin's involvement theory (Anaya, 1996). The crux of Astin's theory is that the energy spent on the student's education leads to the desired outcome.

Astin (1993, 1996) identified some experiences that led to achievement. Some of these are number of hours spent studying, receiving continuous feedback from professors, participation in honors or study abroad programs, spending out-of-class time with faculty, presenting research or reports, and participating in an interdisciplinary program; all which actively involve students in the learning process. Experiences that were negatively associated with grades were: being tutored for a class, participating in study-skill classes, and the number of hours spent reading for pleasure.

Anaya's (1996) research was consistent with prior research because her results showed that precollege characteristics were related to students' academic success in college (see Astin, 1993, Pascarella & Terenzini, 1991). She also found that when students focus on career goals and the type and quality of jobs once they graduate, their learning was negatively affected (also see Astin, Pascarella & Terenzini). Positive effects on student learning resulted from what Anaya describes as the individualistic learning activity such as, tutoring or conducting research where students are interacting with peers and faculty. These activities involved students in the learning process, which helped them achieve at higher levels. Anaya's description of the individualistic learning activity is another type of active learning approach, which would lead to enhanced learning and achievement for students (Astin).

Out-of-Class Experiences

On the average, students spend 85% of their time in out-of-class activities. There are many opportunities for institutions to provide meaningful experiences for students that enhance their growth and development. Research has demonstrated that out-of-class activities, which are linked to course-related material, tend to influence the student's grades and educational attainment (Terenzini et al., 1996). Although experiences such as academic clubs are beneficial, many other activities comprise the college experience. Some examples of these experiences are fraternity or sorority membership, intercollegiate athletics, student government, work, service, and internships. These experiences have been examined by a number of researchers to determine their influence on students' growth and development. Overall this research was embedded in the impact literature and usually suggested that there was a slightly positive or negative effect on students' achievement based on the type of college experiences. Terenzini et al. provided a review of literature on out-of-class experiences and its influence on learning and cognitive development. In particular they examined residence halls, fraternities and sororities, intercollegiate athletics, employment, other extracurricular activities, faculty interactions and peer interactions. There are many out-of-class experiences but the ones that will be discussed in this section are: a) fraternities and sororities and b) intercollegiate athletics.

Fraternities and Sororities

Pike and Askew (1990) conducted a study of academic involvement based on membership in a fraternity or sorority. These authors provided a brief overview of the previous research on fraternity and sorority membership often called Greek membership.

They described research from the 1960s suggesting that Greek membership negatively affected students' academic achievement. For example, Clark (1962) stated that students who are members of sororities and fraternities tend to be "...indifferent and resistant to serious demands emanating from the faculty, or parts of it, for an involvement with ideas and issues over and above that required to gain a diploma" (quoted in Pike & Askew, 1990, p. 13). On the other hand, Stannard and Bowers (1970) found that fraternities enhanced academic performance. Other researchers have also concluded that high levels of involvement both academically and socially resulted from Greek membership (see Baird, 1969; Kaludis & Zatkin, 1996 as cited in Pike and Askew, 1990).

To better understand the influence of Greek membership on learning and academic involvement, Pike and Askew (1990) conducted a study of 6,646 seniors at a Southeastern institution. They concluded that Greeks participated in more clubs, reported higher social interaction with other students, and were more academically involved than their non-Greeks peers. However independents, those who did not belong to Greek organizations, reported more interaction with faculty and more frequent attendance at cultural events. The GPAs of women were basically the same for independents and members of a sorority. Greek men's GPA differed in a negative direction from the independents. Furthermore, Feldman and Newcomb (1969) reviewed Greek members compared to non-Greeks in terms of their academic achievement. They found that the results were mixed; some showed that some studies reported Greek men having higher grades than their counterparts while others showed the opposite. Feldman and Newcomb concluded that the research findings were inconsistent. Again, there was no mention of the impact of fraternity or sorority membership on high-achieving students. Do high-

achieving students who are Greek members have better grades than their non-Greek counterparts? This question was answered in this study.

Intercollegiate Athletics

A modest amount of literature examined intercollegiate athletics and its influence on academic performance and attainment. Most of the research did not control for precollege characteristics (Pascarella & Terenzini, 1991). However, in Pascarella and Smart's (1990) work, they controlled for precollege ability and characteristics. These researchers attempted to determine whether intercollegiate participation affected degree attainment. They found that during a nine-year period, males who participated in intercollegiate athletics had a slightly greater chance of completing a degree than male students who did not participate. This may be because these students were more involved in the institution, and therefore more committed to completing their degree (Astin, 1993; Cornelius, 1995). However, Terenzini et al. (1996) argued that the level of achievement of athletes and non-athletes is nearly the same. These authors asserted that this holds true even for revenue generating athletic programs. Nevertheless, a few studies have concluded that the self-reported educational gains of athletes were smaller than their non-athletic peers (see Cornelius; Pascarella, Bohr, Nora, & Terenzini, 1995). Overall, the literature on the impact of intercollegiate athletics seems to be inconsistent, and again, there were no articles that examined high-achieving students.

Outcomes

Outcomes are the results of a myriad of college experiences. Some examples of outcomes are the cumulative college GPA, cognitive outcomes, post-graduate plans,

educational gains, and satisfaction. This section examines the relevant literature on outcomes that could be potentially affected by the college experiences.

GPA

The majority of studies used college GPA as a measure of the amount learned. However, Pascarella and Terenzini (1991) preferred to consider the student's GPA as one of many measures of learning because GPA varies between and within institutions. The very fact that it is an indirect measure also presents a problem in determining its significance for learning. Use of an indirect measure like GPA as a proxy for learning outcomes makes assessment of academic learning difficult for researchers (Pascarella & Terenzini). Most of Pascarella and Terenzini's comprehensive study examined the net effect of college attendance and placed less emphasis on specific experiences during college.

Cognitive Outcomes and Peers

A modest amount of literature emphasizes the effect of peer interactions on cognitive outcomes. Positive interactions may include exposure to another culture, enhancing one's skills and knowledge by tutoring, peer teaching, or openly discussing thought-provoking issues with peers (e.g., Terenzini et al., 1996). This can be seen in Whitt's et al. (1999) study, which examined peer interactions and student reports of their cognitive outcomes in course-related and non-course-related activities. Evidence suggested that at the end of the first year, both course and non-course-related activities enhanced learning outcomes. In fact, for course-related activities such as studying in a residential hall and participating in class discussions, there were significant positive effects in the self-reported *areas of thinking and writing, academic preparation for*

career, and *understanding science*. Likewise, in terms of non-course-related activities such as discussing art with a peer and having intense conversations with a person from a different country, there were significant positive effects in the self-reported outcome areas of *understanding self and others*, and *arts and humanities*. Overall, the results demonstrated that peer interactions have a substantial influence on student experiences and outcomes in college. Negative reactions also occur in terms of the effect of peer interactions on learning outcomes. Some of these are: time socializing, hours spent in volunteer activities, and obvious ones like amount of time partying (Astin, 1993; Terenzini et al., 1996). According to Whitt et al., (1999) "high-ability students seem to benefit most from peer interactions" (p.73). Does this hold true for all high-achieving learners? The research on peers and their cognitive development supports the notion that student involvement with peers is key to their educational success and cognitive development.

Educational Attainment

In Pascarella and Terenzini's (1991) work, they examined both peer interactions and what students do or participate in while in college. Based on previous research, students tended to persist towards degree attainment when they participate and become involved in the institution (Tinto, 1976). Numerous studies have shown that persistence and degree completion are enhanced through students' involvement (see Astin 1985, 1996; Ory & Braskamp, 1988; Moore, Lovell, McGann, & Wyrick, 1998). For example, Sewell and Hauser (1975) found that the attainment process is enhanced when students become involved in a myriad of activities and surround themselves with significant peers. This is also supported in Hanks and Eckland's study in 1976 where they found that

through participation in certain academic-related activities students might be surrounded with achievement-oriented peers, which may lead them to attainment of their educational goals. This is why research has tended to focus on the relationships between involvement, persistence, and educational attainment as related to important educational outcomes.

In terms of persistence and peers, Pascarella and Terenzini (1991) acknowledged that the quality of student peer relationships increased a student's chances of persisting in college. However, when student precollege characteristics were taken into account, this became less apparent. Although peers can have a tremendous effect on the students' educational goals, other important relationships have been shown to influence student learning, such as relationships with faculty.

Educational Gains

According to Pace (1982) students reported fairly accurate accounts of their educational gains. These gains are usually based on educational outcomes such as critical thinking, cognitive development, reading comprehension, and mathematics skills. Many studies used self-reported data because the correlation between the self-reported gains and achievement test scores are high (Friedlander, 1980). Researchers have looked at certain aspects of students' experience and reported gains in hope to understand its impact. Some have looked at self-reported gains related to peer relationships (e.g., Terenzini et al., 1985), residential learning communities (e.g., Pascarella & Terenzini, 1981; Pike, 1999), test scores (e.g., Pike, 1995), cocurricular activities (e.g., Gholson, 1985), and good practices in education (e.g., Kuh, Pace, & Vesper, 1997). Gains seemed to be enhanced if students were involved in a purposeful learning environment that was

supportive and friendly (Astin, 1993; Pascarella & Terenzini, 1991). In particular, high-achieving students in relation to their peers tended to report that they had experienced the most gains in their education (Pace).

Satisfaction

Pace (1982) said, "high quality achievement in intellectual powers is the best predictor of high satisfaction with college" (p. 31). In order to understand how and why students are satisfied, some researchers have used models of employment satisfaction to investigate the linkages between satisfaction and performance. Some researchers developed models as in the case of Bean and Bradley's (1986) and Pike's (1991) work, where they used endogenous variables of satisfaction and GPA in development of their model. In Bean and Bradley's study, they compared student satisfaction to work situations, and then GPA was then compared to cash value that one would expect to receive from employment. Using a one-way analysis of variance these authors were able to determine that satisfaction had more of an influence on performance than performance had on satisfaction. When the entire sample was taken into account the influence of satisfaction on GPA was twice as large. Pike's study also demonstrated that satisfaction influenced grades instead of grades influencing satisfaction as previously reported by the majority of research done in this area. Others have reported direct linkages between student satisfaction and found that the more satisfied students are the better their grades are in college (Astin, 1993; Pace, 1980, 1982). This study examined high-achieving students overall satisfaction as compared to other students.

Qualities of Student Satisfaction. Students' satisfaction with certain aspects of the university such as major courses, extracurricular activities, and interacting with

professors is also important (Aitken; 1982; Astin, 1993). According to Astin, satisfaction has more to do with environmental variables than with a student's precollege characteristics. There is a growing body of research that suggests that the type of activities and interactions that students have while in college can influence their satisfaction (Astin). Additionally, Astin concluded that students who reported satisfaction with college tended to be students who came from high socioeconomic backgrounds and were academically prepared. Are high-achieving students more satisfied in college? This question was answered in the current study.

Conceptual Framework

To understand why certain high-achieving students at their entry into college remain high achievers throughout college while others do not remain at this high level, Astin's (1985) input-environment-output (I-E-O) model and Pace's quality of effort theories were examined. Pace's (1984) and Astin's research focused on the investment of students' involvement in their college experiences in order to achieve.

The basis for Astin's involvement theory is, "Students learn by becoming involved" (Astin, 1985, p. 133). This notion of involvement stems from the retention research of the 1970's (Astin, 1975; Tinto, 1976). This research showed that students who drop out of college tend to be disconnected from college life (Tinto). Astin developed the theory of involvement in an attempt to explain why students leave college and how they could be retained. There are five postulates in Astin's theory: (a) "involvement requires investment of psychological and physical energy..., (b) involvement is a continuous concept..., (c) involvement has both quantitative and

qualitative features; (d) the amount of learning or development is directly proportional to the quality and quantity of involvement; and (e) educational effectiveness is related to its capacity to induce student involvement" (Pascarella & Terenzini, 1991, p. 50). Astin's involvement theory only focused on the behavioral concepts, what students do, of involvement as opposed to psychological concepts such as motivation (1985).

The I-E-O Model

In order to understand the impact of college on students, Astin developed the I-E-O model, which was one of the first impact models according to Pascarella and Terenzini (1991). This model investigated the change in students who attended college by comparing the input measures to the outcome measures and looked at environmental effects related to change. The inputs or *I* in this model are all the characteristics that students come to college with, such as ability and family background. The environment or *E* consists of all of the experiences that students encounter while attending college such as academic and extracurricular activities, which were examined in the present study. After the student experiences the environment, the results or ends are defined as the outcome or *O* component of this model and could include course grades, satisfaction, gains in educational goals, and ultimately graduation (Astin, 1993). If environment is directly related to outcomes a relationship between college student experiences and achievement should be evident. This study examined specific aspects of the college experiences to better understand this relationship. More specifically, this study examined the experiences of high achievers who are identified at their entry into college as compared to high achievers recognized for their achievement during their senior year of college.

Student Effort

C. Robert Pace's (1982, 1984, 1990) work sought to understand the quality of effort students spend in their experiences and its relationship to the attainment of students' educational goals. Pace asserted that, "education is a process and product" (1984, p. 4). The product is the educational outcome such as knowledge gained or grades received as in this study, whereas the process are the steps necessary to obtain the product. In theory, the process is related to experience, which in turn is related to outcomes. For example, preparing for courses by reading and studying is a more valuable educational experience than just cramming for the test the night before. Pace stated, "the value of the educational experience is inherent in the experience itself" (p. 5). The quality of a student's experiences differentiates the outcomes for one student from that of another. Does this hold true when examining high-achieving students? There are a number of ways that this question can be answered utilizing these frameworks.

Investment of Time and Effort

Investment is the amount of time that students spend on specific experiences that the institution provides. Pace (1982) derived this concept of investment from his work on what makes institutions accountable. He stressed that both institutions and students should be accountable for enhancing students' growth and development in college. By this he meant that while institutions are responsible for providing the facilities and resources available for student use, students are responsible for the amount of time and energy that they invest in those resources that are provided by the institution. The amount of time spent on activities is positively related to students' achievement. The question that emerges is, do high-achieving learners invest in different ways than others?

These themes of energy, time and excellence permeated Pace's (1982, 1984, and 1990) and Astin's (1985, 1993) research. These theories were used as a springboard to determine if the college environment was related to achievement.

Problems with Existing Literature

The central question in this study is whether a relationship existed between student experiences and achievement in college for high-achieving students. The three problems in the existing literature are: 1) paucity of literature on high-achieving college students, 2) discrepancy between controlling or not controlling for precollege ability in many research studies, and 3) lack of research on seniors in college. As indicated from the above literature review on student experiences, there is a lack of literature on high-achieving students and the impact of these students' experiences on achievement. Although this study included some in-class experiences, the emphasis was on investigating out-of-class experiences. Terenzini et al. (1996) supported the need for this type of research because they indicated that there has not been much research on out-of class experiences as related to academic achievement.

Second, whether a researcher controls for prior ability greatly affects the results. Studies did not report significant findings when they controlled for prior ability, but studies reported significant findings when they did not control for prior ability. This inconsistency in the literature makes many of the prior research negligible. However, Pascarella and Terenzini (1991) argued that the collegiate experience is made up of a multiplicity of individual experiences, and the impact of any of the individual experiences is smaller than the combined experience.

Third, there is a lack of research done on college seniors. This is because the most significant change occurs during the freshmen year (Pascarella & Terenzini, 1991). However, it is necessary to examine the changes that occur in subsequent years. In the present study it was beneficial to investigate the experiences of students who had the most knowledge of college life, which would be students in their senior year. In Pike's (1991) research he noted, "...more research on college seniors is needed to assess the effects of involvement and coursework on students' educational outcomes. Studies of freshmen and sophomores may be useful ... but they do not provide an adequate opportunity for faculty-student relationships and relationships with peers to mature and for these impacts of these variables to be felt on educational outcomes" (p. 27).

Summary

This review of literature shows that the research on high-achieving students in college is limited. In order to understand why some of these students consistently remain at high levels of achievement in college while others do not, it was necessary to look at factors that might contribute to variability in college achievement, growth, development, and learning, etc. One might argue that varied experiences in college can ultimately influence student achievement in observable ways. The next chapter identifies specific research questions pertaining to the relationship between achievement and experiences and offers a method for understanding this relationship.

CHAPTER III

METHODOLOGY

Is there a relationship between student experiences and achievement in college for high-achieving students? This chapter outlines specific procedures used to determine whether a relationship exists between student experiences and their achievement in college. Because student experiences in college vary, the review of literature focused on the most salient experiences and their relationship to achievement. This study examined four input measures: (a) high school percentile rank, (b) SAT, Scholastic Aptitude Test, (c) number of advanced placement hours, and (d) number of transfer credits accepted. Also five components of the student experiences were studied: (a) place of residence, (b) peer interactions, (c) interactions with faculty advisors, (d) academic learning, and (e) cocurricular activities. In addition, this study examined four outcomes: (a) students' self-expressed educational gains, (b) post-graduate plans, (c) cumulative grade point average (GPA), and (d) academic and social satisfaction. In particular, this study investigated whether the experiences of high-achieving students affected their achievement in college.

The Research Context

This study examined the reported college experiences of seniors at State University. This institution is classified as a Doctoral/Research University -- Intensive

institution according to a recent Carnegie classification (The Carnegie Foundation for the Advancement of Teaching, 2002) and has a total enrollment of 7,489 students, of which 5,604 are undergraduates (State University Institutional Research data, 2001). State University is a primarily residential campus. In fact, in the 2000-2001 academic year, approximately 77% of the undergraduate students lived on campus. The majority of undergraduates were in the traditional college age range of 17 to 22 years old. Throughout this study, all names that might identify the institution were changed to protect the confidentiality of the information provided by students on the Senior Survey and the anonymity of the institution. As many institutions have chapters of Phi Beta Kappa, it was not considered necessary to change the name of this academic honor society.

The Research Participants

Student experiences in college are based on interests, developmental level and opportunities to participate in activities. For this study, senior students' experiences at one college were studied in-depth. More specifically, this study sought to understand the experiences of high-achieving students at the State University. This study examined the following four different groups of seniors: (a) Group I - students who were not selected as Roosevelt Scholars or members of Phi Beta Kappa, (b) Group II - Roosevelt Scholars only; students identified as high achievers at their entry into college, (c) Group III - Phi Beta Kappa members only; students who were recognized for their high achievement during their senior year, and (d) Group IV - Roosevelt Scholars and Phi Beta Kappa members.

Roosevelt Scholars Program

State University's Roosevelt Scholars program is an honors program that identifies high-achieving students based on certain precollege characteristics. Students were selected into this program based on their achieving a high school percentile class rank of 90 or higher, SAT scores in the top 5% nationally, extracurricular activities, and an enthusiasm for learning. Although these students are afforded the same opportunities as other students who enter the university, they also complete research projects with faculty mentors as a part of their program. These research opportunities help cultivate relationships between faculty and students, which Astin (1993) argued are essential to the academic success of the student. Community service is also a vital part of this program, and many of the students participated in a community service program, coordinated through the Center for Undergraduate Scholarship. Approximately 75% of these students lived in a residence hall designated specifically for Roosevelt Scholars. However, this special housing is not required for this particular group of students.

Phi Beta Kappa

Students with records of high achievement during their undergraduate careers are recognized during their senior year at State University by selection for membership in the honor society, Phi Beta Kappa. During the senior year, students with exceptionally high grades are nominated for Phi Beta Kappa based on faculty recommendations and then voted for membership by a faculty committee. In any given year, students who are initiated into Phi Beta Kappa make up 7% of the senior class, (David Johnson, personal communication, November 15, 2001) and only approximately 43% of the Roosevelt Scholars were selected into Phi Beta Kappa during their senior year. One would expect

that students inducted into Phi Beta Kappa would almost mirror the high-achieving Roosevelt Scholars who entered State University.

If those who are identified as high achievers at the time of admission were not among the highest achievers at graduation, and vice versa, then one might ask, how do experiences in college vary between these groups, and how do these experiences affect students' achievement? These questions can only be answered by first determining if there is a relationship between college experiences and achievement. For the purpose of this study, achievement is operationalized by the four groups identified above. Group I served as the control group.

At State University, there are approximately 150 Roosevelt Scholars admitted per year. For example, the 2002 senior class had a total of 1460 students of whom 155 were selected for the Roosevelt Scholars program during their freshman year of 1998. Due to the small numbers of respondents overall, all students who responded to the survey over the three-year period were included in this study. These students were placed in groups by their achievement level. Therefore Group I, neither high achieving group (n=1,792) had the largest number of students. They were followed by Group II, Roosevelt Scholars (n =215) and the smallest were Groups III, Phi Beta Kappa (n= 81) and IV, Phi Beta Kappa and Roosevelt Scholars (n= 92).

State University's Senior Survey was analyzed for the graduating classes of 2000, 2001 and 2002. The Senior Survey is a self-reported, quantitative measure designed to assess quality and type of student experiences at the State University. For example, the survey measured the amount of time spent in cocurricular activities, as well as specific experiences with concentration advisors, who are members of the faculty.

This instrument was developed by State University in 2000 to better understand student experiences at State University, students' academic and social satisfaction with their overall college experiences, and students' self-estimated gains on several variables related to intellectual growth and personal development. The accuracy of the students' self-reports did not seem to be an issue for most researchers who study the impact on college on students. As Pace (1984) argued, "when activities are reasonably specific and clearly described and refer to things students easily recognize, then their responses, based on past research, can be accepted as quite accurate and therefore credible" (p. 9). The results of the aforementioned gains can be found throughout this review.

Electronic mail requesting completion of the Senior Survey was sent to all seniors who were scheduled to graduate in May of their respective years. The 2000 Senior Survey was solely a paper-format, which was sent to students' campus post office boxes (see Appendix B1). The 2001 Senior Survey asked students to access the survey by linking to a web-based system (see Appendix B2). To follow-up with non-respondents, the Office of Assessment sent a paper survey. Based on the overwhelming number of students who elected to complete the web-based survey in the 2001 year, the Office of Assessment decided to administer only the web-based survey for year 2002. The 2002 survey was divided into 15 smaller sections and administered at various times during the academic year to increase return rates (see Appendix B3). In addition, the survey was administered to all seniors eligible to graduate in May of 2002. The Office of Assessment was hopeful that more students might be inclined to complete mini-surveys at different times of the academic year that may not be as time-consuming as completing the entire survey at one time. Although this might increase the number of overall

respondents, it does not guarantee that the same student will complete the entire survey. Each section of the survey was recorded in a single electronic database by the student. Once the results of the Senior Survey were compiled they were then disseminated to key administrators and to a selected number of academic departments.

Involvement Theory

Alexander Astin developed the involvement theory to help explain the impact of college on students. The basic tenet of this theory is that the more students are involved in college experiences, the more they learn (Astin, 1985). The concept of involvement comes from the research on retention from the 1970s. Both Astin (1975) and Tinto (1976) found that students who left college before completing a degree were disconnected from the institution. The students who remained at the institution were more involved in and connected to the institution. Involvement has been correlated with students' attainment of important outcomes such as academic achievement and degree completion (Pascarella & Terenzini, 1991). The cognitive and affective development of students has been related to involvement (Astin, 1996).

According to Astin (1993) the following types of involvement are most closely related to attainment: (a) involvement in academic-related activities and (b) involvement with agents of socialization (peers and faculty). Others have also found that peers and activities related to academics strongly influenced students (see MacKay & Kuh, 1994; Stanford, 1992). Many researchers have found that students succeed academically when involvement was closely linked to their academics (Anaya, 1996, Pascarella & Terenzini, 1991).

One of the central postulates to Astin's and Pace's (1990) theory is the investment of time and effort. Therefore, the more time and effort a student exerts toward her academic goals, the more likely she is to reach those goals. Astin (1996) asserted that investment can positively and negatively affect students depending on the type of activities in which they chose to participate.

Most of the research examined specific aspects of involvement that led to desired outcomes. Examples of research on the impact of involvement exists in the following key areas of college life: residence life (Schroeder & Hurst, 1996), extracurricular activities (Ose, 1997; Smith & Griffin, 1993; Stanford, 1992), racial identity (Taylor & Howard-Hamilton, 1995), and cocurricular environments (Schroeder & Hurst; MacKinnon-Slaney, 1993). Most of the studies seem to support the notion that involvement was beneficial to students.

Student Effort

C. Robert Pace originated the idea that the frequency and quality of effort or involvement are related to outcomes of college. Pace measured the effect of student effort as it is related to on-campus experiences. He theorized that the students control the amount of time and energy allocated to certain tasks, which ultimately influence learning (1984). According to Pace, "learning is a product and a process", both which require time and energy (p. 4). The time that students spend on their activities such as studying is a measure of frequency, and the effort that students expend while participating in those activities is a measure of quality. Pace asserted that the quality of effort predicts students' use of resources and time spent on learning, which he felt would be directly

related to the outcomes of college achievement (1982). Pace is probably most known for his development of the College Student Experiences Questionnaire (CSEQ). The CSEQ is a multi-item questionnaire, which assesses a wide array of student experiences in college. Many researchers have used this questionnaire to better understand student experiences in college.

In order to determine the relationship between college student experiences and achievement, an in-depth analysis of the responses to this survey using three years of data was employed. According to Pace (1984), one of the central aims in understanding student experiences is determining the linkages between the self-reported goals of growth and development and their quality of effort. He asserted that students tend to attribute the greatest educational gains to areas that were closely related to their academic major or interests. Pace used the example of science majors who attributed greater gains in educational goals related to science than students who majored in humanities. Students who majored in humanities attributed greater gains in literature and other related areas. Pace concluded that the most significant contribution to achievement is the quality of effort, or "what students do" while they are in college. If "what students do" in college is significant for their success, then the question becomes, does this hold true for the four achievement groups identified in this study? This was examined in this study.

Instrumentation

The Senior Survey is a multi-item survey that yields a series of different responses ranging from simple inventories (*check all that apply*) to a self-assessment of how much State University had contributed to the student's growth and development in a

wide array of areas. The survey has eleven sections, which are representative of the experiences related to attending State University, such as information on cocurricular activities and a listing of State University's general educational goals. Copies of the Senior Survey instruments are included in Appendix B. Table 3.1 is an outline of the major sections and general descriptions of the 2001 Senior Survey.

Table 3.1

Quick Glance of the 2001 Survey

Major Headings	Content Areas
Employment	Post graduate status Career Fields
Graduate and Professional School Applications	Applied to graduate/professional school Five schools in which student has applied Which exams were taken and scores
Friends	Numbers of close friends, Type of friends in certain specified categories
Internships/ Externships	Participation in internships/externships List internships/externships and whether pay was received Did internships/externships impact career decisions
Cocurricular activities	Participation in a number of activities
Concentration Information	Mark primary and/or secondary concentration
Concentration Writing Proficiencies	Fulfilling concentration writing requirement for primary and secondary concentration
Concentration Advising	Number of times met with advisor for primary and secondary concentration, Reasons for meeting with primary/secondary advisor and Satisfaction with advising
SU Libraries	Frequency of library usage, Frequency of services Satisfaction with library
SU General Education Goals	Includes satisfaction, academic and social, Rate of current skill and knowledge levels and how much SU contributed to skills and knowledge
Computers and Technology	Ways in which computers are used, How SU helped the student learn how to use computers and technology

The first part of the survey was related to employment plans. This section asked students to provide information about their intended employment after graduation. However, State's Senior Survey included a series of detailed questions pertaining to specific information about employment, which were not part of the analysis in this study. Students who had not yet decided on post-college employment options were instructed to continue to the next section.

The next section was *Graduate and Professional School Applications.* The question analyzed in this study asked students if they had applied to graduate or professional schools. Other items in this section of the Senior Survey that were not included in the analysis asked students to list the schools to which they applied, indicate the type of graduate or professional exam taken, and indicate the corresponding scores received.

The next section, *Friends* is the most influential aspect of a college student's success according to Astin's (1993) research. He asserted that, friendships or what he described as peer interactions had the greatest influence on students' academic achievement. The type of friendships that one had in college can either greatly contribute to or detract from their education (Pascarella & Terenzini, 1991). This section asked students to indicate the number of close friends that they had and to indicate the number of friends in each of eight categories provided.

Next, *Cocurricular Activities* covered 12 activity options containing an "other" option, which allowed students to list two additional activities that were not included on the list. This particular section offered five options where students had the choice of checking all selections that apply. The selections were: a) *none* – did not participate, b)

fresh – freshman year, c) *soph* – sophomore year, d) *junior*, and e) *senior*. Two questions remained in this section; one is related to the number of hours spent while participating in activities during the student's senior year and the longest duration of involvement in a cocurricular activity.

The next section asked students to report on their primary and secondary concentrations or commonly called academic major. Then students were asked to report the number of writing experiences in completing the writing requirement, *Concentration Writing Requirement*, imposed by State University. Writing is a critical component of learning when examining research on student experiences because one of the many purposes of a college degree is to be proficient in writing (Pascarella & Terenzini, 1991). State University's *Concentration Writing Requirement* (CWR) was established to provide students with ample opportunities to write in their courses over the span of their undergraduate years. The goal of the CWR is to enhance students writing skills so that they will be able to write clearly and effectively. This part of the Senior Survey asked a series of directed questions about how the student fulfilled the CWR by allowing them to choose from one of three options: *rarely*, *sometimes*, and *regularly*.

Advisement is an important part of the State University experience. Students are assigned to faculty advisors from matriculation to graduation. This pairing up of student to faculty in an advising relationship may afford students an opportunity to develop close and meaningful relationships with faculty advisors. Astin (1993) stressed that contact with faculty is the second most important experience in college leading to students' success. This section, *Concentration Advising* examined the amount of time spent with faculty advisors during their junior and senior years, and also assessed the various

reasons that students met with their concentration advisors. The next series of questions asked students to report on the quality of advisement by responding to nine statements in one of five options ranging from *strongly agree* to *not applicable.*

Another important aspect of the students' experience according to a number of scholars is oral communication (Astin, 1993; Pace, 1990; Pascarella & Terenzini, 1991). The senior survey asked two questions related to development of oral communication skills. The first examined the number of courses which included class discussions. The second question asked students to respond to a few questions by indicating the number of courses taken that included four specific kinds of oral communication experiences. They were discussion leader, informal report of work, group presentation, and individual speech.

The following components of the Senior Survey were not used in this analysis: (a) *Internships and Externships* -- which provided an overview of students' participation in their cocurricular experiences during college, (b) *Computers and Technology Usage* – asked seniors to report on how they used technology, and (c) how much State University had contributed to the student's level of skills and knowledge.

Outcomes

According to Pace (1982) student satisfaction has been highly correlated with students' achievement. He found that successful students were likely to be the most satisfied students on college campuses. Another important finding was that students who were generally satisfied with their college experiences were also involved in many

activities. The questions in the student satisfaction section of the Senior Survey were divided into two parts, academic and social.

The section that dealt with outcomes, *State University General Education Goals*, asked students to estimate how much they gained from their experiences in relation to the University's educational goals. An example of the general education goals were: a) effective writing, b) leadership skills, c) interpersonal skills, d) knowledge of politics, e) knowledge of the physical realm and major advances in the natural sciences. The students responded to one of five response options ranging from *low* to *high*. The goals were divided into two parts, *skills* containing twelve questions and *knowledge* containing ten questions. The 2000 and 2001 surveys also asked students to compare their skills and knowledge as freshmen to their skills and knowledge as seniors. Due to difficulty in interpretation of this question, it was eliminated from the 2002 survey, and therefore not analyzed in this study.

The Senior Survey is a suitable instrument to answer the research question posed in this study because it asked about the specific experiences of seniors at State University. Another useful instrument, which sought to understand student experiences, is the College Student Experiences Questionnaire (CSEQ). The Senior Survey did not ask about the experiences with teaching faculty, the amount of time spent with friends, relationships with others, and the level of use of campus facilities such as the Recreational Center as did the CSEQ. These are also important factors in understanding student experiences, and should be considered in the next revision of the Senior Survey.

Procedures Used

A permission letter that outlined the components of this study was sent to the Office of Assessment at State University in June 2002 (see Appendix A). Once the Office granted permission to use their survey data from years 2000, 2001 and 2002, the researcher worked with this office to combine all pertinent information into a SPSS file.

In order to ensure that there were four discrete groups of students, lists of students' names were requested from the university Registrar and the Center for Undergraduate Scholarship, which coordinated the Roosevelt Scholars program. First, the names of Roosevelt Scholars were obtained from a written electronic request to the university Registrar for incoming classes of 1996, 1997 and 1998. These lists were compared to the list retrieved from the Center for Undergraduate Scholarship. Next, the recording secretary of Phi Beta Kappa provided the researcher with the inducted students' names spanning the three-year time period. The list of Roosevelt Scholars was cross-referenced with the list of students who achieved Phi Beta Kappa to ensure members were placed in the correct category. The groups were assigned a value from 1 (*neither Roosevelt Scholars nor Phi Beta Kappa*), 2 (*Roosevelt Scholars only*), 3 (*Phi Beta Kappa only*), or 4 (*Roosevelt Scholars and Phi Beta Kappa*) and were added to the SPSS file.

The Office of Institutional Research provided the following information for each student: (a) overall cumulative GPA, (b) ethnicity, (c) gender, (d) verbal and quantitative SAT score, (e) high school rank, (f) size of high school class, (g) advanced placement credit accepted, and (h) amount of transfer credit accepted. The university Registrar provided domicile information, residency status, place of residence, and information on

the academic major, all of which were added to the SPSS file. Once the data file was completed, it was then analyzed using cross tabulations and one-way ANOVAs when appropriate. Tables were created in Microsoft Word from the SPSS output information.

Data Analysis

The central question of this study was to determine if there is a relationship between college student experiences and achievement. In particular, do college experiences as measured by the Senior Survey vary among the four achievement groups? First, a Data Code Book was generated (see Appendix C). This Code Book displayed all of the variables in a clear and logical manner. Because the surveys changed slightly over the three-year period, it was important to identify where the differences existed. In order to answer the questions posed in this study, two statistical methods were employed to analyze the data. Cross tabulations and analyses of variance (ANOVAs) were performed. According to Gall, Borg and Gall (1996) the purpose of an ANOVA is to determine if means differ between two or more groups. Specifically, ANOVA procedures and cross tabulations were used to answer the following research questions:

1) Do these four groups identified above differ from each other on their precollege/background measures?
2) Do these four groups differ on their college experiences as identified in the Senior Survey?
3) Do the four groups differ in the following outcomes?
    a. self-expressed gains of growth and development
    b. post-graduate plans

c. grade point average

d. level of satisfaction

The alpha level was .05 for all of the analyses. The ANOVA tested for differences among the four groups. The first part of the data analysis looked at precollege/background measures. These measures were obtained from the Office of Institutional Research. The precollege/background measures are: ethnicity, gender, verbal and quantitative SAT scores, high school rank, number of advanced placement hours, and number of transfer credit hours. The null hypothesis is that there is no difference between any of the four groups based on their precollege measures. The research suggested that students' high school achievement measures are the best indication of their success in college (Pascarella & Terenzini, 1991). One would expect that the null hypothesis would be rejected because the Roosevelt Scholars were selected on the basis of their exemplary precollege scores. As an example, one of the criteria for selection to the Roosevelt Scholars program is that the candidate's SAT scores must be in the top 5% nationally. The other achievement groups had lower scores.

Next, the Senior Survey asked students to indicate the year that they participated in certain activities and to estimate the amount of time expended in those activities during their senior year. A cross tabulation was done to determine if there were any differences between these groups in activities, academic major, and living arrangements to determine if there was a difference in time spent in activities. Other experiences that were assessed pertain to questions related to quality of advising, academic major, and the opportunities to write and communicate orally. The null hypothesis is that there is no difference in the

students' experiences at State University experiences among the groups. Many scholars who study college impact suggested that academically successful students are highly involved or engaged in their activities (Astin, 1985). This would lead one to believe that the null hypothesis would be rejected because the experiences of high-achieving students would be very different from students who are not in high-achieving groups.

A one-way ANOVA was performed based on the skills and knowledge portions of the Senior Survey. The null hypothesis was that there is no difference in the self-expressed gains of growth and development among the four groups. One would expect that high-achieving students would report greater gains than others based on their experiences. Research has indicated that high-achieving students attribute greater gains in their educational goals, which were not evident in this study (Astin, 1993).

Student satisfaction is an extremely important component of student's academic success. The null hypothesis was that there is no difference in the student satisfaction among the four groups. Pace (1982) asserted that students who are satisfied with their college experience tended to be high achievers. It is expected that the high achievers in this study will be more satisfied with their education compared to the other achievement groups.

Students' post-graduate plans were examined in this study. Post-graduate plans consisted of whether students planned to work, attend graduate school, or had other plans after college. Based on prior research, one would expect that high achievers would attend graduate school at a much higher rate than the other achievement groups (Pascarella & Terenzini, 1991). The null hypothesis indicates that there is no difference

between students' post-graduate plans. A cross tabulation was done to determine students' post-graduate plans.

As expected, GPA would be different by definition among groups because only the highest achievers were selected for Phi Beta Kappa. The research indicated that the null hypothesis would be rejected because the GPA would vary depending on achievement group.

Research indicated that high-achieving students of color had very different experiences from other students (Fries-Britt, 2002). A cross tabulation was done on ethnicity by achievement group. In addition, prior research demonstrated that the experiences of men and women differed significantly in certain areas of collegiate life (Pascarella & Terenzini, 1991). All of the analyses were rerun separating men from women to determine if different patterns emerged.

Indices were created through an item analysis for the following sections of the Senior Survey: (a) advising, (b) Concentration Writing Requirement (CWR), (c) oral communication, and (d) skills and knowledge levels and the institution's contribution to skills and knowledge. There are three steps in conducting an item analysis: (a) "...items are selected on the grounds of face validity; (b) ...item to composite correlations are run, and those items which do not meet a specified criterion [in this case a correlation of .5 or higher] are eliminated from the index; and (c) ...the composite score is re-calculated for those items that remain in the index. Once completed, the item analysis gives us confidence that all items in an index are positively correlated with each other ..., and that each item in an index is providing information not captured by the other items" (Kreps, p. 27).

If there was a significant F after any of these ANOVAs were performed then the Student-Newman-Keuls post hoc analysis was used to identify the specific differences between group means.

Summary

This study sought to understand how high-achieving students differed in their college experiences from the broader student population and how these differences were related to their achievement. Achievement was defined by the four groups in this study which are: (a) Group I - students in neither high-achieving group, (b) Group II – high achievers identified at their entry into college, (c) Group III - high-achievers selected during their senior year, and (d) high achievers at their entry into college and during their senior year. To better understand student experiences at the State University, an assessment of data from the Senior Survey spanning the graduating classes for three years, 2000, 2001, and 2002 was analyzed. To carry out this research, a number of ANOVAs and cross-tabulations were performed around the three basic themes: (a) precollege characteristics, (b) college experiences, and (c) measures of college outcomes.

The goal of the study was to illuminate the characteristics of each high-achieving group and determine if there are aspects of their experiences, which had an impact on the level of their achievement in college. Chapter IV presents the results of the analyses performed in this study.

CHAPTER IV

DATA ANALYSIS

The purpose of this study was to determine if a relationship exists between student experiences and achievement in college for students who are classified as high-achieving students. The goal was to compare the experiences of students who came to college as high-achievers (Roosevelt Scholars) and students who were recognized for their high achievement in their senior year of college (Phi Beta Kappa). Four discrete achievement groups were examined: 1) Group I – neither Roosevelt Scholars nor Phi Beta Kappa, 2) Group II – Roosevelt Scholars only, 3) Group III – Phi Beta Kappa only, and 4) Group IV – Roosevelt Scholars and Phi Beta Kappa. Group I, those who were neither Roosevelt Scholars nor Phi Beta Kappa, served as the control group.

The Annual Senior Survey is administered at State University each year to provide descriptive data about the experiences of students. This survey is sent to all students who are eligible to graduate in May of their respective senior years. For the purpose of this study, seniors from the 2000, 2001 and 2002 classes were studied. Astin's I-E-O model that was discussed in detail in the previous chapters was used as the conceptual framework for this study and also the outline for this chapter. This chapter presents the results of the various cross tabulations and one-way analyses of variance (ANOVAs). The alpha level was .05 for each analysis. The three research questions that were established in order to answer the hypotheses were:

1) Do these four groups identified above differ from each other on their precollege/background (input) measures?

2) Do these four groups differ on their college experiences as identified in the Senior Survey?

3) Do the four groups differ in the following outcomes:

   e. self-expressed gains of growth and development

   f. post-graduate plans

   g. grade point average

   h. level of satisfaction

Inputs

The inputs are all of the characteristics and precollege measures students possessed when they entered college. These characteristics may include various measures of student demographics and precollege measures such as high school grade point average, class rank, and SAT score. The population for this study (N = 3,269) is comprised of all seniors who were scheduled to graduate in May of 2000, 2001, and 2002. The university Registrar's office provided the list of graduating seniors and Roosevelt Scholars. The sample (N = 2,130) is comprised of the seniors who responded to this survey. It is important to determine if the sample is representative of the general population. To do this, several comparisons were conducted to ensure that the researcher was working with a representative group. Table 4.1 represents the demographics of the population as compared to the sample.

Table 4.1

Demographics of Population and Sample for Years 2000, 2001, 2002

	Survey Population		Sample	
	N	%	N	%
Sex				
Female	2,183	60.2	1,354	63.6
Male	1,446	39.8	776	36.4
Ethnic Group				
African American	160	4.4	84	3.9
Anglo American	2,907	80.1	1,710	80.3
Asian American	243	6.7	134	6.3
Hispanic American	99	2.7	54	2.5
Native American	12	.3	8	.4
Unreported	207	5.7	140	6.6
Domicile Code				
In State	2,409	66.4	1,414	66.4
Out of State	1,216	33.5	713	33.5

Note: The sample includes all respondents to the Senior Survey.

Overall, the frequencies showed that the sample is representative of the population. However because the sample is comprised of approximately two-thirds of the population, one would expect it to be representative.

Next, the number of students in each achievement group is included Appendix D. The sample and population, again, mirrored each other. The largest is Group I, neither Roosevelt Scholars nor Phi Beta Kappa (n = 3,091 population; n = 1,742 respondents), followed by Group II, the Roosevelt Scholars (n = 318 population, n = 215 respondents). The smallest were Groups III, Phi Beta Kappa, (n = 109 population; n = 81 respondents) and IV, students who were admitted as Roosevelt Scholars and who also achieved Phi Beta Kappa (n = 111 population; n = 92 respondents). This study's first question asked if students in the four achievement groups differed on their precollege measures. High school percentile rank, SAT score, advanced placement credits, and transfer credit hours accepted were the precollege measures examined in this study. Unfortunately, State University does not have completed input data for all its students. This is partially due to transfer students who were not required to provide the institution with the same input information as a student who was matriculating for the first time. Table 4.2 shows the mean precollege measures for each achievement group.

Table 4.2
Precollege Measures for Four Achievement Groups

	F	Sig.	Group I		Group II		Group III		Group IV	
			N	Mean	N	Mean	N	Mean	N	Mean
High School Percentile Rank	37.8	p<.001	1128	91.22	147	97.62	54	95.58	68	98.51
SAT Total	232.2	p<.001	1598	1280	215	1441	77	1350	92	1468
Advanced Placement Hours	206.4	p<.001	1739	3.53	215	9.89	81	8.10	92	16.36
Transfer Credits	8.11	p<.001	1739	9.73	215	5.2	81	11.54	92	5.50

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

A measure of high school percentile rank was used because the actual rank in school varies greatly depending on the size of the high school class. State University's Institutional Research office provided high school class rank and size for 65.5% of the students in this sample. To obtain the percentile rank for each student, the class rank was divided by the size of the high school class and then this number was subtracted from 100. As illustrated in Table 4.2, students in all achievement groups were ranked close to the top of their class. A one-way ANOVA was performed and showed that these groups differed significantly based on their high school percentiles, $F(3,1396) = 37.8, p < .001$. Group IV was in the 98th percentile while Group I was in the 91st percentile. From examination of Table 4.2, Groups IV and II have the highest percentiles rank in their class because they include Roosevelt Scholars, and these students were selected because of their high academic credentials in high school. A Student-Newman-Keuls post hoc

comparison demonstrated that Groups IV and II had higher percentile ranks than Group III (94th percentile). Groups II, III, and IV were in the 95th to 98th percentile and were significantly different from Group I, whose rank averaged in the 91st percentile. However, the substantive differences between the achievement groups were small.

Although GPA is commonly used as a measure of academic achievement, high school GPA was purposely not examined as an input measure due to the varying standards in grading scales and level of academic rigor in high school. For example, some high schools have grading scales that are greater than a maximum 4.0 GPA while others maintain a 4.0 grading scale. Also, it is difficult to compare a student with a 3.4 cumulative GPA on a 4.0 scale to a student with a 4.2 cumulative GPA in a less rigorous school. Therefore this input measure is meaningless for this particular study. Due to the highly selective students in this study, one would expect that the range of GPAs would be small. Therefore, class rank was used in this study because it is a reasonable proxy for how students performed in high school.

The achievement groups' SAT scores were compared. The SAT verbal and quantitative scores were added to create a single measure. Information on the SAT scores was available for 93% of the respondents to this survey. The one-way ANOVA was significant, $F(3, 1981) = 232.2$, $p < .001$. The Student-Newman-Keuls confirmed that the SAT scores for all of the achievement groups were significantly different from each other. Group IV ($M = 1468$, $SD = 60.61$), and Group II ($M = 1441$, $SD = 8.08$) had the highest SAT score. Group III closely followed ($M = 1350$, $SD = 89.67$) and Group I had the lowest SAT score ($M = 1280$, $SD = 111.35$). Again, since Roosevelt Scholars

were selected based on their inputs; by definition, these groups should have higher SAT scores.

Advanced placement credit is an opportunity for students to take college courses while in high school. If these students desire to transfer these courses and apply them toward college credit they must first pass the College Board Advanced Placement Examination. State University determines the necessary score in each discipline that would transfer to college credit. Students who received college credit for advanced placement exams were able to *jump-start* their college careers. For example, students might be able to graduate early or take additional classes that might be of interest to them. The one-way ANOVA revealed that the achievement groups were significantly different from each other based on the number of advanced placement credits acquired, $F(3, 2126) = 206.42, p < .001$. The Student-Newman-Keuls showed a significant difference in the amount of advanced placement credits received among the groups. Group IV had the highest number of advanced placement credits, followed by Group II ($M = 9.9$, $SD = 7.53$) and Group III ($M = 8.1$, $SD = 8.54$). Group I had the lowest number of advanced placement credits ($M = 3.5$, $SD = 5.26$). Results show that students who were recognized as high achieving at their entry point in to college, Groups II and IV, had more advanced placement credits, which indicated their strong achievement orientation. However, the substantive differences show dramatic differences between Groups I and IV. Groups II and III had similar number of accepted advanced placement hours.

Lastly, the amount of transfer credit hours was examined. Transfer credit consists of Advanced Placement hours, dual enrollment in high school and credit from another higher education institution. Group III had the most transfer credit hours ($M = 11.5$, $SD =$

15.37), followed by Group I (M = 9.7, SD = 16). The one-way ANOVA was significant, $F(3, 2126) = 206.42$, $p < .001$. The Student-Newman-Keuls revealed that Groups II, (M = 5.2, SD = 8.87) and IV (M = 5.5, SD = 10.07) were not different from each other but were significantly different from Groups I and III. One would infer that Group III's high number of transfer credits might be due to the number of college level courses that were taken prior to entering college. The high number of transfer credits accepted could further advance these students towards graduation. It is important to note that transfer students are not eligible for the Roosevelt Scholars program.

Overall the substantive differences between the groups in terms of their input measures are small which indicate that students have similar input measures, but their outcomes at the end of college are indeed different. This suggests that college experiences may explain the differences between the achievement groups.

Environment

The college environment encompasses a wide array of experiences that colleges provide for their students. The experiences examined in this study included: living arrangements, academic major, cocurricular activities, peers, and advising. The living arrangement and academic major information were obtained from the university Registrar, and the remaining experiences were obtained from items on the Annual Senior Survey.

Out-of-Classroom Experiences

Students spend 85% of their time out of the classroom (Kuh et al., 1991). Prior research has examined a number of out-of-class experiences. The experiences that were addressed in this section: a) living environment, b) cocurricular experiences and c) peers.

Living Environment

According to the literature on the impact of college on students, the living environment is widely researched and seems to have significant impacts on student achievement (Pascarella & Terenzini, 1991). One method of determining if the environment explained student achievement is to compare achievement by students' place of residence. This study compared the achievement groups' participation in specialized on-campus housing and place of residence during senior year. First, the types of special housing were Greek housing (only for members of Greek organizations) and special interest housing. Students who reside in these special types of housing live in close proximity to each other which allows plenty of time to interact with each other. The special interest housing provided at State University is based on certain themes or languages. There are seven language houses: the French House, German House, Spanish House, Italian House, Japanese House, Chinese House, and Russian House. The Center for International Studies House is designated for students with a special interest in international affairs; the Environmental House for students with an interest in environmental issues; the Community Partnership House for freshman with an interest in community service; and special housing designated for Roosevelt Scholars. With the exception of the Community Partnership House and the housing for Roosevelt Scholars, which are restricted to students who are participants in these programs, any student at the

University can elect to live in the other specialty interest housing. The Russian House and the Community Partnership housing options were not available for the students in this study and were therefore not included. The students' place of residence was obtained from the Registrar for each academic year that the student was enrolled at State University. In order to determine what special housing was available for each academic year, the researcher referred to the campus phone directories containing information about the type of special interest housing and where they were located. To display place of residence by achievement group, a frequency table was compiled. Greek housing was separated from the other special interest housing because, according to the research literature, Greeks have a different experience than non-Greeks (Feldman & Newcomb, 1970). On campus, the number of students who lived in Greek housing (21.2% of the population) was larger than the number of students who lived in other types of special housing (16% of the population). A total of 79 students were missing residential information. Overall, one would expect that the numbers of students who lived in special housing, whether Greek or special interest, to be small due to the availability of space in these special housing locations. It is also important to examine whether the students' place of residence had any influence on achievement. Table 4.3 represents the number and percentages of students who lived in special housing based on their achievement group. There was a statistically significant difference for students who lived in Greek housing $\chi^2(6, N = 2130) = 24.51, p < .001$, and special interest housing, $\chi^2(6, N = 2130) = 630.28, p < .001$, compared to those that did not live in these locations.

Table 4.3

Living Arrangements for Students in Achievement Groups

	Chi-Square Sig.	Group I		Group II		Group III		Group IV	
		N	%	N	%	N	%	N	%
Greek Housing	$p < .001$								
Lived in Greek Housing		347	19.9	40	18.6	6	7.4	6	6.5
Did not live in Greek Housing		1361	78.1	175	81.4	74	91.4	86	93.5
Special Interest Housing	$p < .001$								
Lived in Special Interest Housing		173	9.9	149	69.3	13	16.0	68	73.9
Did not live in Special Interest Housing		1535	88.1	66	30.7	67	82.7	24	26.1

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

Overall, only a small percentage of students lived in special housing. However, Group I (19.9%) and Group II (18.6%) had the highest percentage of students who lived in Greek housing. Although the total number of students who lived in Greek housing was small, high-achievers who were recognized during college tended to live less frequently in Greek housing. On the other hand, Group IV (73.9%), and Group II (69.3%) had the highest percentage of students who lived in special interest housing compared to Groups I and III. Because Roosevelt Scholars received an early introduction to special housing during their freshmen year, they may be more likely to choose to reside in special housing later in college. The special housing numbers included the special housing

designated for Roosevelt Scholars during their freshman year, which may explain the high numbers of Roosevelt Scholars who lived in special interest housing compared to other groups. Table 4.3 shows that the students' choice of living in special housing may be related to whether they were identified as a high-achiever at their entry point into college or because of the students' election to live in housing designated for Roosevelt Scholars.

Place of Residence During Senior Year

The College guarantees three years of on-campus housing. To determine housing for each academic year, students participate in a residential lottery. Therefore some students may choose to live on campus for a year and then live the remainder of their years off campus while others may remain on campus for their entire four years. Housing is not guaranteed during the sophomore and junior years. This policy gives special consideration to freshman and seniors who desire to live in an on campus space (Parents Handbook 2002-03). Table 4.4 represents the place of residence (either local address or residence hall) for students during their senior year.

Table 4.4

Senior Place of Residence

	Chi Square Sig.	Group I N	%	Group II N	%	Group III N	%	Group IV N	%
Residence Hall	p=.001	1228	70.5	175	81.4	60	74.1	80	87.0
Local Address		461	26.5	39	18.1	19	23.5	11	12.0

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

As seen from table 4.4, the vast majority of students lived in residence halls. The number of students who lived in residence halls compared to local addresses during their senior year was significant, $\chi^2(6, 2130) = 23.60$, $p < .001$. Group IV had the highest percentage of students who lived on campus (87.0%) while Group I had the lowest percentage of students who lived on campus (70.5%). Group II (81.4) had a higher percentage of students who lived in residence halls than Group III (74.1%). These results indicate that a greater number of high-achieving students who were identified at their entry point into college (Roosevelt Scholars in Groups II and IV) and who might have experienced special housing early in college tend to live on campus during the senior year.

Cocurricular Experiences

The Senior Survey assessed the students' cocurricular experiences represented by out-of-class activities designed to enhance students' growth and development while in college. Some of these activities have strong ties to academics, like concentration-related clubs, while others promote social development, like participation in Greek organizations. The survey asked students to indicate the specific type of activities in which they participated. A total of nine activities were examined: concentration-related club, social fraternity/sorority, service club, volunteer activity, intercollegiate activities, intramural or club sports, drama, dance, music or arts group, religious organizations, and work for pay on or off campus. The survey has changed slightly over the three-year period since it was first administered. For example, two activities (honor societies and student publications) that were included in only the 2002 survey were not included in this

analysis. Table 4.5 illustrates the participation rates in cocurricular activities for the four achievement groups.

Table 4.5

Cross Tabulation of Achievement Groups and Their Cocurricular Experiences

Activity	Chi-Square Sig.	% of Overall Participation (N=2130)		Group I (N=1742)		Group II (N=215)		Group III (N=81)		Group IV (N=92)	
		N	%	N	%	N	%	N	%	N	%
Concentration-related Club	p=.004	799	37.5	634	36.4	78	36.3	41	50.6	46	50.0
Social fraternity/ Sorority	p< .001	714	33.5	628	36.1	58	27.0	17	21.0	11	12.0
Service Club	p=.407	566	26.5	453	26.0	59	27.4	23	28.4	31	33.7
Volunteer Activity	p=.003	1176	55.2	930	53.4	131	60.9	55	67.9	60	65.2
Intercollegiate Athletics	p=.003	255	12.0	230	13.2	16	7.4	4	4.9	5	5.4
Intramural or Club Sports	p=.267	1092	51.3	891	51.1	120	55.8	35	43.2	46	50.0
Drama, Dance, Music or Arts Group	p< .001	593	27.8	425	24.4	92	42.8	40	49.4	36	39.1
Religious Organizations	p=.001	671	31.5	519	29.8	78	36.3	32	39.5	42	45.7
Work for Pay (On or Off Campus)	p=.812	1469	69.0	1202	69.0	146	67.9	54	66.7	67	72.8

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

These groups differed significantly in their participation in concentration-related clubs, $\chi^2(3, N = 2130) = 13.12, p = .004$, social fraternity/sorority, $\chi^2(3, N = 2130), p < .001$, volunteer activity, $\chi^2(3, N = 2130) = 14.19, p = .003$, intercollegiate athletics. $\chi^2(3, N = 2130) = 14.23, p = .003$, drama, dance, music or arts group, $\chi^2(3, N = 2130) = 58.75, p < .001$, and religious organizations, $\chi^2(3, N = 2130) = 15.57, p = .001$. Table 4.5 showed the participation rates based on achievement group and type of activity. Group IV, students who came to college as high-achievers and who were recognized for their achievement at the end of college, had higher participation rates in service clubs (33.7%), religious organizations (45.7%), and work for pay on or off campus (72.8%). This group also had the lowest participation rate in the social fraternity/sorority category (12%). Group III, students who were recognized for their high achievement at the end of college, had the highest participation rates in concentration-related clubs (50.6%), volunteer activities (67.9%), and drama, dance, music or arts (49.4%). This group participated at the lowest rates in intramural sports (43.2%), and work for pay on or off campus (66.7%). Group II, students who entered college as high-achievers, had the highest participation rate in intramural or club sports (55.8%) and lowest participation rate in concentration-related clubs (36.3%). Group I, neither Roosevelt Scholars nor Phi Beta Kappa had the highest participation rates in the social fraternity or sorority (36.1%) category and intercollegiate athletics (13.2%). This group reported the lowest participation rates in service clubs (26.0%), volunteer activity (53.4%), drama, dance, music or arts (24.4%), and religious organizations (29.8%).

This table demonstrated that the high-achieving students who were recognized for their high-achievement during college seemed to be involved in activities that were

linked to their academics and moral development, such as concentration-related clubs and service clubs. Students in neither high-achieving group and students identified only as high achievers at their entry point into college were mainly involved in social or athletic related activities. Involvement in cocurricular activities is an integral part of the student experience as demonstrated from prior research (Astin, 1996; Pascarella & Terenzini, 1991). As seen from the Table 4.5, the highest achievers (Phi Beta Kappa -- Groups III and IV) were involved in cocurricular activities that focused on academics and moral development as compared to the other groups.

Time Expended in Cocurricular Experiences

C. Robert Pace argued that in addition to type of involvement, the time spent in extracurricular activities was another critical issue for academic success (1980). The survey asked a series of questions pertaining to time spent and number of cocurricular activities in which the student had participated. First, the researcher examined the number of activities in which students participated. Table 4.6 shows the number of activities and time expended in those activities.

Table 4.6

Time Spent in Cocurricular Activities

	F	Sig.	Group I		Group II		Group III		Group IV	
			N	Mean	N	Mean	N	Mean	N	Mean
# of activities involved in, including work during the senior year	13.1	p < .001	1653	4.18	205	4.55	77	5.03	91	4.81
# of hours involved in cocurricular activities during senior year	5.536	.001	1460	14.81	188	15.32	72	11.13	64	11.79
Including work, longest duration of involvement (1-4 years)	4.032	.007	1653	3.60	205	3.68	77	3.74	91	3.80

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

In terms of the number of activities involved including work during their college years, Group III was slightly more involved ($M = 5.02$, $SD = 1.80$) than the other groups. Group I participated in the lowest number of activities ($M = 4.18$, $SD = 1.60$). The one-way ANOVA was significant, $F(3, 2025) = 101.6$, $p < .001$) for the number of activities in which students participated. The Student-Newman-Keuls confirmed that Group III participated in more activities than the other achievement groups. The results indicate that students who were recognized for their high-achievement during their senior year (Phi Beta Kappas --Group III and IV) tended to participate in more cocurricular activities.

However, the substantive difference between the groups is small since all groups participated in at least four activities.

Table 4.6 also displays the number of hours involved in activities and the longest duration of involvement in activities over the years. The one-way ANOVA was significant for the mean number of hours per week involved in cocurricular activities, $F(3, 1805) = 5.54, p < .001$. Groups I ($M = 14.81$, $SD = 10.31$) and II ($M = 15.32$, $SD = 10.58$) reported the greatest number of hours involved in activities per week during their senior year. The Student-Newman-Keuls showed that Groups III and IV reported the lowest numbers of hours participating in activities during senior year. Table 4.6 also displays the longest duration of involvement including work. Although the one-way ANOVA was significant, $F(3, 2025) = 4.03, p = .007$, the Student-Newman-Keuls showed no difference between any of the groups. All of the groups spent at least 3.5 years participating in at least one cocurricular activity. Overall, these results demonstrate that high-achievers who were recognized in college were involved in more activities during their senior year but spent fewer total hours participating in those activities.

Peers

According to Astin (1993) students' peers have been shown to have the greatest influence on their growth and development in college. However Astin's work examined the peers network based on an institutional level. The present study provided a glimpse into the peer network, at the individual level, at State University. The Senior Survey asked students to check ranges of friends they have who are: from the same college, their same sex, from other 4-year colleges, from their same ethnic group, from their same major, their same age and from their work.

Table 4.7

A Comparison of Friends of Students in the Four Achievement Groups

Type of Friends	F	Sig.	Group I		Group II		Group III		Group IV	
			N	Mean	N	Mean	N	Mean	N	Mean
From State Univ.	1.91	p=.126	1170	2.72	133	2.77	55	2.73	61	2.92
Same sex	1.91	p=.127	1168	2.58	133	2.46	55	2.47	62	2.61
Same age	3.91	p=.009	1170	3.27	132	3.47	55	3.25	61	3.41
Attending a 4-year college	1.29	p=.277	1149	2.47	129	2.45	53	2.57	60	2.25
Same race/ Ethnicity	1.72	p=.161	1161	2.91	132	3.04	55	3.04	62	3.02
Clubs/ organizations	.261	p=.853	1162	2.19	132	2.17	55	2.15	62	2.26
Same Major	.733	p=.532	1168	1.75	132	1.73	55	1.64	62	1.73
Co-workers	1.55	p=.200	1153	1.41	128	1.39	54	1.41	61	1.26

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

The one-way ANOVA showed a significant difference in the type of friends who were of the same age category, $F(3,1417) = 3.907$, $p = .009$. However, the Student-Newman-Keuls showed that there were no differences between the groups in the friends who were the same age. Given the closeness in age of all those in the sample, it is unlikely that any meaningful difference existed among groups. The results indicate that students at State University tended to have very similar peer networks. Table 4.7 clearly shows that students at State University tended not to draw their peer relationships from students in their major and from co-workers. However, previous research would lead one to believe that students draw peers from their academic major, which was not the case in

this study. This may be because of the strong liberal arts orientation of this university where students do not declare a major until junior year, which allowed students to intermingle.

Classroom Related Experiences

Although less time is spent in the classroom it is a very important part of the student experience. The areas that will be addressed in this section are: academic major, advising, and concentration writing and oral communication.

Academic Major

The academic major includes both classroom and out-of-classroom experiences. There are 38 academic majors at the college including the interdisciplinary area. These were compressed into five *areas* for the purposes of this study: (a) humanities, (b) social sciences, (c) natural sciences (including mathematics and computer science), (d) business, and (e) interdisciplinary studies or in different areas. A full listing of academic majors and the groups into which the Office of Assessment classified the majors is included in Appendix E. Area number five is comprised of students who indicated more than one major or an interdisciplinary major. Majors were then cross tabulated with achievement groups (see Table 4.8).

Table 4.8

Cross Tabulation of Majors for Four Achievement Groups

Majors	Chi Square Sig.	Group I N=1742		Group II N=215		Group III N=81		Group IV N=92	
		N	%	N	%	N	%	N	%
Humanities	p<.001	234	13.4	36	16.7	23	28.4	18	19.6
Social Sciences		499	28.6	46	21.4	22	27.2	11	25.0
Natural Sciences/ Mathematics		254	14.6	59	27.4	20	24.7	28	30.4
Business		242	13.9	9	4.2	0	0	0	0
Interdisciplinary /More than one area		513	29.4	65	30.2	16	19.8	35	38.0

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

The Chi Square was significant χ^2 (12, N = 2130) = 101.17, p < .001) for major areas. Students in Group I reported majoring in Social Sciences (28.6%) and Business (13.9%). Group IV most often majored in an Interdisciplinary Studies major and more than one major in different areas (38%) and in the Natural Sciences (30.4%). The highest percentage of students who majored in Humanities was Group III (28.4%). There were no students in Group III and Group IV (Phi Beta Kappa) who majored in Business because these majors are ineligible for Phi Beta Kappa at State University (M.C. Brown, personal communication, April 22, 2003). Business majors may participate in a professional honor society for which they are selected based on high scholastic records. Majors whose secondary concentration is Business are eligible for selection into Phi Beta Kappa. Overall, fewer students (total) majored in business compared to other majors

(Group I –13.9%, Group II - 4.2%, Group III & IV – 0). This may be due to the strong liberal arts orientation of this university.

Advising

The Senior Survey asked a series of questions about the satisfaction and quality of involvement with faculty advisors. Although meeting with advisors was mandatory at State University, students may also have the opportunity to interact with many other faculty members outside of their obligatory meetings. According to researchers, the interaction between faculty and students is important for students and further leads to academic success (Astin, 1993, Pace, 1990). The advising section contained six questions that were added to create an index of satisfaction for advising on a four-point scale where 1 was ranked as the *lowest level of satisfaction* and 4 was the *highest level of satisfaction*. Various indices were created throughout this study. Indices are "a composite measure of individual items that are themselves positively correlated" (p. 27, 1992, Kreps). This was done through an item analysis, which is described in Chapter 3.

Table 4.9

Comparison of Satisfaction with Faculty Advising among Four Achievement Groups

	F	Sig.	Group I		Group II		Group III		Group IV	
			N	Mean	N	Mean	N	Mean	N	Mean
Satisfaction with Advising	6.073	p=.000	959	3.27	128	3.36	56	3.54	64	3.50

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

The one-way ANOVA was significant for satisfaction with advising, $F(3, 1206) = 6.073$, $p < .001$. The Student-Newman- Keuls revealed that Groups II ($M = 3.36$, $SD = .5733$), III ($M = 3.54$, $SD = .4531$, and IV ($M = 3.50$, $SD = .5100$) were not different from each other but were more satisfied than Group I ($M = 3.27$, $SD = .6497$). The results showed that all groups appeared moderately satisfied. The substantive differences between the groups in terms of their satisfaction with faculty advisors were small.

Concentrating Writing Requirement and Oral Communication

Pace (1982) stated that experiences in writing and oral communication enhanced academic success. State University mandated a writing requirement for all students to complete before graduation. The Senior Survey asked students to report on how they fulfilled the Concentration Writing Requirement in each course. Then the Survey asked students to indicate how their fulfilled the Writing Requirement in their primary or secondary concentrations or majors. The scale is from 3-9 where 3-4 (*rarely any writing experiences*), 5-7 (*a mixture of writing experiences*) and 8-9 (*many opportunities to write*). Table 4.10 shows the level of writing and speaking opportunities across the curriculum by achievement group.

Table 4.10

Concentration Writing Requirement and Oral Communication

	F	Sig.	Group I		Group II		Group III		Group IV	
			N	Mean	N	Mean	N	Mean	N	Mean
Concentration Writing Requirement	1.255	p=.288	1428	7.04	192	6.94	69	7.38	82	7.17
Oral Communication	3.006	p=.029	1249	2.87	174	2.70	63	2.90	70	2.59

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

A one-way ANOVA was performed on writing experiences and was not significant, $F(3, 1770) = 1.255, p = .228$. The results demonstrated that students in the four achievement groups seemed to have equally varied writing experiences with the mean ranging from 6.9 to 7.2. Since the Concentration Writing Requirement was required for students at this particular institution, one would expect that students would have similar writing experiences in class.

The oral communication section contained four questions, which assessed the students' types of oral communication assignments. Students were asked to rate their experiences from 0-4, where 0 = *no assignments* and 4 = *four types of assignments*. The oral communication assignments were the opportunity to: a) be a discussion leader, b) complete an informal report of work, c) participate in a group presentation and d) give an individual speech. The one-way ANOVA was significant for opportunities for oral communication in class, $F(3, 1555) = 3.171, p = .029$, and showed that Group III had more opportunities for oral communication while Group IV had the fewest opportunities.

However, the Student-Newman-Keuls showed no statistical difference between the groups.

Outcomes

College outcome measures in this study were self-reported except for the GPA. Table 4.11 presents data from responses to the specific questions related to skills and knowledge on the Senior Survey. An index was created on skills and knowledge and the institutions contribution to the students' skills and knowledge. The skills portion contained four skills questions ranging from 1 (*low*) to 5 (*high*); 4 to 20 is the sum of those ratings. The knowledge portion of the survey contained seven knowledge questions with a scale ranging from 1 (*low*) to 5 (*high*); 7 to 35 is the sum of those ratings. Similarly, indices for the college's contribution to skills and knowledge were created as demonstrated in Table 4.11.

Table 4.11

General Education Skills and Knowledge

	F	Sig.	Group I		Group II		Group III		Group IV	
			N	Mean	N	Mean	N	Mean	N	Mean
Skills[1]	.382	p=.766	1370	16.75	185	16.64	71	16.90	82	16.57
Knowledge[2]	.428	p=.733	1349	22.70	182	22.27	72	22.72	82	22.26
Institution's Contribution to Skills[3]	1.70	p=.165	1323	28.11	180	27.16	70	28.81	78	27.87
Institution's Contribution to Knowledge[4]	470	p=.703	1323	20.80	179	20.65	68	21.66	82	20.55

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa. [1]= Scale 4-20, (4= low ratings on each skill, 20= high ratings on each skill). [2]=Scale 7-35, (7=low ratings on knowledge, 35=high ratings on knowledge). [3]= Scale 8-40, (8=low ratings of contribution to skills, 40= high ratings of contribution to each skill). [4]=Scale 8-40, (8=low ratings of contribution to skills, 40= high ratings of contribution to each skill).

Overall, there were no statistically significant differences among the achievement groups in the students' rating of their skills and knowledge and the college's contribution to their skills and knowledge.

Post Graduate Plans

In addition to the importance of skills and knowledge after completing a degree, student's plans after college were also linked to the quality of their college experience (Pascarella & Terenzini, 1991). Whether a college graduate decided to go to work or graduate school could be just a matter of choice, or this decision might be influenced by

the experiences they had in college. The Senior Survey asked students whether they planned to go to graduate school, join the workforce, or had other unspecified plans. Table 4.12 cross-tabulates students' plans for graduate school, work, or other unspecified plans after college with achievement groups.

Table 4.12

Post Graduate Plans

	Pearson Chi Square	Group I		Group II		Group III		Group IV	
		N	%	N	%	N	%	N	%
Work Status	p<.001								
No response/ Other plans		745	43.0	101	47.0	54	66.7	57	62.0
Plans to work		987	57.0	114	53.0	27	33.3	35	38.0
Graduate School Status	p<.001								
No response/ Other plans		1337	76.8	146	67.9	36	44.4	46	50.0
Plans to attend graduate/ professional school		405	23.2	69	32.1	45	55.6	46	50.0

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

A Chi Square analysis was done and showed significant differences among the achievement groups for plans to work, $\chi^2(3, N = 2120) = 29.118, p < .001$, and also among the groups in choosing to attend graduate school, $\chi^2(3, N = 2130) = 74.051, p < .001$. A higher percentage of students from Groups I (57%) and II (53%) were more

likely to plan to go to work than students in Groups III (33.3%) and IV (38%). On the other hand, students in Groups III (55.6%) and IV (50%) were more likely to plan to go to graduate school than Groups I (23.2%) and II (32.1%). The data show that students who were recognized for their high-achievement at the end of college were more likely to attend graduate school than Groups I and II, and conversely Groups I and II were more likely to work after college than the other groups.

Grade Point Average

Grade point average (GPA) is the most widely used measure of student achievement in college (Pascarella & Terenzini, 1991). In this study, grade point average was also used to measure student achievement in college. The information on the final GPA (cumulative GPA during the student's graduating semester) was obtained from the university Registrar. Table 4.13 is a comparison of the mean grade point averages for students in their respective achievement groups.

Table 4.13

Comparison of GPAs for Four Achievement Groups

	F	Sig.	Group I N=1742	Group II N=215	Group III N=81	Group IV N=92
Mean GPA	238.9	p>.001	3.09	3.43	3.83	3.87
SD			.40720	.32566	9.00580E-02	8.31865E-02

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

Because this institution accepts many high achieving students, the relatively high GPA's were expected. Group I has the lowest GPA ($M = 3.09$, $SD = .40720$) compared

to the highest which is Group IV with a GPA (M = 3.87, SD = 8.31865E-02). It is important to note that the students who entered college as high achievers did not always remain high achievers as illustrated in GPAs on Table 4.13. Although the GPA for Group II is relatively high (M = 3.43, SD = .32566) it is lower than those who achieved Phi Beta Kappa recognition. The one-way ANOVA was significant for GPAs among the groups, $F(3, 2129) = 238.871, p < .001$. The Student-Newman-Keuls revealed that Group II has a higher GPA than Group I but these groups had lower GPAs than Groups III and IV. Since high GPA is the major factor for selection into Phi Beta Kappa, these results were not surprising.

Satisfaction

Another factor which impacts a students' ability to achieve at higher levels is how academically satisfied students were with their education (Pace, 1984). Pace's research (1980) confirmed that when students are satisfied with their education they tended to achieve at higher levels. Table 4.14 displays the social and academic satisfaction of students in the four achievement groups. The scale ranged from 1 (*very dissatisfied with college*) to 5 (*very satisfied with college*).

Table 4.14

Satisfaction with College

	F	Sig.	Group I		Group II		Group III		Group IV	
			N	Mean	N	Mean	N	Mean	N	Mean
overall satisfaction with academic experiences	14.54	p<.001	386	4.22	186	4.29	73	4.66	82	4.71
overall satisfaction with social experiences	8.225	p<.001	1388	3.60	186	3.86	73	3.66	81	4.12

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa. Scale= 1=very dissatisfied, 2=dissatisfied, 3=neither satisfied/dissatisfied, 4=satisfied, 5=very satisfied.

As illustrated in table 4.14, students at this institution tended to be very satisfied with their academic experiences in college. The one-way ANOVA was significant for overall academic satisfaction, $F(3, 1726) = 14.564$, $p < .001$. The Student-Newman-Keuls revealed that Groups I ($M = 4.22$, $SD = .86$) and II ($M = 4.29$, $SD = .85$) had lower satisfaction levels than Groups III and IV. Groups III ($M = 4.66$, $SD = .48$) and IV ($M = 4.71$, $SD = .48$) were the most satisfied with their academic experiences. Students who were recognized as high-achievers during college tend to be more academically satisfied.

The one-way ANOVA was significant for social satisfaction, $F(3, 1727) = 8.225$, $p < .001$. The Student-Newman-Keuls showed that Group I ($M = 3.60$, $SD = 1.13$), Group II ($M = 3.86$, $SD = 1.05$), and Group III ($M = 3.66$, $SD = 1.08$) were not different from each other based on their level of social satisfaction. However, Group IV ($M = 4.12$, $SD = .81$) exhibited a higher level of social satisfaction than the other groups.

Gender and Achievement

What impact does gender have on students' inputs, environment, and outcomes in college? To answer this question, cross-tabulations and one-way ANOVAs were conducted and similar patterns to the overall findings emerged. Notable differences appeared in some of the experience and outcome categories. However, the numbers were too small to draw reliable inferences from the results. Following are the contrasts between men and women that were differed slightly from the overall findings:

Experiences

1) In terms of volunteer activities, significant differences for men were not found, $\chi^2(3, N = 776) = 1.74, p = .629$, but there were statistically significant differences for women, $\chi^2(3, N = 1354) = 12.98, p > .005$. A greater percentage of women and men from Group III participated in volunteer activities.
2) A cross tabulation confirmed that a greater percentage of men and women in Group I participated in intercollegiate athletics compared to the other groups, which were consistent with the overall finding. However, no male Phi Beta Kappas participated in intercollegiate athletics.
3) The amount of hours that students participated in activities was not significant for women after a one-way ANOVA was computed, $F(3, 1182) = 2.50, p = .58$. However, the number of hours in which students participated in activities was significant for men, $F(3, 622) = 4.325, p = 005$. The post hoc comparison revealed a significant difference between groups. Groups III and IV spent fewer hours involved in cocurricular activities than Groups I

and II. A higher percentage of women and men in Group II reported more hours participating in cocurricular activities followed by Group I, which is consistent with the overall trends in this study.

4) A cross tabulation was performed on academic majors by achievement group and showed statistically significant differences. The five major areas are addressed separately below. First, a higher percentage of men from Group IV, $\chi^2(12, N = 776) = 45.12, p > .000$ and women from Group III, $\chi^2(12, N = 1354) = 64.82, p > .000$ majored in Humanities. Second, a higher percentage of men from Group III and a higher percentage of women from Group I majored in the Social Sciences. Third, a higher percentage of men from Group III and women from Group IV majored in Natural Sciences. Fourth, a higher percentage of men and women from Group I majored in Business. Finally, the highest percentage of students declared an interdisciplinary major or more than one major as compared to other major areas. A higher percentage of men from Group III and women from Group IV declared an interdisciplinary major or more than one major area.

5) For women, the one-way ANOVA was statistically significant for friends who were of the same age, $F(3, 1124) = 3.96, p = .008$, and the post hoc comparison revealed significant differences between the groups. Group IV reported the most friends in the same age category and Group I reported the fewest friends in the same age category compared to the other groups. For men, the one-way ANOVA revealed significant differences for friends who attended a four-year college, $F(3, 498) = 4.57, p = .004$ and for friends who

were co-workers, $F(3, 502) = 2.69, p = .046$. The post hoc comparisons also showed significant differences in these areas for men. The patterns were similar to the overall patterns because men and women tended to not have friends who were in the same major or who were co-workers and most of their friends were in the same age category.

Outcomes

1) There were statistically significant differences for ratings of social satisfaction for men, $F(3, 602) = 5.34, p = .001$. However, the post hoc comparison did not reveal statistically significant differences in social satisfaction ratings for men. There were statistically significant differences for women in terms of their social satisfaction, $F(3, 1124) = 3.96, p = .008$ and the post hoc comparisons also revealed significant differences. Women in Groups IV and II rated their social satisfaction higher than other groups, which was consistent with overall trends in this study. In terms of academic satisfaction, Groups IV and III were more satisfied. The patterns of men and women were consistent with the overall trends in this study.

Group Profiles

Four profiles were developed to uncover the specific characteristics of each achievement group. The profiles are displayed in the next four tables: (a) Table 4.15-- Group I, neither Monroe Scholar nor Phi Beta Kappa (b) Table 4.16 -- Group II, Roosevelt Scholars, (c) Table 4.17 -- Group III, Phi Beta Kappa, (d) Table 4.18 -- Group

IV, Roosevelt Scholars and Phi Beta Kappa. In developing these profiles, the Overall Results table was used, which displays all significant results (see Appendix F). These results are listed from the highest to lowest rating per variable in this table. Cross tabulations were computed for place of residence, academic major, cocurricular activities, and post-graduate plans. The highest and lowest percentages in each of these categories were examined. One-way ANOVAs were computed for precollege inputs, advising satisfaction, writing and oral communication opportunities, friends, number of hours and duration of involvement, GPA, and academic and social satisfaction. Unfortunately, when examining group means, one can only report with confidence that the highest and lowest numbers were different because actual statistical differences might not exist otherwise. To develop this profile using Astin's (1993) model as the framework, the researcher highlighted the characteristics on which the achievement groups were in the extreme, high or low, based on the *overall results* table in Appendix F.

Table 4.15 displays the profile for Group I, students who were neither Roosevelt Scholars nor Phi Beta Kappa, which served as the control group.

Table 4.15

The Profile for Group I

Rank	Inputs	Experiences	Outcomes
1		Participated in social fraternity/sorority (36.1%) Majored in social sciences (28.6%)	Planned to work after college (57%)
4	High school percentile rank (91.22) SAT (1280) Advanced placement hours (3.53)	Lived in special interest housing (9.9%) Lived in a residence hall (70.5%) Volunteer Activity (53.4%) Religious organizations (29.8%) Participated in drama, dance, music or arts (24.4%) # of activities (4.2) Majored in Humanities (13.4%) Majored in Natural Sciences (14.6%) Advising Satisfaction (3.27 out of 4)	Planned to attend graduate school (23.2%) Cumulative GPA (3.09 out of 4) Level of academic satisfaction (4.22 out of 5) Level of social satisfaction (3.6 out of 5)

Note. Rank of 1 represents the highest ratings in each measure and the rank of 4 is the lowest ratings in each measure.

Group I had the highest ranks in three areas: a) participation in social fraternity/sorority, b) majoring in Social Science, and c) planning to work after college. As seen in Table 4.15, these students had a number of the lowest ratings on input measures, experiences, and outcomes. Many of the lowest ranks for Group I were the highest ranks for Groups III and IV.

Table 4.16 describes Group II, Roosevelt Scholars, students identified as high-achievers at their entry into college.

Table 4.16

The Profile for Group II

Rank	Inputs	Experiences	Outcomes
1		Hours involved in activities (15.32 hrs)	
4	Transfer credits (5.2)	Participated in concentration-related clubs (36.3%) Majored in social sciences (21.4%)	

Note. Rank of 1 represents the highest ratings in each measure and the rank of 4 is the lowest ratings in each measure.

The students in Table 4.16 were ranked high in only one of the experience categories; the number of hours involved in activities. They were ranked lowest in three categories: a) number of transfer credit hours, b) participation in a concentration-related

club, and c) majored in social sciences. Overall, these students did not have many highest or lowest rankings in any category.

Table 4.17

The Profile for Group III

Rank	Inputs	Experiences	Outcomes
1	Transfer credit hours (11.54)	Concentration-related clubs (50.6%)	Planned to attend graduate school (55.6%)
		Volunteer activities (67.9%)	
		Drama, dance, music or arts (49.4%)	
		Number of activities (5.39)	
		Majored in Humanities (28.4%)	
		Satisfied with advising (3.54 out of 4)	
4		Intercollegiate Athletics (4.9%)	Planned to work after college (33.3%)
		# of hours involved in activities (11.13 hrs)	
		Majored in an interdisciplinary major or more than one major (19.8%)	
		Majored in Business (0)	

Note. Rank 1 represents the lowest rating on each measure and 4 represents the lowest measure on each rating.

Table 4.17 describes Group III, Phi Beta Kappa. These high-achievers were involved in a wide array of activities. Astin (1985) asserted that, "students learn by

becoming involved" (p. 133). This seems to hold true for Group III because these students were involved in many activities and also achieved at very high levels. Group III had highest ranks in the amount of transfer credit hours, which indicated that these students were more advanced in terms of credit hours upon entering college than the other groups. They also had highest ranks for: participation in concentration-related clubs, volunteer activities, drama, dance, music or arts, number of activities in which they had participated, number of majors in Humanities, satisfaction with advising and planned to attend graduate school. Group III's activities seem to be linked to their academic experiences directly and indirectly. They had lowest ranks in five areas: intercollegiate athletics, number of hours involved in activities, majored in interdisciplinary or more than one major, majored in Business, and students who planned to work after college.

Next, Table 4.18 describes Group IV, Roosevelt Scholars and Phi Beta Kappa members.

Table 4.18

The Profile for Group IV

Rank	Inputs	Experiences	Outcomes
1	High school percentile rank (98.51)	Living on campus (87%)	Cumulative GPA (3.87)
	SAT (1468)	Living in Special Housing (73.9%)	Level of academic satisfaction (4.71 out of 5)
	Advanced placement hours (16.35 hrs)	Participated in religious organizations (45.7%)	Level of social satisfaction (4.12 out of 5)
		Majored in Natural Sciences (30.4%)	
		Majored in an interdisciplinary major or more than one major (38.0%)	
4		Lived in Greek housing (6.5%)	
		Lived off-campus (12%)	
		Participated in a social fraternity/sorority (12%)	
		Majored in Business (0)	

Note. Rank of 1 represents the highest ratings in each measure and the rank of 4 is the lowest ratings in each measure.

This group had the highest rank in three precollege measures: (a) percentile rank, (b) SAT score, and (c) number of advanced placement hours taken. In terms of their experiences, this group also had higher participation rates in religious organizations, students who lived on campus and special interest housing, and students majoring in Natural Sciences and an interdisciplinary or more than one major. Group IV had the highest cumulative GPA in college and the highest level of academic and social satisfaction.

Summary

Overall, the profiles illustrated that groups of students have distinct experiences that seemed to be associated with achievement. The high achievers were involved in a wide array of experiences linked to academics and moral development leading to outcomes as displayed in Tables 4.17 and 4.18 compared to the students who did not belong to an achievement group (see Table 4.15). This finding is supported in the research literature because it has been shown that students who participated in activities that were linked to their academics tended to achieve (Pascarella & Terenzini, 1991). Groups III and IV clearly chose different experiences than the other groups. The activities in which these high-achieving groups have participated were mostly linked to their academics, exploring the arts, or service. Groups III and IV were also more satisfied with their academic experiences which might be due to the fact that they were performing at high-levels and had stimulating learning experiences that kept them engaged. It would appear that the high-achieving students in this study were more purposeful and more goal-oriented in their actions, and therefore more likely to achieve. These high-achievers were able to self-regulate their college experiences because they

not only chose activities that were linked to academic life, they also controlled the time spent participating in those activities. The profiles showed a distinct difference between high-achievers who achieved Phi Beta Kappa and others. It is almost a reciprocal relationship between the inputs, experiences, and outcomes of students who achieved Phi Beta Kappa and those who did not. This was a significant finding because it demonstrated that based on students' experiences in college, outcomes such as students' satisfaction, post-college plans, and grades might be affected.

Chapter V provides a brief overview for the motivation of this research study, relates findings of this study to others' assumptions about the *I-E-O* relationships, and offers some implications for future research and practice.

CHAPTER V

SUMMARY AND DISCUSSION

This study examined four student groups: (a) Group I – students who were not classified as high-achieving, (b) Group II – Roosevelt Scholars, high achievers identified at their entry point into college, (c) Group III – Phi Beta Kappa, high achievers recognized during their senior year, and (d) Group IV – Roosevelt Scholars and Phi Beta Kappa, high achievers at their entry point into college and recognized during their senior year. The results of this study showed a relationship between college experiences and achievement for high-achieving students. First, high-achieving college students experience college differently as seen from the profiles in Chapter IV (see Tables 4.15 - 4.18). Secondly, high-achievers self-regulated or controlled their effort in college experiences differently from other students. High-achievers chose activities in which they could control their level of involvement like participation in a concentration-related club. This study showed that the more involved students are in activities with close linkages to academics, the more the will achieve academically. This final chapter presents summaries of the results based on Astin's I-E-O Model. The discussion section of this chapter attempts to interpret the findings, relates the current study to previous research, offers recommendations, and suggests future research directions.

I-E-O Model

This study found that high-achieving students who were recognized during their senior year, Groups III and IV, had a unique profile of college experiences as compared to other student groups. Groups III and IV navigated their experiences differently in terms of time spent and quality of effort towards academia as opposed to Groups I or II.

Inputs

Group IV, students who were identified as high achievers at their entry point into college and were recognized for their achievement at the end of college, had higher input measures (high school percentile rank, SAT, and took more Advanced Placement courses during high school) than any other group. Group I, who were not a part of either high achieving group, had the lowest ratings on their input measures (high school percentile rank, SAT, and Advanced Placement hours). Because these Roosevelt Scholars are identified as high achievers at their entry in college (Groups II and IV), it is expected that these students would have higher input measures. Lastly, the only input measure in which Group III, Phi Beta Kappa members, displayed the highest rating was in the number of accepted transfer credit hours. Group II had the lowest number of accepted transfer credit hours. Accepted transfer hours are considered more valuable because these credits actually transferred into the student's record upon admission to the college. Conversely, students can take a number of advanced placement hours that will never become part of their college record, whereas obtaining transfer credit could lead to the students advancing in their curriculum or pursuing an additional major and interests. There was a relationship between SAT score and high school percentile rank and high achievement, Group IV and III, which is consistent with prior research. However the fact that Group II had higher scores than Group III, but were not identified among the highest

achievers might indicate that there were other factors such as college experiences that affected achievement.

Experiences

The college experiences, *E* of Astin's theory, as measured by State University's Senior Survey, included living arrangements, academic major, cocurricular activities, types of peers, and satisfaction with faculty advisors. In terms of living arrangements, Group IV and II tended to live in special housing and on campus during their senior year at much higher rates than other groups. Group I had the lowest percentage of students who lived on campus during their senior year (70.5%). Groups III and IV were less likely to live in Greek housing than Groups I and II but a low percentage of students lived in Greek housing overall ranging from Group III at 6.5%, to Group I at 19.9%.

Cocurricular experiences may complement academic curricula by providing students with a myriad of activities in which they can become engaged and connected with college life. This notion of engagement originated from the research on college dropouts, which found that students who left college before completion were more likely to be disengaged, while those students who completed college were more likely to be engaged (Astin, 1975). Pace (1984) argued that engaged students tend to put forth more effort and therefore perform better academically. That pattern held as expected for the highest achievers in this study. Groups III and IV participated in more activities that were closely linked to academic and moral development, such as concentration-related clubs and volunteerism. These groups (III and IV) had similar participation rates to each other in most of the cocurricular experiences. The two exceptions were: Group III, Phi Beta Kappa, had the highest participation rates in drama, dance, music or arts and Group

IV had the highest participation rates in religious organizations. Group II had the lowest ratings in concentration-related clubs and did not report highest participation rates in any cocurricular activity. Group I had the lowest participation rates in volunteer activities, drama, dance, music or arts and religious organizations and the highest in social fraternity/sorority and intercollegiate athletics. This group was almost completely opposite from Groups III and IV in terms of participation in activities.

The high-achievers in this study were involved in more activities than others, but spent fewer hours participating in those activities. This result might show that students in Groups III and IV navigated or self-regulated their participation in activities in ways that enriched their experiences, but did not distract them from achievement. Groups I and II were involved in fewer activities but spent more time in those activities and achieved at lower levels academically.

Students in this study majored in five different areas: (a) Humanities, (b) Social Sciences, (c) Natural Sciences, (d) interdisciplinary major or more than one major, and (e) Business. Group IV was most likely to be interdisciplinary majors. Group III had the highest percentage of students majoring in Humanities. No students from Groups III or IV majored in Business, however, Business majors were ineligible for participation in Phi Beta Kappa. Group I had the highest percentage of students who majored in Social Sciences and the lowest percentage of majors in Natural Sciences and Humanities. Groups II and IV, all Roosevelt Scholars, showed closely parallel tendencies to major in Social Sciences, Natural Sciences and an Interdisciplinary major or more than one major. So, the choice of academic major might be related more to the characteristics of students when they entered college than to college experiences.

Astin (1993) asserted that interaction with faculty is the second most significant factor related to a student's success. Groups III and IV reported the highest satisfaction levels with faculty advising while Groups I and II, students who were not in either high-achieving group or students only identified as high achieving at the entry point into college respectively, rated their satisfaction level with faculty advising the lowest. The findings in this study mirror Astin's assertion. The more academically successful a student is, the higher satisfaction they reported with faculty, while those who reported the lowest satisfaction were not a part of either high-achieving group.

Outcomes

The Outcomes component of this model examined self-reported skills and knowledge, as well as the college's contribution to those skills and knowledge, college GPA, post-graduate plans, and level of overall academic and social satisfaction. Only post-graduate plans, college GPA, and satisfaction yielded significant results. First, more students in Groups III and IV planned to go to graduate school and significantly fewer planned to work or had other plans when compared to Groups I and II. Second, GPA was highest for Groups III and IV and lowest for Groups I and II. Third, in terms of satisfaction, Groups III and IV exhibited higher levels of academic satisfaction. Pace (1990) stressed that students who were successful in their course work tended to be more academically satisfied. Groups II and IV were more socially satisfied than other groups, which indicated that students identified as high achievers at their entry point into college were more socially satisfied. Is their satisfaction linked to the fact that these students were connected very early to the college based on their participation in a program specifically for high achievers? Roosevelt Scholars, Groups II and IV, were selected for

their exceptionally strong academic records in high school and active involvement in high school life, such as organizations and music clubs. Once Roosevelt Scholars are on campus they live in special housing, are strongly encouraged to engage in research opportunities with faculty, and participate in community service activities. Therefore, it is plausible to assume that Roosevelt Scholars experience an unusually rich and supportive network. However, this question remains to be answered with more empirical evidence.

Discussion of the Results

The central question in this study examined if a relationship exists between college experiences and outcomes for high-achieving students. The results in this study illustrated that there is indeed a relationship between experiences and achievement in college. Previous research showed that one of the most important determinants of college success is based on students' input measures (Pascarella & Terenzini, 1991). While this is true, this study showed that highest achievers (Group III and IV) had greater participation in academically related activities as compared to Groups II and I who had greater participation in socially related activities. This demonstrated that a combination of inputs plus involvement in experiences might lead to outcomes such as college achievement, which is seen in Astin's (1993) research.

In Astin's theory of involvement, he suggested that experiences are a critical factor in students' educational attainment. The findings in this study support Astin's theory. The profiles in Chapter IV show that Group III had the most extensive and intensive participation of all groups. Group I, students who were not identified in either

achievement group, reported the lowest participation rates in many of their experiences compared to the other groups. Pace (1984) asserted that achievement is based on "what they [students] do"(p. 48). The evidence from this study supports Pace's notion that students who make a concerted investment in their own growth and development through participation are more likely to achieve at a higher level. Although Group IV had high participation rates in their experiences, they were also high achievers at the time of admission so one would expect for this group to achieve at high levels. On the other hand, Group III was not recognized for their high achievement at their entry point into college but this group may have used their experiences to achieve beyond what might have been expected.

Astin (1996) suggested that it is important for students to become involved, but their level of involvement or effort is a key factor in their academic success. The results of this study showed that Group III and IV participated in activities that enhanced their psychosocial development and values, such as volunteerism and participation in religious organizations. Groups I and II participated in activities with strong social content that may have led them to be less engaged in the academic aspects of college compared to other groups. This notion of engagement originated from the research on college dropouts, which found that students who left college before completion were more disengaged but that those students who completed college were more engaged in the university (Astin, 1975). This study shows an association between involvement and achievement.

In terms of students' academic major, Astin (1993) found that Humanities majors showed positive gains on their writing skills, foreign language skills, and GPA. Gains on

writing and foreign language skills did not yield statistically significant results in the present study. However, GPA did result in statistically significant findings. Group III tended to major in Humanities, which would support Astin's assertion that GPA tended to be higher for students majoring in Humanities. Another major area that was addressed in Astin's research found that majoring in Physical Sciences was positively linked to plans to attend graduate school. Group IV had a high percentage of students who majored in science and who also planned to attend graduate school, which is consistent with Astin's research findings about these majors.

A vast body of literature has examined the influence of students' place of residence on achievement measures (Feldman & Newcomb, 1970; Kuh, 1996). Pascarella & Terenzini (1991) found that most of the research on place of residence did not show statistically significant results when students' background characteristics were taken into account. However, prior research showed that living on campus compared to living off campus and commuting impacted the students' ability to achieve. Kuh asserted that living on campus allows students to interact with faculty and other students in ways that might not be as readily available if students live off-campus. In the present study, Groups II and IV tended to live on campus during their senior year and tended to live in special interest housing. Although both of Groups II and IV lived on campus at higher rates than the other groups, the research suggests that high achievers would tend to live on campus. Group III, Phi Beta Kappa had fewer percentages of students who lived in special interest housing and who lived on campus during their senior year which was not consistent with prior research. Also because the Roosevelt Scholars freshman year

housing was included in the special housing numbers, the results might exacerbate Groups II and IV high percentage of students living in on campus locations.

One area that has been widely researched is Greek participation. There does not seem to be consensus in the literature on whether participation in Greek organizations benefits or impedes students' achievement (Pike & Askew, 1990). In Pike's and Askew's study, they concluded that there was a significant difference between the academic and social involvement of Greeks versus non-Greeks. They found that Greeks participated in more clubs, reported higher social integration with other students and were more academically involved than other students. The present study showed that Group I, students in neither high-achieving group, and Group II, Roosevelt Scholars, had higher participation rates in Greek organizations but reported lower participation in academic-related clubs. The conclusions of the present study were not consistent with Pike's and Askew's findings because they found that Greeks were more academically involved than non-Greeks. According to Astin (1993) academic involvement is linked to students' academic success. Groups III, Phi Beta Kappas, and IV, both Roosevelt Scholars and Phi Beta Kappas, were the most academically successful based on their GPA but reported the lowest level of participation in Greek organizations, also inconsistent with the results that Pike and Askew reported.

A number of research studies (Astin, 1993; Franklin, 1996; Pace, 1982) have reported the importance of positive influence of peer interactions, and experiences with oral communication and writing on learning and achievement. This study's findings did not support prior research in these areas because after post hoc comparisons were computed, no significant differences among achievement groups were found. This might

indicate that State University's students had similar peer networks. It might also suggest that in the students' courses they had similar opportunities to communicate in an oral and written form and this is the reason why no significant differences were found.

This study found that the achievement groups differed in the inputs, experiences and outcomes. Being identified as a high achiever at the entry point into college does not guarantee that a student will remain a high achiever in college. Although the inputs were high for Group II compared to Groups III and I, Group III students were recognized for their high achievement in college and Group II was not. In the present study, experiences distinguished the four achievement groups from one another. The highest achievers, Group III and IV, were not only involved in more activities, but the activities in which they chose to participate where linked to their academic and personal development. Group I and II had high participation rates in more socially related activities, such as participating in a Greek fraternity or sorority and were involved in fewer cocurricular activities. However, the highest achievers, Groups III and IV, participated in more activities and had higher GPAs, academic satisfaction level, and planned to attend graduate school at higher rates than other groups. Group I had the lowest participation in activities and reported the lowest GPA, academic satisfaction level, and lowest number of students who planned to attend graduate school. This study shows a reciprocal relationship between the cocurricular experiences of Group I and III because their experiences were almost exactly opposite of each other. When examining the group profiles in Tables 4.15 to 4.18, it was clear that Group I had the lowest participation rates in many of their cocurricular experiences and Group III had many of the highest participation rates in their cocurricular experiences.

In Chapter II, the theme of the locus of control was introduced. Using Dweck's research from 1975, Kanoy et al. (1990) examined the theory of locus of control for high-achieving compared to low-achieving women based on whether placement and teaching had an effect on high-achieving women. The locus of control is defined as the internal or external control that students give to a situation which is similar to the self-regulation described in the current study. Kanoy et al. found that high-achieving students put forth more effort and were more *internal* compared to low-achievers, who were more *external* and did not put forth the effort required to accomplish the task. High-achieving students in Kanoy's et al. study exerted more effort into academics as Pace (1984) has also concluded. This focuses the attention on "what students do" in college as an essential component of their academic success. The findings of the current study seem to support Kanoy's et al. findings. Groups III and IV's self regulated experiences are associated with their achievement. This notion of self-regulation or locus of control in high achievers should be further examined.

Future Research Directions

The current study used Astin's I-E-O model to determine the experiences of high-achieving students and the effect on the outcomes. Astin's (1993) model includes many different input measures, experiences, and outcomes. Some relationships emerged from this study, and served to confirm the work of Pace and Astin. Most of the researcher's recommendations therefore, focus on the technical issues facing others who may wish to refine both the kind of data to be gathered and the ways in which existing models might be further tested and extended.

Instrumentation

First, research has shown that peers have a significant impact on college experiences (Astin, 1993). For example, Astin examined the peer group at the institutional level. He found that peers are the most influential component of the student experience. He asserted that information on the characteristics of the peer group would sharpen an understanding of the influence peers have on students. However the Senior Survey did assess the type of peer networks at the individual level, which might indicate the friends in which students associate. The Senior Survey did not address the hours spent with friends or the types of activities in which peers' participate.

Faculty involvement is the second most influential factor for college students (Astin, 1993). Astin's research asked students specific questions about their involvement with faculty outside of the classroom. The Senior Survey does not include questions pertaining to faculty interactions in general. Although it does ask students to report on their experiences with advisors, the interaction between the advisor and student is mandatory, and the survey does not take into account any other relationships with faculty that might influence achievement.

Third, in Pace's (1984) and Astin's (1993) research, the quality of effort or engagement is a critical element of achievement. For example, both researchers assessed the quality of time involved in specific activities such as hours spent talking to faculty outside of class or time spent tutoring another student. This type of informal interaction could reveal some important aspects of engagement that could not be explored with the questions on the Senior Survey. If this type of information were included in the Senior Survey, it might provide State University with a better indication of the level of effort

students commit to their experience and of the myriad of ways in which students become engaged with faculty.

Finally, Pace's (1990) work focused on quality of effort scales that were not included in the Senior Survey. Pace (1984) designed the College Student Experiences Questionnaire, which assesses students' quality of effort expended in activities. Quality of effort scales would demonstrate how students utilized the facilities and opportunities in which the institution provides. However, the Senior Survey only asked students whether they participated in certain types of activities, as opposed to asking about the level of active participation. For example, a student can participate in a dramatic performance by attending the performance or engage at a deeper level by acting in the performance. While both the actor and the spectator participate in the performance, their level of effort varies greatly in the commitment, dedication, and rigor of learning involved. State University should consider modifying the Senior Survey to include additional items that focus on quality of effort and time as described earlier in order to better understand students' experiences in college.

Sample

A future study might be conducted on more diverse institutions with more diverse student populations in terms of their input measures and background characteristics. The range of ability at State University was narrow due to its highly selective admission standards.

Ethnic diversity was too limited at State University as well. A cross-tabulation was computed on ethnicity and achievement group of the sample and no African American nor American Indian students achieved Phi Beta Kappa recognition (see

Appendix G). This is problematic because research shows that students of diverse ethnic backgrounds tend to have dramatically different college experiences (Fries-Britt, 2002; Pascarella & Terenzini, 1991). Future research might explore this area further.

Expanding the scope of this research might have provided very different results. Because the goal of this study was to capture the experiences of students who were identified as high-achieving at their entry into college and who were recognized for high-achievement during college, there was a limitation on the contrasts that might have been conducted relative to groups with other levels of, and types of, achievement. It might be interesting and more illuminating to examine students who fall within more different GPA ranges, and to include forms of achievement beyond just those measured by GPA (such as winning a national competition, co-publishing with faculty and leadership roles) and examine patterns of experience associated with these kinds of achievement.

Finally, one-way ANOVAs and cross-tabulations allowed the researcher to determine patterns of high-achieving students' behavior. However, the analysis might yield different results if correlations and multiple regressions were computed. Also, interviews with specific groups of students might have shed light on why these students chose to participate in certain activities and provided a more in depth look at what kinds of value such experiences may have added.

Suggestions for Practice

The results of this study provide a glimpse into the lives of high-achieving students. This may be very useful for practitioners because this study illustrates how inputs and experiences influence outcomes. Examining the experiences of high-

achieving students may allow practitioners to better guide students into activities that are more likely to provide challenges and enhance learning, growth, and development. There is a great deal of research, which stresses the benefit of participation in activities that were closely linked to academics (Anaya, 1996). Is it possible that practitioners could create more balanced college experiences that would encourage practitioners to develop a social component to academic activities and vice versa? This current study showed that the achievement groups sort themselves in their participation in activities in a stereotypical way. The students who are not in any achievement group or were only high-achieving when they entered college tend to be more socially driven, and the high achievers who were recognized in college appear more academically driven and focused. More balanced experiences might encourage more intermingling among the groups to the potential benefit of all involved.

The highest achievers in this study self-regulated their time spent in activities and their quality of effort. Groups III and IV controlled the level of involvement and time involved in activities. Groups I and II were involved in fewer activities but spent more time participating in activities and had lower outcome measures. The behavioral patterns of Group I and II might have positively influenced their outcomes if they self-regulated their time. Is self-regulation a behavior that can be taught, and if so, should it be taught during the freshman year and reemphasized through students' collegiate experience?

Grades continue to be a widely used measure of achievement in college. However, this study sought to look not solely at grades, but used broader measures that impact achievement. For example, the Roosevelt Scholars, Group II, were selected on a broad range of precollege measures. Phi Beta Kappa, Groups III and IV, were selected

based on high academic achievement and faculty recommendations that spoke to students' character and unique qualities. Although there is some controversy about whether grades are an appropriate measure of college achievement, this study investigated only one institution so there is probably less grade variance than in a multi-institutional study. Astin (1993) supported the use of grades in institutional studies in his statement, "...college grades continue to represent an important index of student accomplishment in college" (p. 187). Practitioners should seek to identify other areas of achievement as in this study because achievement is multi-dimensional. The question becomes, how do multi-dimensional inputs influence both experiences and multi-dimensional outcomes? If this study were conducted, there are two issues that must be addressed: (a) measuring relevant dimensions and (b) designing studies that show connection between the inputs, experiences and outcomes.

Conclusion

This study adds to the body of literature on college impact. It is one of the few that attempts to connect the achievements of college seniors to their college experiences. The student profiles that were developed as a part of this study provides a snapshot of college experiences of high achievers that were not available in prior studies. This study has three major conclusions: a) a relationship exists between college student experiences and achievement, b) high achievers are involved in more academically related activities than other groups, and c) high achievers seem to self regulate their level of involvement in activities.

First, this study provides evidence that college student experiences are related to achievement. In the profiles that were developed, Group III and IV, the highest achievers who were recognized in college, had many of the highest participation rates in experiences and had higher outcome measures than the other groups. Group I, students who were in neither high-achieving group, or Group II, students who were only recognized for their achievement at the entry point into college, had lower participation rates in experiences and were not recognized for their achievement during senior year. This demonstrates that there is indeed a relationship between college student experiences and achievement. Because the outcomes were different between the highest achievers who were recognized in college and the other groups, Astin's prediction that the experiences in college play a role in later achievement and outcomes is supported.

Second, Group III and IV were involved in more academically related college experiences such as participation in concentration-related clubs. Group I and II were involved in more social activities such as intercollegiate athletics. The type of activities in which students participated seemed to determine the level of achievement in college. This finding is consistent with prior research, which stated that students who participated in activities that were closely linked with academics tended to achieve academically (Pace, 1984).

Third, Groups III and IV seemed to self-regulate their level of involvement because they were involved in different types of activities but spent less time in their activities. Groups I and II were involved in fewer activities but spent more time participating in activities. The differences in the amount of time that certain groups allocate to their activities shows a greater amount of control or commitment. This can be

seen in Groups III and IV self-regulation of their commitment to activities. Groups III and IV could have deliberately chosen activities that were not too time intensive allowing them to remain focused or connected with their academic responsibilities.

Overall, many researchers affirmed that college makes a difference in students' level of achievement. The amount of difference reported seems largely dependent on the type of analysis and nature of the samples studied. This study supports prior research (Pace, 1982, Astin, 1993) that focused on associations between experiences in college and outcomes of learning and student development. Astin's involvement theory hypothesizes that involvement is the essential element of the college experience, and high achievers in this study were clearly involved. Pace's (1984) work suggested that experiences are a joint product of the opportunities that colleges provide and how much effort is required for students to be engaged. This study upholds Pace's (1984) and Astin's findings. However, this research study only begins to identify patterns of high-achieving students' involvement in college and merely hints at how institutions can foster their growth and development and create models to encourage high achievement.

APPENDIX A

Permission Letter

Samantha Doe, Ph.D.
Director
State University
Office of Assessment

Dear Dr. Doe:

Thank you for explaining the process of using the Senior Survey at State University. I am requesting permission to use the Senior Survey to complete my doctoral dissertation.

My dissertation topic hopes to determine if a relationship between college student experiences and achievement exists. The Senior Survey is an ideal instrument for my study because it assesses the experiences of college students at State University. This study will investigate the differences in students who were identified as high achievers when they entered college and remained as high achievers or did not and compare those high achievers in their senior year that were either high achievers at their entry into college or not high achievers.

The students that I will examine are the Roosevelt Scholars, who were identified as high achievers at their entry to college. These students have demonstrated their achievement by excellent grades, standardized test scores and high levels of involvement in high school. I will also examine students who were selected for Phi Beta Kappa membership. A group of students who were not in any of these groups will serve as the control group. Since only approximately 43% of the Roosevelt Scholars during their senior year are selected for Phi Beta Kappa membership, this issue needs to be further investigated. Students who are selected for Phi Beta Kappa membership have exemplary academic records and faculty recommendations so one would expect that a higher percentage of Roosevelt Scholars would be selected into Phi Beta Kappa.

This study proves to be intriguing because it will provide research on high-achieving college students that is not currently available. If you grant me permission to use this survey data, I will complete all necessary documentation. After the study is completed, I will provide your office with a copy of my dissertation. Thank you.

Sincerely,

Carlane J. Pittman

APPENDIX B

Survey Instruments

Senior Survey 2000

2000 Senior Survey

We recently sent you an email notice about the annual student survey. If you have not already done so, please take a few minutes to complete the survey below. Fold the completed survey so the Assessment Office address is on the outside, and return it through campus mail. All responses are confidential. Results will be combined with other data sets to help assess curricular and co-curricular activities at the college.

If you would prefer, please access the following URL and enter your password (e-mail ID) when prompted to do so. http://su.edu/assessdb/StudentSurveys/SophomoreLogin.cfm

If you have questions about the survey or the College's assessment program, or have difficulty accessing the website, contact the College's Assessment Coordinator, Samantha Doe (223-4853, doesamantha@su.edu)

SU General Education Knowledge Goals

1. Please rate your skill level on a scale of 1 (low) to 5 (high), for each of the following skills:

		Low 1	2	3	4	High 5
a.	Effective writing	O	O	O	O	O
b.	Effective speaking	O	O	O	O	O
c.	Proficiency in a foreign language	O	O	O	O	O
d.	Mathematical skills	O	O	O	O	O
e.	Leadership skills	O	O	O	O	O
f.	Computer skills	O	O	O	O	O
g.	Interpersonal skills	O	O	O	O	O
h.	Scientific method skills	O	O	O	O	O
i.	Historical inquiry skills (i.e., ability to verify facts through analysis and comparison of texts and archives)	O	O	O	O	O
j.	Critical thinking skills (i.e., inductive and deductive reasoning skills)	O	O	O	O	O
k.	Aesthetic skills (i.e., understanding of creative processes and media)	O	O	O	O	O

2. How much did the college contribute to your personal growth in each of these skills?

	Very little 1	2	Some 3	4	Very much 5
a. Effective writing	O	O	O	O	O
b. Effective speaking	O	O	O	O	O
c. Proficiency in a foreign language	O	O	O	O	O
d. Mathematical skills	O	O	O	O	O
e. Leadership skills	O	O	O	O	O
f. Computer skills	O	O	O	O	O
g. Interpersonal skills	O	O	O	O	O
h. Scientific method skills	O	O	O	O	O
i. Historical inquiry skills (i.e., ability to verify facts through analysis and comparison of texts and archives)	O	O	O	O	O
j. Critical thinking skills (i.e., inductive and deductive reasoning skills)	O	O	O	O	O
k. Aesthetic skills (i.e., understanding of creative processes and media)	O	O	O	O	O

Concentration Information

3a. What is your primary concentration?

3b. If applicable, what is your secondary concentration?

3c. If applicable, what is your minor?

4. Please rate your knowledge level on a scale of 1 (your knowledge level is low) to 5 (your knowledge level is high)

	Low 1	2	3	4	High 5
a. Major philosophical and religious systems	O	O	O	O	O
b. The physical real and major advances in the natural sciences	O	O	O	O	O
c. Important events that have shaped Western societies	O	O	O	O	O
d. Important events that have shaped non-Western societies	O	O	O	O	O
e. Politics	O	O	O	O	O

f. Leading historical figures	O	O	O	O	O
g. Masterworks and movement in art, music, and literature	O	O	O	O	O
h. Individual and social behavior and major advances in the social behavior sciences	O	O	O	O	O
i. Wars and revolutions	O	O	O	O	O

5. How much did the SU contribute to **your personal growth** in each of these knowledge areas?

	Very little		**Some**		**Very much**
	1	2	3	4	5
a. Major philosophical and religious systems	O	O	O	O	O
b. The physical real and major advances in the natural sciences	O	O	O	O	O
c. Important events that have shaped Western societies	O	O	O	O	O
d. Important events that have shaped non-Western societies	O	O	O	O	O
e. Politics	O	O	O	O	O
f. Leading historical figures	O	O	O	O	O
g. Masterworks and movement in art, music, and literature	O	O	O	O	O
h. Individual and social behavior and major advances in the social behavior sciences	O	O	O	O	O
i. Wars and revolutions	O	O	O	O	O

6. In how many of your classes last semester (Fall 1999) were you assigned each of the following activities?

Discussion leader: ☐☐

Formal group presentation or debate: ☐☐

Informal (round table): Report of your work ☐☐

Formal individual presentation/ speech of at least 5 minutes: ☐☐

7. Briefly describe how you were evaluated on formal group and/or individual oral presentations:

	very dissatisfied	dissatisfied	neither dissatisfied nor satisfied	satisfied	very satisfied
8. Thinking about your **academic experiences** at SU, overall would you say you are:	O	O	O	O	O
9. Thinking about your **social experiences** at SU, overall would you say you are:	O	O	O	O	O

Concentration Writing and Computing Proficiencies

10. How did you fulfill the Concentration **Writing** Requirement in your primary concentration?

11. In fulfilling the Writing Requirement in your primary concentration, how often did the following occur?

	rarely	sometimes	regularly
a. You had the opportunity to practice your writing:	O	O	O
b. An instructor commented on your writing:	O	O	O
c. You rewrote papers based on an instructor's comments:	O	O	O

12. If applicable, how did you fulfill the **Writing** Requirement in your secondary concentration?

13. In fulfilling the Concentration Writing Requirement in your secondary concentration, how often did the following occur?

	rarely	sometimes	regularly
a. You had the opportunities to practice your writing	O	O	O
b. An instructor commented on your writing:	O	O	O
c. You rewrote papers based on an instructor's comments:	O	O	O

14. How did you fulfill the **Computing Requirement** in your primary concentration?

15. How did you fulfill the **Computing Requirement** in your secondary concentration?

Concentration Advising

16. How many times during your junior year did you meet with your assigned advisor?

O Only when I needed an advisor's signature

O One additional contact

O More than one additional contact

17. Did you meet with your concentration advisor during your senior year? O Yes O No

18. Please indicate the extent to which you agree with the following statements about your concentration advisor.

	strongly	agree	agree	disagree	strongly disagree
a. My advisor was usually available when I needed to see him or her	O	O	O	O	O
b. My advisor understands and communicate College policies and procedures	O	O	O	O	O
c. My advisor is interested in my development as an individual	O	O	O	O	O
d. My advisor encourages me to make my own decisions	O	O	O	O	O
e. My advisor discusses other college resources with me (e.g., Study Skills, Writing Center, Career Services)	O	O	O	O	O
f. I am satisfied overall with the advice I have received.	O	O	O	O	O
g. I am satisfied with the advice I have received about careers.	O	O	O	O	O
h. I am satisfied with the advice I have received about graduate or professional schools	O	O	O	O	O

19. Comments about concentration advisors:

Specific Experiences (Prim Library)

20. How frequently do you use Prim Library?
O 8 or more times a month O 4 to 7 times a month O 1 to 3 times a month
O less than once a month O other

21. How well have the resources in Prim Library's collection met your overall academic needs?
O very poorly O inadequately O adequately O very thoroughly

22. How well the resources in Prim Library's collection met your academic needs in your primary concentration?
O very poorly O inadequately O adequately O very thoroughly

23. How well have the resources in Prim Library's collection met your academic needs in your secondary concentration?
O very poorly O inadequately O adequately O very thoroughly

Co-Curricular Activities

24. Please indicate which (if any) years you participated in the following College activities:

	Freshman	Sophomore	Junior	Senior	Did not participate
a. Concentration-related club	O	O	O	O	O
b. Social fraternity/sorority	O	O	O	O	O
c. Service club	O	O	O	O	O
d. Intercollegiate athletics	O	O	O	O	O
e. Intramural or club sports	O	O	O	O	O
f. Artistic group (performance or visual)	O	O	O	O	O
g. Religious organizations	O	O	O	O	O
h. Work for pay on- or off-campus	O	O	O	O	O
i. Volunteer activity	O	O	O	O	O
j. Community group	O	O	O	O	O
k. List any other activity (ies) and years involved					

25. During your senior year, about how many hours per week have involved in these types of activities?

26. Have you held any offices in these organizations? O Yes O No

27. Have you held any offices in these organizations? O Yes O No

If no, skip to the next section (Grad & Professional School)

Graduate and Professional School Applications

28. Please list the schools and programs (fields of study) you have applied to in order of preference. Also, indicate the status of your application.

School & Program (field of study)	Accepted	Rejected	Wait List	No News
1_____	O	O	O	O
2._____	O	O	O	O
3_____	O	O	O	O
4_____	O	O	O	O
5_____	O	O	O	O

29. As of right now, which school do you plan to attend?

30. Please describe briefly why you would select to attend this school.

Graduate and Professional School Examinations

31. Please indicate which professional and qualifying examinations you have taken. If available, please provide scores so we can gauge how well our students are prepared for these examinations.

Taken exam?	Exam	Scores (if not yet available indicate NAV)
O yes Ono	GRE's Graduate School	Verbal Quantitative Analytical

Graduate and Professional School Applications

O yes O no	GRE Subject Test	Subject Score:
O yes O no	MCAT (Medical School)	Biological Sciences_____Physical Sciences_____ Verbal Reasoning_____Writing Sample_____
O yes O no	LSAT (law)	Scores:
O yes O no	GMAT (Business)	Scores:
O yes O no	Praxis I & II (Teaching)	Scores:
O yes O no	Other:	Scores:

Employment:

32. Do you intend to enter the work force right after graduation?

O no ⟶ Why not?_____

O yes ⟶ Do you have a Job lined up? O no O yes ⟶

Title_____
Employer:_____
Job Description_____
_____
Is this job related to your career interest? O no O yes

33. Please list any additional comments that you have about this survey or the school.

Senior Survey 2001

Top of Form

2001 State University (SU)Senior Survey

Today's Date:

Please list your preferred email address:

The following questions address your specific post-graduation plans. The information will be used to help us prepare SU students for post-graduate studies and careers.

EMPLOYMENT

Please describe your Post Graduate work status:

If you chose "other", please explain here:

If **employed**, please complete the following section. If planning to attend **graduate school**, skip to the **next section**.
If working **and** attending graduate school, please complete **both sections**.

Job Title:

Employer:

Business City: State:

Salary: Signing Bonus:

How did you learn about this job?

If you chose "other", please explain here:

Is this job related to your concentration(s)?

YES NO

Which of the following categories best describes your career field?

ARTS:		MEDICAL/HEALTH SCIENCES:	
BUSINESS:		MUSEUM/LIBRARY:	
COMMUNICATIONS:		NON-PROFITS:	
EDUCATION:		PHYSICAL SCIENCES/MATH:	
GOVERNMENT:		SOCIAL SCIENCES / RELIGION:	
INTERNATIONAL:		TECHNOLOGY:	
LEGAL:		TRAVEL / RECREATION:	

Top of Form

State University (SU) Senior Survey, cont'd

GRADUATE AND PROFESSIONAL SCHOOL APPLICATIONS

Have you applied to graduate or professional school?

- NO (scroll to next section: Grad School & Prof. Exams)
- YES (address questions below)

Please list up to five schools and programs (field of study) you have applied to in order of preference.
Also, indicate the status of your application.

	Name of School	Department/Program	Degree	Application Status
1.				
2.				
3.				
4.				
5.				

As of right now, which school do you plan to attend?

Submit

Bottom of Form

Top of Form

State University Senior Survey, cont'd

GRADUATE SCHOOL AND PROFESSIONAL EXAMINATIONS

Please indicate which professional and qualifying examinations you have taken. If available, please provide scores
so we can gauge how well our students are prepared for these examinations.

Taken exam?	Examination	Highest scores received (if not yet available indicate NAV)
○ YES ○ NO	**GREs (Graduate School)**	Verbal [ ] Quantitative [ ] Analytical [ ]
○ YES ○ NO	**GRE Subject test**	Subject: [ ] Score: [ ]
○ YES ○ NO	**LSAT (Law)**	SCORES: [ ]
○ YES ○ NO	**MCAT (Medical College)**	Biological Sciences [ ] Physical Sciences [ ] Verbal Reasoning [ ] Writing Sample [ ]
○ YES ○ NO	**GMAT (Business)**	Total Score: [ ] Quantitative: [ ] Verbal: [ ]
○ YES ○ NO	**Other:**	TEST NAME & SCORES: [ ]

Friends

How many close friends do you have? [ ]

How many of your friends are:

From W&M	[ ]	Your same sex	[ ]
Attending (attended) another 4-year college	[ ]	Your same race or ethnicity	[ ]
Involved in clubs/organizations with you	[ ]	In your major	[ ]
About your same age	[ ]	Co-workers	[ ]

Submit

Bottom of Form

Top of Form

Internships and Externships

Did you participate in any **externships** (1-5 days spent mostly observing)? ○ Yes ○ No

Did you participate in any **internships** (at least 1-3 months of hands-on practical experience? ○ Yes ○ No

Please list the specific internship/externship site(s), marking all items that apply:

Externship	Internship	Site (include department/program)	Academic Credit	Stipend Wage
○	○	1.	☐	☐
○	○	2.	☐	☐
○	○	3.	☐	☐
○	○	4.	☐	☐
○	○	5.	☐	☐

Co-curricular Activities

Please indicate which (if any) years you participated in the following activities:	Did not participate	Freshman	Sophomore	Junior	Senior
Concentration-related club	☐	☐	☐	☐	☐
Honor society/fraternity	☐	☐	☐	☐	☐
Social fraternity/sorority	☐	☐	☐	☐	☐
Service club	☐	☐	☐	☐	☐
Volunteer activity (please specify: ☐	☐	☐	☐	☐	☐
Intercollegiate athletics	☐	☐	☐	☐	☐
Intramural or club sports	☐	☐	☐	☐	☐
Drama, dance, music or arts group	☐	☐	☐	☐	☐
Religious organization	☐	☐	☐	☐	☐
Work for pay on or off campus	☐	☐	☐	☐	☐
Student publications	☐	☐	☐	☐	☐
Study abroad	☐	☐	☐	☐	☐

State University Senior Survey - cont'd.

Top of Form

Concentration Information

Please mark your **primary** concentration:

If Other, please define:

If applicable, please mark your **secondary** concentration:

If Other, please define:

Concentration Writing Proficiencies

How did you fulfill the Concentration Writing Requirement in your primary concentration?

In fulfilling the Writing Requirement in your **primary** concentration, how often did the following occur?	rarely	sometimes	regularly
You had opportunities to practice your writing:	○	○	○
An instructor commented on your writing:	○	○	○
You rewrote papers based on an instructor's comments:	○	○	○

If applicable, how did you fulfill the Writing Requirement in your **secondary** concentration? (if not applicable, scroll to "Concentration Advising".)

In fulfilling the Writing Requirement in your secondary concentration, how often did the following occur?	rarely	sometimes	regularly
You had opportunities to practice your writing:	○	○	○
An instructor commented on your writing:	○	○	○
You rewrote papers based on an instructor's comments:	○	○	○

Concentration Advising

How many times during your **junior** year did you meet with your **secondary** concentration advisor?

How many times during your **senior** year did you meet with your **secondary** concentration advisor?

Why did you meet with your **secondary** concentration advisor? *(mark all that apply)*

- ☐ To discuss my course schedule
- ☐ To get information about requirements for graduation
- ☐ To discuss post-graduation plans

Other *(please specify)*:

Please indicate the extent to which you agree with the following statements about your **primary** concentration advisor.	strongly agree	agree	disagree	strongly disagree	NA
My advisor is usually available when I needed to see him or her	○	○	○	○	○
My advisor understands and communicates institutional policies and procedures	○	○	○	○	○
My advisor encourages me to make my own decisions	○	○	○	○	○
My advisor is interested in my development as an individual	○	○	○	○	○
My advisor has informed me about the Office of Career Services.	○	○	○	○	○
My advisor discusses other institutional resources with me (e.g., Study Skills, Writing Center)	○	○	○	○	○
I am satisfied overall with the advice I have received.	○	○	○	○	○
I am satisfied with the advice I have received about careers	○	○	○	○	○
I am satisfied with the advice I have received about graduate or professional schools.	○	○	○	○	○

Please indicate the extent to which you agree with the following statements about your **secondary** concentration advisor.	strongly agree	agree	disagree	strongly disagree	NA
My advisor is usually available when I needed to see him or her	○	○	○	○	○
My advisor understands and communicates College policies and procedures	○	○	○	○	○
My advisor encourages me to make my own decisions	○	○	○	○	○
My advisor is interested in my development as an individual	○	○	○	○	○
My advisor has informed me about the Office of Career Services.	○	○	○	○	○
My advisor discusses other College resources with me (e.g., Study Skills, Writing Center)	○	○	○	○	○
I am satisfied overall with the advice I have	○	○	○	○	○

received.					
I am satisfied with the advice I have received about careers	○	○	○	○	○
I am satisfied with the advice I have received about graduate or professional schools.	○	○	○	○	○

Comments About Concentration Advisors

Submit

Bottom of Form

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State University (SU)Senior Survey - cont'd.

SU LIBRARIES

How frequently do you use any of the State University libraries or their online resources?

Which State University library do you use most frequently?

How frequently do you use State University library (or their web pages) to do the following:

- Use print indexes, databases, bibliographies
- Use online or electronic indexes, databases, bibliographies, full-text journals
- Study
- Check out books or other materials
- Read journals or newspapers
- Meet with friends
- Go to the Library Cafe´

The online catalog		Videos	
Library web site		Government publications	
Interlibrary loan services (materials not available on campus)		Archives, manuscripts, rare books	
Computer lab		Microfilm and microfiche	
Reference service (in person, by telephone, email, or web)			

How satisfied are you with the State University libraries?

Submit

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State University (SU) Senior Survey

SU General Education Goals

How many of your courses this year (Fall 2000, Spring 2001) included class discussions?

In how many of your courses this year (Fall 2000, Spring 2001) were you assigned each of the following activities?

Discussion leader:

Informal (round table) report of your work:

Formal group presentation or debate:

Formal individual presentation/speech of at least 5 minutes:

Thinking about your *academic* experiences at State University, overall would you say you are:	very dissatisfied	dissatisfied	neither dissatisfied nor satisfied	satisfied	very satisfied
	○	○	○	○	○

Thinking about your *social* experiences at State University , overall would you say you are:	very dissatisfied	dissatisfied	neither dissatisfied nor satisfied	satisfied	very satisfied
	○	○	○	○	○

State University lists the following skills as goals of general education.

Please rate your **current skill level** on a scale of **1 to 5**, and then indicate how it compares to your skill level when you first came to SU.	**low** 1	2	3	4	**high** 5	**Current skill level compared to when you entered SU**
Effective writing	○	○	○	○	○	
Effective speaking	○	○	○	○	○	
Proficiency in a foreign language	○	○	○	○	○	
Mathematical/statistical skills	○	○	○	○	○	
Leadership skills	○	○	○	○	○	
Computer skills	○	○	○	○	○	
Interpersonal skills	○	○	○	○	○	

Scientific method skills	○	○	○	○	○	
Historical inquiry skills (i.e., ability to verify facts through analysis and comparison of texts and archives)	○	○	○	○	○	
Critical thinking skills (i.e., inductive and deductive reasoning skills)	○	○	○	○	○	
Aesthetic skills (i.e., understanding of creative processes and media)	○	○	○	○	○	
Information literacy skills (searching, selecting, evaluating and using resources, including those on the Internet)	○	○	○	○	○	

How much did **SU contribute** to your personal growth in each of these skills?	very little		some		very much
	1	2	3	4	5
Effective writing	○	○	○	○	○
Effective speaking	○	○	○	○	○
Proficiency in a foreign language	○	○	○	○	○
Mathematical/statistical skills	○	○	○	○	○
Leadership skills	○	○	○	○	○
Computer skills	○	○	○	○	○
Interpersonal skills	○	○	○	○	○
Scientific method skills	○	○	○	○	○
Historical inquiry skills (i.e., ability to verify facts through analysis and comparison of texts and archives)	○	○	○	○	○
Critical thinking skills (i.e., inductive and deductive reasoning skills)	○	○	○	○	○
Aesthetic skills (i.e., understanding of creative processes and media)	○	○	○	○	○
Information literacy skills (searching, selecting, evaluating and using resources, including those on the Internet)	○	○	○	○	○

State University also lists the following broad areas of knowledge as goals of general education.

Please rate your **knowlege level** for	**low**				**high**	**Current knowledge**

indicate if it compares to your knowledge level when you first came to SU .						
Major philosophical and religious systems	○	○	○	○	○	
The physical realm and major advances in the natural sciences	○	○	○	○	○	
Important events that have shaped Western societies	○	○	○	○	○	
Important events that have shaped non-Western societies	○	○	○	○	○	
Politics	○	○	○	○	○	
Leading historical figures	○	○	○	○	○	
Masterworks and movements in art, music, and literature	○	○	○	○	○	
Individual and social behavior and major advances in the social/behavioral sciences	○	○	○	○	○	
Wars and revolutions	○	○	○	○	○	
Important applications of Mathematics	○	○	○	○	○	

How much did State University contribute to your **personal growth** in each of these **knowledge areas**?	very little		some		very much
	1	2	3	4	5
Major philosophical and religious systems	○	○	○	○	○
The physical realm and major advances in the natural sciences	○	○	○	○	○
Important events that have shaped Western societies	○	○	○	○	○
Important events that have shaped non-Western societies	○	○	○	○	○
Politics	○	○	○	○	○
Leading historical figures	○	○	○	○	○
Masterworks and movements in art, music, and literature	○	○	○	○	○
Individual and social behavior and major advances in the social/behavioral sciences	○	○	○	○	○
Wars and revolutions	○	○	○	○	○
Important applications of Mathematics	○	○	○	○	○

Submit

Bottom of Form

Top of Form

State University Senior Survey - Final Page

Computers & Technology

Please indicate the ways in which you use computers (*mark all that apply*):

- ☐ word processing
- ☐ presentation graphics (e.g., PowerPoint or Corel Presents)
- ☐ desktop publishing
- ☐ email
- ☐ accessing or maintaining databases
- ☐ photographic or multimedia editing
- ☐ downloading music
- ☐ gaming (entertainment)
- ☐ chat or instant messaging
- ☐ maintaining your calendar or schedule
- ☐ research
- ☐ browsing the World Wide Web
- ☐ spreadsheets (e.g., Excel, Quattro Pro, Lotus 123)
- ☐ statistical analyses
- ☐ computer programming
- ☐ Other:

Please indicate which computer applications at State University helped you learn how to use. (*mark all that apply*)

- ☐ word processing
- ☐ presentation graphics (e.g., PowerPoint or Corel Presents)
- ☐ desktop publishing
- ☐ email
- ☐ accessing or maintaining databases
- ☐ photographic or multimedia editing
- ☐ downloading music
- ☐ gaming (entertainment)
- ☐ chat or instant messaging
- ☐ maintaining your calendar or schedule
- ☐ research
- ☐ browsing the World Wide Web
- ☐ spreadsheets (e.g., Excel, Quattro Pro, Lotus 123)
- ☐ statistical analyses
- ☐ computer programming
- ☐ Other:

Additional comments about the Senior Survey:

Submit

Bottom of Form

Senior Survey 2002

2002 State University Senior Survey

Concentration Advising

How many times during your **junior** year did you meet with your **primary** concentration advisor? ____

How many times during your **senior** year did you meet with your **primary** concentration advisor? ____

Why did you meet with your **primary** concentration advisor? *(mark all that apply)*

- ☐ To discuss my course schedule
- ☐ To get information about requirements for graduation
- ☐ To discuss post-graduation plans
- ☐ Other *(please specify)*: ____

How many times during your **junior** year did you meet with your **secondary** concentration advisor? ____

How many times during your **senior** year did you meet with your **secondary** concentration advisor? ____

Why did you meet with your **secondary** concentration advisor? *(mark all that apply)*

- ☐ To discuss my course schedule
- ☐ To get information about requirements for graduation
- ☐ To discuss post-graduation plans
- ☐ Other *(please specify)*: ____

Submit

Senior Survey

Concentration Advising, cont'd.

Please indicate the extent to which you agree with the following statements about your **primary** concentration advisor.	strongly agree	agree	disagree	strongly disagree	NA
My advisor is usually available when I needed to see him or her	○	○	○	○	○
My advisor understands and communicates institutional policies and procedures	○	○	○	○	○
My advisor encourages me to make my own decisions	○	○	○	○	○
My advisor is interested in my development as an individual	○	○	○	○	○
My advisor has informed me about the Office of Career Services.	○	○	○	○	○
My advisor discusses other institutional resources with me (e.g., Study Skills, Writing Center)	○	○	○	○	○
I am satisfied overall with the advice I have received.	○	○	○	○	○
I am satisfied with the advice I have received about careers	○	○	○	○	○
I am satisfied with the advice I have received about graduate or professional schools.	○	○	○	○	○

Please indicate the extent to which you agree with the following statements about your **secondary** concentration advisor.	strongly agree	agree	disagree	strongly disagree	NA
My advisor is usually available when I needed to see him or her	○	○	○	○	○
My advisor understands and communicates institutional policies and procedures	○	○	○	○	○
My advisor encourages me to make my own decisions	○	○	○	○	○
My advisor is interested in my development as an individual	○	○	○	○	○
My advisor has informed me about the Office of Career Services.	○	○	○	○	○
My advisor discusses other institutional resources with me (e.g., Study Skills, Writing Center)	○	○	○	○	○
I am satisfied overall with the advice I have received.	○	○	○	○	○
I am satisfied with the advice I have received about careers	○	○	○	○	○
I am satisfied with the advice I have received about graduate or professional schools.	○	○	○	○	○

Comments About Concentration Advisors

Submit

SENIOR SURVEY

CO-CURRICULAR ACTIVITIES

Please indicate which (if any) years you participated in the following College activities:	Did not participate	Freshman	Sophomore	Junior	Senior
Concentration-related club	☐	☐	☐	☐	☐
Honor society/fraternity	☐	☐	☐	☐	☐
Social fraternity/sorority	☐	☐	☐	☐	☐
Service club	☐	☐	☐	☐	☐
Volunteer activity (please specify: _____)	☐	☐	☐	☐	☐
Intercollegiate athletics	☐	☐	☐	☐	☐
Intramural or club sports	☐	☐	☐	☐	☐
Drama, dance, music or arts group	☐	☐	☐	☐	☐
Religious organization	☐	☐	☐	☐	☐
Work for pay on or off campus	☐	☐	☐	☐	☐
Student publications	☐	☐	☐	☐	☐
Study abroad	☐	☐	☐	☐	☐

List any other activity(ies) and years involved: _____

During this academic year, about how many **hours** per week have you been involved in these types of activities? _____

During this academic year, about how many **times** per week did you participate in these types of activities? _____

Have you held any offices in these organizations? ○ YES ○ NO

Comments: _____

Submit

Senior Survey

COMPUTERS & TECHNOLOGY

Please indicate the ways in which you **use computers** and **which computer applications at State University (SU)helped you learn how to use.** (*mark all that apply*)

Use computers	SU helped you learn	Application
☐	☐	**word processing**
☐	☐	**presentation graphics** (e.g., PowerPoint or Corel Presents)
☐	☐	**desktop publishing**
☐	☐	**email**
☐	☐	**accessing or maintaining databases**
☐	☐	**photographic or multimedia editing**
☐	☐	**downloading music**
☐	☐	**gaming** (entertainment)
☐	☐	**chat or instant messaging**
☐	☐	**maintaining your calendar or schedule**
☐	☐	**research**
☐	☐	**browsing the World Wide Web**
☐	☐	**spreadsheets** (e.g., Excel, Quattro Pro, Lotus 123)
☐	☐	**statistical analyses**
☐	☐	**computer programming**
☐	☐	**Other:** ☐

Comments about the Annual Senior Survey:

☐

Submit

State University Senior Survey (p.1-4)

Concentration Information

Please mark your **primary** concentration:

If Other, please define:

If applicable, please mark your **secondary** concentration:

If Other, please define:

Submit

State University Senior Survey, cont'd (p.2-4)

Concentration Writing Proficiencies

How did you fulfill the Concentration Writing Requirement in your primary concentration?

In fulfilling the Writing Requirement in your **primary** concentration, how often did the following occur?	rarely	sometimes	regularly
You had opportunities to practice your writing:	○	○	○
An instructor commented on your writing:	○	○	○
You rewrote papers based on an instructor's comments:	○	○	○

If applicable, how did you fulfill the Writing Requirement in your **secondary** concentration?
(if not applicable, scroll to "Concentration Advising".)

In fulfilling the Writing Requirement in your secondary concentration, how often did the following occur?	rarely	sometimes	regularly
You had opportunities to practice your writing:	○	○	○
An instructor commented on your writing:	○	○	○
You rewrote papers based on an instructor's comments:	○	○	○

Comments about your concentrations or this survey:

Submit

Top of Form

STATE UNIVERSITY ANNUAL SENIOR SURVEY p.1-4

POST GRADUATE PLANS

Please list your preferred email address:

The following questions address your specific post-graduation plans. The information will be used to help us prepare SU students for post-graduate studies and careers.

EMPLOYMENT

Please describe your Post Graduate work status:

If you chose "other", please explain here:

If **employed**, please complete the following section. If planning to attend **graduate school**, click on "Continue Survey" at the bottom of the page to skip to the **next section**.
If working **and** attending graduate school, please complete **both sections**.

Job Title:

Employer:

Business City: State:

Salary: Signing Bonus:

How did you learn about this job?

If you chose "other", please explain here:

Is this job related to your concentration(s)?

YES NO

Submit

Bottom of Form

Top of Form

STATE UNIVERSITY ANNUAL SENIOR SURVEY, cont'd. p.2-4

POST GRADUATE PLANS

Which of the following categories best describes your career field?

ARTS:		MEDICAL/HEALTH SCIENCES:	
BUSINESS:		MUSEUM/LIBRARY:	
COMMUNICATIONS:		NON-PROFITS:	
EDUCATION:		PHYSICAL SCIENCES/MATH:	
GOVERNMENT:		SOCIAL SCIENCES / RELIGION:	
INTERNATIONAL:		TECHNOLOGY:	
LEGAL:		TRAVEL / RECREATION:	
LIFE SCIENCES:		OTHER:	

Have you completed a School of Education Program? ○ YES ○ NO

Submit

Bottom of Form

State University Annual Senior Survey, cont'd p.3-4

GRADUATE AND PROFESSIONAL SCHOOL APPLICATIONS

Have you applied to graduate or professional school? ○ NO (Click on Continue Survey)

○ YES (address questions below)

Please list up to five schools and programs (field of study) you have applied to in order of preference. Also, indicate the status of your application.

	Name of School	Department/Program	Degree	Application Status
1.				
2.				
3.				
4.				
5.				

As of right now, which school do you plan to attend?

Submit

State University Annual Senior Survey, cont'd p.4-4

GRADUATE SCHOOL AND PROFESSIONAL EXAMINATIONS

Please indicate which, if any, professional and qualifying examinations you have taken. If available, please provide scores
so we can gauge how well our students are prepared for these examinations.

Taken exam?	Examination	Highest scores received (if not yet available indicate NAV)
○ YES ○ NO	**GREs (Graduate School)**	Verbal [ ] Quantitative [ ] Analytical [ ]
○ YES ○ NO	**GRE Subject test**	Subject: [ ] Score: [ ]
○ YES ○ NO	**LSAT (Law)**	SCORES: [ ]
○ YES ○ NO	**MCAT (Medical College)**	Biological Sciences [ ] Physical Sciences [ ] Verbal Reasoning [ ] Writing Sample [ ]
○ YES ○ NO	**GMAT (Business)**	Total Score: [ ] Quantitative: [ ] Verbal: [ ]
○ YES ○ NO	**Other:**	TEST NAME & SCORES: [ ]

Submit

STATE UNIVERSITY (SU) SENIOR SURVEY

During your time at SU did you:	Did not participate	Freshman	Sophomore	Junior	Senior
Use a SU recreational facility?	☐	☐	☐	☐	☐
Attend a SU artistic performance or exhibit?	☐	☐	☐	☐	☐
Attend a SU sporting event?	☐	☐	☐	☐	☐

About how many **times during this academic year** did you participate in these types of activities? ☐

How many close friends do you have? ☐

How many of your friends are:

From SU	▼	Your same sex	▼
Attending (attended) another 4-year college	▼	Your same race or ethnicity	▼
Involved in clubs/organizations with you	▼	In your major	▼
About your same age	▼	Co-workers	▼

Comments: ☐

Submit

STATE UNIVERSITY SENIOR SURVEY

Internships and Externships

Did you participate in any **externships** while attending State University? (1-5 days spent mostly observing) ○ Yes ○ No

Did you participate in any **internships** while attending State University? (at least 1-3 months of hands-on practical experience) ○ Yes ○ No

Please list the specific internship/externship site(s), marking all items that apply:

Externship	Internship	Site (include department/program)	Did you receive Academic Credit?	Were you paid a Stipend/Wage?
○	○	1.	☐	☐
○	○	2.	☐	☐
○	○	3.	☐	☐
○	○	4.	☐	☐
○	○	5.	☐	☐

On the whole, were any of the internships/externships helpful in deciding on a career? ○ Yes ○ No

Did any of the internships/externships help you in some way to find a job or gain acceptance to grad school? ○ Yes ○ No

Submit

State University (SU) Annual Senior Survey

SU General Education Goals, p.1-3

How many courses did you take in Fall 2001 and Spring 2002?

How many of those courses included class discussions?

In how many of those courses were you assigned each of the following activities?

Discussion leader:

Informal (round table) report of your work:

Formal group presentation or debate:

Formal individual presentation/speech of at least 5 minutes:

Thinking about your *academic* experiences at State University, overall would you say you are:	very dissatisfied	dissatisfied	neither dissatisfied nor satisfied	satisfied	very satisfied
	○	○	○	○	○
Thinking about your *social* experiences at State Univeristy, overall would you say you are:	very dissatisfied	dissatisfied	neither dissatisfied nor satisfied	satisfied	very satisfied
	○	○	○	○	○

Submit

State University (SU) Senior Survey

SU General Education Goals, p.2-3

The College lists the following skills as goals of general education.

Please rate your **current skill level** on a scale of **1 to 5**, and then indicate how much **SU contributed** to your personal growth in each of these skills.	low 1	2	3	4	high 5	**SU's *contribution* to your personal growth in each of these *skills*:**
Effective writing	○	○	○	○	○	
Effective speaking	○	○	○	○	○	
Proficiency in a foreign language	○	○	○	○	○	
Mathematical/statistical skills	○	○	○	○	○	
Leadership skills	○	○	○	○	○	
Computer skills	○	○	○	○	○	
Interpersonal skills	○	○	○	○	○	
Scientific method skills	○	○	○	○	○	
Historical inquiry skills (i.e., ability to verify facts through analysis and comparison of texts and archives)	○	○	○	○	○	
Critical thinking skills (i.e., inductive and deductive reasoning skills)	○	○	○	○	○	
Aesthetic skills (i.e., understanding of creative processes and media)	○	○	○	○	○	
Information literacy skills (searching, selecting, evaluating and using resources, including those on the Internet)	○	○	○	○	○	

Submit

State University (SU) Senior Survey

SU General Education Goals, p.3-3

State University also lists the following broad areas of knowledge as goals of general education.

Please rate your **knowledge level** for each one on a scale of 1 to 5, with 1 meaning you believe your knowledge level is low to 5 meaning your knowledge level is high, and then indicate how much did the SU contribute to your **personal growth** in each of these **knowledge areas**?	low 1	2	3	4	high 5	**SU's contribution to your *personal growth*:**
Major philosophical and religious systems	○	○	○	○	○	
The physical realm and major advances in the natural sciences	○	○	○	○	○	
Important events that have shaped Western societies	○	○	○	○	○	
Important events that have shaped non-Western societies	○	○	○	○	○	
Politics	○	○	○	○	○	
Leading historical figures	○	○	○	○	○	
Masterworks and movements in art, music, and literature	○	○	○	○	○	
Individual and social behavior and major advances in the social/behavioral sciences	○	○	○	○	○	
Wars and revolutions	○	○	○	○	○	
Important applications of Mathematics	○	○	○	○	○	

Final Comments:

Submit

APPENDIX C

Data code Book

[1]Variables for use in study (available 2000, 2001, 2002)

[2]Variables for use in study (available 2001, 2002)

[3]Did not use in present study

[4]Variables available (2001, 2002)

IDENTIFIERS

STU_SSN: student social security number

SURVYR: survey year: 2000, 2001, 2002

EXCELYR: year defined by SIS excel file

resp[1]: respondent to senior survey(s): yes, no, blank (not in survey population)

FROM REGISTRAR

group[1]: achievement groups derived from Roosevelt (Roosevelt Scholars) and PBK (Phi Beta Kappa)

neither=non-high achievers (neither Roosevelt Scholar nor PBK)

Roosevelt=high school achiever (Roosevelt Scholar, not PBK)

pbk=college achiever (not Roosevelt Scholar, PBK)

Roosevelt/pbk=high school & college achiever (Roosevelt Scholar & PBK)

DEMOGRAPHICS

sex[1]: M=male, F=female

race[1]: **CK CODESA**=Asian, B=Black/African American, H=Hispanic, I=Indian/subcontinent, N=Native American, U=Unrecorded, W=White

dom_code[1]: **domicile** – I=, IR=, IS=, MR=, O=, OA=, OR=, OS=, SR=

gpa[1]: cumulative grade point average

greek_ho[1]: lived in Greek housing – no, yes, NA (information not available)

spec_hou[1]: lived in Special Interest Housing (languages, ...) identify which houses marked-- no, yes

FROM SURVEY DATA

MAJORS (survey and Registrar)

majors[1]: area of major(s): RECODED: 1=humanities, 2=social sciences, 3=natural sciences, 4=business, 5=interdisciplinary and/or majors in two disciplines

RECODED from self-reported primary and secondary concentrations and State University Registrar data. Self -reports are coded first, and if not available, SIS data are used.

ADVISING: Please indicate the extent to which you agree with the following statements about your primary concentration advisor? RECODE – highest of primary and secondary: 4=strongly agree, 3=agree, 2=disagree, 1=strongly disagree, 0=N/A (0=missing, no calculations for any 0 responses, results in a 56% response rate for this item: students do not respond to each item)

INDEX: SATISFACTION WITH CONCENTRATION ADVISING

advindx6[1]: sum of agreement level (1-4) for items about advising (6) divided by 6 to get a 4-point scale consistent with the original scale (4=strongly agree, 3=agree, 2=disagree, 1=strongly disagree). Range: 1-4 with 1=lowest level of satisfaction and 4=highest level

ADVISING INDEX ITEMS

items included in advising index

advavail: advisor usually available when I need to see him/her

advSUpol: advisor understands/communicates college policies and procedures

advown: advisor encourages me to make my own decisions

advindev: advisor interested in my development as individual

advsat1: I am satisfied with the overall advice I have received

advsat4: satisfaction with post-grad advice: highest rating of career **(advsat2)** or school advice **(advsat3)**

items not included in advising index:

advresou: advisor discusses other SU resources with me (e.g. Study Skills, Writing Center)

advsat2: I am satisfied with the advice I received about careers

advsat3: I am satisfied with the advice I have received about graduate or professional schools

GENERAL EDUCATION: CWR

In fulfilling the Writing Requirement in your primary concentration, how often did the following occur? RECODED: highest of primary and secondary: 3=regularly, 2=sometimes, 1=rarely, 0=no response

INDEX: CWR EXPERIENCES

cwrindx3[1]: sum of frequencies in 3 writing experiences. For each experience, scale is 1-3, and index scale is 3-9 with 3=rarely any of the experiences; 4=2 rarely, 1 sometimes; 5,6,7=mix of experiences; 8=2 regularly, 1 sometimes; 9=regularly all of the experiences

cwrprac: had opportunity to practice writing

cwrcomm: instructor commented on writing

cwrwrite: rewrote papers based on instructor comments

GENERAL EDUCATION: ORAL COMMUNICATION

INDEX: TYPES OF ASSIGNMENTS IN ORAL COMMUNICATION

orlindx4[1]: total # of types of oral communication assignments: discussion leader, informal report of work, group presentation, individual speech: 0=no assignments 4=four types of assignments

y_o_lead: yes/no: In how many courses were you assigned: discussion leader (string) RECODE: 0=none/missing, 1=at least one such assignment

y_o_rept: yes/no: In how many courses were you assigned: informal report of your work (string) RECODE: 0=none/missing, 1=at least one such assignment

y_o_grp: yes/no: In how many courses were you assigned: formal group presentation or debate (string) RECODE: 0=none/missing, 1=at least one such assignment

y_o_spch: yes/no: In how many courses were you assigned: individual presentation/speech (string) RECODE: 0=none/missing, 1=at least one such assignment

GENERAL EDUCATION: SKILLS & KNOWLEDGE LEVELS—State University (SU)

Please rate your *current skill (knowledge) level* on a scale of 1 (low) to 5 (high.

INDEX: GENERAL EDUCATION SKILLS

sklindx4[1]: sum of ratings on 4 skill items. For each skill area, scale is 1-5, and index scale is 4-20 with 4=low ratings on each skill to 20=high ratings on each skill. NOTE: The items included in the index are general skill areas. Those that were excluded are more specific. Index developed by creating an index of all skill items, running a bivariate Pearson correlation, extracting those items that met a .5 criterion for inclusion, and recreating the general education skills index. Items used in index construction:

SKILLS INDEX ITEMS

items included in skills index:

curspeak: rate level: effective speaking

curlead: rate level: leadership skills

curthink: rate level: critical thinking skills

curipers: rate level: interpersonal skills

not included in final index:

curwrite: rate level: effective writing

curfrlng: rate level: proficiency in foreign language

curmath: rate level: mathematical skills

curcomp: rate level: computer skills

cuscimet: rate level: scientific method skills

cuhisinq: rate level: historical inquiry skills

curaesth: rate level: aesthetic skills

INDEX: GENERAL EDUCATION KNOWLEDGE

knwindx7[1]: sum of ratings on 7 knowledge items. For each knowledge area, scale is 1-5, and index scale is 7-35 with 7=low ratings in each knowledge area to 35=high ratings in each knowledge area. NOTE: Index developed by creating an index of all knowledge items, running a bivariate Pearson correlation, extracting those items that met a .5 criterion for inclusion, and recreating the general education knowledge index. Items used in index construction:

KNOWLEDGE INDEX ITEMS

Items included in knowledge index

kphilsys: rate level: philosophical/religious systems

kwestsoc: rate level: important events that have shaped Western societies

knonwest: rate level: important events that have shaped non-Western societies

kpolitic: rate level: politics

khistfig: rate level: leading historical figures

kartslit: rate level: masterworks/movements in art, music, literature

kwarsrev: rate level: wars & revolutions

Items not included in knowledge index

knatsci: rate level: physical realm & advances in natural sciences

ksocbehv: rate level: individual/social behavior & advances in social sciences

GENERAL EDUCATION: SU CONTRIBUTION TO SKILLS & KNOWLEDGE

Please ...indicate how much *SU contributed to your personal growth* in each of these skills. Scale: 1 (low) to 5 (high).

INDEX: SU CONTRIBUTION TO SKILLS

SUsindx8[1]**:** sum of ratings on 8 SU contribution-to-skills items. For each item, scale is 1-5, and index scale is 8-40 with 8=low ratings of SU contribution to each skill to 40=high ratings of SU contribution to each skill. NOTE: The items included in the index are not identical to those in the skills level—contributions index includes more skill areas. Index developed by creating an index of all SU contributions-to-skill items, running a bivariate Pearson correlation, extracting those items that met a .5 criterion for inclusion, and recreating the SU contributions-to-skills index.

Items used in index construction:

2000, 2001: 5-pt scale; 2002: 3-pt scale: 2002 RECODED 1=very little, 3=some, 5=very much: the difference in scales results in a difference in means: 2000, 2001=29, 2002=26

SU CONTRIBUTIONS-TO-SKILLS INDEX ITEMS

Items included in contribution-to-skills index

SUwrite: SU contribution: effective writing

SUspeak: SU contribution: effective speaking

SUlead: SU contribution: leadership skills

SUcomp: SU contribution: computer skills

SUipers: SU contribution: interpersonal skills

SUhisinq: SU contribution: historical inquiry skills

SUthink: SU contribution: critical thinking skills

SUaesth: SU contribution: aesthetic skills

Not included in contribution-to-skills index

SUforlng: SU contribution: proficiency in foreign language

SUmath: SU contribution: mathematical skills

SUscimet: SU contribution: scientific method skills

INDEX: SU CONTRIBUTION TO KNOWLEDGE

SUkindx7[1]: sum of ratings on 7 SU's contribution to knowledge items. For each item, scale is 1-5, and index scale is 7-35 with 7=low ratings of SU contribution to each knowledge area to 35=high ratings of SU contribution to each knowledge area. NOTE: The items included in the index are identical to those in the knowledge level. Index developed by creating an index of all SU contributions-to-knowledge items, running a bivariate Pearson correlation, extracting those items that met a .5 criterion for inclusion, and recreating the SU contributions to skills index. Items used in index construction:

2000, 2001: 5-pt scale; 2002: 3-pt scale: 2002 RECODED 1=very little, 3=some, 5=very much: the difference in scales does not result in any difference in means: 2000, 2001=21, 2002=20

SU CONTRIBUTIONS-TO-KNOWLEDGE INDEX ITEMS

Items included in contribution-to-knowledge index

SUphil: SU contribution: philosophical/religious systems

SUwstsoc: SU contribution: important events that shaped Western societies

SUnonwst: SU contribution: important events that shaped non-Western societies

SUpoltic: SU contribution: politics

SUhisfig: SU contribution: leading historical figures

SUartlit: SU contribution: masterworks/movements in art, music, literature

SUwars: SU contribution: wars & revolutions

Not included in contribution-to-knowledge index

SUnatsci: SU contribution: physical realm & advances in natural sciences

SUsocbhv: SU contribution: individual/soc. behavior & advances in social sciences

COMPUTING[34]: 2001, 2002 ONLY

From list of 14 computer applications, # of applications respondent marked at "uses" (list follows variables)

c_useaca : # of academic computer uses (0-8):

usewdprc+pregraph+dsktppub+database+research+sprdsht+statstic+cprogram

c_usepls: # of recreational computer uses (0-6): usemail+fotoedit+dnldmus+games+chat+calendar

c_useall: total # of ways in which computer used (0-14)

(NOTE: c_useall is a sum of c_useaca and c_usepls, so both correlated highly with c_useall

Please indicate the ways in which you use computers: 1=marked

Usewdprc: word processing

Pregraph: presentation graphics (e.g., PowerPoint or Corel Presents)

Dsktppub: desktop publishing

Usemail: email

Database: accessing or maintaining databases

Fotoedit: photographic or multimedia editing

Dnldmus: downloading music

Games: gaming (entertainment)

Chat: chat or instant messaging

Calendar: maintaining your calendar or schedule

Research: research

Sprdsht: spreadsheets (e.g., Excel, Quattro Pro, Lotus 123)

Statstic: statistical analyses

Cprogram: computer programming

From list of 14 computer applications, # of applications State University helped respondent learn how to use (1=marked, 0=not marked) (list follows variables)

(NOTE: c_SU_all is a sum of c_SU_aca and c_SU_pls, so both correlated highly with c_SU_all

c_SU_aca: # of academic computer uses SU helped respondent learn (0-8):

usewdprc+pregraph+dsktppub+database+research+sprdsht+statstic+cprogram

c_SU_pls: # of recreational computer uses SU helped respondent learn (0-6):

usemail+fotoedit+dnldmus+games+chat+calendar

c_SU_all : total # of applications SU helped respondent learn to use (0-14)

Computer applications W&M helped respondent learn how to use

SUwdprc: Learned at SU: word processing

SUgrphic: Learned at SU: presentation graphics

SUdskpub: Learned at SU: desktop publishing

SUemail: Learned at SU: email

SUdbase: Learned at SU: accessing or maintaining databases

SUfotoed: Learned at SU: photographic or multimedia editing

SUdlmus: Learned at SU: downloading music

SUgames: Learned at SU: gaming (entertainment)

SUchat: Learned at SU: chat or instant messaging

SUcalndr: Learned at SU: maintaining your calendar or schedule

SUresrch: Learned at SU: research

SUsprsht: Learned at SU: spreadsheets

SUcprog: Learned at SU: computer programming

SUstats: Learned at SU: statistical analyses

CO_CORRICULAR ACTIVITIES & FRIENDS:

CALCULATED ACTIVITIES VARIABLES:

act_hr#[1]: # hours per week involved in cocurricular activities during senior year RECODE (from string to numeric):

act#_wk[1]: # of activities involved in INCLUDING work (1-12)

act#_xwk[4]: # of activities involved in EXCLUDING work (1-11)

actyr_wk[1]: INCLUDING work, longest duration of involvement in activity (1-4)

actyrxwk[4]: EXCLUDING work, longest duration of involvement in activity (1-4)

ACTIVITIES: INITIAL LIST OF 11 ACTIVITIES & "OTHER"

Please indicate which (if any) years you participated in the following College activities

(# of years participated: 0-4)

a_honors[4]: Honor society/fraternity

a_public[4]: Student publications

a_conc[1]: Concentration-related club

a_frat[1]: Social fraternity/sorority

a_service[1]: Service club

a_volunt[1]: Volunteer activity

a_athl[1]: Intercollegiate athletics

a_sports[1]: Intramural or club sports

a_arts[1]: Drama, dance, music or arts group

a_relig[1]: Religious organizations

a_work[1]: Work for pay on or off campus

a_other[4]: other activities: (# years when available, 1 if activity listed, years not listed)

cocuroff[4]: Have you held any offices in these organizations? 2000: recode 1=2, 0=1, =0

FRIENDS- ONLY 2001, 2002

Friends[34]: number of close friends (string)

friends#[34]: number of close friends (numeric)

How many friends are from: RECODE: 0=no response, 1=none, 2= some, 3= most, 4= all

FrndSU[23]: SU

frndsex[23]: Your same sex

frnd4yr[23]: Attending (attended) a 4-year college

frndrace[23]: Your same race or ethnicity

frndclub[23]: Involved in clubs/organizations with you

frndmaj[23]: In your major

frndage[23]: About your same age

frndcowk[23]: Co-workers

OVERALL SATISFACTION

Acadexp[1]: Thinking about your academic experiences at SU overall would you say you are:

1=very dissatisfied, 2= dissatisfied, 3= neither satisfied/dissatisfied, 4= satisfied, 5=very satisfied

Most respondents are satisfied/very satisfied (89%)

socexp[1]: Thinking about your academic experiences at SU, overall would you say you are: 1=very dissatisfied, 2= dissatisfied, 3= neither satisfied/dissatisfied, 4= satisfied, 5=very satisfied

POST GRADUATION PLANS:

work#[1]: Post Graduate work status: 2=plans to work, 0=no response/no plans to work

gradsch#[1]: Plans to attend grad/prof school? 2=plans to attend, 0=no response/no plans to attend

APPENDIX D TABLE D1

Achievement Groups

Table D1

Achievement Groups -- Sample Compared to Population

	Group I		Group II		Group III		Group IV	
	N	%	N	%	N	%	N	%
Sample	1742	81.8	215	10.1	81	3.8	92	4.3
Population	3091	85.2	318	8.8	109	3.0	111	3.1

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa. Sample consisted of respondents to the Senior Survey and the population consisted of all seniors scheduled to graduate in May of 2000, 2001 and 2002.

APPENDIX E

Classification of Majors

HUMANITIES (AREA I):

Art

Art History

Classical Studies (Latin)

English

Modern Languages: French, German,

Hispanic Studies (Spanish)

Music

Philosophy

Religion

Theatre & Speech

SOCIAL SCIENCES (AREA II)

Anthropology

Economics

Government

History

Kinesiology

Psychology

Sociology

NATURAL SCIENCES (AREA III)

Biology

Chemistry

Computer Science

Geology

Mathematics

Physics

BUSINESS (AREA IV)

Business: Accounting, Finance,

Marketing, Operations & Information

Technology

INTERDISCIPLINARY (AREA V)

American Studies

International Relations

International Studies (e.g., East Asian

Studies, Latin American Studies,

Middle Eastern Studies)

Interdisciplinary Studies:

- Biological Psychology
- Black Studies
- Environmental Science/Studies
- (Environmental Geology,
- Environmental Geology, & Ethics)
- Linguistics
- Literary & Cultural Studies
- Medieval Renaissance Studies
- Women's Studies
- Public Policy

SECONDARY MAJOR ONLY

Education: Elementary, Secondary

(certification)

MINORS ONLY

Chinese, Film Studies – not coded

unless part of interdisciplinary major

(e.g., LCST – Film studies)

APPENDIX F TABLE F2

Summary of Overall Results

Category	Variable	Group I	Group II	Group III	Group IV
Inputs	High School Rank	91.22	97.62	95.58	98.51
	SAT	1280	1441	1350	1468
	Advanced Placement	3.53	9.89	8.1	16.36
	Transfer Credits	9.73	5.2	11.54	5.5
Experiences	Greek Housing	19.9%	18.6%	7.4%	6.5%
	Special Interest Housing	9.9%	69.3%	16.0%	73.9%
	Living in Residence Hall[1]	70.5%	81.4%	74.1%	87.0%
	Living Off-campus[1]	26.5%	18.1%	23.5%	12.0%
	Concentration-related clubs	36.4%	36.3%	50.6%	50.0%
	Social fraternity/ sorority	36.1%	27.0%	21.0%	12.0%
	Volunteer Activity	53.4%	60.9%	67.9%	65.2%
	Intercollegiate Athletics	13.2%	7.4%	4.9%	5.4%
	Drama, dance, music or arts	24.4%	42.8%	49.4%	39.1%

		Group I	Group II	Group III	Group IV
	Religious organizations	29.8%	36.3%	39.5%	45.7%
	# of activities involved in	4.18	4.55	5.03	4.81
	# of hours involved in activities	14.81	15.32	11.13	11.79
	Humanities	13.4%	16.7%	28.4%	19.6%
	Social sciences	28.6%	21.4%	27.2%	12.0%
	Natural sciences	14.6%	27.4%	24.7%	30.4%
	Business	13.9%	4.2%	0.0%	0.0%
	Interdisciplinary/ more than one major	29.4%	30.2%	19.8%	38.0%
	Advising (satisfaction)	3.27	3.36	3.54	3.5
Outcomes	Work	57.0%	53.0%	33.3%	38.0%
	Graduate School	23.2%	32.1%	55.6%	50.0%
	GPA	3.09	3.43	3.83	3.87
	Satisfaction (academic)	4.22	4.29	4.66	4.71
	Satisfaction (social)	3.6	3.86	3.66	4.12

Note: [1] = During Senior Year, [redacted] = Highest rating for this group compared to the other groups,

[redacted] = Lowest rating for this group compared to the other groups.

APPENDIX TABLE G3

Ethnic Group Representation

Table G3

Ethnic Group Representation

Ethnicity	Group I		Group II		Group III		Group IV	
	N	%	N	%	N	%	N	%
Asian	120	6.9%	11	5.1/%	2	2.5%	1	1.1%
African American	82	4.7%	2	.9%	0		0	
Hispanic	45	2.6%	6	2.8%	1	1.2%	2	2.2%
Indian/subcontinent	8	.5%	0		0		0	
Unrecorded	119	6.8%	12	5.6%	6	7.4%	3	3.3%
Caucasian	1368	78.5%	184	85.6%	72	88.9%	86	93.5%

Note. Group I – Neither Roosevelt Scholars nor Phi Beta Kappa, Group II – Roosevelt Scholars only, Group III – Phi Beta Kappa only, and Group IV – Roosevelt Scholars and Phi Beta Kappa.

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