

THE RELATIONSHIPS BETWEEN PERCEIVED PARENTING STYLE, ACADEMIC
SELF-EFFICACY AND COLLEGE ADJUSTMENT OF
FRESHMAN ENGINEERING STUDENTS

Nancy Elaine Shaw, B.A.

Thesis Prepared for the Degree of
MASTER OF SCIENCE

UNIVERSITY OF NORTH TEXAS

May 2008

APPROVED:

Arminta L. Jacobson, Major Professor
Rebecca Glover, Committee Member
Anglea Nievar, Committee Member
Mary Estes, Chair of the Department of
Educational Psychology
M. Jean Keller, Dean of the College of Education
Sandra L. Terrell, Dean of the Robert B. Toulouse
School of Graduate Studies

Shaw, Nancy Elaine. The Relationships between Perceived Parenting Style, Academic Self-Efficacy and College Adjustment of Freshman Engineering Students. Master of Science (Development and Family Studies), May 2007, 80 pp., 6 tables, references, 45 titles.

This study examined the relationships between perceived parenting styles, academic self-efficacy, and college adjustment among a sample of 31 freshman engineering students. Through the administration of self-report surveys and chi-square analyses, strong academic self-efficacy was demonstrated in students who reported authoritative maternal parenting. These findings support previous research on the relationship between academic self-efficacy and parenting styles. Implications were drawn for parents and future research.

Copyright 2008

by

Nancy Elaine Shaw

TABLE OF CONTENTS

	Page
LIST OF TABLES	v
Chapters	
I. STATEMENT OF THE PROBLEM	1
Significance and Justification of the Research Problem	
Purpose of the Study	
Assumptions	
Definitions of Terms	
Delimitations	
Possible Implications of the Research Problem	
II. REVIEW OF THE LITERATURE	9
Student Adjustment to College	
Parenting Style	
Self-Efficacy	
Conclusions and Hypotheses	
III. METHODOLOGY	33
Subjects	
Measures	
Procedures	
Analysis	
IV. RESULTS	43
Data Analysis	
Descriptive Data	

	Hypotheses Testing	
	Summary	
V.	DISCUSSION	52
	Discussion of Findings	
	Conclusions	
	Strengths and Limitations	
	Implications for Future Research	
Appendices		
A.	IRB APPROVAL LETTER	66
B.	INFORMED CONSENT FORM	68
C.	DEMOGRAPHICS	71
D.	STUDENT ADAPTATION TO COLLEGE QUESTIONNAIRE.....	73
	REFERENCES	76

LIST OF TABLES

	Page
1. SACQ Full-Scale Scores, SACQ Sub-Scale Scores, PAQ Scores, and ASES Scores by Mean, Minimum, Maximum, and Standard Deviation ($n=31$)	45
2. Maternal Parenting Style and SACQ Full-Scale High/Low Level ($n=29$)	46
3. Paternal Parenting Style and SACQ Full-Scale High/Low Level ($n=26$).....	47
4. Weak/Strong Academic Self-Efficacy by Number, Mean , and Standard Deviation ($n=31$).....	48
5. Maternal Parenting Style and Academic Self-Efficacy ($n=29$)	49
6. Paternal Parenting Style and Academic Self-Efficacy ($n=26$).....	50

CHAPTER I

INTRODUCTION

Significance and Justification of the Research Problem

Researchers have investigated predictors affecting students' decision to pursue higher education and/or continue their education after entry to college or university. Predictors include primary and secondary school preparation, family dynamics, self-esteem, commitment to goals, social support systems, and the like. Yet with all the services available to students and the research conducted to better understand factors associated with the above issues, there are some students who never successfully assimilate into and navigate through the university system. Factors which have not yet been examined may have an influence on a student's ability to successfully adjust to and progress through postsecondary education and earn a baccalaureate degree. For individuals who matriculate into university education, not all experience a successful transition and complete a baccalaureate degree.

Professionals who work in higher education and investigate issues such as student adjustment, attrition, retention, and success have focused on various aspects of academia. Steps have been taken at many American universities to engage students in a satisfying experience at the university both academically and socially in order to assist in students' adjustment to university life, thus, retaining the majority of students who have entered into the higher education system. Peer mentoring groups, professor mentoring groups,

tutoring services, student employment assistance, internship assistance, academic advising, first-generation support groups, personal counseling and disability accommodation services are just a few of the many services offered at most universities which focus on helping students toward successful transition and navigation through the complexity of the university (Alberts, 2006; Cabrera, 1993; Nutt, 2003).

In 2005, the U.S. Census Bureau stated that as of the year 2004, 85% of those aged 25 or older reported they had earned a high school diploma, but only 28% had attained at least a baccalaureate degree. High school graduation rates for women exceed those of men, 85.4% compared to 84.8%; however, a higher proportion of men complete a baccalaureate degree or higher (29.4% of men compared with 26.1% of women).

The National Science Foundation (2002) reported slightly higher numbers of American college graduates, with an estimated 34% female college graduates compared to 32% male college graduates. Women also account for approximately 56% of all undergraduate students and 20% of engineering undergraduate students at public and private institutions. The National Center for Education Statistics (1999) reported that as of the year 1999, a total of 33% of the American population had earned a baccalaureate degree.

ACT Incorporated (2002) developed the American College Test (ACT) as partial criteria for admission requirements to universities and colleges. ACT Inc. reported only 51% of students who entered a 4-year institution (public or private) earned a baccalaureate degree within 5 years of entry. Seventy-four percent of students return to college after completing their first year, thus, leaving an attrition rate of 26%. Porter

(1990) estimated 40% of undergraduate students leave college without completing a baccalaureate degree. Tinto (1987) documented 75% of students leave college within their first two years. Mallinckrodt and Sedlacek (1987) reported the freshman class holds the highest attrition rate as compared to any other class, with percentages that average between 20% and 30%.

Engineering disciplines lose approximately 53% of undergraduate students before completion of an engineering degree. Of these students, 40% switch into a non-engineering discipline and approximately 25% leave college before their sophomore year (Astin & Astin, 1992).

The importance of a college education has been shown by its impact on an individual's yearly financial earnings. The U.S. Census Bureau (2005) reported workers aged 18 and older with a baccalaureate degree earn an average of \$51,206 a year as compared to those with a high school diploma, who only earn an average of \$27,915 a year. Workers with a graduate degree earn an average of \$74,602 a year as compared to those without a high school diploma, who only average \$18,734 a year. These figures clearly reinforce the value of a college education on one's financial earnings, which can also contribute to one's standard of living and availability of numerous resources. Furthermore, Glennen, Farren and Vowell (1996) report students who attain their academic goals enhance their chance of success in America's competitive society and job market.

Termination of a college education may negatively affect a student in ways other than financial. Being a college dropout is associated with undesirable characteristics that

may hinder future success. Vazquez-Abad, Winter and Derome (1997) report students who drop out are more likely to display low levels of self-esteem and self-worth, which affects their decision-making and pursuits of occupations after college termination. These students also feel less confident about their skills, knowledge, and capacity to complete tasks.

The negative impacts of student attrition extend beyond students' financial and emotional well-being. Universities and colleges as well as the American labor market may suffer when students terminate their college education prior to graduation. Academic programs, facilities planning, funding patterns, and student services are some of the items that rely on student tuition at universities and colleges (Heisserer & Parette, 2002).

Attrition results in less available money for institutions to maintain or improve academic or developmental programs and services. Decreased attrition combined with increased graduation rates may improve funding for certain public institutions as they show accountability to state and/or local taxpayers and legislators (Glennen et al., 1996).

The labor market in the United States is directly impacted by the quality of current and future employees in the workforce. Heisserer and Parette (2002) report the future American labor force may suffer due to a decreased quality of workers available in certain professions. College termination may leave an individual under-prepared and improperly trained to meet the expected roles and responsibilities associated with specialized professions.

This may have negative consequences for the American workforce, especially when considering Americans have begun to compete in a global market in addition to a

national market. The United States Government Accountability Office (2007) reports technological advancements have changed the way companies conduct business. Some examples of this are outsourcing, relocation of American companies to other countries, and company buy-outs. The United States needs to produce educated workers who are prepared to meet the demands of a changing American job market and emerging global market.

America produces more college graduates compared to most of the other industrialized nations in the world. In 1999, the National Center for Education Statistics collected the graduation rates for the United States along with 7 other countries. America ranked second in graduation rates, with a total of 33% of its population having earned a baccalaureate degree. The United Kingdom, which includes England, Northern Ireland, Scotland and Wales, ranked first, with 36% of its population earning the equivalent of a baccalaureate degree. Japan, with 29%, and Canada, with 27%, did not fall far behind the United States. If the percentages of graduation rates increase for these other countries, thus producing more qualified workers, employees in the United States may be competing with additional individuals for available jobs.

Purpose of the Study

The purpose of this research study is to examine the relationships between perceived parenting style, academic self-efficacy, and college adjustment of freshman engineering students. Specifically, three relationships are explored: (a) the relationship between perceived parenting style and student adjustment, (b) the relationship between

academic self-efficacy and student adjustment, and (c) the relationship between perceived parenting style and academic self-efficacy.

Assumptions

This research problem includes numerous assumptions such as the postulation that an adjustment period exists for each student upon entering a college or university; that college adjustment is linked to achievement and attrition; that the style of parenting employed remains fairly consistent throughout childhood, adolescence, and early adulthood; and that the style of parenting employed continues to affect children after they have entered adulthood.

Definition of Terms

Parenting style is defined as the child-rearing practices and interactive behaviors which have been developed and implemented by parents. Parenting style will be considered in reference to three general categories: authoritative, authoritarian and permissive (Schwartz & Scott, 2003).

Authoritative parenting is operationally defined as the parenting style in which the parent provides clear and firm direction for the child, characterized by warmth, reason, flexibility and verbal give-and-take. Authoritarian parenting is defined as the parenting style in which the parent is highly directive and values unquestioning obedience from the child. The style is characterized by parental detachment, lack of parental warmth and parental use of punitive measures of control over the child. Permissive parenting is defined as the parenting style characterized by few parental demands of the child and the belief the child can regulate his or her own activities. Permissive parents are

noncontrolling and tend to use a minimum of punishment. These parents may be warm and loving or neglectful, depending on the nature of the parent (Buri, 1991).

Personal belief in one's capability to perform tasks, meet goals, and produce desired outcomes is defined as self-efficacy (Bandura, 1997). Academic self-efficacy is defined as a student's perceived ability to successfully accomplish tasks, meet goals, and complete coursework and assignments associated with academia (Hall & Ponton, 2005).

Student adjustment to college is defined as the academic, social, and personal-emotional adaptation a student experiences after entry into an institution of higher education. Student adjustment includes the concepts of goal regulation, commitment to goals, and attachment to the institution (Baker & Siryk, 1986).

Delimitations

This study includes only freshman engineering students recruited from a public, metropolitan university in the southwestern United States. Freshman students were defined as students whose total earned credit hours did not exceed 29 at the time of their participation. Engineering students were defined as students whose primary field of study was identified as a specific engineering discipline or an undetermined engineering discipline at the time of their participation.

Participants were limited by age to exclude students younger than 18 years of age and older than 21 years of age. Students who had earned 30 or more credit hours and/or whose primary field of study was identified as a discipline other than engineering were excluded from this study.

Participants were recruited through two announcements made in freshman level computer programming classes designated for engineering majors only. One engineering professor taught the classes at the time of this study and granted extra credit to the freshman students enrolled in his classes for their participation. A convenience sample was used as participants voluntarily agreed to participate in this study.

Possible Implications of the Research Problem

The study of student adjustment to college warrants research as it is tied to student attrition and graduation rates. Research focused on student adjustment may better equip students, families, and institutions of higher education with handling various adaptation issues. The academic community may be aided if a connection between perceived parenting style, self-efficacy, and adjustment to college is manifested. Improved procedures and services may be implemented at universities and colleges. These procedures may account for the impacts of parenting style and self-efficacy on college adjustment to better assist in retention efforts and lower attrition rates.

Results of this study can contribute knowledge for implementation of programs for new freshman students. Programs may include orientations for parents of new freshman students which address the relationship of parenting style and student adjustment, information to assist high school and college advisors for working with families of college-bound students, and counseling sessions/services for college freshman which address parental influence and self-efficacy on adjustment. Encouragement of academic self-efficacy in professors' curriculum and in the teaching style of numerous freshman level college courses could also be implemented.

CHAPTER II

REVIEW OF THE LITERATURE

Review of previous literature show students experience an adjustment period after entry into an institution of higher education. Student adjustment includes academic, social and personal-emotional adaptation and relates to experiences such as developing and maintaining goals, expectations, identities, roles, and social networks as well as student attrition (Baker & Siryk, 1986, 1999; DeBerard, Spielmans & Julka, 2004; Lapsley, Rice & Shadid, 1989; Lu, 1994; McGaha & Fitzpatrick, 2005; Tinto, 1987, 1993). Previous research shows a relationship between parenting style and college adjustment (Beyers & Goossens, 2003; Chao, 2001; Gonzalez, 2001; Hickman, Toews & Andrews, 2001; Mason, 2005; Strage, 1998; Wintre & Yaffe, 2000). Previous research also shows a relationship between self-efficacy and college adjustment (Chemers, Hu, & Garcia, 2001; Devonport & Lane 2006; Elias & Loomis, 2000; Hall & Ponton, 2005; Lent, Brown, & Larkin, 1984, 1986; Tong & Song 2004; Wilson, 2002).

Student Adjustment to College

According to Baker and Siryk (1986), student adjustment to college is the academic, social, and personal-emotional adaptation a student experiences after entry into an institution of higher education. Student adjustment includes the concepts of goal regulation, commitment to goals, and attachment to the institution.

Academic adjustment refers to meeting the educational goals and demands innate to the university experience. Adequate academic adjustment suggests the student is applying him or herself to academic work and meeting institutional requirements (Baker & Siryk, 1999).

The interpersonal-societal demands attributed to the college experience refer to social adjustment (Baker & Siryk, 1999). High levels of social adjustment are associated with a student's satisfaction with the social aspects of college. This may include involvement in campus activities and events as well as establishing and maintaining relationships with others on campus. A low level of social adjustment is related to a sense of loneliness in college students. This may result from less student participation in college activities and events as well as a student perception of little opportunity for social interaction and limited social supports available on campus.

Personal-emotional adjustment pertains to the level of physical and psychological distress a student experiences after entry into an institution of higher education (Baker & Siryk, 1999). Positive personal-emotional adjustment results in physical and psychological well-being. Students who are not adjusting well have an increased likelihood of experiencing anxiety and depression.

A student's feelings about his or her institution of higher education and the quality of the relationship or bond to that institution are related to goal commitment and institutional attachment (Baker & Siryk, 1999). High satisfaction with the current

university is associated with better institutional attachment, whereas low satisfaction indicates more negative attachment and an increased likelihood of student attrition.

Tinto (1993) theorizes the adjustment to college involves psychosocial interactions between the student and his or her college environment. Student attributes such as personal characteristics, personal experiences, and familial dynamics influence the adjustment period which occurs after the student enters college. Student attributes interact with the college environment to contribute to various levels of student adjustment into the academic and social systems of the university.

Student Adjustment Related to Student Experiences

The freshman year is one of stressful transition for college students as many report it is the most stressful adjustment phase of their lives. Common student experiences include developing and maintaining goals, expectations, identities, roles, and social networks. The complexity of these experiences and the steps to handle them are perceived at times as an overwhelming task to first year students (Lu, 1994).

Lapsley et al. (1989) surveyed 130 freshman students and 123 junior and senior students to determine the relationship between psychological separation-individuation and adjustment to college. Data was acquired through use of the Student Adaptation to College Questionnaire and the Psychological Separation Inventory. Freshman students reported more personal-adjustment problems, poorer social skills and adjustment, and more psychological dependencies on their parents than sophomore, junior or senior level students.

Students pursuing an engineering program report a particularly difficult college experience. These students encounter similar adjustment issues as noted above with additional negative academic, social, and overall experiences. Negative incidents include dissatisfaction with engineering faculty and quality of instruction, unsatisfactory grade point average (GPA), poor student life, and overall negative college environment (Astin & Astin, 1992).

DeBerard et al. (2004) surveyed 204 undergraduate students to determine what social support, coping, and health risk factors might affect college adjustment and attrition rates. The Multidimensional Perceived Social Support Scale (MPSSS) was used to assess social support. The Ways of Coping Checklist-Revised (WOC) was used to assess student coping. Students' health status (i.e., substance use/abuse, mental health, and general health) was assessed by a single-item question, multiple choice response questionnaire designed by the researchers.

Social support was a significant predictor for freshman students' academic success (DeBerard et al., 2004). Social support acted as an insulator from harmful effects of stress, which resulted in perceived control and ability to cope with the stress from the first year experience. DeBerard et al. theorized academic achievements resulting from a stable social support increases freshman students' return rate for the sophomore year.

Student Adjustment Related to Attrition

It has been determined student adjustment to college is one key variable linked to student attrition. A student's ability to successfully transition into and "fit" into the

culture of an institution dictates whether that student will terminate his or her education prior to completion of a degree (Tinto, 1987).

McGaha and Fitzpatrick (2005) found three nonacademic factors which accounted for nearly half of the variance in dropout risk in undergraduate students. Participants consisted of 127 undergraduate students (median age of 20.56 years). Loneliness, interpersonal competence, and marginality were the three independent variables considered in this study.

Students who showed high levels of interpersonal competence were at a lower risk of dropout, which supports one of the hypotheses posed in this study. This finding was reflected in students with strong academic skills as well as students with poor academic skills. The researchers questioned if the students with poor academic skills (who are considered to be at-risk students) sought more meaningful relationships with others as a tool to buffer the stress and demands of college and avoid dropout (McGaha & Fitzpatrick, 2005).

Loneliness was defined for this study as less life satisfaction and optimism among college students and was assessed by the Revised UCLA Loneliness Scale. Interpersonal competence was defined as appropriate relational behaviors, such as initiating contact with others, self-disclosing, and providing emotional support and was assessed by the Interpersonal Competence Questionnaire. Marginality was defined as a disconnection or exclusion of oneself from mainstream groups or associations and was assessed by the Perception of Community/Environment of Undergraduate Students in Higher Education Scale. Dropout risk was assessed by the Persistence/Voluntary Dropout Decision Scale.

Students who showed high levels of marginality also showed high levels of dropout risk. This supports another hypothesis posed by the researchers. The greater the student feels marginalized, the higher the chance the student will leave college before completing a degree (McGaha & Fitzpatrick, 2005).

Loneliness was not uniquely related to risk, but it was also associated with interpersonal competence and marginality. Loneliness alone did not positively correlate with dropout risk, but it appeared students with high levels of marginality also experienced high levels of loneliness, and students with low levels of interpersonal competence also experienced high levels of loneliness, thus increasing the risk of college dropout (McGaha & Fitzpatrick, 2005).

McGaha and Fitzpatrick's (2005) study provides documentation which supports the idea that attrition rates may be attributed to the abovementioned factors. These factors may act alone or in conjunction with other factors when affecting attrition. Other factors to be considered include academic readiness, academic performance, or services provided to students by their universities.

Summary

Previous research has shown student adjustment to college is a universal experience shared by all entering first-year students (Lu, 1994). Student adjustment affects numerous domains of a student's life, including academic, social, and personal-emotional. The ability of a student to successfully adjust to college is related to a positive college experience, whereas unsuccessful adjustment is related to negative college experience (Baker & Siryk, 1986, 1999; DeBerard et al., 2004; Lapsley et al., 1989;

McGaha & Fitzpatrick, 2005) and increased likelihood of college termination (Astin & Astin, 1992; Tinto, 1993).

Parenting Style

The child-rearing practices and interactive behaviors which have been developed and implemented by parents are referred to as parenting style. Parent-child relationships are greatly affected by the parenting style the parent incorporates into parent-child interactions. Three main parenting styles have been observed by professionals. These three parenting styles are parental authoritativeness, parental authoritarianism and parental permissiveness (Schwartz & Scott, 2003).

Kuczynski (2003) defines an authoritative parenting style as one in which a parent's attitudes and actions give priority to the child's needs and abilities, while implying age-appropriate maturity demands. Baumrind (1967) describes this style as one in which the parent supports the child's present qualities while also setting standards for appropriate future conduct. This parenting style recognizes the child's agency and attempts to maintain equal agency between the parent and child. The parent attempts to guide the child using warmth, respect, communication, shared control, appropriate power, and reasonable expectations. The parent uses reason to achieve his/her parenting goals and does not base his/her behavior merely on the child's desires or the parent's desires. This parenting style fully accepts the concept of bi-directionality between the parent and child. Both are seen as equals who influence each other's behaviors and attitudes.

The authoritarian parenting style is presented by Kuczynski (2003) as one in which interactions imply "relative neglect of the child's needs in favor of the parent's

agenda, strong demands for child compliance, and forceful methods for gaining compliance and punishing infractions” (p. 58). Baumrind (1967) describes this style as one in which the parent attempts to control the behavior and attitudes of the child according to an absolute standard. This parenting style assumes a unilateral interaction between the parent and child where the parent is seen as the instigator who fully influences the child’s attitudes and behaviors yet remains unaffected by any influence by the child. Authoritarianism restricts the child’s autonomy in an attempt to gain total obedience from the child. This style shows little warmth, reason, respect or communication. The parent exerts excess power and control over the child and maintains high expectations which may or may not be reasonable.

Baumrind (1967) describes the permissive parenting style as one in which the parent shares equal power with the child. The parent exerts no control over the child, sets no boundaries for the child, and displays no expectations. The parent may present himself or herself as a resource the child may use when desired but not as a model of appropriate conduct. Kuczynski (2003) defines this parenting style as one in which parents imply low demands “related to either child-centered indulgence toward the child’s self-direction or parent-centered inattentiveness and neglect of the child” (p. 58). When parents are neglectful rather than indulgent, the style is often referred to as a neglectful or uninvolved parenting style. The parent may be permissive by showing warmth and responsiveness or may be uninvolved by remaining cold and distant, depending on the nature of the parent.

The Relationship Between Parenting Style and Student Adjustment

A relationship clearly exists between parenting style and a child's ability to adjust to and meet academic, emotional and social challenges. Parenting style is related to a child's ability to successfully adjust to university culture and demands. Baumrind (1967) notes preschool-age children reared in an authoritative household display well-developed social skills and emotional regulation, lively and pleasant dispositions, and self-confidence about their ability to master tasks. Authoritarian parenting results in a child with an anxious, withdrawn, and unhappy disposition who displays poor reactions to frustration. However, Baumrind notes these children perform well in school and are less likely to engage in antisocial behavior compared to children reared by authoritative or permissive parents. Preschool-age children reared in permissive households display poor social skills and emotional regulation as well as a low persistence to challenges.

Parenting style related to academic adjustment. Strage (1998) ascertained college students reared in homes which used the authoritative parenting style displayed higher levels of self-confidence and perceived they were in control of their academic lives. Students whose parents used the authoritarian parenting style displayed more concern about their ability to prepare for the future, perceived themselves as unable to control their academic lives, and perceived more difficulty in note-taking and completing assignments than students reared in authoritative households. The sample consisted of 465 undergraduate students, ranging from first-year students to upperclassmen, at a metropolitan university in the United States. The sample contained a similar proportion of males (45%) to females (55%) and included participants who identified themselves as

Caucasian (56%), African-American (8%), Asian-American (28%) and Hispanic (8%).

Data was collected through participant completion of the Student Attitudes and Perceptions Survey.

The results of Strage's 1998 study clearly show a positive impact of the authoritative parenting style and negative impact of the authoritarian parenting style on college students' adjustment to and experiences with university life and academia. However, authoritative parenting may not be the more effective style for all student populations. Students of a particular gender or ethnic group may benefit more from parenting styles other than the authoritative parenting style.

The effect of parenting style on the educational performance of Asian-American and European-American high school students in the United States were studied by Chao in 2001. Roughly 500 first-generation and second-generation Chinese-Americans and 208 European Americans who were third-generation or more were examined for the study. The Family Adaptability and Cohesion Environment Scales II (FACES II) and a parenting scale devised by Steinberg in 1992, were administered to students. Students' academic performance was assessed through students' self-reported cumulative grade point averages and school effort scale, devised by Steinberg in 1992.

Evidence suggested authoritative parenting has positive effects on European Americans' academic pursuits, whereas authoritarian parenting has negative effects. Students from authoritative households consistently earned higher grades and showed higher overall ability at approaching challenges presented by academia than those from authoritarian households (Chao, 2001).

Evidence showed the effects of authoritative parenting on Chinese-Americans' academic pursuits yielded the same results as authoritarian parenting. First generation students' grades and overall academic abilities did not differ based on parenting style used by parents. Second generation students showed slightly higher grades and academic abilities when reared in an authoritative household; however, the finding was not significant enough to suggest authoritative parenting is truly more effective than authoritarian parenting (Chao, 2001).

Chao (2001) noted the generalization that an authoritative parenting style is superior to an authoritarian parenting style in its effects on academic success for university students is not true for all ethnic groups. This study implies the child's perception of parenting style is culturally based and cultural perception largely impacts whether a parenting style is considered effective or positive by the child, family and society.

Research conducted by Gonzalez (2001) also found it may be unwise to generalize authoritative parenting style as the most effective style resulting in student success. Data was collected from 311 undergraduate students at a Southeastern university to determine the relationship between perceived parenting style and college adjustment. The sample consisted of 234 female students and 77 male students; 236 were Caucasian, 30 were African-American, 24 were Hispanic, 11 were Asian-American and 10 were of mixed ethnicity. Participants completed a questionnaire which was a combination of the Goals Inventory, Parental Authority Questionnaire, and background information

assessing demographics, parental educational achievement level, and parental involvement in the participant's educational experience.

Differences were noted between the relationship of authoritative and authoritarian parenting by gender and race. Gonzalez's (2001) research indicated authoritarian parenting has negative consequences on Caucasian females' perceptions of their academic abilities, independence, and self-assertiveness, whereas it results in positive consequences for African American females. Authoritarian parenting also showed less negative impact on males' perceptions of their academic abilities, independence and self-assertiveness than on females'. Gonzalez notes females may be more susceptible to undesirable effects of authoritarian parenting than males.

Due to her findings, Gonzalez (2001) theorized culture moderates the meaning of parenting style. An individual's culturally driven perception of a parenting style will affect whether the style is seen as normal, nurturing, positive, or negative. This will, in turn, affect the individual's reaction to that parenting style and affect skills necessary to excel in higher education.

Mason (2005) noted differences related to ethnicity and parenting style in her study of 204 undergraduate university students from the New York City metropolitan area. Her sample included students who identified themselves as African-American, Asian-American, Latino, and Caucasian. Caucasian students who indicated being reared in an authoritative household reported more secure relationships with their parents, which was positively correlated with students' academic abilities. However, the results for African-American, Asian-American, and Latino students were different. These students

reported more secure relationships with parents who implemented an authoritarian parenting style, which was positively correlated with academic abilities.

Parenting style related to social and personal-emotional adjustment. Wintre and Yaffe (2000) studied a sample of 408 first-year students attending a large commuter university in a metropolitan city in Canada to determine the effect parenting style and parent-child relationships had on the child's transition and adjustment to university life. The participants consisted of 116 males and 292 females and also represented a multicultural make-up. Participants were administered an array of measures to assess their relationship with their parent(s) as well as their personal-emotional and social adjustment to college. Relationship with parent(s) was evaluated through the Parental Authority Questionnaire (PAQ), the Perception of Parental Reciprocity Scale (POPRS), the Social Provisions Scale-Present Version (SPS-P), and parental interviews in which the participant indicates how often or how much information he or she relays to his or her parent(s). Personal-emotional and social adjustment were evaluated through the Autonomy Scale of the Psychosocial Maturity Inventory, the Beck Depression Inventory (BDI), the Self-Esteem Scale, the Perceived Stress Scale, and the Student Adaptation to College Questionnaire.

The authoritative parenting style was shown to positively contribute to students' ability to successfully adjust to university life, whereas the authoritarian parenting style negatively contributed to this transition (Wintre & Yaffe, 2000). Furthermore, father authoritativeness resulted in slightly more positive effects on the child's ability to adjust than mother authoritativeness. Wintre and Yaffe also discovered lack of authoritativeness

from the father as well as mother authoritarianism resulted in increased depression and perceived stress within the sample group, resulting in more difficulty in adjusting to college.

Cultural interpretation of parenting style may account for the findings by Hickman et al. (2001). These researchers studied first-year college students to investigate the relationship between the authoritative parenting style, gender, self-esteem, aptitude, academic success, and adjustment to university life. Authoritative parenting was found to be positively correlated with initial grade point averages of male students. However, there was no significant correlation with female students' grade point averages.

Researchers postulated authoritative parenting results in high self-esteem and aptitude, which is necessary for students to transition into college life (Hickman et al., 2001). These same skills affect a student's ability to approach academic challenges successfully and earn high grades even though the findings yielded differing results for male and female students. Numerous other variables, such as ethnicity and cultural interpretation of parenting style, in addition to gender and parenting style, may contribute to the differences noted in correlation size between male and female students' grade point averages.

Previous research (Chao, 2001; Gonzalez, 2001; Hickman et al., 2001; Strage, 1998; Wintre & Yaffe, 2000) focused on parenting style and academic success in higher education found that, generally, the authoritative parenting style and, occasionally, the authoritarian parenting style positively impacts student success in higher education. Research either ignores the effects of permissive parenting or finds correlations between

this parenting style and academic success or failure to be too insignificant to assume a relationship between the two.

Beyers and Goossens (2003) investigated the relationship between parenting style, psychological separation from parents, and adjustment to university life to judge students' successful separation from parents and transition to academia. The sample included 969 undergraduate students at the Catholic University of Leuven in Belgium. Students completed the Psychological Separation Inventory (PSI), the Student Adjustment to College Questionnaire (SACQ) and the Child Report on Parent Behavior for Older Children and Adolescents (CRPBI).

The researchers found moderate independence and separation from parents results in healthy and successful adjustment to college in students (Beyers & Goossens, 2003). Authoritative parenting was highly correlated to needed independence and adjustment. Interestingly, permissive parenting was also found to be correlated to needed independence and separation. The researchers noted both parenting styles equally produced feelings of independence and parental separation in children. The children of authoritative and permissive parents also reported a positive perception of their parents' parenting style, positive interactions with their parents, and positive changes in their relationship with their parents. These perceptions and factors led to better transitions into academia for these students.

Beyers and Goossens (2003) also found permissive parenting may actually be the better parenting style in assisting children in adjusting to universities which adhere to a permissive academic and social environment. The reason permissive parenting showed

the same effects as authoritative parenting may be due to the participants residing in Belgium. The culture of Belgium may affect children's perception, meaning, and interpretation of parenting style. Permissive parenting may not yield the same positive results in other cultures as it does within the culture of Belgium.

Summary

Previous research has shown a relationship between parenting style and a student's adjustment to college. Style of parenting indicated either negative or positive effects on various aspects of adjustment, including academic performance and achievement, social adjustment, and personal-emotional adjustment (Beyers & Goossens, 2003; Mason, 2005; Strage, 1998; Wintre & Yaffe, 2000).

Also, a student's gender and ethnicity affects the influence of parenting style on his or her adjustment to college (Chao, 2001; Gonzalez, 2001; Hickman et al., 2001)

Self-Efficacy

Personal belief in one's capability to perform tasks and produce desired outcomes is defined as self-efficacy. An individual with a strong sense of self-efficacy sees difficult tasks as challenges and believes him or herself to be capable of approaching and mastering these challenges. These individuals often initiate goals, maintain a commitment to their goals, and recover quickly from any failures or setbacks, therefore, displaying lower vulnerability to stress and depression (Bandura, 1997).

Contrarily, individuals with a weak sense of self-efficacy believe themselves incapable of approaching and mastering difficult tasks and view difficult tasks as risks which should be avoided. These individuals are slow to recover from failures and show

feeble commitment to goals. Likewise, they are prone to stress and depression resulting from their perceived lack of ability (Bandura, 1997).

Bandura (1997) theorizes self-efficacy is cognitive, malleable, and influenced by four important sources of information. The first source of self-efficacy is performance accomplishment. Specifically, self-efficacy is a self-perpetuating phenomenon wherein a strong sense of self-efficacy will more than likely result in positive action and positive outcomes which reinforces perceptions of strong self-efficacy. Likewise, weak self-efficacy will result in weak action and failure and bolster perceptions of weak self-efficacy.

The observation of success or failure of one's mentors, parents, peers, or others with whom the individual identifies is the second source of self-efficacy. The third source is verbal persuasion wherein encouragement or castigation of an individual may influence perceived self-efficacy. Emotional arousal is the final source of self-efficacy. Impressions of emotional, psychological, and physical reactions to anxiety or stress may result in feelings of vulnerability and looming failure (Bandura, 1997).

The Relationship Between Self-Efficacy and Student Adjustment

Self-efficacy has been shown as a mediating factor in human behavior and accomplishment across numerous domains (Hall & Ponton, 2005). One achievement domain is academic performance in higher education (Devonport & Lane, 2006; Hall & Ponton, 2005; Wilson, 2002). It is theorized academic self-efficacy is a contributing factor to academic commitment and success, thus, resulting in an increased probability of completion of requirements to earn a baccalaureate degree.

Self-efficacy related to academic adjustment. The relationship between academic self-efficacy and academic success was investigated by Wilson (2002) in her study of 130 undergraduate students. Wilson's primary focus was on the factors associated with the academic success of female students compared to male students enrolled in a C++ Programming I course. The sample consisted of only 19 female students who participated in the study. The C++ Programming I course was chosen because it is the first mandatory computer programming course in the course sequence for computer science majors.

Factors associated with academic success in the introductory programming course included previous computer experience, hostile environment and culture, attribution theory, and self-efficacy. Previous computer experience, hostile environment and culture, and attribution theory were assessed through a questionnaire developed by the researcher. Hostile environment and culture is defined as the culture of programmers (i.e., students, faculty, and professionals) which may conflict with the personality and culture of aspiring programming students and result in feelings of discomfort to hostility. Academic success was defined as the grade earned in the C++ Programming I course at the midterm point of the semester on a range from 0 to 100. Self-efficacy was evaluated in terms of subject specific self-efficacy as opposed to total academic self-efficacy. The Computer Programming Self-Efficacy Scale was administered to judge computer programming self-efficacy. Midterm grades were acquired and compared to scores on both the questionnaire and the Computer Programming Self-Efficacy Scale (Wilson, 2002).

Wilson (2002) reported comfort level was the most prominent factor associated with high midterm grades for both male and female participants. She defines comfort

level as the measure of how much anxiety one experiences in the computer science program's environment indicated by computer programming self-efficacy, previous computer experience (both programming and computing experiences), and hostile environment and culture. Interestingly, computer programming self-efficacy alone was not a significant factor in academic success noted by midterm grades. Also, male students reported higher programming self-efficacy scores compared to their female counterparts even though their midterm grades were not reflective of the programming knowledge they claimed to possess.

Lent et al. (1984) explored academic self-efficacy as a predictor of student academic adjustment. Twenty-eight male and 14 female undergraduate students enrolled in a career/educational planning course for potential science and engineering majors participated in the study. Participants completed a self-efficacy scale developed by the researchers. Their Preliminary Scholastic Aptitude Test (PSAT) scores, high school ranks, college grades, and declared major during each quarter of their first year was collected from the sample university's student records. It was reported that undergraduates who displayed strong self-efficacy earned higher grades and remained enrolled longer in a science or engineering major compared to students whose self-efficacy was weak. Also, students with strong self-efficacy reported higher PSAT scores and high school ranks compared to students with weaker self-efficacy.

In 1986, Lent et al. studied the relationship between academic self-efficacy of undergraduate engineering and science students, academic performance, and perceived career options. Participants included 75 male and 30 female undergraduates from the

college of technology at the sample university. Participants were recruited due to their enrollment in either of two sections of a career/educational planning course for students considering an engineering or science major/career. Students completed 5 measures to assess the following: (a) self-efficacy, (b) self-esteem, (c) career indecision, (d) expressed vocational interests, and (e) perceived vocational options in technical/scientific fields. Measures were administered during the first and final class sessions of the engineering career/educational planning course. Grade point averages and number of semesters/quarters completed were gathered one year after the participants' completion of the career/educational planning course and measures. Students who displayed strong self-efficacy achieved higher grades and remained enrolled longer in the College of Technology at the sample university compared to students whose self-efficacy was weak. Also, students with strong self-efficacy were more decided on career options and displayed higher self-esteem.

Persistence in one's academic major and its relationship to academic self-efficacy was investigated by Elias and Loomis (2000) in a sample of 99 undergraduate students. Participants completed the Academic Self-Efficacy Scale and a demographics scale. Students who reported having changed their major multiple times displayed weaker levels of self-efficacy compared to students who had never changed their major.

Self-efficacy related to social and personal-emotional adjustment. The relationship between self-efficacy, coping, and student retention was investigated during research of 87 male and 44 female undergraduate sports degree students in the United Kingdom (Devonport & Lane, 2006). Self-efficacy was measured by a 40-item

self-report, open-ended questionnaire developed by the researchers in which self-efficacy was investigated in five areas: (a) time management, (b) use of learning resources, (c) teamwork, (d) listening skills, and (e) note-taking ability during lectures and communication. Coping strategies were measured by the MCOPE, a modified version of the COPE scale. Retention was assessed by the university database which retains withdrawal documentation and statistics. Results of this study supported the proposed hypothesis that strong self-efficacy correlates with high coping abilities and high retention rates in undergraduate students. Self-efficacy was shown to be positively associated with academic coping and success, thus, negatively associated with university withdrawal rates.

Tong and Song (2004) investigated whether or not self-efficacy related to students' subjective well-being in a sample of low and high socioeconomic status students. Self-efficacy was defined as the confidence in one's coping ability to effectively deal with a variety of stressful situations. Subjective well-being was defined as one's evaluation of his or her life, including happiness, pleasant emotions, life satisfaction, and relative absence of unpleasant moods and emotions.

Participants included 102 low socioeconomic and 164 mid-high socioeconomic students enrolled in a Chinese university. Participants completed a demographics questionnaire, the General Self-Efficacy Scale to assess self-efficacy, the Index of Well-Being, and the Index of General Affect to assess subjective well-being. Research showed participants with stronger self-efficacy reported higher levels of subjective

well-being, whereas students with weaker self-efficacy reported lower levels of subjective well-being (Tong & Song, 2004).

Chemers et al. (2001) explored the possible effects of academic self-efficacy and optimism on first-year college students' performance and adjustment. Participants were recruited from an American, public university on the West coast. Each first-year student was contacted and asked to voluntarily participate. Of the 1,600 students contacted, 373 agreed to initially participate and 256 agreed to follow-up participation. Students completed questionnaires to assess their academic self-efficacy; level of optimism; coping ability; self-reported academic performance, evaluation, and expectations; experienced stress including irritability, nervousness, loss of control, health including physical and psychological symptoms or problems, and social adjustment. Participants' grade point averages from secondary school were obtained from the sample university's admissions records.

Results showed students with strong self-efficacy displayed high levels of optimism and viewed their college experiences as challenges to be conquered rather than risks to be feared. These students reported more positive ratings of personal adjustment to and satisfaction with college life. Also, levels of stress and frequency of physical and/or mental illness were weaker compared to students with weak self-efficacy and low levels of optimism (Chemers et al., 2001).

Summary

Previous research has shown a relationship exists between academic self-efficacy and a student's adjustment to college. Academic self-efficacy relates either positively or

negatively to numerous aspects of adjustment, including academic performance and achievement, social adjustment, and personal-emotional adjustment. A negative relationship exists wherein weak self-efficacy correlates to university withdrawal, lower grades, and more frequent changes in major selection. A positive relationship exists wherein strong self-efficacy is associated with higher levels of student well-being, higher grades, and longer enrollment in college (Chemers et al., 2001; Devonport & Lane, 2006; Elias & Loomis, 2000; Hall & Ponton, 2005; Lent et al., 1984, 1986; Tong & Song, 2004; Wilson, 2002).

Conclusions and Hypotheses

Review of previous literature shows students experience an adjustment period after entry into an institution of higher education. Student adjustment includes academic, social, and personal-emotional adaptation and relates to experiences such as developing and maintaining goals, expectations, identities, roles, and social networks as well as student attrition (Astin & Astin, 1992; Baker & Siryk, 1986, 1999; DeBerard et al., 2004; Lapsley et al., 1989; Lu, 1994; McGaha & Fitzpatrick, 2005; Tinton, 1987, 1993). Findings also show parenting style and academic self-efficacy are related to a student's adjustment to college (Beyers & Goossens, 2003; Chao, 2001; Chemers et al., 2001; Devonport & Lane, 2006; Elias & Loomis, 2000; Gonzalez, 2001; Hall & Ponton, 2005; Hickman et al., 2001; Kuczynski, 2003; Lent et al., 1984, 1986; Mason, 2005; Strage, 1998; Tong & Song, 2004; Wilson, 2002; Wintre & Yaffe, 2000).

The objectives of this study were to examine the relationship between (a) perceived parenting style and student adjustment to college, (b) academic self-efficacy and student adjustment to college, and (c) perceived parenting style and academic self-efficacy. Information on students' age, gender, ethnicity, full-time or part-time status, family structure, educational attainment of parents, and current living situation was also collected. Although this information was not used as variables in predicting student adjustment to college, they were used to describe the sample used in this study. The research project contains five hypotheses. The first hypothesis for this study is that a relationship exists between ratings of mothers' parenting styles and mean scores on college adjustment of freshman engineering students. The second hypothesis is that a relationship exists between ratings of fathers' parenting styles and mean scores on college adjustment of freshman engineering students. The third hypothesis is that freshman engineering students who display strong academic self-efficacy will have higher mean scores on college adjustment than students who display weak self-efficacy. The fourth hypothesis is that a relationship exists between ratings of mothers' parenting style and academic self-efficacy scores of freshman engineering students. The final hypothesis is that a relationship exists between ratings of fathers' parenting style and academic self-efficacy scores of freshman engineering students.

CHAPTER III

METHODOLOGY

Freshman engineering students were surveyed to determine relationships between adaptation to college, parenting style, and academic self-efficacy. The research methodology employed in this study is a quantitative methodology of survey research. The survey research included three standardized self-report questionnaires as well as a demographics survey created by this researcher.

Subjects

Participants included 31 English-speaking, freshman students recruited from a large public Southwestern university in a metropolitan area. Total student population at this university was approximately 33,000 students at the time of this study. The total engineering student population was approximately 1,125 students, including approximately 253 freshman engineering students. The sample consisted of 27 male and 4 female freshman engineering students. Thirteen participants were 18 years of age, 14 were 19 years of age, 2 were 20 years of age, and 2 were 21 years of age. Twenty-nine participants were full-time students and 2 participants were part-time students. Ethnicity of the participants consisted of the following: 17 identified as White, Non-Hispanic, 3 identified as Hispanic/Latino, 7 identified as African-American, 3 identified as Asian/Asian-American/Pacific Islander, and 1 identified as Other. No students identified as American Indian/Native American/Alaskan Native or Arab/Arab-American. Family

structure consisted of 18 participants from married families, 3 from divorced families, 3 from remarried families and 7 from single parent families. Educational attainment of the mother was as follows: 2 attended high school but did not graduate, 8 completed high school, 4 attended college but did not graduate, 15 completed college, and 2 were unknown. Father's educational attainment was as follows: 3 attended high school but did not graduate, 4 completed high school, 5 attended college but did not graduate, 14 completed college and 5 were unknown. Participants' current living situation consisted of 19 students living in a residence hall with roommate(s), 4 living alone in a residence hall, 1 living alone in an apartment/house, 1 living in an apartment/house with roommate(s), and 6 living with parent(s).

Participants included those who identified themselves as a freshman engineering student. Freshman student was defined as a student whose total earned credit hours did not exceed 29 at the time of participation. Engineering student was defined as a student whose primary area of study was identified as an engineering discipline at the time of participation. Engineering disciplines offered at the university which was the site of the investigation included computer science, computer engineering, electrical engineering, materials science and engineering, mechanical and energy engineering, construction engineering technology, electronics engineering technology, manufacturing engineering technology, mechanical engineering technology and nuclear engineering technology. Students who were undecided amongst the above disciplines were also included in the sample.

Participants were enrolled in a freshman level computer programming course designated for engineering majors only at the time of the study. Students who volunteered to participate received extra credit from the professor who taught all sections of the computer programming course. Other extra credit opportunities were available for students who chose not to participate in this study.

Measures

The following three measures were chosen for utilization in this research study due to their validity, reliability, and frequent use by researchers investigating experiences of college students.

Student Adaptation to College Questionnaire (SACQ)

The College Adjustment Inventory was developed as a response to previous college adjustment measures which lacked reliability and validity (Baker & Siryk, 1984). The measure was a 52-item self-rating scale which examined dimensions of the college transition including academic, personal-emotional and social adjustment. This was one of the first comprehensive measures which examined numerous aspects of student adaptation to college.

The College Adjustment Inventory was revised and renamed the Student Adaptation to College Questionnaire (SACQ) (Baker & Siryk, 1986). The SACQ is a 67-item questionnaire which takes approximately 20 minutes to complete. In addition to a Full-Scale adaptation score, the SACQ provides 4 sub-scales relating to different aspects of college adjustment. These include: (a) Academic Adjustment (24 items), (b) Social Adjustment (20 items), (c) Personal-Emotional Adjustment (15 items), and (d) Goal

Commitment/Institutional Attachment (15 items). Baker and Siryk altered their 1984 College Adaptation Inventory to remove a subscale, referred to as General, and replaced it with the Goal Commitment/ Institutional Attachment subscale.

Each SACQ item is a statement to which the participant responds on a 9-point Likert scale ranging from 1 (doesn't apply to me at all) to 9 (applies very closely to me). The participant is asked to circle the number most representative of his or her response. On the original College Adjustment Inventory, Baker and Siryk (1984) required the participant circle an asterisk most representative of his/her response instead of circling a number. The SACQ results in 5 scores based on the Full-Scale (all 67 items) as well as the 4 subscales. A high score indicates better adjustment to college, whereas a low score indicates greater difficulty to adjust.

Baker and Siryk (1986) reported coefficient alphas for the SACQ from .92 to .95 for the full scale of all 67 items. Coefficient alpha values ranged in each sub-scale as follows: .81 to .90 for Academic Adjustment; .83 to .91 for Social Adjustment; .77 to .86 for Personal-Emotional Adjustment; and .85 to .91 for Goal Commitment/Institutional Attachment.

For SACQ chi-square analysis for this study, mean scores for participants were calculated and used to divide participants into 2 groups: (1) high full-scale adjustment or (2) low full-scale adjustment. Participants' whose mean scores were at or above the mean were coded as high adjustment, whereas participants whose mean scores were below the mean were coded as low adjustment.

Parental Authority Questionnaire (PAQ)

The Parental Authority Questionnaire (PAQ) was developed to measure parenting styles (Buri, 1991). The questionnaire consists of separate evaluations of mothers' and fathers' parenting style, with a total 30 items each. The questionnaire yields separate authoritative, authoritarian, and permissive scores for each parent. Each of the scores is derived from the child's appraisals of the parent's perceived style. The PAQ does not distinguish between indulgent permissive or neglectful permissive.

The PAQ has been tested and proven to be an effective tool in assessing maternal and paternal authoritativeness, authoritarianism, and permissiveness. It is an appropriate measure for older adolescent and young adult males and females (Buri, 1991). Higher mean scores indicate stronger perception by the respondent of perceived parent's parenting style as authoritative, authoritarian, or permissive. Scores are separated into 6 categories: (a) mother's authoritativeness, (b) mother's authoritarianism, (c) mother's permissiveness, (d) father's authoritativeness, (e) father's authoritarianism, and (f) father's permissiveness. Mean scores range from 1 to 5, with 1 indicating little recognition by the respondent of the parenting style of each parent and 5 indicating total recognition by the respondent of the parenting style of each parent.

Test-retest for reliability yielded coefficient alpha values of .78 for mother authoritativeness, .86 for mother authoritarianism, .81 for mother permissiveness, .92 for father authoritativeness, .85 for father authoritarianism, and .77 for father permissiveness. Internal consistency reliability yielded Cronbach coefficient alpha values as follows: .82 for mother authoritativeness, .85 for mother authoritarianism, .75 for mother

permissiveness, .85 for father authoritativeness, .87 for father authoritarianism, and .74 for father permissiveness (Buri, 1991).

Buri (1991) tested discriminant-related and criterion-related validity.

Discriminant-related validity showed mother's authoritarianism was inversely related to mother's permissiveness ($r = -.38, p < .05$) and to mother's authoritativeness ($r = -.48, p < .05$). Father's authoritarianism was inversely related to father's permissiveness ($r = -.50, p < .05$) and father's authoritativeness ($r = -.52, p < .05$). Criterion-related validity was assessed through comparisons of the PAQ and the Parental Nurture Scale. Bivariate correlations between the scales yielded the following results: authoritative parents were the highest in parental nurturance for mothers ($r = .56, p < .05$) and fathers ($r = .68, p < .05$); authoritarian parenting was inversely related to nurturance for both mothers ($r = -.36, p < .05$) and fathers ($r = -.53, p < .05$); and parental permissiveness was unrelated to nurturance for both mothers ($r = .04, p > .10$) and fathers ($r = .13, p > .10$).

Buri (1991) compared the PAQ to the Marlowe-Crowne Social Desirability Scale to assess if the PAQ was free from socially desirable responses. Bivariate correlations between the PAQ scores and Marlowe-Crowne Social Desirability Scale yielded no statistically significant values and, therefore, indicated the PAQ was free from social desirability response biases.

For PAQ chi-square analysis for this study, mean scores for mothers and fathers were calculated and used to sort parents into 1 of 2 groups: (1) authoritative or (2) authoritarian. The parenting style with the higher mean score was the group to which the

parent was assigned. A permissive parent group was not used because no parents were perceived as more permissive than authoritative or authoritarian. If identical scores occurred or if scores occurred that were within one-tenth of a point, that score was excluded from chi-square analysis. A total of 2 mothers and 5 fathers were excluded from analysis based on these criteria. Exclusion increased the power of the analysis.

Academic Self-Efficacy Scale (ASES)

The Academic Self-Efficacy Scale was developed in order to assess perceived academic self-efficacy in undergraduate college students (Elias & Loomis, 2000). The measure was based on the Self-Efficacy for Broad Academic Milestones Scale (Lent et al., 1997) and the Self-Efficacy for Academic Milestones Scale (Lent et al., 1986).

The ASES is comprised of 34 items within two facets which examine the confidence level of participants in their ability to accomplish some academic task. Facet 1 (questions 1 to 22) addresses specific university courses such as English and Biology. Facet 2 (questions 24 to 34) addresses milestones students encounter during their course of study, such as specified grade point averages based on their major. Elias and Loomis (2000) report Cronbach alpha coefficients of .92 for facet 1 questions and .91 for facet 2 questions. Participants rated their confidence using a 9-point Likert scale, which ranged from 1 to 10. A high score indicated a strong sense of academic self-efficacy. A score of 1 indicated no confidence at all, whereas a score of 10 indicated complete confidence. Participants completed only questions 23 - 34 of the ASES because these questions were applicable to the general self-efficacy of all university students. Participants did not

answer questions 1–22 because these questions were specific to students’ self-efficacy in specified non-engineering courses.

For ASES chi-square analysis for this study, mean scores for participants were calculated and used to sort participants into 2 groups in order to conduct chi-square analysis. The 2 groups were: (1) weak or (2) strong. Participants’ whose mean scores were at or above the mean were coded as strong, whereas participants whose mean scores were below the mean were coded as weak.

Demographics

Demographic data was collected in order to describe the participants in the study. The survey designed for this study included information about the participant’s age, gender, ethnicity, full-time or part-time status, family structure, educational attainment of parents, and current living situation.

Procedures

Participants were recruited through two announcements made in freshman level computer programming classes designated for engineering majors only. One engineering professor taught the classes at the time of this study and granted extra credit to the freshman students enrolled in his classes for their participation. A convenience sample was used as participants voluntarily agreed to participate in this study.

Participants completed the surveys outside of their assigned computer programming class. A designated university classroom was secured by this researcher for use in administering the study. Upon arrival, participants were provided a packet of information which explained the research study, consent form describing the general

purpose of the study, all questionnaires, and the total estimated amount of time to complete the study.

Each participant was asked to read and sign the consent form before proceeding with the study. Any questions or concerns of the participant were addressed before the participant signed the form. After obtaining consent, participants were asked to first complete the demographics form. Next, participants completed the Student Adaptation to College Questionnaire (SACQ), followed by the Parental Authority Questionnaire (PAQ), and finally the Academic Self-Efficacy Scale (ASES). The demographics form, the ASES, and the PAQ were formatted as scannable forms before being administered to the participants.

The approximate length of time for a participant to complete the consent form, demographics form, and questionnaires was 45 minutes. A pilot study was conducted with two undergraduate student assistant workers in the engineering undergraduate advising office of the sample university. The student workers volunteered for the pilot study to assist the researcher in determining approximate length of time required to complete the questionnaires and forms and any possible complications with the implementation of the study. Participants' names were given to the computer programming professor after completion of the study so extra credit was granted. The study was approved by the University of North Texas Institutional Review Board for the use of Human Subjects. A copy of the approval letter is included in the appendices.

Analysis

Data analysis was calculated from participants' responses to the demographics form created by this researcher, the Student Adaptation to College Questionnaire (SACQ), the Parental Authority Questionnaire (PAQ), and the Academic Self-Efficacy Scale (ASES). Descriptive statistics were used to describe characteristics of the sample based on the demographic survey. Data were analyzed using the SPSS for Windows version 15.0 computer program. Data from the demographics form, the ASES, and the PAQ was scanned into SPSS, whereas data from the SACQ was hand scored and entered into SPSS. There were SACQ questions which did not apply to all participants. For those questions, participants left the answer blank. In order to score the SACQ, Baker and Siryk (1999) require an average score be calculated and used for analysis. Mean scores were computed for all data to determine if the data was normally distributed. Hypotheses 1, 2, 4, and 5 were analyzed using Pearson's correlation and chi-square. Hypothesis 3 was analyzed by *t*-test.

CHAPTER IV

RESULTS

This study examined the relationships between perceived parenting style, academic self-efficacy, and college adjustment of freshman engineering students. Specifically, three relationships are explored: (a) the relationship between perceived parenting style and student adjustment, (b) the relationship between academic self-efficacy and student adjustment, and (c) the relationship between perceived parenting style and academic self-efficacy.

Participants included 31 English-speaking, freshman students recruited from a public southwestern university in a metropolitan area. Total student population at this university was approximately 33,000 students at the time of this study. The total engineering student population at the time of this study was approximately 1125 students including approximately 253 freshman engineering students. Participants were no younger than the age of 18 and no older than the age of 21 with a mean age of 19 years.

Participants were recruited from students enrolled in a freshman level computer programming course designated for engineering majors only at the time of the study. Students who volunteered to participate received extra credit from the professor who taught all sections of the computer programming course. Other extra credit opportunities were available for students who chose not to participate in this study. Surveys were

administered and collected during the months of April and May, 2007, outside of classroom time.

Data Analysis

Mean scores were calculated for the Student Adaptation to College Questionnaire (SACQ), Parental Authority Questionnaire (PAQ), the Academic Self-Efficacy Scale, and demographics. Pearson's correlation analysis and chi-square analysis were used to test hypotheses regarding the relationships between parenting style and college adjustment, as well as parenting style and academic self-efficacy. The relationship between academic self-efficacy and college adjustment in hypothesis 3 was analyzed using *t*-test statistics.

Descriptive Data

Descriptive data is presented on demographics, full-scale SACQ mean scores, sub-scale SACQ mean score, PAQ mean scores, and ASES mean scores. See Table 1 and Appendix G.

Student Adaptation to College Questionnaire (SACQ)

The mean score for full-scale adjustment was 407.16. Mean scores for the sub-scales were as follows: $M = 136.39$ for academic adjustment, $M = 126.81$ for social adjustment, $M = 82.94$ for personal-emotional adjustment, and $M = 102.65$ for goal/commitment/institutional attachment. SACQ full-scale scores and sub-scale scores by mean, minimum, maximum, and standard deviation for the total population ($n=31$) is presented in Table 1.

Table 1

SACQ Full-Scale Scores, SACQ Sub-Scale Scores, PAQ Scores, and ASES Scores by Mean, Minimum, Maximum, and Standard Deviation (n=31)

Characteristics	<i>n</i>	Mean	Min.	Max.	<i>SD</i>
SACQ Full-Scale	31	407.16	231	532	73.76
SACQ Academic Sub-Scale	31	136.39	79	195	32.46
SACQ Social Sub-Scale	31	126.81	69	171	26.09
SACQ Personal-Emotional Sub-Scale	31	82.94	27	116	21.23
SAQC Attachment Sub-Scale	31	102.65	57	132	18.45
PAQ Authoritative Mother	31	3.71	2.30	4.70	.67
PAQ Authoritarian Mother	31	3.63	1.80	5.00	.78
PAQ Permissive Mother	31	2.01	1.20	3.50	.66
PAQ Authoritative Father	31	3.35	2.10	4.50	.61
PAQ Authoritarian Father	31	3.74	1.80	5.00	.86
PAQ Permissive Father	31	2.05	1.10	3.10	.60
ASES	31	9.00	4.00	10.00	1.46

Parental Authority Questionnaire (PAQ)

In this study, mean scores for mothers were as follows: $M = 3.71$ for authoritative, $M = 3.63$ for authoritarian, and $M = 2.01$ for permissive. Mean scores for fathers were as follows: $M = 3.35$ for authoritative, $M = 3.74$ for authoritarian, and $M = 2.05$ for permissive. PAQ scores by mean, minimum, maximum, and standard deviation and by parenting style for mothers and fathers for the total population ($n=31$) is presented in Table 1.

Academic Self-Efficacy Scale (ASES)

In this study, the mean score on the ASES was 9.00. ASES score by mean, minimum, maximum, and standard deviation for the total population ($n = 31$) is presented in Table 1.

Hypotheses Testing

Hypothesis 1: A relationship exists between ratings of mothers' parenting styles and mean scores on college adjustment of freshman engineering students.

Correlation analysis. The correlation between authoritative maternal parenting and college adjustment was small and not statistically significant, $r(29) = .22, p = .24$. The correlation between authoritarian maternal parenting and college adjustment was small and not statistically significant, $r(29) = -.25, p = .18$. The correlation between permissive maternal parenting and college adjustment was small and not statistically significant, $r(29) = .11, p = .54$.

Chi-square analysis. The number of participants who reported maternal authoritativeness or authoritarianism differed by high or low level of college adjustment is illustrated in Table 2. The number of students whose mothers were categorized as authoritative or authoritarian did not significantly differ by high and low levels of college adjustment, $\chi^2(1, N = 29) = 2.54, p = .11$.

Table 2

Maternal Parenting Style and SACQ Full-Scale High/Low Level

SACQ Full-Scale	Maternal Parenting Style		Total
	Authoritative	Authoritarian	
Full-Scale Low	6	7	13
Full-Scale High	12	4	16
Total	18	11	29

No statistically significant results were noted from correlation analysis or chi-square analysis. Therefore, this hypothesis is rejected.

Hypothesis 2: A relationship exists between ratings of fathers' parenting styles and mean scores on college adjustment of freshman engineering students.

Correlation analysis. The correlation between authoritative paternal parenting and college adjustment was moderate and not statistically significant, but indicated a positive trend, $r(29) = .32, p = .09$. The negative correlation between authoritarian paternal parenting and college adjustment was small and not statistically significant, $r(29) = -.16, p = .39$. The correlation between permissive paternal parenting and college adjustment was insubstantial and not statistically significant, $r(29) = .06, p = .75$.

Chi-square analysis. The number of participants who reported paternal authoritativeness or authoritarianism differed by high or low level of college adjustment is illustrated in Table 3. The number of students whose fathers were categorized as authoritative or authoritarian did not differ by high or low levels of college adjustment, $\chi^2(1, N = 26) = .08, p = .78$.

Table 3

Paternal Parenting Style and SACQ Full-Scale High/Low Level

SACQ Full-Scale	Paternal Parenting Style		Total
	Authoritative	Authoritarian	
Full-Scale Low	5	6	11
Full-Scale High	6	9	15
Total	11	15	26

No statistically significant results were noted from correlation analysis or chi-square analysis. Therefore, this hypothesis is rejected.

Hypothesis 3: Freshman engineering students who display strong academic self-efficacy will have higher mean scores on college adjustment than students who display weak self-efficacy.

There was not a significant difference in mean scores on college adjustment between freshman engineering students who displayed strong academic self-efficacy and those students who displayed weak self-efficacy, $t(29) = -.12, p = .90$. Therefore, the hypothesis is rejected. The number of participants who reported weak or strong academic self-efficacy as well as mean scores and standard deviation is illustrated in Table 4.

Table 4

Weak/Strong Academic Self-Efficacy y by Number, Mean, and Standard Deviation

Academic Self-Efficacy	N	Mean	Std. Deviation
Weak	12	1.50	.522
Strong	19	1.58	.507

Hypothesis 4: A relationship exists between ratings of mothers' parenting style and academic self-efficacy scores of freshman engineering students.

Correlation analysis. The correlation between authoritative maternal parenting and academic self-efficacy was moderate and not statistically significant, but indicated a positive trend, $r(29) = .32, p = .08$. The correlation between authoritarian maternal parenting and academic self-efficacy was small and not statistically significant, $r(29) = .12, p = .54$. A negative correlation between permissive maternal parenting and self-efficacy was small and not statistically significant, $r(29) = -.23, p = .21$.

Chi-square analysis. The number of participants who reported maternal authoritativeness or authoritarianism differed by weak or strong academic self-efficacy is illustrated in Table 5. Strong levels of self-efficacy were associated with authoritative parenting. The number of students whose mothers were categorized as authoritative or authoritarian did differ by weak and strong levels of academic self-efficacy, $\chi^2(1, N = 29) = 4.97, p = .03$, and was statistically significant at the .05 level.

Table 5

Maternal Parenting Style and Academic Self-Efficacy

ASES	Maternal Parenting Style		Total
	Authoritative	Authoritarian	
Weak	4	7	11
Strong	14	4	18
Total	18	11	29

No statistically significant results were noted from correlation analysis, however, the chi-square analysis was significant. Therefore, this hypothesis is not rejected.

Hypothesis 5: A relationship exists between ratings of fathers' parenting style and academic self-efficacy scores of freshman engineering students.

Correlation analysis. The correlation between authoritative paternal parenting and academic self-efficacy was not substantial and not statistically significant, $r(31) = -.05, p = .78$. The correlation between authoritarian paternal parenting and academic self-efficacy was close to zero and not statistically significant, $r(29) = .01, p = .95$. The negative correlation between permissive paternal parenting and academic self-efficacy was not substantial and not statistically significant, $r(29) = -.03, p = .87$.

Chi-square analysis. The number of participants who reported paternal authoritativeness or authoritarianism differed by weak or strong level of academic self-efficacy is illustrated in Table 6. The number of students whose fathers were categorized as authoritative or authoritarian did not differ by weak or strong levels of academic self-efficacy, $\chi^2(1, N = 26) = .39, p = .53$.

Table 6

Paternal Parenting Style and Academic Self-Efficacy

ASES	Paternal Parenting Style		Total
	Authoritative	Authoritarian	
Weak	5	5	10
Strong	6	10	16
Total	11	15	26

No statistically significant results were noted from correlation analysis or chi-square analysis. Therefore, this hypothesis is rejected.

Summary

The objectives of this study were to examine the relationship between perceived parenting style and student adjustment to college, academic self-efficacy and student adjustment to college, and perceived parenting style and academic self-efficacy. No relationship was found between mothers' parenting styles and scores on college adjustment of freshman engineering students or fathers' parenting styles and scores on college adjustment of freshman engineering students. There was not a significant difference in mean scores on college adjustment between freshman engineering students who display strong academic self-efficacy and those students who display weak self-

efficacy. Based on chi-square analysis, no significant relationships were found between college adjustment and academic self-efficacy. No statistically significant relationship was found from fathers' parenting style and academic self-efficacy through correlation analysis or chi-square analysis. No statistically significant relationship was found between mothers' parenting style and academic self-efficacy through correlation analysis. Based on chi-square analysis, maternal parenting was significantly different between groups of students with strong and weak academic self-efficacy.

CHAPTER V

DISCUSSION

This study examined the relationships between perceived parenting style, academic self-efficacy, and college adjustment of freshman engineering students. Specifically, three relationships were explored: (a) the relationship between perceived parenting style and student adjustment, (b) the relationship between academic self-efficacy and student adjustment, and (c) the relationship between perceived parenting style and academic self-efficacy. Participants were recruited from a computer programming course required for engineering majors at the target university. Thirty-one participants who volunteered to complete the surveys received extra credit in their computer programming course. A discussion of the findings follows.

Discussion of Findings

This study sought to expand research on college adjustment by assessing the relationship of perceived parenting style and academic self-efficacy on the level of adjustment to college in freshman engineering students. This research is unlike previous research in that it examines the adjustment level of only engineering students. Little research has been conducted which looks specifically at the possible effects of parenting style and academic self-efficacy on college adjustment within this student population.

Hypotheses 1 and 2

The hypotheses that relationships exist between ratings of parenting styles of mothers and fathers, as measured by the Parental Authority Questionnaire (PAQ), and

mean scores on college adjustment, as measured by the Student Adaptation to College Questionnaire (SACQ), of freshman engineering students was not fully supported by this data. This data did show a trend between fathers' parenting and adjustment to college wherein authoritative parental parenting may be associated with better overall adjustment to college. This data differs from the findings of previous research which report that authoritative parenting is shown to positively contribute to students' ability to successfully adjust to college, whereas authoritarian parenting contributes to poor college adjustment (Beyers & Goossens, 2003; Hickman et al., 2001; Wintre & Yaffe, 2000).

One reason this study did not produce similar results as the previous studies may be differences in sample size. This study examined a small sample of 31 freshman students. Beyers and Goossens (2003) investigated 969 undergraduate students, whereas Wintre and Yaffe (2000) studied 408 undergraduate students. A larger sample may have produced different results.

A second reason this study did not produce similar results may be gender, ethnic, cultural or regional differences associated with parenting style and/or college adjustment. This study was conducted at one public university located in the southwestern United States with a sample of primarily White, male students. Beyers and Goossens (2003) conducted their research at a Catholic university in Belgium. The sample in Wintre and Yaffe's (2000) study consisted of a multicultural make-up, although vastly more females were represented than males. Also, their research was conducted at a commuter university in a metropolitan city in Canada. Participants' assessments of parenting styles and/or college adjustment may be affected by gender, ethnicity, culture and regional

affiliations. Previous research (Chao, 2001; Gonzalez, 2001, Mason, 2005) reports certain parenting styles may result in better or worse academic abilities and college adjustment for non-White or female students.

A third reason this study did not produce similar results may be that factors and participant characteristics pertaining to the subjects in this study differed from subjects in previous research. These factors and characteristics may have more impact on students' college adjustment than parenting style. Factors may include students' employment, involvement in extracurricular activities, social support networks, and access to university resources. Participant characteristics may include students' personality, high school preparedness, academic aptitudes, motivation, and time management skills.

Another reason this study may have not produced similar results as previous research may be due to this sample consisting of only engineering students who were primarily male and White/Non-Hispanic. A sample containing more minority and female engineering students may have produced different results. Also, there may be something unique in the engineering student that she or he will not have similar results regardless of gender or ethnicity. These students may simply perceive parenting style or experience college adjustment differently than other freshman students.

Parenting style and academic adjustment. Since no significant relationship was found between maternal or paternal parenting and college adjustment, post hoc analyses were conducted to investigate whether a relationship exists between maternal and paternal parenting style, as measured by the PAQ, and SACQ sub-scales. Based on correlation analysis, a positive, moderate, and significant relationship was found between

authoritative maternal parenting and the SACQ sub-scale of academic adjustment, $r(29) = .388, p = .031$. A negative, moderate, and significant relationship was found between authoritarian maternal parenting and the SACQ sub-scale of academic adjustment, $r(29) = -.424, p = .017$. A positive, moderate, and significant relationship was found between authoritative paternal parenting and the SACQ sub-scale of academic adjustment, $r(29) = .462, p = .009$. A negative, moderate, and significant relationship was found between authoritarian paternal parenting and the SACQ sub-scale of academic adjustment, $r(29) = -.402, p = .025$. These findings indicate authoritative parenting results in better academic adjustment and authoritarian parenting results in poorer academic adjustment of these freshman engineering students. No significant relationship was noted between parenting style and social adjustment, parenting style and personal-emotional adjustment, or parenting style and goal commitment/institutional attachment

These findings are similar to findings conducted in previous research which show authoritative parenting has a positive effect whereas authoritarian parenting has a negative effect on academic adjustment, ability, and self-confidence (Chao, 2001; Gonzalez, 2001, Mason, 2005; Strage, 1998). Strage concluded undergraduate students reared in authoritative households displayed higher levels of academic self-confidence, perception of academic ability, and control over their academic lives compared to students reared in authoritarian households. The sample consisted of a fairly equal proportion of males and females students; however, 56% of participants were Caucasian. Gonzalez reported authoritative parenting resulted in better student perceptions of their academic abilities. Authoritarian parenting resulted in a more negative adjustment,

especially for female students. The sample investigated consisted of 311 participants, including 234 females and 236 Caucasian students. The conclusion of Chao, in regards to a sample of 708 students, was authoritative parenting has positive effects on the academic pursuits and abilities of Caucasian students and Chinese-American students who were second generation Americans. Likewise, Mason (2005) concluded authoritative parenting positively correlated with academic abilities within Caucasian students in a sample of 204 students.

Hypothesis 3

The hypothesis that freshman engineering students who display strong academic self-efficacy, as measured by the Academic Self-Efficacy Scale (ASES), would have higher mean scores on college adjustment, as measured by the Student Adaptation to College Questionnaire (SACQ), was not supported by these data. This differs from findings of other studies which show students who display a strong level of academic self-efficacy also display a high level of college adjustment (Chemers et al., 2001; Devonport & Lane, 2006; Elias & Loomis, 2000; Hall & Ponton, 2005; Lent et al., 1984, 1986; Tong & Song, 2004; Wilson, 2002).

Chemers et al. (2001) concluded students with strong self-efficacy displayed high levels of personal adjustment to and satisfaction with college life as well as high levels of optimism about their college experience. The findings of Tong and Song (2004) note students with strong self-efficacy displayed higher levels of subjective well-being than those with weak self-efficacy. Devonport and Lane (2006) as well as Hall and Ponton (2005) report self-efficacy is a factor in human behavior and accomplishment within

higher education. Most previous research conducted on this subject focused on undergraduate students. This study differed in that it examined only freshmen students. Sophomores, juniors, and seniors may experience academic self-efficacy differently than freshmen, thus, resulting in different findings. Self-efficacy is influenced by performance accomplishment, observation of success or failure of others, verbal persuasion, and emotional arousal (Bandura, 1997). Freshman may not have experienced the full scope of influences due to their limited college career. The relationship of self-efficacy and college adjustment may not be accurately observed soon after students' college entry. Examination after students' prolonged college experience may be more conclusive in establishing whether a relationship exists between self-efficacy and college adjustment.

Academic self-efficacy and academic adjustment. Post hoc analysis was conducted to examine the relationship between academic self-efficacy and academic adjustment. Since no relationship was established between overall college adjustment and academic self-efficacy, post hoc analysis was performed to investigate if similar results would arise when looking at only academic adjustment. A *t*-test of academic self-efficacy and the SACQ sub-scale academic adjustment did not reveal a statistically significant difference in academic adjustment between freshman engineering students who displayed strong academic self-efficacy and those students who displayed weak self-efficacy. This supports the findings of Wilson (2002) who reported that academic self-efficacy was not a factor in academic adjustment or success. Wilson noted participants perceived themselves to have a strong sense of self-efficacy although this was not associated with academic performance or high grades. The sample consisted on 130 undergraduate

engineering students including 111 males. The study was comprised of 27 males compared to 4 females. Gender and/or status as an engineering major may contribute to the effects of self-efficacy on academic adjustment or performance.

Hypotheses 4 and 5

The hypothesis that a relationship exists between parenting styles, as measured by the Parental Authority Questionnaire (PAQ), and academic self-efficacy, as measured by the Academic Self-Efficacy Scale (ASES), of freshman engineering students was partially supported by this data. A relationship was shown to exist between maternal parenting and academic self-efficacy, although no relationship was shown to exist between paternal parenting and academic self-efficacy. Students whose mothers were categorized as authoritative, reported stronger academic self-efficacy. This indicates maternal authoritativeness results in stronger academic self-efficacy in these freshman engineering students. This supports previous research which reports authoritative parenting is associated with higher levels of various aspects of academic self-efficacy (Chao, 2001; Strage, 1998). Chao found students reared in authoritative homes consistently earned higher grades and showed higher overall ability at approaching academic challenges than students reared in authoritarian homes. Strage reported undergraduates reared in authoritative homes displayed higher levels of academic self-confidence, perception of academic ability, and control over their academic lives. Academic ability, academic self-confidence, academic perception of ability, and academic control are aspects of academic self-efficacy.

One explanation why strong academic self-efficacy was reported in students whose mothers were categorized as authoritative may be because parental authoritativeness is related with child characteristics including content disposition, positive self-esteem, self-confidence, positive perception about ability to master tasks, developed social skills, and developed emotion regulation (Baumrind, 1967). Perceived ability to approach and master tasks, self-confidence, and developed emotion regulation are also characteristics of individuals with strong self-efficacy (Bandura, 1997). Parental authoritativeness may contribute to a child's strong academic self-efficacy because this parenting style tends to foster characteristics which are found in children with strong self-efficacy. Authoritative parents are nurturing parents who are secure in the standards they hold for their children. Their parenting style consists of confidence, respect, warmth, and parental self-control. Children reared in authoritative homes may be more likely to internalize their parents' characteristics because authoritative parents appear more fair, reasonable, and caring than permissive or authoritarian parents (Kuczynski, 2003). These children may model their parents' behavior, therefore, displaying self-confidence, respect, emotion regulation, and social understanding. Authoritative parents make demands that fit with children's abilities. This allows children to take responsibility for their own behavior which may lead to high self-esteem, cognitive development, and emotional maturity. Children learn that they are competent individuals who can achieve or recover successfully from failure. Strong academic self-efficacy likely arises from internalization and modeling of authoritative parenting as well as the parental cultivation of child attributes which promote academic self-efficacy.

One explanation as to why maternal parenting style was found in students with stronger self-efficacy whereas paternal parenting style was not may be due to family dynamics within this sample. The participants in this study may be affected more by maternal parenting than paternal parenting for a variety of reasons. One reason may be that some participants were reared in female-headed households or had mothers as primary caregivers thus elevating the impact of maternal parenting. Second, some participants, regardless of family structure, may be emotionally closer to their mothers than to their fathers. This may cause these children to be more susceptible to maternal parenting. Another reason may be that participant personality impacts sensitivity to one parent's style versus another. Also, participants' assessments and perceptions of parenting styles may be affected by their gender, ethnicity, culture, and/or regional affiliations. Previous research (Chao, 2001; Gonzalez, 2001, Mason, 2005) reports certain parenting styles may result in better or worse academic abilities for non-White or female students. Lastly, the small sample size may have affected the results. With a larger sample, a relationship between academic self-efficacy and paternal authoritativeness may have been detected.

Conclusions

The following conclusions can be made about the relationships between student adjustment to college, perceived parenting style, and academic self-efficacy based on the data presented in this study.

Parenting Style and Adjustment to College

This research showed no relationship between parenting style and overall college adjustment. Post hoc analysis was conducted on components of overall adjustment including academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment. Post hoc analysis showed parenting style was related to students' academic adjustment, although it showed no effect on social adjustment, personal-emotional adjustment, or institutional attachment. The findings indicate authoritative parenting resulted in better academic adjustment and authoritarian parenting resulted in poorer academic adjustment of these freshman engineering students. Although findings in this study did not show a relationship between overall college adjustment and parenting style, previous research notes that a relationship exists (Beyers & Goossens, 2003; Chao, 2001; Gonzalez, 2001; Hickman et al., 2001; Kuczynski, 2003; Mason, 2005; Strage, 1998; Wintre & Yaffe, 2000). Further research should be conducted to gain more insight into the subject of college adjustment of engineering students.

Academic Self-Efficacy and Adjustment to College

This research showed no relationship between academic self-efficacy and adjustment to college although previous research (Chemers et al., 2001; Devonport & Lane, 2006; Elias & Loomis, 2000; Hall & Ponton, 2005; Lent et al., 1984, 1986; Tong & Song, 2004; Wilson, 2002) suggests a relationship may indeed exist between academic self-efficacy and college adjustment. Findings for previous research are unclear as to whether academic self-efficacy is a symptom of positive college adjustment or if it is a contributing factor.

Parenting Style and Academic Self-Efficacy

A relationship between parenting style and academic self-efficacy was partially supported by the research in this study. The relationship between maternal parenting and academic self-efficacy was not supported by correlation analysis although it was supported by chi-square analysis. The relationship between paternal parenting and academic self-efficacy was not supported by either correlation analysis or chi-square analysis. Previous research (Chao, 2001; Gonzalez, 2001; Mason, 2005; Strage, 1998) indicates parenting style impacts the level of academic self-efficacy; however, as with the relationship between parenting style and academic self-efficacy, strong or weak self-efficacy may be an indication of the bidirectionality of the parent-child relationship. Strong academic self-efficacy may arise from internalization and modeling of maternal authoritativeness. Also, maternal authoritativeness may cultivate child attributes which promote academic self-efficacy.

Strengths and Limitations

There are three strengths of this study. First, this study examined the college adjustment of engineering students. Limited research has been conducted on college adjustment primarily focused on students whose majors are in engineering disciplines. Second, this is one of few studies which assessed how parenting style affects the adjustment of engineering students. Third, this is one of the few studies which examined how parenting style relates to academic self-efficacy in a sample of engineering students.

There are numerous limitations of this study. First, the sample size was small and random selection was not used to acquire the sample. Type II errors may have resulted

due to the small sample. Additionally, the sample may not be representative of the population. The sample was acquired at one university in the southwestern United States from participants enrolled in an introductory computer programming class. These participants received extra credit for their participation. The extra credit opportunity may have affected respondents' agreement to participate in the study, thus, affecting the results of this study. Likewise, students enrolled in the computer programming class may respond differently than students who have already completed or who have yet to complete the computer programming class. Also, the study does not account for the socioeconomic status or cultural influences of participants and their families. In addition, the correlation analyses did not have sufficient power. Finally, if similar studies are conducted with a larger sample, other analyses may be used to examine the data in order to determine how significant the mean score difference may be.

Implications for Future Research

University representatives meet with parents during high school recruitment events and new student orientations aimed toward educating and enrolling their children into college. While existing research literature may be used as the basis for educating parents about the effects of their parenting style and how to help their children effectively transition into and gain greater academic success, this research study does not provide conclusive evidence of the influence of parents on college adjustment and academic self-efficacy. Research based information could be used to educate parents to better support their children with their first year transition or to improve their parenting skills as needed. Research findings can also be the basis of parent manuals or university websites

dedicated to information pertinent to parents of college students, or university events such as parent orientations, recruitment events, or family welcome parties.

Future research on the relationships between college adjustment, parenting style, and academic self-efficacy in engineering freshman students is needed to determine if the data and results presented accurately reflect this student population. Only through more thorough research can the implications of parenting style and academic self-efficacy on the college transition of this specific population be addressed and understood. First, further research should be conducted to determine if differences in gender roles, gender expectations, cultural roles or cultural expectations affect adjustment in engineering students. Second, research should be conducted to see if enrollment status affects adjustment in engineering students. Part-time versus full-time enrollment may result in different stress and/or anxiety levels or time to focus on extracurricular activities. These differences may result in either increased or decreased attachment to the university, social contact, and social support. Third, research should explore the impact of living arrangements on adjustment in engineering students to determine if on-campus or off-campus residence as well as having a roommate affects adjustment. Additionally, family dynamics including educational attainment of parents, educational support of parents, parents' marital relationships, and sibling relationships may be explored to see if these characteristics affect aspects of adjustment in engineering students. Also, using data collected during this investigation, a longitudinal study could be conducted to determine if results vary over time. It would be useful to repeat this present study with a larger sample to test reliability and validity of these findings.

Finally, additional research which incorporates the following changes would be helpful in adding knowledge to this subject: (a) use a larger sample, (b) use a sample which includes more females, (c) include sophomore students to determine if college adjustment continues into the sophomore year, (d) include participants' grades and grade point averages, (e) include high school ACT and/or SAT scores, (f) obtain parents' perception of their style of parenting.

APPENDIX A
IRB APPROVAL LETTER

UNT
UNIVERSITY OF
NORTH TEXAS
DISCOVER THE POWER OF IDEAS

RESEARCH AND TECHNOLOGY TRANSFER
Office of Research Services

April 16, 2007

Nancy Shaw
Department of Technology and Cognition
University of North Texas

RE: Human Subjects Application No. 07-118

Dear Ms. Shaw:

In accordance with 45 CFR Part 46 Section 46.101, your study titled "The Relationship between Perceived Parenting Style, Academic Self-efficacy and College Adjustment of Freshman Engineering Students" has been determined to qualify for an exemption from further review by the UNT Institutional Review Board (IRB).

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your subjects.

No changes may be made to your study's procedures or forms without prior written approval from the UNT IRB. Please contact Shelia Bourns, Research Compliance Administrator, ext. 3940, if you wish to make any such changes.

Sincerely,



Scott Simpkins, Ph.D.
Chair
Institutional Review Board

SS:sb

APPENDIX B
INFORMED CONSENT FORM

INFORMED CONSENT FORM

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose and benefits of the study and how it will be conducted.

Title of Study: The Relationships Between Perceived Parenting Style, Academic Self-Efficacy and College Adjustment of Freshman Engineering Students

Principal Investigator: Nancy Shaw, a graduate student in the University of North Texas (UNT) in the Human Development and Family Studies program in the Department of Technology and Cognition.

Purpose of the Study: You are being asked to participate in a research study which looks at the relationship between parent behaviors and characteristics, belief in academic abilities, and adjustment to college in freshman college students.

Study Procedures: You will be asked to read and answer numerous questions in 4 different surveys that will take a total of about 45 minutes of your time.

Foreseeable Risks: No foreseeable risks are involved in this study.

Benefits to the Subjects or Others: This study may benefit you by informing you about your adjustment to college. Your participation may benefit others by helping people who study and work with college students to determine how to better help them to succeed in college.

Compensation for Participants: You will receive extra credit toward CSCE 1030 as compensation for your participation. You will receive a grade of 100 on one of your six homework assignments.

Procedures for Maintaining Confidentiality of Research Records: You will not be asked to submit your name, student ID number or social security number on any survey that you complete. Your signed consent form will be kept separate from the surveys that you complete and all documents will be kept in locked file cabinets. Your name will be shared with Dr. Garlick so that he may award the extra credit but your scores will not be shared with him or any other person. Group data will be shared with members of my thesis committee. Also, the confidentiality of your individual information will be maintained in any publications or presentations regarding this study.

Questions about the Study: If you have any questions about the study, you may contact Nancy Shaw at telephone number (940) 565-4201.

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB).

The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Participants' Rights: Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Nancy Shaw has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You have been told you will receive a copy of this form.

Printed Name of Participant

Signature of Participant

Date

For the Principal Investigator or Designee:

I certify that I have reviewed the contents of this form with the participant signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

Signature of Principal Investigator or Designee

Date

APPROVED BY THE UNT IRB
FROM 4/16/07 TO 4/15/08
JS

APPENDIX C
DEMOGRAPHICS

DEMOGRAPHICS

The following information will remain confidential and is designed to help give the researcher some background on the college students participating in this research study. Please mark the appropriate answer to each question.

Shade Circles Like This--> ●
Not Like This--> ⊗

1. Please mark your age: 18 19 20 21
2. Please mark your gender: Male Female
3. Please mark if you are a freshman (less than 30 credit hours earned): Yes No
4. Please mark if you are enrolled in: 12 credit hours or more less than 12 credit hours
5. Please mark your ethnicity:

<input type="radio"/> White, Non-Hispanic	<input type="radio"/> Arab / Arab-American
<input type="radio"/> Hispanic / Latino	<input type="radio"/> Asian / Asian-American / Pacific Islander
<input type="radio"/> African-American	<input type="radio"/> Other : _____
<input type="radio"/> American Indian / Native American / Alaskan Native	(Please describe above)
6. Which of the following best describes the structure of the family that you grew up in:
 married divorced remarried single parent
7. Please mark the highest level of education of your mother:

<input type="radio"/> Attended high school but did not graduate	<input type="radio"/> College graduate
<input type="radio"/> High school graduate	<input type="radio"/> Not sure of parent(s) educational level
<input type="radio"/> Attended college but did not graduate	
8. Please mark the highest level of education of your father:

<input type="radio"/> Attended high school but did not graduate	<input type="radio"/> College graduate
<input type="radio"/> High school graduate	<input type="radio"/> Not sure of parent(s) educational level
<input type="radio"/> Attended college but did not graduate	
9. Please mark your current living situation:

<input type="radio"/> Living alone in a residence hall	<input type="radio"/> Living with roommate(s) in an apartment/house
<input type="radio"/> Living with roommate(s) in the residence hall	<input type="radio"/> Living with parent(s)
<input type="radio"/> Living alone in an apartment/house	<input type="radio"/> Living with boyfriend/girlfriend/spouse

Thank you for your participation in my survey!

APPENDIX D

STUDENT ADAPTATION TO COLLEGE QUESTIONNAIRE

REFERENCES

- ACT, Inc. (2002). Return/graduation rate data for 2002. Retrieved March 17, 2006 from <http://www.act.org/news/releases/2002/update.html>.
- Alberts, B. M. (2006). Campus wide retention planning: The six-minute "read." Retrieved October 25, 2007 from the *NACADA Clearinghouse of Academic Advising Resources* Web site: <http://www.nacada.ksu.edu/Clearinghouse/AdvisingIssues/retention-what-works.htm>
- Astin, A. W., & Astin, H. S. (1992). *Final report: Undergraduate science education: The impact of different college environments on the educational pipeline in sciences*. Higher Education Research Institute, Graduate School of Education, UCLA.
- Baker, R. W., & Siryk, B. (1984). Measuring adjustment in college. *Journal of Counseling Psychology*, 31(2), 179-189.
- Baker, R. W., & Siryk, B. (1986). Exploratory intervention with a scale measuring adjustment to college. *Journal of Counseling Psychology*, 33(1), 31-38.
- Baker, R. W., & Siryk, B. (1999). *Student adaptation to college questionnaire*. Los Angeles: Western Psychological Services.
- Bandura, A. (1997). *Self-efficacy: The exercise of self-control*. New York: W. H. Freeman and Company.
- Baumrind, D. (1967). Child care practices anteceding three patterns of preschool behavior. *Genetic Psychology Monographs*, 75(1), 43-88.

- Beyers, W., & Goossens, L. (2003). Psychological separation and adjustment to university: Moderating effects of gender, age, and perceived parenting style. *Journal of Adolescent Research, 18*(4), 363-383.
- Buri, J. R. (1991). Parental Authority Questionnaire. *Journal of Personality Assessment, 57*(1), 110-119.
- Cabrera, A. F. (1993). College persistence: Structural equations modeling test of an integrated model of student retention. *Journal of Higher Education, 64*, 123-139.
- Chao, R. K. (2001). Extending research on the consequences of parenting style for Chinese Americans and European Americans. *Child Development, 72*(6), 1832-1843.
- Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first-year student performance and adjustment. *Journal of Educational Psychology, 93*(1), 55-64.
- DeBerard, M. S., Spielmans, G. I., & Julka, D. C. (2004). Predictors of academic achievement and retention among college freshman: A longitudinal study. *College Student Journal, 38*(1), 66-80.
- Devonport, T. J., & Lane, A. M. (2003). Relationships between self-efficacy, coping and student retention. *Social Behavior and Personality, 34*(2), 127-138.
- Elias, S. M., & Loomis, R. J. (2000). Using an academic self-efficacy scale to address university major persistence. *Journal of College Student Development, 41*(4), 450-454.

- Glennen, R. E., Farren, P. J., & Vowell, F. N. (1996). How advising and retention of students improves fiscal stability. *NACADA Journal*, 16(1), 38-41.
- Gonzalez, A. (2001). Undergraduate students' goal orientations and their relationship to perceived parenting styles. *College Student Journal*, 35(2), 182-193.
- Hall, J. M., & Ponton, M. K. (2005). Mathematics self-efficacy of college freshman. *Journal of Developmental Education*, 28(3), 26-33.
- Heisserer, D. L., & Parette, P. (2002). Advising at-risk students in college and university settings. *College Student Journal*, 36(1), 69-83.
- Hickman, G. P., Toews, M. L., & Andrews, D. W. (2001). The differential influence of authoritative parenting on the initial adjustment of male and female traditional college freshman. *Journal of the First-Year Experiences & Students in Transition*, 13(1), 23-46.
- Kuczynski, L. (Ed.). (2003). *Handbook of dynamics in parent-child interactions*. Thousand Oaks, California: Sage.
- Lapsley, D. K., Rice, K. G., & Shadid, G. E. (1989). Psychological separation and adjustment to college. *Journal of Counseling Psychology*, 36(3), 286-294.
- Lent, R. W., Brown, S. D., & Gore, P. A., Jr. (1997). Discriminant and predictive validity of academic self concept, academic self-efficacy and mathematics - specific self-efficacy. *Journal of Counseling Psychology*, 44(3), 307-315.
- Lent, R. W., Brown, S. D., & Larkin, K. C. (1984). Relation of self-efficacy expectations to academic achievement and persistence. *Journal of Counseling Psychology*, 31(3), 356-362.

- Lent, R. W., Brown, S. D., & Larkin, K. C. (1986). Self-efficacy in the prediction of academic performance and perceived career options. *Journal of Counseling Psychology, 33*(3), 265-289.
- Lu, L. (1994). University transition: Major and minor stressors, personality characteristics and mental health. *Psychological Medicine, 24*, 81-87.
- Mallinckrodt, B., & Sedlacek, W. E. (1987). Student retention and the use of campus facilities by race. *NASPA Journal, 24*, 28-32.
- Mason, L. K. (2005). Attachment classification, parental bonding and parental authority as they relate to anxiety, depression, and self-efficacy from a multicultural perspective. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 65*(7-B), 3715.
- McGaha, V., & Fitzpatrick, J. (2005). Personal and social contributors to dropout risk for undergraduate student. *College Student Journal, 39*(2), 287-298.
- National Center for Education Statistics (1999). *International comparisons in education, education indicators: An international perspective*. Retrieved September 23, 2006 from <http://nces.ed.gov/surveys/international/IntlIndicators/index.asp?SectionNumber=4&SubSectionNumber=1&IndicatorNumber=7>
- National Science Foundation (2002). *Women, minorities and persons with disabilities in science and engineering: 2002*. Retrieved September 15, 2006 from <http://www.nsf.gov/statistics/nsf03312/c0/intro.htm>.

- Nutt, Charlie L. (2003). Academic advising and student retention and persistence.
Retrieved October 24, 2007 from the NACADA Clearinghouse of Academic
Advising Resources Web site:
<http://www.nacada.ksu.edu/Clearinghouse/AdvisingIssues/retention.htm>.
- Ponton, M K. (2002). Motivating students by building self-efficacy. *Journal of Professional Issues in Engineering Education and Practice*, 128(2), 54-28.
- Porter, O. F. (1990). Undergraduate completion and persistence at four-year college and universities: Detailed findings. Washington, DC: National Institute of Independent Colleges and Universities.
- Schwartz, M. A., & Scott, B. M. (2003). *Marriages and families: Diversity and change*. Upper Saddle River, New Jersey: Pearson.
- Strage, A. A. (1998). Family context variables and the development of self-regulation in college students. *Adolescence*, 33(129), 17-32.
- Tinto, V. (1987). *Leaving college*. Chicago: University of Chicago Press.
- Tinto, V. (1993). *Leaving college: Rethinking the cause and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.
- Tong, Y., & Song, S. (2004). A study on general self-efficacy and subjective well-being of low SES college students in a Chinese university. *College Student Journal*, 38(4), 637-642.
- U.S. Census Bureau (2005). *College degree nearly doubles annual earnings*, *Census Bureau Report*. Retrieved March 17, 2006 from <http://www.census.gov/Pressrelease/www/releases/archives/education/004214.html>.

- United States Government Accountability Office (2007, April 11). *GAO Forces that will shape America's future: Themes from GAO's Strategic Plan 2007-2012*. Retrieved November 2, 2007, from <http://www.gao.gov/new.items/d07467sp.pdf> .
- Vasquez-Abad, J., Winter, L., & Derome, J. (1997). Why some stay: A study on the factors contributing to persistence in undergraduate physics. *McGill Journal of Education*, 32, 209-229.
- Wilson, B. C. (2002). A study of factors promoting success in computer science including gender differences. *Computer Science Education*, 12(2), 141-164.
- Wintre, M. G., & Yaffe, M. (2000). First-year student's adjustment to university life as a function of relationships with parents. *Journal of Adolescent Research*, 15(1), 9-37.