

THE RELATIONSHIP BETWEEN SELF-ESTEEM AND ACADEMIC SUCCESS  
AMONG AFRICAN AMERICAN STUDENTS IN THE MINORITY ENGINEERING  
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## **DEDICATION**

This work is dedicated to my mother, Marie Harris Young, who offered me unending support and encouragement throughout the entirety of my educational journey. I know that she would never believe that the daughter who she scolded for not completing her homework in elementary school would be fulfilling her educational dreams of completing a doctoral degree. My mother has instilled in me a love of education, the value of hard work, and a dedication to the completion of my goals. She has taught me the importance of putting God first in all my endeavors.

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## **ABSTRACT**

The purpose of this study was to determine if a relationship exists between the self-esteem and academic success of African American students in the Minority Engineering Program (MEP) at a research-extensive university in the Southern portion of the United States. The nature of the study required the use of descriptive, comparative, and correlational research methods.

The Coopersmith Self-Esteem Inventory Adult Form (CSEI-A), a 25-item dichotomous self-report questionnaire was used to measure the level of self-esteem of all respondents. CSEI-A data was collected through the use of an on-line survey program, called Zoomerang©. Data on the specific demographic and academic variables related to the objectives of this study was collected from the University's official records in the College of Engineering.

The target population of this study was defined as African American students enrolled in a Minority Engineering Program at a research extensive university in the Southern portion of the United States. A census of 260 African American engineering students was selected to participate in the study, and a total of 121 completed the on-line survey resulting in a 46.5% response rate. Overall high levels of self-esteem were demonstrated. The mean CSEI-A score was determined to be 71.64/100.

Findings of the study indicated that there was a positive relationship between level of self-esteem and demographic variables, such as parent's highest educational level completed, year of classification, cumulative GPA, and engineering major GPA. Furthermore, findings revealed that respondents with high cumulative and engineering GPA's were found to have higher levels of self-esteem. Stepwise multiple regression

analysis of dummy coded variables gender, age, year of classification, and parent's highest educational level completed as possible predictors of CSEI-A scores revealed that year 1 students reported lower CSEI-A scores than all other students. However, year 1 students who reported their parent's highest educational level completed as a bachelor degree or higher scored higher on the CSEI-A than year 1 students who reported their parent's highest educational level completed as an associate degree or lower.

Results from this study support the need for the inclusion of a self-esteem building component into the retention efforts of the program. The researcher also recommended that the study institution develop first-generation college student retention strategies, such as individual and group counseling, intensive orientation programs, first-year experience courses, and learning communities.

# CHAPTER 1

## INTRODUCTION

### Rationale

In 1979, engineering degrees were awarded to 52,598 students. Of these, 2,347 students were African American, Hispanic, or Native American. In 1994, engineering degrees were awarded to 59,507 students. According to the Engineering Workforce Commission of the American Engineering Society (1995), only 5,490 students who received these degrees were minorities. More than one fourth of the American college population in the United States is made up of minority students. However, the working population of U.S. engineers is predominately non-minority males. Despite a greater awareness of the need for diversity in the engineering field that occurred over the past decade, the historic pattern of under-representation of African Americans has changed very little (Babco, 2001).

The enrollment of minority freshmen in engineering schools has increased more than six times during the last twenty years. However, the attrition rate of minority students, especially African Americans, in engineering has stayed constant. Over the last decade, an estimated 45,000 minority students earned a bachelor's degree in an engineering field, but over 75,000 dropped out of an engineering major (NACME Research Letter, p. 1). The retention of minority students in colleges of engineering is an issue of great concern, since engineering graduates will provide a high percentage of the technical workforce of the future (Morrison & Williams, 1993). Unsatisfactory recruitment and retention efforts in higher education have severely hindered the

successful retention of African American students. The literature available on the experience of African Americans in higher education is very limited (Pascarella & Terenzini, 1991) and therefore gives little guidance to higher education professionals.

According to van Laar (2000), African American students tend to have lower academic success rates than non-minority students. The severity of this problem is illustrated by an attrition rate that runs as high as 62% among African American college students, compared with 40% among all college students in the United States (American Council on Education, 2008). Only six percent of the nation's minority high school students graduate with the academic prerequisites to enroll in an undergraduate engineering program (NACME Research Letter, p. 1). Since African American students are usually not appropriately prepared by the high schools they attend, affective variables, such as self-esteem, may be a better predictor of academic success than high school graduation rank.

Studies by Tracey and Sedlacek (1984 & 1985) have indicated that self-esteem and other affective variables can predict persistence and achievement of African American college students. Self-esteem has been extensively investigated for African American populations (Porter & Washington 1979, 1989). Numerous researchers have reported that the lower academic performance experienced by African American students has reflected in a more negative self-evaluation of academic abilities. These findings are consistent with many theories of self-evaluation that expect information about an individual's performance, social comparisons with others, and the judgment of the individual made by others, to be processed into self-judgments (van Laar, 2000).

The literature on self-evaluation theories states that academic achievement is influenced by self-esteem (Festinger, 1954; Wills, 1991). Numerous studies have shown a positive correlation between self-esteem and academic achievement. However, correlation does not imply causation. Research shows that academic achievement influences an individual's level of self-esteem. Wills (1991) believes that downward social comparisons following negative performance feedback will lead to a less positive self-concept. According to the self-esteem model, African American college students internalize the negative stigma surrounding their minority group and blame themselves for their lower levels of academic success. In addition, their attribution to a stable factor lowers African American students' expectancies for future outcomes and decreases their motivation and performance (van Laar, 2000).

### **Problem Statement**

The purpose of this study was to determine if a relationship exists between the self-esteem and academic success of African American students in the Minority Engineering Program (MEP) at a research-extensive university in the Southern portion of the United States.

### **Research Objectives**

The following objectives were formulated to guide the research:

1. Describe the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States based on the following selected demographic characteristics:

- a. Gender
  - b. Age
  - c. Parent's Highest Educational Level Completed
  - d. Engineering Major
  - e. Year of Classification
  - f. Enrollment Status
2. Describe the academic success of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States. Academic success for purposes of this objective is defined as the following:
    - a. Whether or not the student has a Cumulative Grade Point Average (C-GPA) of 2.00 or greater on a 4.00 scale.
    - b. Whether or not the student has an Engineering Major Grade Point Average (EM-GPA) of 2.00 or greater on a 4.00 scale.
  3. Describe the self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form.
  4. Determine if a relationship exists between level of self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory

(CSEI-A) Adult Form and the following variables:

- a. Gender
  - b. Age
  - c. Parent's Highest Educational Level Completed
  - d. Year of Classification
  - e. Cumulative Grade Point Average (C-GPA)
  - f. Engineering Major Grade Point Average (EM-GPA)
5. Determine if a relationship exists between level of self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form and academic success of students with a C-GPA of 2.00 or greater on a 4.00 scale and of students with a EM-GPA of 2.00 or greater on a 4.00 scale.
6. Determine if a model exist which explains a significant portion of the variance of self-esteem as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form from the following demographic characteristics:
- a. Gender
  - b. Age
  - c. Parent's Highest Educational Level Completed
  - d. Year of Classification

### **Significance of Study**

The research study was conducted to contribute to the limited body of research concerning the academic success of African American students majoring in engineering at a research extensive university in the Southern portion of the United States. By examining the selected demographic, academic characteristics, and self-esteem of the students who participated in the research, the researcher attempted to gain valuable insight into the relationship that exists between level of self-esteem and academic success in African American engineering students. The researcher hoped to make specific recommendations to the administrators of the Minority Engineering Program. The goal of the study was to determine the self-esteem levels of the African American students in MEP with implications for the inclusion of a self-esteem building component into the retention efforts of the program.

### **Definition of Terms**

1. Self-esteem: A set of attitudes and beliefs that a person brings with him- or herself when facing the world. It includes beliefs as to whether he or she can expect success or failure, how much effort should be put forth, whether failure at a task will be painful, and whether he or she will become more capable as a result of difficult experiences (Coopersmith, 1967, 1981).
2. Academic Success: A Cumulative and Engineering Major Grade Point Average above 2.00 on a 4.00 researcher developed scale.
3. Minority Engineering Program (MEP): A formal program that maintains a

concentrated effort to recruit and retain minority students pursuing a Bachelor of Science degree in engineering major.

4. Engineering Major: A student's principal area of study in engineering, such as Mechanical Engineering.
5. Cumulative Grade Point Average (C-GPA): The grade point average computed by the university's Office of the Registrar on all college level course work attempted. It is based upon a 4.00 scale.
6. Engineering Major Grade Point Average (EM-GPA): The grade point average computed by the university's Office of the Registrar on all course work attempted in a particular Engineering Major. It is based upon a 4.00 scale.
7. Age: For the purpose of this study, subjects will report their chronological age.
8. Year of Classification is determined by the number of hours of college level course work student has completed.
  - a. Freshman = 0-29 hours
  - b. Sophomore = 30-59 hours
  - c. Junior = 60-91 hours
  - d. Senior = 92 + hours
9. Enrollment Status:
  - a. Enrollment in a minimum of 12 credit hours during the Fall and Spring semesters is considered Full-time.

- b. Enrollment in fewer than 12 credit hours during the Fall and Spring semesters is considered Part-time.

### **Limitation of the Study**

Generalizations from this study to other groups or populations are limited because the population of the study is limited to students at this research extensive university and students who participate in the Minority Engineering Program at the same university. This population is not characteristic of all the African American engineering students on campuses at other universities, or other minority support programs at this research extensive university or elsewhere.

## **CHAPTER 2**

### **REVIEW OF RELATED LITERATURE**

The main purpose of this study was to explore the relationship between self-esteem and the academic success of African American students in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States. This chapter reviews the literature pertinent to self-esteem and the variables introduced and defined in the Introduction. Included in this chapter is the review of related literature concerning self-esteem, African American College Students, MEP, and the Coopersmith Self-Esteem Inventory.

#### **Self-Esteem**

Self-esteem has long been considered an essential component of good mental health. It is a widely used concept both in popular language and in psychology. It refers to an individual's sense of his or her value or worth, or the extent to which a person values, approves of, appreciates, prizes, or likes him or herself (Blascovich & Tomaka, 1991). Self-esteem is a set of attitudes and beliefs that a person brings with him or herself when facing the world. It includes beliefs as to whether he or she can expect success or failure, how much effort should be put forth, whether failure at a task will "hurt," and whether he or she will become more capable as a result of difficult experiences (Coopersmith, 1967, 1981). In basic terms, self-esteem is an internal belief system that an individual possesses about one's self. The concept of self-esteem has been researched by several social scientists. One major area of research has been the relationship between self-esteem and academic achievement.

## Theories of Self-Esteem

The most broad and frequently cited definition of self-esteem within psychology is Rosenberg's (1965), who described it as a favorable or unfavorable attitude toward the self. Self-esteem is generally considered the evaluative component of the self-concept, a broader representation of the self that includes cognitive and behavioral aspects as well as evaluative or affective ones (Blascovich & Tomaka, 1991). Wilson suggests that basic self-esteem develops during childhood to the age of about 12 years. Branden (1969) defined self-esteem as a standard by which a person judges her/himself, an estimate, a feeling, and an emotion. This self-evaluation is the single most significant key to behavior, which affects the thinking processes, emotions, desires, values, and goals. Branden stated that to understand a person psychologically, it is vital to understand the nature and degree of self-esteem. His definition is a synthesis of earlier interpretations. Branden notes the two strands to self-esteem as being competence and worthiness but emphasizes the relationship between the two strands as being another factor in understanding self-esteem. He states that self-esteem "is the conviction that one is competent to live and worthy of living." In 1994 Branden wrote *The Six Pillars of Self-Esteem*. He states that there are six pillars which form the foundation of self-esteem. They are:

- the practice of living consciously
- the practice of self-acceptance
- the practice of self-responsibility
- the practice of self-assertiveness

- the practice of living purposefully
- the practice of personal integrity

The literature on self-esteem promotes the outlook of self-esteem as a construct that explains a person's ability to adapt to the environment. The inner balance and stability which each person achieves is directly related to their emotions, social relationships, and behaviors (Blascovich & Tomaka, 1991; Branden, 1969; Brockner & Wallnau, 1981; Coopersmith, 1967, 1981; Rosenberg, 1979).

James (1983) in his *Principles of Psychology* defined self-esteem as being the sum of an individual's successes divided by what they think they ought to achieve. Self-esteem can be increased by achieving great successes and maintained by avoiding failures. Raised self-esteem could, he argued, also be achieved and maintained by adopting less ambitious goals. Self-esteem was therefore defined as being competence-oriented but also open to change. Alexander (2001), the founder of the Self-Esteem Network in Britain, views self-esteem as a syndrome, as a set of indicators for mental well-being. The core of self-esteem is an "unconditional appreciation of oneself" meaning an appreciation of both an individual's positive and negative potential in its fullest sense. Alexander also distinguishes between 'trait' self-esteem which reflects confidence or ability in a particular area, such as work or sport, and 'global' self-esteem which is intrinsic worthiness regardless of what particular abilities or qualities an individual may possess.

Coopersmith (1967, 1981) in his study, suggested four major factors which are important in the development of self-esteem:

- the treatment and acceptance received from significant others in life
- a person's past successes
- the values and aspirations which modify and interpret a person's experiences
- how a person responds to devaluation.

Self-esteem is described by Coopersmith as a process of integration, where the individual becomes a member of the group and internalizes ideas and attitudes as a mirror image, via key figures and by observing actions and attitudes. Self-esteem is a form of self-protection since any loss of self-esteem can bring feelings of distress. Since the presence of anxiety can minimize our self-esteem, defenses allow the maintenance of an idealized image. The events and the people which surround the individual have a direct relationship with the development of self-esteem (Diaz, 1984).

### **Self-Esteem and Academic Success**

Several theorists have specifically identified academic performance as an important determinant of global self-esteem. Harter (1985) identified self-perceived competence in scholastics as one of the five major dimensions that individuals use to evaluate themselves. Erickson (1968) specifically identified academic achievement as a vital component in forming a healthy self-image. Academic self-esteem is operationally defined as the evaluative appraisal of the experience of being capable of meeting academic challenges and being worthy of happiness. Academic self-concept or academic self-esteem can be broadly considered to be how a student views his or her academic ability when compared with other students (Cokley, 2000). However,

other evidence indicates that members of stigmatized or disadvantaged groups also protect their self-esteem by selectively devaluing those domains in which the out-group is advantaged and selectively valuing those domains in which their in-group has advantages (Major, Sciacchitano, & Crocker, 1993).

The relationship between self-esteem and academic achievement has been well documented in the literature. Different studies have reached the conclusion that academic achievement and self-esteem are positively correlated (Bankston & Zhou, 2002; Lockett & Harrell, 2003; Schmidt & Padilla, 2003). For example, West, Fish, and Stevens (1980) cited a correlation ranging from 0.18 to 0.50 between general self-esteem and academic achievement. Another study, conducted by Carr, Borkowski, and Maxwell (1991) found self-esteem to be a significant predictor of reading awareness. Purky (1970) found that self-esteem is related to some components of success, either academic or verbal. He concluded that there is continuous interaction between self-esteem and academic achievement. Reynolds (1988) found in his research that academic self-concept is related in a positive and significant manner to grade point average in college students. Covington (1989) reports that as level of self-esteem increases, so does the level of academic achievement scores but as the level of self-esteem decreases, achievement declines. He concluded that self-esteem can be modified through direct instruments which can lead to achievement gains. Reasoner (2005) explained that there is a general agreement among researchers that there is a close relationship between self-esteem and academic achievement but that there are considerable disagreements among them as to the nature of the relationship. Some

researchers argue that students who perform higher in school do so to possess positive self-esteem, while others argue that positive self-esteem is a necessary pre-requisite for academic achievement.

However, there have also been conflicting reports ranging from null to positive and negative relationships between self-esteem and academic achievement that have been documented in the literature. Van Tuinen and Ramanaiah (1979) researched the prediction of academic performance of specific and global self-esteem in undergraduate female students. He reported that specific self-esteem was a significant predictor of actual performance on concept attainment tasks, whereas global self-esteem was not an adequate predictor. Yogev and Ilan (1987) produced a conflicting report that self-esteem was generally not related to educational aspirations, but the relationship was important to some student's feelings of competence. The differences in the reports can be attributed to differences in the conceptions and definitions of: general and specific self-concept, self-concept and self-esteem, and global and specific self-esteem; and the consequential interchangeable use of these constructs as one unitary construct by researchers.

Research also suggests a reciprocal process whereby academic accomplishments foster self-esteem, and high self-esteem, in turn, facilitates academic achievement (Purkey, 1970). Numerous studies exist that support the relationship between high self-esteem and academic achievement in school aged children, but the question still exists whether academic achievement has the same significance to college students as it does for younger students. If it does, then individuals would be

expected to evaluate themselves and others on the basis of academic achievement and an association between academic achievement and self-esteem would also be expected. A history of success in an educational setting was found by Rosenberg (1965) to be one of four major social antecedents of self-esteem.

Studies examining self-esteem's impact on African American student academic achievement have presented conflicting results. It has been proven that there is a visible gap in African American and White student academic performance and some researchers have proposed that a failure to achieve academically may be a function of negative self-concept (Mayo-Booker, 1996). Berry (1974) found that students attending a special school for dropouts had lower self esteem than a comparable group of non-dropouts attending a regular high school. However, there are studies that have found little to no relationship between self-esteem and academic success in African American students (van Laar, 2000). Many social scientists have assumed that the lower academic performance experienced by African Americans students would be reflected in a more negative self-evaluation in these students, but paradoxical results have been reported.

### **Global and Specific Self-Esteem**

Also contributing to the conflicting reports is the use of the same or similar research instruments to measure these constructs. Studies reveal that self-esteem is not a unitary construct, but that it consists of a number of distinguishable components such as academic self-esteem in specific subject domains, physical self-esteem, and social self-esteem. Therefore, when some researchers use academic self-esteem while

others use global self-esteem, to measure a specific construct such as academic self-esteem without consideration of the differences in the components of self-esteem, differences in results will exist. Hartner (1993) defined global self-esteem as “the level of global regard that one has for the self as a person.” In his research, Hartner (1993) suggests that self-esteem can be understood in terms of separate domains, and that competence in domains considered important to the individual is the basis for global self-esteem. Rosenberg, Schooler, Schoenbach, & Rosenberg (1995) suggest that global and specific self-esteem are both important, but they are important for different reasons and are relevant in different ways. Specific self-esteem is most relevant to an individual’s behavior, while global self-esteem is most relevant to an individual’s psychological well-being (Rosenberg et al., 1995).

Self-concept can be viewed as an “umbrella” term which encompasses three components: the self-image, the ideal-self, and the self-esteem of an individual (Reasoner, 2005). Reasoner believed that self-concept is the sum total of a person’s perceived and desired mental and physical characteristics, as well as the person’s perceived worthiness. Self-esteem is an evaluative component of self-concept, which has been described as the core of an individual’s self-concept (Fontana, 1995). From the research perspective, self-esteem is concerned with the value the individual places upon him/herself which involves a feeling of adequacy and inadequacy, an attitude of approval or disapproval, and indicates the extent to which the individual believes himself to be capable, significant, successful, and worthy (Coopersmith, 1967, 1981).

According to James (1983), a person's overall self-evaluation is derived from

specific self-evaluations which are integrated according to their relative importance and relation to one's self-ideals and aspirations. Coopersmith (1967) stated, "Success or failure in any particular domain will affect an individual's self-esteem only to the extent that that particular domain is considered relevant or important." More recently, however, self-concept theory has stressed that global and specific self-esteem are neither equivalent nor interchangeable, and that one cannot be automatically deduced from the other (Rosenberg et al., 1995).

While global self-esteem, for instance, appears to be heavily affective and associated with overall psychological well-being, specific self-esteem, on the contrary, appears to have a more cognitive component and is more strongly associated with behavioral outcome (Marsh, 1993; Rosenberg et al., 1995). Marsh (1990) expresses that "More recently, self-esteem theory has stressed the multi-dimensionality of self-esteem, and empirical studies have identified distinct, priority facets of self-concept." Looking at the large body of research on self-esteem it is evident that most of the literature deals with global self-esteem, the individual's total thoughts and feelings, positive or negative attitudes towards the self. Similarly, a number of writers have stressed the importance of studying specific self-esteem (Harter, 1985; Marsh, 1986; Swann, 1987). Self-esteem is an attitude and the study of any attitude must take into account the fact that people have attitudes towards an object as a whole (global self-esteem) and towards specific facets of that object (specific self-esteem) (Marsh, 1986).

### **Self-Esteem and African Americans**

Although African American students tend not to achieve as highly as White

students in academic domains, African Americans have been found not to report lower global self-esteem than Whites (Rosenberg, 1979; Wylie, 1979). Much research has demonstrated that personal self-esteem among African Americans is not lower than it is among whites. Middle-class African Americans have higher personal self-esteem than lower income groups (Porter & Washington, 1979, 1989). Lay and Wakstein (1985) investigated White and Black student differences in self-esteem. Their findings indicate that a larger percentage of African Americans than Whites showed high self-esteem, although the level of self-esteem among African Americans depended less on academic success than among Whites. Demo and Parker's (2001) study of college students adds to the growing literature reporting black self-esteem as equal to or greater than that of whites. In their comparison study they found that white female students reported the lowest self-esteem of the groups studied, this was consistent with earlier research conducted by Simmons and Rosenberg (1972) and Dukes and Martinez (1994).

Despite clear predictions of lower self-esteem in African Americans than Whites by researchers, African American students have generally been found to have equal or higher self-esteem than White students (Crocker & Major, 1989; Graham, 1994; Rosenberg, 1979). Although self-evaluation theorists expect achievement to influence self-esteem, social scientists have often found little relationship between academic performance and self-esteem in African American students (Demo & Parker, 1987; Simmons & Rosenberg, 1972; Osborne, 1995). In his research, Osborne (1995) found a decreasing relationship between achievement and self-esteem among African American students with increasing age. The self-esteem of African Americans is based

more on racial-identity than academic success.

### **African American College Students**

African American students' participation in higher education has experienced periods of both growth and decline. Historically, African Americans have been underrepresented as a proportion of the total enrollment of students at institutions of higher education (Douglas, 1998). Historically Black Colleges and Universities (HBCU) educated the majority of African Americans seeking a college education (Blackburn, Gamson, & Peterson, 1978; Fleming, 1984; Willie & Cunnigen, 1981). Prior to *Brown v. Board of Education* (1954), HBCUs were the leading options available to African American students who attended college. According to Kim (2002), over 90% of Black college graduates gained their degrees from HBCUs prior to *Brown*, while 17% of Black students attended HBCUs as of 1996. The majority of African American college students are now enrolled at public Predominantly White Institutions (PWI) (Person & Christensen, 1996). Allen et al. (1991) reported that on average, African-American students who attend PWIs do not perform as well academically as Whites. Feelings of prejudice or alienation have also been shown to be negatively correlated with minority student persistence and minority students who reported feeling isolated were more likely to consider withdrawing from college (Loo & Rolison, 1986; Suen, 1983).

The graduation rates of African American students at public PWIs has been and continue to be low when compared to those of White students (Allen, 1991; Fleming, 1984; Willie & Cunnigen, 1981). Fisk-Skinner and Gaither (1992) report a dropout rate for White undergraduates of 55% compared to 71% for Black undergraduates. African

American college students differ from their White peers in important ways: their parents are more often urban, have fewer years of education, work at lower status jobs, earn less, and are more often divorced or separated than the parents of White students (Blackwell, 1982). Blackwell (1982) also reported that Black students at PWIs do not fare as well as their white counterparts in persistence rates, academic achievement, postgraduate study, and overall psychosocial adjustment. Allen (1987) identified self-esteem, educational barriers, and campus alienation as the three factors most crucial to minority retention. Despite their social, economic, and educational disadvantages, African American college students have similar aspirations as White college students (Allen, 1992). However, upon college entry, the differences in preparation, combined with the additional burdens of being a member of a disadvantaged minority group, result in a situation where, on average, African American students evidence lower academic achievement than White students (van Laar, 2000).

Although Black students begin school with standardized test scores that are not too far behind those of their White counterparts, almost immediately a gap begins to appear (Steele, 1997). Kane (1998) estimates the academic performance gap between African American and White college students to be approximately a third of a letter grade. Jenson (1998) reported similar differences on standardized achievement and intelligence tests. Environmental explanations for these academic performance gaps typically point to lack of opportunities for intellectual enrichment, cultural disengagement with academic achievement, or discrimination against underperforming groups (Brown & Lee, 2005). African Americans' lower academic performance and persistence is viewed

as a function of the harmful effects of negative cultural views of African Americans, or group stereotypes, on academic self-concept (Chavous, Harris, Rivas, Helaire, Green, 2004). Steele (1997) offers another type of environmental explanation, one that emphasizes the power of social stereotypes to create self-fulfilling prophecies without the necessity of any direct discrimination at the hands of a majority group. This theory is referred to as *Stereotype Threat* and attributes lower academic performance in minority groups to the negative effects of racial experiences.

Steele's (1992) theory of stereotype threat and disidentification accounts for both African American students' poor academic performance and their paradoxically high self-esteem. Steele (1992; 1997) claims that under certain conditions, negative racial stereotypes concerning the intellectual ability of disadvantaged groups such as racial minorities and women, can undermine the academic performance of members of those groups. He believes that the academic underperformance of students from disadvantaged groups can be explained partly by their anxiety associated with the fear that others' may judge their performance based on negative stereotypes that may exist about their group's intellectual capacity. Steele argues that African American students may feel the risk of embarrassment and failure but also risk confirming the negative perceptions associated with their group. The students performance may become depressed due to the threat of being reduced to negative stereotypes in various situational contexts and can lead to increased anxiety. When a stigmatized person finds him/herself in a stereotype-relevant situation, the burden of the stereotype adds unique performance pressure to what may already be an anxiety-provoking experience

(Brown & Lee, 2005).

van Laar (2000) believes that African American college students internalize the negative stigma surrounding their group and blame themselves for lower academic outcomes. She also purposes that these students attribution to a stable factor lowers their expectancies for future outcomes and decreases their motivation and performance. Attribution theory is concerned with how individuals interpret events and how this relates to their thinking and behavior (Weiner, 1986). In simple terms, attribution theory attributes causes to behavior. Weiner (1986) was the first theorist to focus attribution theory on achievement. He found that students with higher ratings of self-esteem and with higher school achievement tend to attribute success to internal, stable, uncontrollable factors such as ability. These students contribute failure to either internal, unstable, controllable factors such as effort, or external uncontrollable factors such as task difficulty. A key component of attribution theory is that individuals will attribute their successes or failures to factors that will enable them to feel as good as possible about themselves. According to Weiner, the attribution of lower outcomes to internal causes will lead to low self-esteem, whereas the attribution of lower outcomes to external causes should protect self-esteem. Figure 1 illustrates van Laar's Attributional Process Model based on Weiner's attributional theory of motivation and emotion.

### **Minority Engineering Program**

In an effort to assist underrepresented minority populations who are at risk of attrition in science, mathematics, and engineering majors, university administrators

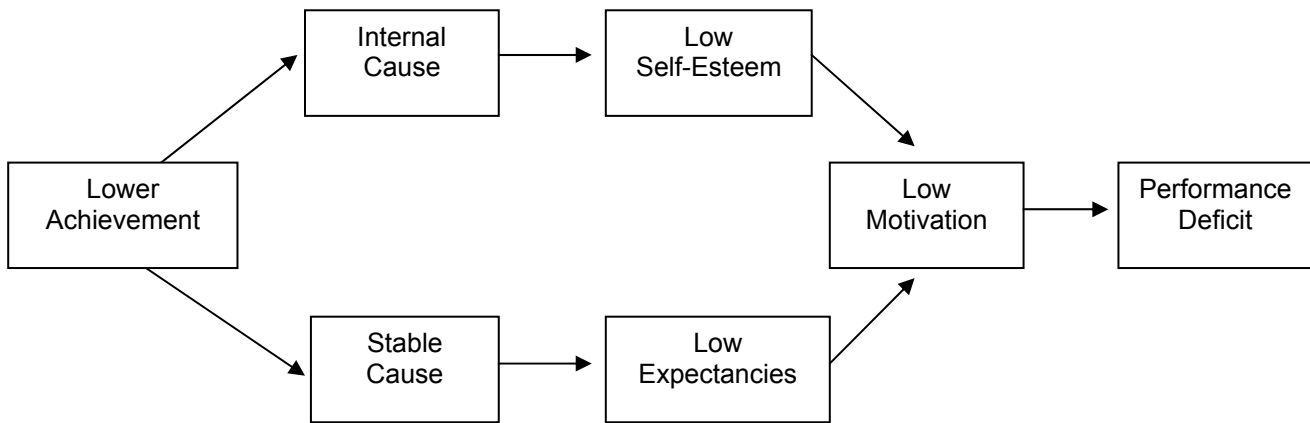


Figure 1  
van Laar's Attributional Process Model

have launched and evaluated minority support programs. These programs seek to increase the quantity and quality of underrepresented minority undergraduate, graduate, postdoctoral and junior faculty in STEM disciplines in colleges and universities in the United States. One such support program is the Minority Engineering Program (MEP). MEPs were established in the late 1970s to recruit minority students to engineering education and reduce the dropout rate. MEPs were developed to implement strategies to increase the number of minority students who successfully complete baccalaureate degrees in engineering and pursue graduate studies in the field of engineering. In the 1970s, the National Action Council for Minorities in Engineering (NACME) introduced the Incentive Grants Program (IGP) and scholarships became the central strategy to recruit under represented populations into the field of engineering. IGP provided large grants to universities as an incentive for them to invest in outreach, recruitment, and supplementary scholarships. This strategy was enormously effective as the number of minority freshmen enrolled in engineering climbed from 2,249 in 1973 to 11,116 in 1981

(NACME Research Letter, p. 2). However, at this point the number stayed stagnant. Recognizing both the intensity of engineering education and the hostile environment faced by minority students, who were very much isolated ethnically in engineering schools, NACME established Minority Engineering Programs (MEP). The MEPs were designed to enhance the academic and survival skills of minority students and enable them to overcome institutional obstacles. The goals of the programs are to increase the number of underrepresented minority students who enroll in undergraduate engineering programs and to increase the number of underrepresented minority students who successfully complete their undergraduate engineering degree. These goals are accomplished through programs such as the Peer/Tutor/Mentor Program, Academic Excellence, skill workshops, and MEP New Student Orientation.

Undergraduate engineering degrees awarded to African Americans, Hispanics, and Native Americans more than tripled in the nineteen year period from 1972-73 (1,255) to 1991-92 (4,681) (Morrison & Williams, 1993). Much of the increase can be attributed to efforts initiated in the early seventies when foundations, corporations, and schools of engineering launched a national movement to expand the participation of underrepresented minorities. While enrollment has been robust, minority students' persistence lags far behind their non-minority peers.

NACME pioneered the development of 11 MEPs throughout the country in 1980-81. They developed and refined the MEP model and collaborating with the National Association of Minority Engineering Program Administrators (NAMEPA), published a best practices handbook on how to start and operate effective MEPs. MEPs work from

within the educational system to bring about positive change and build academic communities of students pursuing technical degrees. These programs have developed an arsenal of tools that have had significant impact on increasing the number of students receiving Science, Engineering, or Mathematics degrees by over 234% from 1974 to 1994 (NACME Research Letter, p. 3). MEP nurtures, develops, and empowers students to be the best and to achieve in all endeavors (Ohland & Zhang, 2002). Although enrollment has increased, minority students' persistence lags far behind their non-minority counterparts. These programs are designed to assist minority students to feel comfortable and supported in the challenging curriculum of engineering.

There are 88 institutions of higher education that belong to NAMEPA. Of the top 25 Engineering Schools, as ranked by *US News & World Reports*, 17 are NAMEPA members. NAMEPA is a national network of educators and representatives from industry, government, and non-profit organizations who share a common commitment to improving the recruitment and retention of African American, Hispanic American, and Native American students earning degrees in engineering (Martinez, 1999). MEP continues to increase the number of avenues for minority students to receive an education in the engineering field. One of the main areas of concern for incoming freshmen who plan to enter the engineering field, is their level of preparation in the areas of math and science. The services that MEPs offer students include:

- Freshmen Orientation Programs
- Student Mentoring
- Book and Calculator Loan Program

- Career and Interpersonal Counseling
- Introduction to Engineering Course
- Study Center
- Tutoring
- Social Recreation
- Student Progress Tracking
- Career Exploration Workshops

MEP programs have been built on the existing literature for the retention of minority students, as well as the incorporation of unique techniques that have been found successful in many college activities. NACME has developed a theoretical MEP model (Figure 2) which includes pre-enrollment activities, matriculation services, and a set of characteristics that define the institutional environment in which programs function (Morrison & Williams, 1993). The MEP model is designed to be less costly while creating a high level of student-to-student interaction, attempting to leverage staff and program resources, and enhancing each student's experience on a daily basis. Summer Bridge Programs and Orientation seminars have been used successfully for some time to assist in the retention of students. Bridge Programs vary in length from a few days to one week. The Mathematics Bridge Program used at Purdue is a five week residence program for high school students. Others are eight weeks or 10 weeks with the participants taking two courses for credit. Bridge programs may also concentrate on just mathematics, tutorials in several subjects, on survival skills, or other combinations of the above. The programs often are offered free of charge and may include stipends

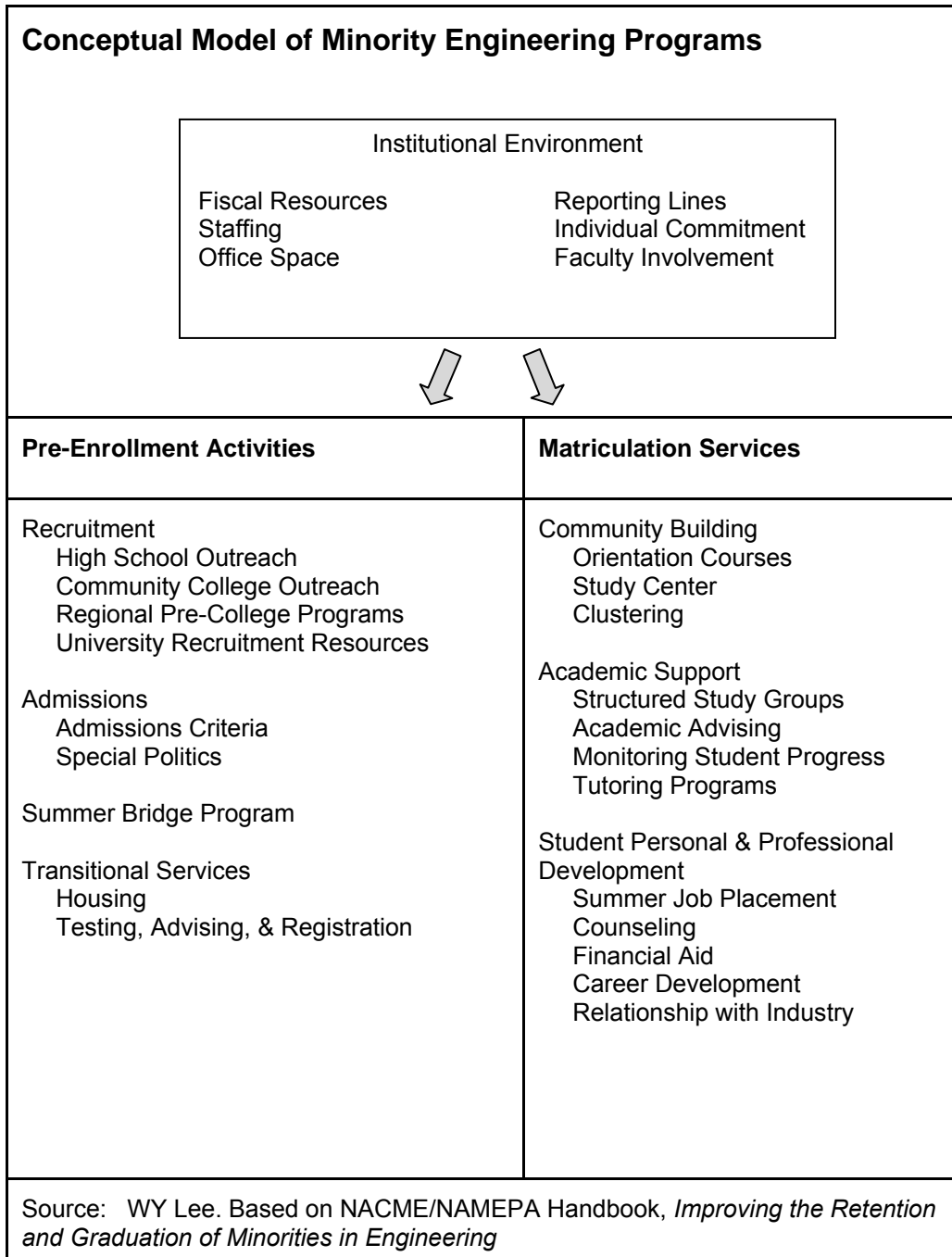


Figure 2  
Theoretical Model of Minority Engineering Programs

or scholarships based on performance during the session (Reyes, Anderson-Rowland & McCartney, 1998). MEPs at the most effective institutions have summer bridge programs that stress study and critical thinking skills over other activities (Morrison & Williams, 1993).

MEP staffing typically includes a full-time director who reports to a tenured faculty member or to the dean of engineering. In addition, programs generally have at least one half-time clerical support position and utilize work-study students as office assistants, tutors, and recruiters. As programs grow and resources permit, additional staff members, such as recruiters or counselors, may be added. Seventy percent of MEP directors have reported that their programs run smoothly and that despite staff shortages, organization and administration are satisfactory. MEP directors perceive their roles as one of leadership and management. They cite supervision of program staff, fund-raising, planning and development of programs, as well as participating in and overseeing daily activities, as their main functions. Generally, support staff members feel they receive the administrative assistance they need to do their jobs effectively. Students often reported that staff members, who are mostly minority group members themselves, are both supportive and accessible (Morrison & Williams, 1993).

### **Coopersmith Self-Esteem Inventory**

There are numerous techniques available to measure level of self-esteem. For the purposes of research studies, psychologists typically assess self-esteem by a self-report inventory yielding a quantitative result. The Coopersmith Self-Esteem Inventories (CSEI) is one of the most widely used measures of self-esteem. It has been

administered to tens of thousands of children and adults participating in research studies or in special education or clinical programs to enhance self-esteem. Findings demonstrate the relationship of academic achievement to personal satisfaction in school and adult life. The CSEI was developed by Stanley Coopersmith (1967, 1981) as part of an extensive study of self-esteem in children. Dr. Coopersmith received a doctorate in developmental psychology from Cornell University in 1957. For many years, he was a practicing child therapist and a lecturer at the University of California at Davis. Dr. Coopersmith's professional and scholarly interests focused on the development of self-esteem in children, and he constructed the CSEI in conjunction with his program of research on self-esteem (Bolton, 2003). The major basis for the study was the widely held belief that self-esteem is significantly associated with personal satisfaction and effective functioning. This belief is shared by many personality theorists and clinical and social psychologists (Coopersmith, 1967, 1981). The CSEI was designed to measure the respondent's attitudes toward self in personal, social, family, and academic areas of experience. The CSEI has been used in numerous studies involving both children and adult subjects. It has been used to determine the relationship between self-esteem and academic achievement, assertiveness, peer relationships, and creativity.

The CSEI has been one of the more popular self-report measures of self-esteem. Coopersmith (1967, 1981) based his scale on the premise that self-reports do add to the understanding of the self-esteem of individuals. He developed items associated with generally accepted sources of self-esteem. Coopersmith constructed the CSEI on the basis of items selected from the Rogers and Dymond scale (1954). The initial

instrument is a 58-item self-report inventory in which the subjects read a declarative statement and then checks whether the statement is “like me” or “unlike me.” The inventory was concerned with the student’s perception in four areas: general self-esteem, social self-esteem, home-parents, school-academic, and an eight item lie scale (Diaz, 1984). Coopersmith developed that 25 item Short Form version of his original CSEI. When scoring the CSEI appropriately marked item is weighted at a value of 1, the summary score is then multiplied by 4. Given this scoring procedure, the hypothetical range of scores on the CSEI is from 0 to 100, with higher scores associated with higher levels of self-esteem.

Since its initial publication in 1979, there have been over 300 studies published during the past 20 years examining the CSEI. These studies include data about the psychometric characteristics of the CSEI, comparisons of other self-esteem measures with the CSEI, numerous research applications that provide validity evidence for the CSEI, and scores for a variety of samples of children and adults that could be compiled into norms for users of the CSEI (Bolton, 2003).

The CSEI has been used extensively with many African American populations ranging in age from grade school to adult. Clark (1982) used the CSEI to examine the relationship between self-esteem and racial identity in African American children grades 3-6. In 1991 Jennings used the CSEI adult form to investigate the relationship between self-esteem, racial identity and membership in an Africentric organization to academic achievement among African American college students.

Acceptable reliability (internal consistency and test-retest) and validity

(convergent and discriminate) information exists for the CSEI (Blascovich and Tomaka, 1991). First, internal consistency reliability estimates for the total self-score for the School Form ranged from 0.80 to 0.92, parallel form reliability estimates were 0.71 and 0.80, and a 5-week retest correlation was 0.88. These data suggest that the reliability of the total score for children is about 0.85. For the Adult Form total score, internal consistency estimates ranged from 0.71 to 0.80, and retest reliabilities were 0.80 and 0.82. These figures support a reliability estimate for college students of about 0.80 (Bolton, 2003). Coopersmith (1987) reports that the test-retest reliability with a group of 102 fifth and sixth grade students was 0.88. There were significant correlations between CSEI score  $r = 0.29$ , and achievement scores  $r = 0.30$ , and sociometric choice  $r = 0.37$ . The multiple correlation between sociometric choice and achievement combined  $r = 0.69$  advanced the prediction of self-esteem (Coopersmith, 1987).

Stability coefficients with a 3-year interval between administrations of the School Form to children were 0.42, 0.64, and 0.70. A stability coefficient with a 1-year interval was .64. These data suggest that the construct measured by the CSEI is relatively stable over time. Intercorrelations among the four self-esteem subscales of the School Form were moderate in magnitude, ranging from 0.28 to 0.52. Bolton stated that the Lie Scale was virtually independent of the self-esteem subscales. The results of the three factor analyses provide some support for the subscale structure; however, a confirmatory factor analysis is needed (2003).

In his test review of the CSEI, Bolton (2003) found that concurrent validity evidence reported in the Manual included correlations of .44 with a behavioral rating of

self-esteem and .45 with the self-acceptance scale of the *California Psychological Inventory for Children*. Correlations of 0.59 and 0.60 with the *Rosenberg Self-Esteem Scale* were obtained for college students. Several analyses produced correlations in the 0.30s with reading and arithmetic achievement scores for children, supporting the hypothesis that self-esteem is associated with school success.

There are two forms of the CSEI, a School Form (ages 8-15) and an Adult Form (ages 16 and older). The Adult Form was adapted from the School Short Form for use with persons over the age of fifteen years. The language and situations referred to in the items were modified to make them more meaningful to adults. The Adult Form was created by making slight modifications to 8 of the 25 items taken from the School Short Form. Specifically, the following substitutions in the wording of the 8 items were made: *group* for *class*, *people* for *kids*, *family* for *parents*, and *work* for *school*.

Researchers have stated that the Adult Form would be more aptly named the College Form, because the only adult norms in the Manual are based on a sample of college students (Bolton, 2003). The Adult Form of the CSEI was administered by Coopersmith to 226 community college and university students. The mean age of these students was 21.5 years with a standard deviation of 3.5 and a range of 16 to 34 years. Coopersmith found that subjects who were no longer in their teens had slightly higher scores (ages 16-19 mean = 66.7; and ages 20-34 mean = 71.7). There were no significant gender or school effects (Coopersmith, 1987). The reliabilities ranged from 0.78 to 0.83. Table 1 illustrates the means, standard deviations, and Cronbach alpha reliabilities for various subgroups on the CSEI-A.

**Table 1**  
**Means, Standard Deviations, and Reliabilities by Sex, Ethnicity, and**  
**Age for CSEI-A**

	<b>Mean<sup>a</sup></b>	<b>SD</b>	<b><i>n</i></b>	<b>Alpha</b>
Males	68.4	18.5	114	0.79
Females	71.6	19.5	112	0.83
Caucasian	72.3	18.3	148	0.80
African American	71.2	18.4	24	0.79
Hispanic American	64.0	19.2	13	0.78
Asian	61.6	20.0	28	0.80
Ages 16-19	66.7	19.2	78	0.80
Ages 20-34	71.7	18.8	148	0.81
<b>Total</b>	<b>70.0</b>	<b>19.0</b>	<b>226</b>	<b>0.81</b>

<sup>a</sup>Maximum possible total score is 100.

Source: Coopersmith Self-Esteem Inventories Manual

### **Review of Related Literature Summary**

This review of the literature demonstrated that extensive research in the area of self-esteem does exist. The topic of self-esteem is surprisingly complex. Not all psychologists are even in agreement on what self-esteem is, let alone where it comes from or how to improve it. Many theorists have developed their own personal definitions of self-esteem. However, all theorists concur that self-esteem affects the entire person. Although there has been a general consensus that academic performance is an

important determinant of global self-esteem, there have been numerous debates about the extent to which self-esteem is related to academic performance. It has been suggested that a reciprocal relationship exists between academic accomplishments and self-esteem. Some researchers reported that academic success fosters high self-esteem and in turn, high self-esteem facilitates academic success.

The review of literature discovered that many researchers have found that there is a relationship between self-esteem and academic performance in college students. The majority of the studies conducted on this topic have used White college students as the subjects of their research. However, the data pertaining to African American college students' self-esteem and its relationship to academic performance has been conflicting. Research has proven that African Americans students have generally been found to have equal or higher self-esteem than White students, even though there is a reported gap in academic performance. Literature has revealed that the paradox of high self-esteem and lower academic performance in African American students can be attributed to negative stigmas that may exist about the intellectual ability of African Americans.

Universities have developed Minority Engineering Programs to promote enrollment and retention of African American students majoring in engineering. Research revealed that these programs implement strategies to increase the number of minority students who successfully complete undergraduate engineering and pursue graduate degrees. MEPs at the most effective institutions were found to follow the MEP model developed by NACME. This model includes Freshman Orientation

programs, mentoring, tutoring, student tracking, summer bridge programs, career counseling, and social recreation.

Though there are numerous studies regarding the relationship of self-esteem and academic performance, this researcher found very little research that has been performed to ascertain if a relationship exist between self-esteem and academic success in African American engineering students. Thus, this study had merit, and the findings contributed significantly to the body of knowledge.

## **CHAPTER 3**

### **METHODOLOGY**

The purpose of this chapter is to describe the research design, population and sample, data collection, and research instrument.

#### **Research Design**

This study was designed as an exploratory correlational study. Two indicators of academic success were used as dependent variables: Cumulative Grade Point Average and Engineering Major Grade Point Average. The independent variable self-esteem was measured by subject's scores on the Adult Form of the Coopersmith Self-Esteem Inventory. The nature of the study required the use of descriptive, comparative, and correlational research methods.

The following objectives were formulated to guide the research:

1. Describe the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States based on the following selected demographic characteristics:
  - a. Gender
  - b. Age
  - c. Parent's Highest Educational Level Completed
  - d. Engineering Major
  - e. Year of Classification
  - f. Enrollment Status

2. Describe the academic success of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States. Academic success for purposes of this objective is defined as the following:
  - a. Whether or not the student has a Cumulative Grade Point Average (C-GPA) of 2.00 or greater on a 4.00 scale.
  - b. Whether or not the student has an Engineering Major Grade Point Average (EM-GPA) of 2.00 or greater on a 4.00 scale.
3. Describe the self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form.
4. Determine if a relationship exists between level of self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form and the following variables:
  - a. Gender
  - b. Age
  - c. Parent's Highest Educational Level Completed
  - d. Year of Classification
  - e. Cumulative Grade Point Average (C-GPA)

- f. Engineering Major Grade Point Average (EM-GPA)
5. Determine if a relationship exists between level of self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form and academic success of students with a C-GPA of 2.00 or greater on a 4.00 scale and of students with a EM-GPA of 2.00 or greater on a 4.00 scale.
  6. Determine if a model exist which explains a significant portion of the variance of self-esteem as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form from the following demographic characteristics:
    - a. Gender
    - b. Age
    - c. Parent's Highest Educational Level Completed
    - d. Year of Classification

### **Population and Sample**

The target population of this study was defined as African American students enrolled in a Minority Engineering Program at a research extensive university in the Southern portion of the United States. The accessible population was the African American students in MEP at one selected research extensive university in the Southern portion of the United States. A census was conducted with all 260 students

(186 male and 74 female) enrolled in MEP. The accessible population's average age is 20. Of the 260 students, 258 are full-time students and 2 were part-time. The average C-GPA of the accessible population is 2.62 and the average EM-GPA is 3.15.

### **Data Collection**

Data on the specific demographic and academic variables related to the objectives of this study was collected from the University's official records in the College of Engineering. The College of Engineering maintains a MEP database containing information on the following variables: engineering major, gender, race, cumulative GPA, engineering major GPA, enrollment status, year of classification, and age.

Participation of subjects was on a voluntary basis. All African American students in MEP received an email requesting their participation in the research study and a link to the online survey. The 32-item online survey was comprised of the 25-item CSEI-A and 7 demographic information questions (Appendix A). Students were informed that all information obtained, whether from the instrument or the students' records will be confidential. Instruments and all academic information was identified and collated numerically; no student's name appeared on any data. Students, who were willing to participate in the proposed research, completed the online survey.

Approval for this study was obtained through the LSU Institutional Review Board (IRB) for Human Subject Protection prior to initiation. The study was granted approval #E4097 (Appendix B)

In order to obtain the maximum percentage of survey returns, the following techniques were used:

1. An initial introductory email was sent to all students in the accessible population including a hyperlink to the web based survey. Participants were informed that the survey was available online for exactly ten days.
2. On the seventh day that the survey was available, all non-respondents received a follow-up email. The email emphasized the importance of responding to the survey and that the survey is only available for three more days. A hyperlink to the web based survey was also included in this message.
3. A final reminder email was sent to non-respondents informing them that only 24 hours remained to complete the survey. The email included a message emphasizing the importance of responding to the survey and another hyperlink to the web based survey.

The final response rate was 121 out of 260 students or 46.5%. The responses by response wave are presented in Table 2.

**Table 2**  
**Response Rates by Wave**

Wave	<i>n</i>	Percentage
First email	52	43.0
Second email	36	29.8
Third email	33	27.2
Total	121	100.0

## **Research Instrument**

The Coopersmith Self Esteem Inventory was developed by Stanley Coopersmith in 1967 to measure general self-esteem. His own inductive work examined CSEI scores as they related to other personality constructs. This study will use the Adult Form of the CSEI, which was adapted from the School Short Form for children. The CSEI-A has validity and reliability similar to the School Form and the School Short Form and a high correlation was found between all three versions (Peterson, 1985).

The CSEI-A is a self-report questionnaire intended to measure “the evaluation a person makes and customarily maintains with regard to him or herself” (Coopersmith, 1967, 1981). The questionnaire presents respondents with generally favorable or generally unfavorable statements about the self, which they indicate as “like me” or “unlike me.” The CSEI-A is a 25 item inventory that reflects situations and language more relevant to those not as closely associated with school or parents. It was designed for subjects aged 16 years and older. All forms of the CSEI are dichotomously scored. Each response indicating positive attitude toward self is marked as 1 with negative responses scored as 0. The raw scores on the CSEI-A are multiplied by 4 for a maximum scale score of 100. The result is a score between 0 and 100 (Appendix C).

The CSEI has been the subject of many validity research studies (Bedeian, Geogud, & Zmud, 1977; Johnson, Redfield, Miller, & Simpson, 1983; Taylor & Reitz, 1968). Crandall (1973) reported correlations of 0.59 and 0.60 between the Short Form and the Rosenberg scale of college students. The CSEI is a valid and reliable

instrument for the study of self-esteem among African American college students.

### **Data Summary/Analysis**

Data collected in this study was statistically analyzed as described for each objective below.

Objective 1 is descriptive in nature and was analyzed using descriptive statistical techniques. The variables gender, age, Parent's Highest Educational Level Completed, engineering major, year of classification, and enrollment status were summarized using mode, frequency, and percentages in each category.

Objective 2 is descriptive in nature and was analyzed through summation and calculation of means and standard deviations of the Cumulative Grade Point Average and Engineering Major Grade Point Average of participants. Also, whether or not the student has a C-GPA and/or EM-GPA of 2.00 or greater on a 4.00 scale will be summarized using frequency and percentages in each category.

Objective 3 is descriptive in nature and was analyzed through summation and calculation of means and standard deviations of the students' scores on the CSEI-A. The scores on the CSEI-A were used to determine the students' level of self-esteem.

Objective 4 is correlational in nature and was analyzed through calculation of correlation coefficients of the selected variables with the interval level variable students' scores as measured by the CSEI-A. The variables gender, age, Parent's Highest Educational Level Completed, Cumulative Grade Point Average (C-GPA), and Engineering Major Grade Point Average (EM-GPA) were determined through calculation of the Pearson product-moment correlation ( $r$ ).

Objective 5 is correlational in nature and was analyzed through calculation of the Pearson product-moment correlation of the students' scores as measured by the CSEI-A and C-GPAs and EM-GPAs of 2.00 or greater on a 4.00 scale.

Objective 6 was accomplished through the use of multivariate analysis and multiple regression to determine if a model exist which explains a significant portion of the variance of level of self-esteem as measured by the students' scores on the CSEI-A from specific demographic variables. The demographic variables of gender, age, Parent's Highest Educational Level Completed, and year of classification were then entered stepwise because of the exploratory nature of the study.

## CHAPTER 4

### RESULTS AND DISCUSSION

The purpose of this study was to determine if a relationship exists between self-esteem and the academic success of African American students in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States. A total of 121 subjects were surveyed at the conclusion of the Spring 2009 semester. Findings and analysis of the CSEI-A data are presented in this chapter. Results are arranged and presented by research objective and include objectives one through six.

#### Objective One

Objective one of the study was to describe the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States based on the following selected demographic characteristics:

- a. Gender
- b. Age
- c. Parent's Highest Educational Level Completed
- d. Engineering Major
- e. Year of Classification
- f. Enrollment Status

#### **Gender**

Regarding gender of the engineering students responding to the CSEI-A; the

majority of the respondents ( $n = 91, 75.2\%$ ) indicated their gender as male. Thirty subjects ( $24.8\%$ ) reported their gender as female.

### Age

Respondents were asked to choose from the most appropriate range that included their current age. The category options were “Less than 18,” “18-24,” “25-34,” “35-44,” “45-50,” and “Older than 50.” The largest number of respondents indicated their age as between 18 and 24 years ( $n = 114, 94.2\%$ ). The second largest group was the 25-34 age group, with 6 ( $4.9\%$ ) of the respondents indicating their age in this group. Only one respondent ( $n = 1, 0.9\%$ ) indicated his/her age as between 35 and 44 years.

Table 3 illustrates data regarding the sample’s age distribution.

**Table 3**  
**Age Distribution of the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

Age in Years	<i>n</i>	Percentage
Less than 18	0	0.0
18-24	114	94.2
25-34	6	4.9
35-44	1	0.9
45-5-	0	0.0
Older than 50	0	0.0
Total	121	100.0

### Parent's Highest Educational Level Completed

Regarding respondents' parent's highest educational level completed, the largest group ( $n = 48$ , 40%) reported completion of a Bachelor degree. The second largest group ( $n=44$ , 36%) reported "High School Diploma/GED" as the parent's highest educational level completed. Fourteen respondents ( $n = 14$ , 12%) reported "Graduate/Professional Degree" as their parent's highest educational level completed. The fourth largest group ( $n = 11$ , 9%) reported "Vocational/Technical Degree" as their parent's highest educational level completed. Table 4 illustrates data regarding the respondents' parent's highest educational level completed.

**Table 4**  
**Parent's Highest Educational Level Completed of the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

Level of Education	<i>n</i>	Percentage
High School Diploma/GED	44	36.3
Vocational/Technical Degree	11	9.1
Associate Degree	4	3.3
Bachelor Degree	48	39.7
Graduate/Professional Degree	14	11.6
Total	121	100.0

### Engineering Major

Survey respondents were asked to report their current engineering major. The

largest number of respondents ( $n = 27$ , 22.3%) reported their engineering major as Mechanical Engineering. The smallest number of respondents ( $n = 3$ , 2.5%) report their engineering major as Construction Management. Table 5 illustrates data regarding the distribution of the engineering majors of study participants.

**Table 5**  
**Engineering Major Distribution of the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

Major	<i>n</i>	Percentage
Construction Management	3	2.5
Environmental Engineering	4	3.3
Biological Engineering	8	6.6
Petroleum Engineering	10	8.4
Civil Engineering	12	9.9
Computer Engineering	13	10.7
Industrial Engineering	13	10.7
Electrical Engineering	15	12.4
Chemical Engineering	16	13.2
Mechanical Engineering	27	22.3
Total	121	100.0

### **Year of Classification**

The fifth variable on which the subjects were described was year of classification.

The year of classification for the largest group of respondents was Senior ( $n = 38$ , 31.4%). Freshman students and sophomore students both represented 30 respondents each ( $n = 30$ , 24.8%). The smallest group of respondents were junior students ( $n = 23$ , 19.0%). The information regarding year of classification of respondents is provided in Table 6.

**Table 6**  
**Year of Classification Distribution of the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

Year Class	<i>n</i>	Percentage
Freshman	30	24.8
Sophomore	30	24.8
Junior	23	19.0
Senior	38	31.4
Total	121	100.0

### **Enrollment Status**

The final variable that was used to describe respondents was enrollment status. Respondents were asked to indicate if they were enrolled as either “full-time” or “part-time” students. The majority of respondents reported that they were enrolled as full-time students ( $n = 119$ , 98%). Part-time students accounted for two percent of respondents ( $n = 2$ , 2%). The distribution of enrollment status of students responding to the CSEI-A is illustrated in Table 7.

**Table 7**  
**Enrollment Status Distribution of the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

Enrollment Status	<i>n</i>	Percentage
Full-time	119	98.0
Part-time	2	2.0
Total	121	100.0

### **Objective Two**

Research objective two was to describe the academic success of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States. Academic success for purposes of this objective is defined as the following:

- a. Whether or not the student has a Cumulative Grade Point Average (C-GPA) of 2.00 or greater on a 4.00 scale.
- b. Whether or not the student has an Engineering Major Grade Point Average (EM-GPA) of 2.00 or greater on a 4.00 scale.

In order to achieve this objective, individual C-GPA and EM-GPA were collected for each respondent from the university's Office of the Registrar database that was distributed to the College of Engineering.

### **Whether or Not the Student Has a C-GPA of 2.0 or Greater**

Cumulative Grade Point Average was defined as the grade point average computed by the university's Office of the Registrar on all college level course work

attempted by the student. It was based upon a 4.00 scale. The mean C-GPA for all respondents was 2.658 ( $SD = 0.7367$ ). C-GPAs ranged from a low of 0.714 to a high of 4.00. The largest group of respondents were found to have a C-GPA of 2.00 or higher ( $n = 102, 84.3\%$ ). Students with a C-GPA below 2.00 accounted for 15.7 percent ( $n = 19, 15.7\%$ ) of respondents. When the C-GPA data was examined in ranges of measurements, the range of scores that had the largest number of students was Less than 2.00 ( $n = 19, 15.7\%$ ). Table 8 illustrates the distribution of C-GPAs for students responding to the CSEI-A.

**Table 8**  
**Distribution of Cumulative Grade Point Averages (C-GPA) for the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

C-GPA Range	<i>n</i>	Percentage
4.00	2	1.6
3.75-3.99	8	6.6
3.50-3.74	10	8.3
3.25-3.49	7	5.8
3.00-3.24	13	10.7
2.75-2.99	15	12.4
2.50-2.74	17	14.0
2.25-2.49	15	12.4
2.00-2.24	16	13.2
Less than 2.00	19	15.7

(Table continued)

Total	121	100.0
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### Whether or Not the Student Has an EM-GPA of 2.0 or Greater

Engineering Major Grade Point Average (EM-GPA) was defined as the grade point average computed by the university's Office of the Registrar on all course work attempted in a particular Engineering Major by the student. It was based upon a 4.00 scale. The mean EM-GPA for all respondents was 2.419 ( $SD = 0.90596$ ). EM-GPAs ranged from a low of 0.33 to a high of 4.00. The largest group of respondents were found to have an EM-GPA of 2.00 or greater ( $n = 59, 71.1\%$ ). Students with an EM-GPA below 2.00 accounted for percent ( $n = 24, 28.9\%$ ) of respondents. Thirty-eight respondents did not have an EM-GPA because they had not taken any engineering courses in their major prior to the conclusion of the Spring 2009 semester. When the EM-GPA data were examined in ranges of measurements, the range of scores that had the largest number of students was Less than 2.00 ( $n = 24, 28.9\%$ ). Table 9 illustrates the distribution of EM-GPAs for students responding to the CSEI-A.

**Table 9**  
**Distribution of Engineering Major Grade Point Averages (EM-GPA) for the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

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EM-GPA Range	$n^a$	Percentage
4.00	5	6.0

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(Table continued)

3.75-3.99	2	2.4
3.50-3.74	5	6.0
3.25-3.49	3	3.6
3.00-3.24	12	14.5
2.75-2.99	6	7.2
2.50-2.74	10	12.0
2.25-2.49	8	9.6
2.00-2.24	8	9.6
Less than 2.00	24	28.9
<hr/>		
Total	83	100.0

<sup>a</sup>Thirty-eight respondents did not have an EM-GPA to report

### **Objective Three**

The third research objective was to describe the self-esteem of the African American students who participated in the Minority Engineering Program at a research-intensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form. Scores for all respondents were calculated on their responses to the 25 measures on the CSEI-A. The maximum possible score is 100 and the minimum possible score is 0. The mean CSEI-A score for respondents was 71.64 (SD = 22.313). The respondents' scores ranged from a low of 4 to a high of 100. Respondents with scores in the range of 0 to 40 were considered to have low self-esteem. Scores in the range of 41 to 70 represented moderate self-

esteem in respondents. Students with high self-esteem score's ranged from 71 to 100 (Coopersmith, 1967). The majority of respondents were scored as possessing high self-esteem ( $n = 72$ , 59.5%). Table 10 illustrates the distribution of respondents' CSEI-A scores in ranges of low, moderate, and high.

**Table 10**  
**Distribution of CSEI-A Score Ranges the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

CSEI-A Range <sup>a</sup>	<i>n</i>	Percentage
0 - 40	12	9.9
41 – 70	37	30.6
71 – 100	72	59.5
Total	121	100.0

<sup>a</sup>Respondents' scores ranged from a low of 4 to a high of 100.

The most frequent CSEI-A score for the group of respondents was 92 ( $n = 14$ , 11.6%). There were only four respondents who scored the highest possible score of 100 ( $n = 4$ , 3.3%). The distribution of all respondents' scores is presented in Table 11.

**Table 11**  
**Distribution of CSEI-A Scores of the African American Students in the Minority Engineering Program at a Research Extensive University in the Southern Portion of the United States**

CSEI-A Score	<i>n</i>	Percentage
4	1	0.8

(Table continued)

12	3	2.5
16	1	0.8
20	1	0.8
24	1	0.8
32	3	2.5
36	1	0.8
40	1	0.8
44	2	1.7
48	8	6.6
52	2	1.7
56	6	5.0
60	2	1.7
64	6	5.0
68	11	9.1
72	4	3.3
76	11	9.1
80	6	5.0
84	11	9.1
88	12	9.9
92	14	11.6
96	10	8.3

(Table continued)

100	4	3.3
<hr/>		
Total	121	100.0
<hr/>		

#### **Objective Four**

The fourth objective of this research was to determine if a relationship exists between level of self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form and the following variables:

- a. Gender
- b. Age
- c. Parent's Highest Educational Level Completed
- d. Year of Classification
- e. Cumulative Grade Point Average (C-GPA)
- f. Engineering Major Grade Point Average (EM-GPA)

Pearson product-moment correlations were performed on the dependent variable CSEI-A score and the independent variables of gender, age, parent's highest educational level completed, C-GPA, and EM-GPA. For the purpose of this correlation following coding was used: gender (male = 1, female = 2) and parent's highest educational level completed (High School/GED = 1, Vocational/Technical Degree = 2, Associate Degree

= 3, Undergraduate Degree = 4, Graduate/Professional Degree = 5). The results revealed that CSEI-A score was positively correlated with parent's highest educational level completed ( $r = 0.230, p < 0.05$ ), year of classification ( $r = 0.339, p < 0.01$ ), C-GPA ( $r = 0.797, p < 0.01$ ), and EM-GPA ( $r = 0.468, p < 0.01$ ). Table 12 presents the results of the analysis.

**Table 12**  
**Pearson Product-Moment Correlations between the Selected Demographic Variables and Dependent Variable CSEI-A Score**

Variable	<i>n</i>	<i>r</i>	<i>p</i>
C-GPA	121	0.797	<0.001 <sup>c</sup>
EM-GPA	83	0.468	<0.001 <sup>c</sup>
Year of Classification	121	0.339	<0.001 <sup>b</sup>
Parent's Education	121	0.230	0.011 <sup>a</sup>
Age	121	0.092	0.314
Gender	121	0.085	0.353

<sup>a</sup>Correlation is significant at the 0.05 level

<sup>b</sup>Correlation is significant at the 0.01 level

<sup>c</sup>Correlation is significant at the 0.01 level

### **Objective Five**

Research objective five was to determine if a relationship exists between level of self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form and academic success of the students with a C-GPA of 2.00 or greater on a 4.00

scale and the academic success of the students with a EM-GPA of 2.0 or greater on a 4.0 scale.

Pearson product-moment correlations were performed on the dependent variable CSEI-A score and the independent variables C-GPA of 2.00 or greater and EM-GPA of 2.00 or greater. Of the 121 respondents, 102 students had a C-GPA of 2.00 or greater ( $n = 102, 84.3\%$ ). The mean C-GPA for this group was 2.87 ( $SD = 0.564$ ). The mean CSEI-A score of respondents with a C-GPA of 2.0 or greater was 78.82 ( $SD = 14.456$ ). The results of this analysis revealed that CSEI-A score and a C-GPA of 2.0 or greater were positively correlated ( $r = 0.565$ ). Of the 121 respondents, 59 students had an EM-GPA of 2.0 or greater ( $n = 59, 48.8\%$ ). The mean EM-GPA for this group was 2.99 ( $SD = 0.590$ ). The mean CSEI-A score for respondents with a EM-GPA of 2.0 or greater was 82.03 ( $SD = 14.863$ ). The results of the correlation analysis revealed that CSEI-A and an EM-GPA of 2.0 or greater were also positively correlated ( $r = 0.628$ ). Table 13 presents the results of this correlation analysis.

**Table 13**  
**Pearson Product-Moment Correlations between the Variables C-GPA of 2.00 or greater and EM-GPA of 2.00 or greater and Dependent Variable CSEI-A Score**

Variable	<i>n</i>	<i>r</i>	<i>p</i>
EM-GPA of 2.0 or greater	59 <sup>a</sup>	0.628	<0.001 <sup>c</sup>
C-GPA of 2.0 or greater	102 <sup>b</sup>	0.565	<0.001 <sup>c</sup>

<sup>a</sup>Respondents with EM-GPAs less than 2.00 were excluded.

<sup>b</sup>Respondents with C-GPA of less than 2.00 were excluded.

<sup>c</sup>Correlation is significant at the 0.01 level

### **Objective Six**

Objective six was to determine if a model existed which explained a significant portion of the variance of self-esteem as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form from the following demographic variables:

- A. Gender
- B. Age
- C. Parent's Highest Educational Level Completed
- D. Year of Classification

The demographic variables were included in the model as control variables to determine their impact on CSEI-A scores. Two of the independent variables (parent's highest educational level completed and year of classification) were categorical and were restructured as dichotomous variables through the use of binary coding. Parent's highest educational level completed was dichotomized as "high school/GED" and "non high school/GED"; "vocational/technical" and "non vocational/technical"; "associate degree" and "non associate degree"; and "bachelor degree" and "non bachelor degree". The category of professional degree was excluded from the analysis. Year of classification was dichotomized as "Freshman" and "non Freshman"; "Sophomore" and "non Sophomore"; and "Junior" and "non Junior". The category Senior was excluded from the analysis.

Data analysis consisted of Pearson product-moment correlations and stepwise multiple regression analysis. For each model, the probability of  $F$  to enter the equations was set at 0.05, and the probability of  $F$  to be removed from the model was set at 0.10.

Variables were added to the regression equation if they increased the explained variance by one percent or more, as long as the overall equation was significant. The data was examined for collinearity, normality, linearity, and homoscedasticity. The multiple regression diagnostics of computing and analyzing Mahalanobis Distance ( $D^2$ ) was conducted. Mahalanobis  $D^2$  was computed and it was determined that no multivariate outliers existed in the data. Using the  $\chi^2$  table, it was found that the critical value of  $\chi^2$  at  $p = 0.001$  with  $df = 8$  to be 26.125. It was determined that no  $D^2$  value met or exceeded 26.125. The results of the Mahalanobis  $D^2$  analysis are displayed in Table 14.

**Table 14**  
**Mahalanobis Distance for Multivariate Analysis Extreme Values**

		Case Number	$D^2$
Highest	1	6	4.536
	2	13	4.536
	3	44	4.536
	4	65	4.536
	5	68	4.536 <sup>a</sup>
Lowest	1	120	1.220
	2	108	1.220
	3	104	1.220
	4	100	1.220

(Table continued)

5

95

1.220<sup>b</sup>

<sup>a</sup>Only a partial list of cases with the value 4.536 are shown in the table of upper extremes.

<sup>b</sup>Only a partial list of cases with the value 1.220 are shown in the table of lower extremes.

Stepwise entry of the independent variables was the preferred method of analysis because of the exploratory nature of the study. For descriptive purposes, the Pearson product-moment correlation coefficients and significance levels for the CSEI-A scores and the independent variables are represented in Table 15. The correlation coefficients were analyzed using Davis' (1971) descriptors for interpretation of correlation strength (0.00 – 0.09 = negligible association; 0.10 – 0.29 = low association; 0.30 – 0.49 = moderate association; 0.50 – 0.69 = substantial association; 0.70 or higher = very strong association). A negative moderate association ( $r = -0.353$ ,  $p < 0.001$ ) was found to exist between “Freshman” year of classification and CSEI-A score, suggesting that Freshman respondents had lower levels of self-esteem.

**Table 15**  
**Relationship Between Selected Demographic Variables and CSEI-A Scores**

Variable	<i>n</i>	<i>r</i> <sup>a</sup>	<i>p</i>
Bachelor Degree <sup>i</sup>	107	0.280	0.002 <sup>j</sup>
Junior <sup>e</sup>	107	0.134	0.085
Age	107	0.118	0.112
Sophomore <sup>d</sup>	107	0.009	0.464
Gender <sup>b</sup>	107	-0.022	0.411
Associate Degree <sup>h</sup>	107	-0.097	0.159

(Table continued)

High School/GED <sup>f</sup>	107	-0.132	0.088
Vocational/Technical <sup>g</sup>	107	-0.184	0.029
Freshman <sup>c</sup>	107	-0.353	<0.001 <sup>k</sup>

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<sup>a</sup>Pearson Product Moment Correlation coefficient.

<sup>b</sup>Coded males = 1; females = 0.

<sup>c</sup>Whether year of classification was Freshman (coded 1) or not (coded 0).

<sup>d</sup>Whether year of classification was Sophomore (coded 1) or not (coded 0).

<sup>e</sup>Whether year of classification was Junior (coded 1) or not (coded 0).

<sup>f</sup>Whether parent's highest educational level was High School/GED (coded 1) or not (coded 0).

<sup>g</sup>Whether parent's highest educational level was Vocational/Technical (coded 1) or not (coded 0).

<sup>h</sup>Whether parent's highest educational level was a Associate degree (coded 1) or not (coded 0).

<sup>i</sup>Whether parent's highest educational level was a Bachelor degree (coded 1) or not (coded 0).

<sup>j</sup>Correlation is significant at the 0.05 level

<sup>k</sup>Correlation is significant at the 0.01 level

Histograms and scatterplots were examined for normality, linearity, and homoscedasticity. The data for the dependent variable, which is presented in Figure 3, were normally distributed (skewness = 1.350, kurtosis = 0.169). The scatterplots for the dependent variable of CSEI-A scores and standardized residuals were not randomly scattered about 0. The assumption of linearity held, as the plots revealed a linear relationship. A visual evaluation of the scatterplot revealed that homoscedasticity was held.

In addition to assessing normality, linearity, and homogeneity, analyses were conducted to determine if any of the variables were collinear. The preferred method for detecting collinearity was the computation of Variance Inflation Factors (VIF) and

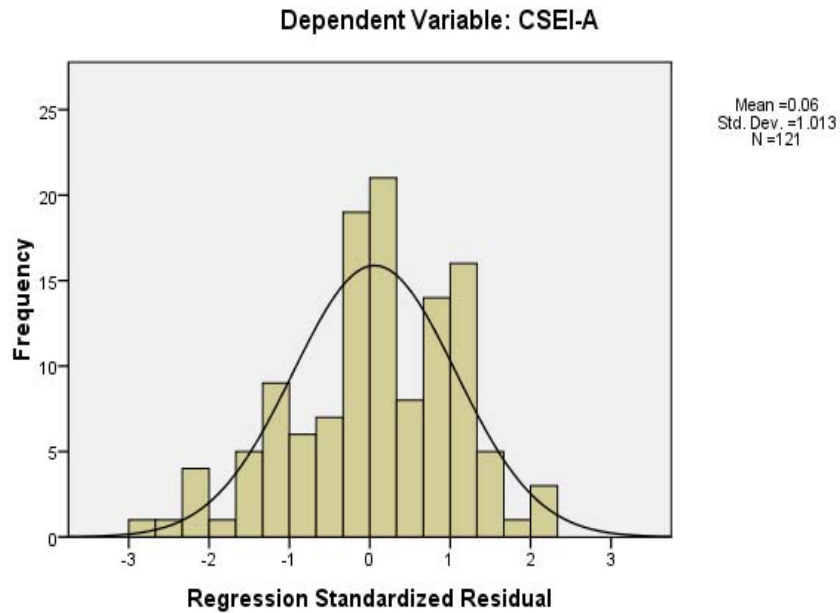


Figure 3  
Standardized Residuals for the Dependent Variable CSEI-A Score

Tolerance levels. The cutoff criteria for assessing collinearity were VIF computations that exceeded 10.0 and Tolerance levels of less than 0.10. Collinearity diagnostics did not reveal calculations for VIF or Tolerance levels that met the criteria for collinearity or the presence of overlap between variables. Therefore, the researcher concluded that excessive collinearity did not exist within the data.

The multiple regressions were conducted using the Stepwise method. Two of the eight independent variables were entered into the model. In the first step, Year of Classification “Freshman” was entered as it account for 12.5% of the variance in CSEI-A scores ( $R^2 = 0.125$ ). The next step entered Freshman followed by Parent’s Highest Educational Level Completed “Bachelor degree”, creating a model that accounted for 18.6% of the variance of the CSEI-A scores ( $R^2 = 0.186$ ). As illustrated in Table 16, the

Oneway Analysis of Variance (ANOVA) table presents the *F*-test for the chosen model which significantly predict CSEI-A score.

**Table 16**  
**Multiple Regression Analysis of CSEI-A Score and Selected Demographic Variables**

<u>ANOVA</u>					
Model	Source of Variation	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
	Regression	2	4903.379	11.911	0.000
	Residual	104	411.654		
	Total	106			

<u>Model Summary</u>					
Model	<i>R</i> <sup>2</sup> Cumulative	<i>R</i> <sup>2</sup> Change	<i>F</i> Change	<i>p</i>	<i>β</i>
	0.186	0.062	7.902	0.006	-0.330 0.250

Predictors in Model: (Constant), Freshman, Bachelor degree

<u>Variables Not in the Equation</u>			
Model	Variable	<i>t</i>	<i>p</i>
	Gender	-0.510	0.611
	Sophomore	-0.698	0.487
	Junior	0.037	0.970
	High School/GED	-1.773	0.079
	Associate	-0.790	0.431
	Age	-0.949	0.345

Predictors in Model: (Constant), Freshman, Bachelor degree

## CHAPTER 5

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Purpose and Objectives

The purpose of this study was to determine if a relationship exists between self-esteem and the academic success of African American students in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States. The specific research objectives explored in the study were:

1. Describe the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States based on the following selected demographic characteristics:
  - a. Gender
  - b. Age
  - c. Parent's Highest Educational Level Completed
  - d. Engineering Major
  - e. Year of Classification
  - f. Enrollment Status
2. Describe the academic success of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States. Academic success for purposes of this objective is defined as the following:
  - a. Whether or not the student has a Cumulative Grade Point Average

- (C-GPA) of 2.00 or greater on a 4.00 scale.
- b. Whether or not the student has an Engineering Major Grade Point Average (EM-GPA) of 2.00 or greater on a 4.00 scale.
3. Describe the self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form.
  4. Determine if a relationship exists between level of self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form and the following variables:
    - a. Gender
    - b. Age
    - c. Parent's Highest Educational Level Completed
    - d. Year Class
    - e. Cumulative Grade Point Average (C-GPA)
    - f. Engineering Major Grade Point Average (EM-GPA)
  5. Determine if a relationship exists between level of self-esteem of the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States, as measured by the Coopersmith Self-Esteem Inventory

(CSEI-A) Adult Form and academic success of students with a C-GPA of 2.00 or greater on a 4.00 scale and of students with a EM-GPA of 2.00 or greater on a 4.00 scale.

6. Determine if a model exist which explains a significant portion of the variance of self-esteem as measured by the Coopersmith Self-Esteem Inventory (CSEI-A) Adult Form from the following demographic characteristics:
  - a. Gender
  - b. Age
  - c. Parent's Highest Educational Level Completed
  - d. Year of Classification

### **Procedures**

The target population of this study was defined as African American students enrolled in a Minority Engineering Program at a research extensive university in the Southern portion of the United States. The accessible population was the African American students in MEP at one selected research extensive university in the Southern portion of the United States. At the time that the research was conducted, a total of 260 students were participants in the MEP.

Data on the specific demographic and academic variables related to the objectives of this study were collected from the University's official records in the College of Engineering. The Coopersmith Self Esteem Inventory Adult Form (CSEI-A)

was used to measure level of self-esteem for the purpose of this study. The CSEI-A is a short inventory consisting of 25 items requiring a binary response of “Like Me” or “Unlike Me.” The participants received an email requesting their participation in the research study. The email contained a link to a survey that included the CSEI-A and additional items related to student demographics, such as age, parent’s highest educational level completed, engineering major, and race.

All 260 MEP participants received an email requesting participation in the research study by completing the indicated survey. They were informed that participation in the research study was on a voluntary basis. A total of 121 MEP participants responded to the emailed survey at the conclusion of the Spring 2009 semester.

### **Summary of Findings**

#### **Objective One**

Objective One was to describe the African American students who participated in MEP at the study institution on specific demographic characteristics. Findings of Objective One indicated that male was the most frequently reported gender of respondents ( $n = 91, 75.2\%$ ). The greatest number of respondents were between 18 and 24 years of age ( $n = 114, 94.2\%$ ). The highest number of respondents reported their parent’s highest educational level completed as “Undergraduate Degree” ( $n = 48, 40\%$ ), while “High School Diploma/GED” was the second highest response reported ( $n = 44, 36\%$ ).

Mechanical Engineering was the engineering major of the greatest number of respondents ( $n = 27$ , 22.3%). The second largest group of respondents' engineering major was Chemical Engineering ( $n = 16$ , 13.2%). The year of classification of the largest group of respondents was Senior ( $n = 38$ , 31.4%). Freshman and Sophomore both had 30 student respondents each ( $n = 30$ , 24.8%). The overwhelming majority of students who participated in the study reported that they were enrolled as full-time students during the Spring 2009 semester ( $n = 119$ , 98%).

### **Objective Two**

Objective Two was to describe the academic success of the African American students who participated in the MEP. For the purposes of this objective, academic success was defined as whether or not the student had a C-GPA of 2.00 or greater on a 4.00 scale and whether or not the student had an EM-GPA of 2.00 or greater on a 4.00 scale. Findings for Objective Two revealed that the mean Cumulative Grade Point Average of all respondents was 2.658 on a 4.00 scale ( $SD = 0.7367$ ). The largest group of respondents were found to have a C-GPA of 2.00 or higher ( $n = 102$ , 84.3%). When the C-GPA data was examined in ranges of measurements, the range of scores that had the largest number of students was Less than 2.00 ( $n = 19$ , 15.7%).

The mean Engineering Major Grade Point Average of all student respondents was 2.419 on a 4.00 scale ( $SD = 0.90596$ ). The largest group of respondents were found to have an EM-GPA of 2.00 or higher ( $n = 59$ , 71.1%). Thirty-eight of the 121 study participants did not have an EM-GPA because they had not completed any engineering course in their major prior to the end of the Spring 2009 semester. When

the EM-GPA data were examined in ranges of measurements, the range of scores that had the largest number of students was Less than 2.00 ( $n = 24$ , 28.9%).

### **Objective Three**

This objective was to describe the self-esteem of the African American students who participated in the MEP based on their scores as measured by the CSEI-A.

Respondents' CSEI-A scores were calculated from responses of participants on the 25 item survey. The mean CSEI-A score for all respondents was 71.64 (SD = 22.313).

The majority of respondents had a CSEI-A score in the high self-esteem range of 71 to 100 ( $n = 72$ , 59.5%). The most frequent CSEI-A score for the group of respondents was 92 ( $n = 14$ , 11.6%).

### **Objective Four**

Objective Four sought to determine if a relationship exists between level of self-esteem of the African American students who participated in the MEP, as measured by the CSEI-A and the variables of gender, age, parent's highest educational level completed, year of classification, C-GPA, and EM-GPA.

Pearson product-moment correlations were performed on the dependent variable CSEI-A score and the chosen independent variables. Of the six independent variables, four were found to be positively correlated with CSEI-A score. The results of Objective Four revealed that CSEI-A score was positively correlated with parent's highest educational level completed ( $r = 0.230$ ,  $p < 0.05$ ), year of classification ( $r = 0.339$ ,  $p < 0.01$ ), C-GPA ( $r = 0.797$ ,  $p < 0.01$ ), and EM-GPA ( $r = 0.468$ ,  $p < 0.01$ ). The variables of gender and age did not reveal a significant correlation with CSEI-A score.

## **Objective Five**

The purpose of Objective Five was to determine if a relationship exists between level of self-esteem of the African American students who participated in the MEP, as measured by the CSEI-A and the academic success of students with a C-GPA of 2.00 or greater on a 4.00 scale and the academic success of students with an EM-GPA of 2.00 or greater on a 4.00 scale.

Person product-moment correlations were performed on the dependent variable CSEI-A score and the independent variables C-GPA of 2.00 or greater and EM-GPA of 2.0 or greater. One hundred and two respondents were found to have a C-GPA of 2.00 or greater ( $n = 102$ , 84.2%). The mean C-GPA for this group was 2.87 (SD = 0.564). The mean CSEI-A score of all respondents with a C-GPA of 2.00 or greater was 78.82 (SD = 14.456). The results of the correlation revealed that CSEI-A score and A C-GPA of 2.00 or greater were positively correlated ( $r = 0.565$ ,  $p < 0.01$ , 1-tailed).

Of the 121 survey respondents, 83 students had a calculated EM-GPA. Fifty-nine of the 83 respondents had an EM-GPA of 2.00 or greater ( $n = 59$ , 48.8%). The mean EM-GPA for this group of respondents was 2.99 (SD = 14.863). The results of the correlation analysis revealed that CSEI-A and an EM-GPA of 2.00 or greater were also positively correlated ( $r = 0.628$ ,  $p < 0.01$ , 1-tailed).

## **Objective Six**

The sixth and final objective of this study was to determine if a model exist which explains a significant portion of the variance of self-esteem as measured by the CSEI-A from the demographic variables of gender, age, parent's highest educational level

completed, and year of classification. Findings for Objective Six are based on a multiple regression analysis employing dummy coding of the selected demographic variables of gender, age, parent's highest educational level completed, and year of classification as predictor variables and CSEI-A score as the dependent variable for the formulation of two separate multiple regression equation. Results demonstrated that models did exist which explained a significant portion of the variance in the dependent variable of CSEI-A score.

Two models exist which explained a significant portion of the variance in CSEI-A score from the dummy coded demographic variables of gender, age, parent's highest educational level completed, and year of classification. In Model 1, the year of classification "Freshman,"  $F(1, 105) = 14.939, p < 0.001$ , was determined to be a significant predictor of CSEI-A score. Being a Freshman student resulted in a decrease of CSEI-A score. Freshman students scored 16.854 points lower on the CSEI-A than Sophomore, Junior, and Senior students. The final regression equation was determined to be  $\hat{y} = 75.500 - 16.854x$ . In Model 2, the year of classification "Freshman" was entered and followed by parent's highest educational level "Bachelor Degree",  $F(2, 104) = 11.911, p < 0.001$ , was determined to be a significant predictor of CSEI-A score. Freshman students who reported that their parent's highest educational level completed as Bachelor Degree scored 11.132 points higher on the CSEI-A than Freshman students who reported that their parent's highest educational level as High School/GED, Vocational/Technical, or Associate Degree. The regression equation for Model 2 was determined to be  $\hat{y} = 70.212 - 16.854x + 11.132z$ .

## **Conclusions, Implications, and Recommendations**

From the findings of this study, the researcher has derived the following conclusions, implications, and recommendations:

### **Conclusion One**

The student population studied demonstrated high levels of self-esteem as measured by the Coopersmith Self-Esteem Inventory Adult Form (CSEI-A). The mean CSEI-A score for all respondents was 71.64 (SD = 22.313). Students with high self-esteem score's ranged from 71 to 100. The majority of respondents were scored as possessing high self-esteem ( $n = 72$ , 59.5%). The most frequent CSEI-A score was 92 ( $n = 14$ , 11.6%) and four respondents scored the highest possible score of 100 ( $n = 4$ , 3.3%).

These findings support the conclusions made by Coopersmith (1967), Rosenberg (1979), and Wylie (1979) which demonstrated that African Americans tend to have high levels of global self-esteem. Van Laar (2000) suggested that the reason for African Americans high levels of self-esteem is the use of global measures of self-esteem rather than specific self-esteem. Wade *et al.* (1989), found that overall self-esteem remained fairly consistent between African Americans and Whites; however there were ethnic differences in social attitudes and behavior, which in turn may have influenced self-esteem. It may be that the sources of self-esteem are different for African Americans and Whites. Based on these conclusions, a recommendation for a more extensive exploration of African American students' self-esteem can be undertaken by future researchers. Students' self-esteem can be measured on a global scale as well

as on a specific scale. A comparison of global self-esteem and academic self-esteem can be conducted for the African American students who participated in the Minority Engineering Program at a research-extensive university in the Southern portion of the United States.

## **Conclusion Two**

Findings of this study demonstrated the existence of a relationship between the level of self-esteem and the academic success of African American students participating in MEP at a research extensive university in the Southern portion of the United States. Procedures for the study included the completion of the Coopersmith Self-Esteem Inventory Adult form to determine level of self-esteem. The findings demonstrated that there was a significant positive correlation between level of self-esteem, as measured by CSEI-A score and C-GPA ( $r = 0.797, p < 0.01, 1\text{-tailed}$ ). As the respondents' scores increased, so did students' C-GPA. There was a similar correlation between CSEI-A score and EM-GPA ( $r = 0.468, p < 0.01, 1\text{-tailed}$ ). The research also revealed a significant positive correlation between level of self-esteem, as measured by CSEI-A score and academic success, as measured by whether or not a student had a C-GPA of 2.00 or greater ( $r = 0.565, p < 0.01, 1\text{-tailed}$ ) and whether or not a student had a EM-GPA of 2.00 or greater ( $r = 0.628, p < 0.01, 1\text{-tailed}$ ).

These findings corroborates outcome results by Reynolds (1988) who found in his research that academic self-concept is related in a positive and significant manner to grade point average in college students. The study results also support the findings of Bankston & Zhou (2002); Lockett & Harrell (2003); Schmidt & Padilla (2003); West,

Fish, & Stevens (1980); who all cited a positive correlation between self-esteem and academic performance. However, the findings contradict the research of Van Laar (2000) who reported little to no relationship between self-esteem and academic success in African American students.

Based on this conclusion, the inclusion of a self-esteem building component into the retention efforts of the MEP is recommended. It is important for higher education administrators and educators to understand the role that they play in the achievement of African American students. Although it has been proven that MEPs increase the retention of minority students in engineering majors at PWIs, it is important for administrators to be proactive in enhancing diversity on campus. Administrators should examine what other program components can be incorporated to increase the academic success of African American students.

### **Conclusion Three**

A significant positive relationship was found to exist between level of self-esteem and parent's highest educational level completed of the African American students who participated in the research study. The research revealed that as the parent's highest educational level completed increased, so did the CSEI-A scores ( $r = 0.230$ ,  $p < 0.05$ , 2-tailed). The majority of students reported that their parent had received an Associate Degree or higher ( $n = 66$ , 54.5%). The highest number of respondents reported their parent's highest educational level completed as having completed an Undergraduate Degree ( $n = 48$ , 40%).

The findings from the study support the research that suggests that the

participation of African Americans has increased since the 1960s (Douglas, 1998). Although the research of Allen (1991), Fleming (1984), and Willie & Cunnigen (1981) report that African American students at PWIs have a lower graduation rates than those of White students, it is clear that African Americans are receiving degrees of higher education. Future research might explore if the Stereotype Threat hypothesis, as presented by Steele (1992) and other researchers, is no longer a necessary protective factor for African American students majoring in engineering. Additionally, researchers might investigate the effects of having parents who have successfully completed a degree and the protective factors with which they equip their children to deal with the obstacles that normally lead to low self-esteem.

#### **Conclusion Four**

The research study revealed that a relationship does not exist between level of self-esteem and gender in the African American students participating in the study. The majority of the respondents ( $n = 91$ , 75.2%) reported their gender as male. The Pearson product-moment correlation that was conducted found that there was not a significant correlation between CSEI-A score and gender ( $r = 0.085$ ,  $p = 0.353$ , 2-tailed).

The findings of the study support the research of Maccoby & Jacklin (1974) and Wylie (1979) which reported that there was no consistent gender difference in self-esteem of males and females. In their study Maccoby & Jacklin (1974) concluded that males and females have equivalent levels of global self-esteem. Some researchers have reported non-significant differences between African American males and African American females on self-esteem measures, while simultaneously reporting a

significant gender effect, favoring males, in Whites (Simmons & Rosenberg, 1975). Implications of this finding include the recommendation to further investigate the relationship between gender and self-esteem of African American engineering students and determine if any significant differences exist between the level of self-esteem of male and female students.

### **Conclusion Five**

Findings of the study demonstrated that no significant relationship existed between level of self-esteem and age of the African American engineering participants. The vast majority of respondents reported their age as between 18 to 24 years ( $n = 113$ , 93%). The mean age of all participants was 21.22 (SD = 2.308). The Pearson product-moment correlation results revealed that there was no significant relationship between CSEI-A scores and age present for the participants of this study ( $r = 0.092$ ,  $p = 0.314$ , 2-tailed).

Although there have been numerous studies on the effects of age on self-esteem, the findings of the studies usually provide a comprehensive picture of age differences in self-esteem across the entire lifespan. Wylie (1979) conducted an extensive review of the self-esteem literature and concluded that there are no systematic age differences in self-esteem. There are numerous studies that exist that examine the self-esteem of college students, but none of these studies determined if differences existed between the age ranges of college students. Therefore, a recommendation based on this finding includes the expansion of research exploration into determining if any significant differences exist in the self-esteem of the different age

ranges of college students.

### **Conclusion Six**

The research findings revealed that freshman African American engineering majors tend to have lower self-esteem than all other African American engineering majors. The study also suggested that freshman African American engineering students whose parent's highest educational level completed was at least a Bachelor degree had higher self-esteem than freshman African American engineering students whose parent's highest educational level completed was lower than a Bachelor degree. Students who reported their parent's highest educational level completed as less than a Bachelor degree are considered first generation college students. Billson and Terry (1982) defined first-generation college students as those whose parents have had no college or university experience. In the most basic terms, a first-generation college student is a student whose parents have not completed a Bachelor degree or higher. Horn and Nunez (2000) found that first-generation college students tended to be from low-income families and were more likely to be African-American or Hispanic.

First-generation college students may be perceived as having different expectations, poorer academic and social preparation, greater financial constraints, lower self-esteem, and insufficient parental support (Hicks, 2002). Researchers have suggested that the increased accessibility of higher education to first-generation students, especially minorities, necessitates a clearer understanding of the unique needs of this population due to the dramatic growth of their enrollment in colleges and universities. Since attrition for minorities is greatest during the freshman year, support

services must be available to students at enrollment.

Based on the findings of this study and similar research, colleges and universities should provide support to first-generation college students to assist them in successfully attaining their desired degree. The researcher recommends the implementation of services designed specifically to address the needs of first-generation minority students majoring in engineering. Intensive individual and group counseling and an intensive orientation program for freshman first-generation college students would be beneficial. Hicks (2002) suggests implementing a first-year experience course that includes effective tools for combating the lack of academic support for first-generation students. This type of course would allow the first-generation student to learn about the resources that a university has to offer and about course expectations of faculty members. First-generation retention strategies should be multifaceted, and assist students in developing a sense of social networking accompanied by a sense of academic competence. Thayer (2000) reported that strategies that work for first-generation and low-income students are likely to be successful for the general population as well.

Further researcher recommendations include the implementation of learning communities designed specifically for freshman first-generation engineering students. Thayer (2000) reported that learning communities help students form supportive peer groups that extend beyond the classroom. According to Rasmussen and Skinner (1999) a learning community, very broadly defined, is “curriculum design which coordinates two or more courses into a single program of instruction.” They continue to say the strength of learning communities is in the integrated approach to education.

Learning communities should include integrated engineering course clusters. For example, a first semester calculus course would be linked to a study skills course and a tutorial. Another type of learning community would integrate a summer program where students are exposed to the engineering curriculum for their intended major. Students would interact with faculty, peer mentors, and academic advisors. According to Thayer (2000), students enter the fall semester with confidence, having been exposed to the campus community.

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**APPENDIX A**  
**ONLINE SURVEY INSTRUMENT**

## Self-Esteem

Created: May 08 2009, 11:16 AM  
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Design Theme: Basic Green  
Language: English  
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Disable Browser "Back" Button: False

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### Self-Esteem Inventory

Page 1 - Heading

#### PART 1 Directions

Below, you will find a list of statements about feelings. If a statement describes how you usually feel, choose "Like Me." If the statement does not describe how you usually feel, choose "Unlike Me." There are no right or wrong answers.

Page 2 - Question 1 - Choice - One Answer (Bullets)

Things usually do not bother me.

- Like me
- Unlike me

Page 3 - Question 2 - Choice - One Answer (Bullets)

I find it very hard to talk in front of a group.

- Like me
- Unlike me

Page 4 - Question 3 - Choice - One Answer (Bullets)

There are lots of things about myself I would change if I could.

- Like me
- Unlike me

Page 5 - Question 4 - Choice - One Answer (Bullets)

I can make up my mind without too much trouble.

- Like me
- Unlike me

Page 6 - Question 5 - Choice - One Answer (Bullets)

I am a lot of fun to be with.

- Like me
- Unlike me

Page 7 - Question 6 - Choice - One Answer (Bullets)

I get upset easily at school.

- Like me
- Unlike me

Page 8 - Question 7 - Choice - One Answer (Bullets)

It takes me a long time to get used to anything new

- Like me
- Unlike me

Page 9 - Question 8 - Choice - One Answer (Bullets)

I am popular with persons my own age.

- Like me
- Unlike me

Page 10 - Question 9 - Choice - One Answer (Bullets)

My friends usually considers my feelings.

- Like me
- Unlike me

Page 11 - Question 10 - Choice - One Answer (Bullets)

I give in very easily.

- Like me
- Unlike me

Page 12 - Question 11 - Choice - One Answer (Bullets)

My family expects too much of me.

- Like me
- Unlike me

Page 13 - Question 12 - Choice - One Answer (Bullets)

It is pretty tough to be me.

- Like me
- Unlike me

Page 14 - Question 13 - Choice - One Answer (Bullets)

Things are all mixed up in my life.

- Like me
- Unlike me

Page 15 - Question 14 - Choice - One Answer (Bullets)

People usually follow my ideas.

- Like me
- Unlike me

Page 16 - Question 15 - Choice - One Answer (Bullets)

I have a low opinion of myself.

- Like me
- Unlike me

Page 17 - Question 16 - Choice - One Answer (Bullets)

There are many times when I would like to leave school.

- Like me
- Unlike me

Page 18 - Question 17 - Choice - One Answer (Bullets)

I often feel upset with my school performance.

- Like me
- Unlike me

Page 19 - Question 18 - Choice - One Answer (Bullets)

I am not as nice looking as most people.

- Like me
- Unlike me

Page 20 - Question 19 - Choice - One Answer (Bullets)

If I have something to say, I usually say it.

- Like me
- Unlike me

Page 21 - Question 20 - Choice - One Answer (Bullets)

My family understands me.

- Like me
- Unlike me

Page 22 - Question 21 - Choice - One Answer (Bullets)

Most people are better liked than I am.

- Like me
- Unlike me

Page 23 - Question 22 - Choice - One Answer (Bullets)

I usually feel as if my family is pushing me.

- Like me
- Unlike me

Page 24 - Question 23 - Choice - One Answer (Bullets)

I often get discouraged with school.

- Like me
- Unlike me

Page 25 - Question 24 - Choice - One Answer (Bullets)

I often wish I were someone else.

- Like me
- Unlike me

Page 26 - Question 25 - Choice - One Answer (Bullets)

People can't depend on me.

- Like me
- Unlike me

**PART 2**

**Directions**

This information on your personal characteristics is intended to better help the researcher analyze the collected data. Strict CONFIDENTIALITY for individual responses is assured.

Please select the appropriate response to the following questions.

Please indicate your gender.

- Male
- Female

What is your ethnicity? (select one)

- African American
- Native American
- Caucasian
- Asian
- Hispanic

Which range includes your current age? (select only one)

- Less than 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 50
- Older than 50

What is your parent's highest educational level completed? (Whichever parent's educational level is the highest)

- High School Diploma/GED
- Vocation/Technical Degree
- Associates Degree
- Undergraduate Degree
- Graduate/Professional Degree

Page 32 - Question 30 - Choice - One Answer (Bullets)

What is your current major? (select one)

- BE
- CE
- CHE
- CM
- EE/EEC
- EVEG
- IE
- ME
- PETE
- Other, please specify

Page 33 - Question 31 - Choice - One Answer (Bullets)

At the beginning of the Spring 2009 semester, what was your enrollment status?

- Full-time
- Part-time

Page 34 - Question 32 - Choice - One Answer (Bullets)

What is your current year of classification?

- Freshman
- Sophomore
- Junior
- Senior

Thank You Page

**APPENDIX B**

**LOUISIANA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB)  
FOR THE PROTECTION OF HUMAN SUBJECTS APPROVAL LETTER**

**Application for Exemption from Institutional Oversight**

Unless qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/projects using living humans as subjects, or samples or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.



Institutional Review Board  
 Dr. Robert Mathews, Chair  
 203 B-1 David Boyd Hall  
 Baton Rouge, LA 70803  
 P: 225.578.8692  
 F: 225.578.6792  
 irb@lsu.edu | lsu.edu/irb

- Applicant, Please fill out the application in its entirety and include the completed application as well as parts A-E, listed below, when submitting to the IRB. Once the application is completed, please submit two copies of the completed application to the IRB Office or to a member of the Human Subjects Screening Committee. Members of this committee can be found at <http://www.lsu.edu/irb/screeningmembers.shtml>
- A Complete Application Includes All of the Following:
  - (A) Two copies of this completed form and two copies of parts B thru E.
  - (B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1 & 2)
  - (C) Copies of all instruments to be used.
    - If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.
  - (D) The consent form that you will use in the study (see part 3 for more information.)
  - (E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB.  
 Training link: (<http://cme.cancer.gov/clinicaltrials/learning/humanparticipant-protections.asp>.)

1) Principal Investigator: Sandra L. Harris Rank: \_\_\_\_\_ Student? Y/N  Y

Dept.: SHREWD Ph: 225-907-7310 E-mail: sharril@lsu.edu

2) Co Investigator(s): please include department, rank and e-mail for each  
 If student, please identify and name supervising professor in this space

Dr. Krisanna Machmes, Supervising Professor  
School of Human Resource Education & Workforce Development (HRE)

3) Project Title: Self-Esteem and It's Relation to Academic Performance in African American Engineering Students enrolled in a Research Extensive University

4) LSU Proposal?(yes or no)  No If Yes, LSU Proposal Number: \_\_\_\_\_  
 Also, if YES, either  This application completely matches the scope of work in the grant  
 OR  More IRB Applications will be filed later

5) Subject pool (e.g. Psychology Students) Engineering Students  
 • Circle any "vulnerable populations" to be used: (children <18; the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

6) PI Signature S Harris \*\* Date 5/19/08 (no per signatures)  
 \*\*I certify my responses are accurate and complete. If the project scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at LSU for three years after completion of the study. If I leave LSU before that time the consent forms should be preserved in the Departmental Office.

\*\*\*Effective August 1, 2007, all Exemptions will expire three years from date of approval, unless a continuation report, found on our website, is filed prior to expiration date\*\*\*

Study Exempted By:  
 Dr. Robert C. Mathews, Chairman  
 Institutional Review Board  
 Louisiana State University  
 203 B-1 David Boyd Hall  
 225-578-8692 | www.lsu.edu/irb  
 Exemption Expires: 5/24/2011

IRB# E 4097  
 Complete Application  
 Human Subjects Training

Screening Committee Action: Exempted  Not Exempted \_\_\_\_\_ Category/Paragraph 2  
 Reviewer Mathews Signature Robert C. Mathews Date 5/30/08

**APPENDIX C**

**COOPERSMITH SELF-ESTEEM INVENTORY ADULT FORM**

## COOPERSMITH INVENTORY ADULT FORM

- | Like Me                  | Unlike Me                |   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. Things usually don't bother me.                              |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. I find it very hard to talk in front of a group.             |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. There are lots of things about myself I'd change if I could. |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. I can make up my mind without too much trouble.              |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. I'm a lot of fun to be with.                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. I get upset easily at home.                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. It takes me a long time to get used to anything new.         |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. I'm popular with persons my own age.                         |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. My family usually considers my feelings.                     |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. I give in very easily.                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | 11. My family expects too much of me.                           |
| <input type="checkbox"/> | <input type="checkbox"/> | 12. It's pretty tough to be me.                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 13. Things are all mixed up in my life.                         |
| <input type="checkbox"/> | <input type="checkbox"/> | 14. People usually follow my ideas.                             |
| <input type="checkbox"/> | <input type="checkbox"/> | 15. I have a low opinion of myself.                             |
| <input type="checkbox"/> | <input type="checkbox"/> | 16. There are many times when I would like to leave home.       |
| <input type="checkbox"/> | <input type="checkbox"/> | 17. I often feel upset with my work.                            |
| <input type="checkbox"/> | <input type="checkbox"/> | 18. I'm not as nice looking as most people.                     |
| <input type="checkbox"/> | <input type="checkbox"/> | 19. If I have something to say, I usually say it.               |
| <input type="checkbox"/> | <input type="checkbox"/> | 20. My family understands me.                                   |
| <input type="checkbox"/> | <input type="checkbox"/> | 21. Most people are better liked than I am.                     |
| <input type="checkbox"/> | <input type="checkbox"/> | 22. I usually feel as if my family is pushing me.               |
| <input type="checkbox"/> | <input type="checkbox"/> | 23. I often get discouraged with what I am doing.               |
| <input type="checkbox"/> | <input type="checkbox"/> | 24. I often wish I were someone else.                           |
| <input type="checkbox"/> | <input type="checkbox"/> | 25. I can't be depended on.                                     |

## VITA

Sandra Latrice Harris was born in Baton Rouge, Louisiana, in December 1974. She is the daughter of Marie Harris Young and the late David Coates. She graduated from Belaire High School and attended Louisiana State University in Baton Rouge, Louisiana. Ms. Harris received her Bachelor of Arts degree, majoring in sociology, from Louisiana State University in August 1997. She immediately began her studies in the Counselor Education Program at Louisiana State University in August 1997. Ms. Harris received her Master of Arts degree in May 1999.

Upon completion of her master's degree, Ms. Harris was employed as an Extended Day Program Teacher at Audubon Elementary. She was employed at Audubon for two years. During her time at Audubon, Ms. Harris became the Contract Counselor at the Sharon Hills Elementary Discipline Center. In her capacity as Contract Counselor, she worked individually with the student who were removed from their regular elementary school and placed in the discipline center due to behavioral problems. While employed at Sharon Hills, Ms. Harris began course work necessary to complete her Education Specialist Certification. She received her certificate of Education Specialist, specializing in school and career counseling, in May 2002.

Ms. Harris has been employed as a counselor in the College of Engineering at Louisiana State University in October 2002. She is currently certified by the National Board of Certified Counselors (NBCC) as a National Certified Counselor (NCC). Ms. Harris is currently working toward the hours necessary for licensure as a Licensed Professional Counselor in the state of Louisiana. She is currently a member of the

Louisiana Counseling Association (LCA), where she holds membership in the Louisiana College Counseling Association (LCCA) and Louisiana Career Development Association (LCDA) divisions of LCA. Ms. Harris has served as President of LCCA for the 2007-2008 term and has served as the LCCA Newsletter Editor for the 2006-2007 term. She has been the LCDA Newsletter Specialist since 2003. Ms. Harris has also maintained national memberships in the American College Counseling Association (ACCA) and the National Academic Advising Association (NACADA).

While working in the College of Engineering, Ms. Harris began her doctoral studies. Completion of this degree is a special accomplishment to her, because she is the first member of her family to pursue a doctoral degree. Ms. Harris is also the staff advisor for the Engineering College Counsel. She is a member of the Black Faculty and Staff Caucus at Louisiana State University. The Black Student Union recognized her in April 2009 as one of the TOP 5 Faculty and Staff members for her contributions to the campus community.