ROLE OF ACADEMIC PROCRASTINATION, ACADEMIC SELF-EFFICACY BELIEFS, AND PRIOR ACADEMIC SKILLS ON COURSE OUTCOMES FOR COLLEGE STUDENTS IN DEVELOPMENTAL EDUCATION

by

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(Under the Direction of Jay W. Rojewski)

ABSTRACT

This study examined the relationship between academic self-efficacy beliefs, academic procrastination, and prior academic skills on course outcomes for students who completed a mandatory developmental college course. One hundred twenty three undergraduate students enrolled in a developmental college English course during a single semester participated. A very high academic self-efficacy was identified, even though students were enrolled in a developmental course. These students did not achieve higher grades suggesting an overestimation of academic achievement.

A significant negative relationship existed between academic self-efficacy and academic procrastination. Students who had high academic procrastination levels also had lower academic-self-efficacy. Levels of academic procrastination yielded a statistically significant negative relationship to academic achievement. Students who had higher academic procrastination levels did not perform as well on end-of-course grades. Prior academic skills, predicted by the COMPASS Writing Skills Placement Test, produced a statistically significant relationship to

academic achievement. Students with higher COMPASS scores achieved higher end-of-course grades.

Older students and men had higher levels of academic procrastination. Students were most likely to procrastinate on studying for exams, weekly reading assignments, and completing writing assignments. Task aversiveness was the most important reason students gave for procrastinating. Younger students and men were more task averse. The fear of failure factor was not as important as task aversiveness as an explanation for academic procrastination. There was little difference between men and women on the fear of failure factor, which was different from the original study using the PASS (Solomon & Rothblum, 1984) in which women rated the fear of failure factor higher. Older students most often attributed fear of failure to academic procrastination.

INDEX WORDS: ACADEMIC PROCRASTINATION, ACADEMIC SELF-EFFICACY, DEVELOPMENTAL EDUCATION

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A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

ATHENS, GEORGIA

2012

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August 2012

ACKNOWLEDGEMENTS

I thank my husband, Bill Jackson, for his day-to-day support throughout this process. His love, devotion, and encouragement are a blessing to me. I also owe a debt of gratitude to my parents who instilled in me a lifelong love of learning. I will be forever grateful for their support of my dreams and educational goals. To my daughter Kathleen Jackson, we have shared our educational journeys and achievements, which makes this day very special. And last but not least, from the bottom of my heart thank you to all my family for listening, loving, and believing in me. You all never doubted this day would come. I am blessed to have such a great and loving family.

To my advisor and major professor Dr. Jay Rojewski, your support and guidance have been tremendous. Over these years, you have challenged me to be the best scholar and student I could be. You were a mentor who understood that students must seek knowledge, challenge their thinking, improve their writing, and come away with a sense of pride. Through your words and actions you conveyed confidence in me, and I believed that as well. You are a scholar, a valued teacher, and a wonderful mentor.

To my committee members and professors, Dr. Myra Womble and Dr. Elaine Adams you encouraged me with many words of personal and scholarly wisdom in completion of my doctorate. Your valuable insights and points of view guided my thinking, research, and writing, and I thank you both for your unselfish devotion.

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CHAPTER 1

INTRODUCTION

Rationale

Many students enter college without essential skills and qualifications required to meet the rigors of college academics. Only 70% of all students in public high schools graduate, and only 34% leave high school qualified to attend a 4-year college (Manhattan Institute for Policy Research, 2003). Fifty percent of students seeking an associate's degree and 20.7% seeking a bachelor's degree require remediation (Complete College America, 2011). The National Center for Education Statistics (2010a) found that nearly one-third of first year college students require at least one developmental course in reading, writing, or math. When students do enroll in their required developmental courses, only 55% complete those courses and only 24.7% earn their bachelor's degrees within 6 years (Complete College America, 2011). In the state of Georgia in fall 2008, 46,500 freshmen were enrolled in public colleges. Of those students, 25% or 11,603 students were required to enroll in a developmental course (University System of Georgia, 2008). Even though students spend one year or less in developmental courses, these statistics highlight that students' need for developmental education is strong as the problem of academic underpreparedness persists in colleges today (McCabe & Day, 1998).

The National Association for Developmental Education (2012) reported that developmental education enhances academic, personal, and professional achievement for all learners. Despite the importance and costs of implementing developmental courses, there is little rigorous research analyzing its effectiveness. The research available is inconclusive on the value

of specific developmental program interventions for college students. For example, in a study of 26,000 college students, students who did not receive remediation did just as well as students who received some type of support in respect to graduation and transfer rates (Bettinger & Long, 2005). In contrast, several studies have shown that students who completed developmental coursework experienced higher achievement and were just as or even more successful in future college coursework than students without intervention (Castator & Tollefson, 1996; Crews & Aragon, 2007).

Much of the literature on developmental education has focused on raising academic standards and improving instructional methods using the *skill and drills* approach (Grubb & Associates, 1999). A more in-depth understanding of all complex factors relating to student success in college is required. Instruction and support strategies provided to students in developmental courses should rely on a continued understanding of how students construct knowledge and interact with the institution. The goal is to have a long-term impact on retention and graduation, while establishing frameworks for understanding how students learn and develop (Higbee, Arendale, & Lundell, 2005).

Social cognitive theory (Bandura, 1986), a psychological theory of human learning and development, provided the theoretical foundation for this study. Social cognitive theory explains that student learning occurs through an interaction of behavior, cognitive factors, and the environment. Bandura (1986) believed that as students learn they self-direct or self-regulate their environment depending on their perception of their capability to deal with current realities or self-efficacy. Self-efficacy is the "belief in one's capabilities to organize and execute the courses of action required, producing given attainments" (Bandura, 1997, p. 3). Students who self-regulate should be able to monitor or keep track of their own behaviors, evaluate their actions for

effectiveness, and respond to their behavior by modifying, rewarding, or discounting it. In educational environments, students have the ability to choose and direct their own actions. The ability to self-direct or self-regulate learning depends on motivation set by a student's internal standards and self-evaluative reactions to actions (Bandura, 1986). Social cognitive theory explains that students continuously monitor their learning process and if they require additional instruction on a skill they will seek out a qualified teacher or alter and adjust their learning environment to enhance their learning.

One self-regulatory behavior that has been studied extensively in the literature is academic procrastination and its effect on student achievement. Students who procrastinate may have thoughts or behaviors that inhibit their ability to self-regulate, for example, false estimates of time needed to complete a study task and low self-efficacy (Schouwenburg, Lay, Pychyl, & Ferrari, 2004). Academic procrastination is a multidimensional construct with behavioral, cognitive, and affective components. Academic procrastination in college students demonstrates a lack of self-control and, when combined with lower self-efficacy for academics, can lead to lower academic achievement (Bandura, 1997; Burka & Yuen, 1983; Judge & Bono, 2001).

Academic procrastination is fairly common among college students and may negatively impact academic achievement (Clark & Hill, 1994; Ellis & Knaus, 2002; Harriott & Ferrari, 1996; Solomon & Rothblum, 1984; Wesley, 1994). Academic procrastination is defined as failing to perform an academic activity within a desired time frame or postponing until the last minute activities one needs to complete (Wolters, 2003). Another definition includes the postponement of academic goals to the point where optimal performance becomes highly unlikely (Ellis & Knaus, 2002). Most procrastination behaviors in academic situations concern

completion of academic assignments such as preparing for exams, doing homework, and writing papers (Schouwenburg et al., 2004).

There are inconsistencies in the literature about whether or not academic procrastination leads to lower academic achievement. Several studies have found that academic procrastination had little effect on academic achievement (Beck, Koons, & Milgram, 2000; Beswick, 1988; Lay, 1986; Pychyl, Morin, & Salmon, 2000; Solomon & Rothblum, 1988). Beck et al. (2000) reported that students may or may not be able to get away with delaying studying for an exam depending on their level of ability. In examining test performance as a function of lecture attendance, behavioral procrastination, and SAT scores, they found that students with low SAT scores performed poorly on tests regardless of whether they procrastinated or attended class. One area where information is lacking is the connection between academic procrastination and students in developmental courses. It is important to develop a greater understanding of students in developmental education to clarify whether and how procrastination affects their academic achievement.

Academic procrastination has been linked extensively to self-efficacy (Knaus, 1998). When students procrastinate, they limit their abilities to develop academic self-efficacy – the ability to organize, regulate, and direct their actions to achieve a productive outcome (Knaus, 2000). In an academic environment, students' self-efficacy influences their achievement behavior through choices of activities, effort expenditure, persistence, and learning. Self-efficacy for college academics, or academic self-efficacy, seems to have positive effects on academic achievement. Several studies have found that students with high academic self-efficacy will have higher grades than students with low academic self-efficacy (e.g., Bong, 2001; Brown, Lent, &

Larkin, 1989; Hackett, Betz, Casas, & Rocha-Singh, 1992; Lent, Brown, & Larkin, 1984; Multon, Brown, & Lent, 1991).

According to social cognitive theory, students who are more academically self-efficacious also manage their time better, are more persistent, and persevere to seek correct solutions (Bandura, 1997). Students who demonstrate high academic self-efficacy tend to be self-regulated learners, and as a result, may procrastinate less (Zimmerman, 1994; Zimmerman & Paulsen, 1995). Students who are self-regulated learners exhibit high academic self-efficacy beliefs and an orientation toward mastery goals (Pintrich, 2000; Schunk & Ertmer, 2000). While the literature is extensive about academic self-efficacy and its effect on academic achievement, little information exists concerning the impact of academic self-efficacy on students taking developmental courses. Students who are placed into developmental courses may feel discouraged because they are taking pre-college courses while their peers may be taking courses for their degrees. Students placed into developmental courses – by the very nature of their placement – may have lower academic self-efficacy and engage in higher levels of procrastination (Bandura, 1997; Burka & Yuen, 1983; Judge & Bono, 2001).

Colleges often place great importance on placement testing for students taking developmental courses. Placement testing determines entering first-year students' academic strengths and weaknesses. In developmental education, placement testing is often used to place students in an appropriate program of study to enhance their chance for success (Farmer & Barham, 2001). It is important to view placement test scores as they relate to other factors, including course outcomes and academic achievement for students in developmental education. Students' prior academic skills were considered in this study and measured by scores on the Computer-Adaptive Placement Assessment and Support System (COMPASS; ACT, 2012)

Writing Skills Placement Test. The COMPASS placement test is used in colleges today to evaluate incoming students' skill levels in many academic areas including reading, writing, math, and English as a Second Language. To determine academic achievement, the criterion variable was defined as end-of-course grade in a developmental academic English course.

This study examined the relationship between academic self-efficacy beliefs, academic procrastination, and prior academic skills for college students taking developmental education courses. An understanding of the relationships posited in this study may help teachers, counselors, and advisors better understand aspects of college students' behavior. Interactions and relationships between variables like academic procrastination, academic self-efficacy, and prior academic skills helped identify important factors contributing to the success of students taking a developmental course. This, in turn, will assist in the development of academic strategies to decrease the likelihood that students will fail when enrolled in developmental courses.

Purpose of Study

The purpose of this correlational study was to explore the relationship between academic self-efficacy beliefs, academic procrastination, and prior academic skills on course outcomes for students who must take developmental college courses. Self-efficacy refers to individuals' beliefs about their ability to exercise control over their own functioning and over events that affect their lives (Bandura, 1993). Academic self-efficacy is an individual's belief in his or her ability to successfully achieve an academic goal (Bandura, 1977). Academic self-efficacy beliefs can affect academic functioning, effort regulation, perseverance, increased persistence in seeking solutions, and overall academic achievement (Bandura, 1997; Bong, 2001; Brown et al., 1989; Hackett et al., 1992; Lent et al., 1984; Multon et al., 1991). Students who demonstrate high

academic self-efficacy tend to be more self-regulated learners, are skilled in time management, and, as a result, procrastinate less in the classroom (Zimmerman, 1994; Zimmerman & Paulsen, 1995). The Academic Self-Efficacy scale (ASES; Elias & Loomis, 2000) provided a measure of students' perceived academic self-efficacy.

Academic procrastination is common among college students and may have a negative impact on academic achievement (Beck et al., 2000; Clark & Hill, 1994; Ellis & Knaus, 2002; Harriott & Ferrari, 1996; Solomon & Rothblum, 1984; Wesley, 1994). Academic procrastination is defined as failing to perform an academic activity within a desired time frame or postponing until the last minute activities one needs to complete (Wolters, 2003). In this study, the complex behavior of student procrastination was examined through social cognitive theory (Bandura, 1986) and self-regulation. Social cognitive theory considers motivational and cognitive factors together to understand student's behaviors in academic contexts. Students who procrastinate are not self-regulated learners (Bandura, 1997; Wolters, 2003) because they fail to monitor and control important aspects of their learning behavior (Butler & Winne, 1995; Pressley, Borkowski, & Schneider, 1987). Important traits of self-regulation in a learning environment include goal directedness, academic time management, meaningful and directed practice, appropriate use of cognitive and metacognitive strategies, and a sense of self-efficacy (Zimmerman, 1994; Zimmerman & Paulsen, 1995). This study defined and explored the relationships of academic procrastination and academic self-efficacy on the level of achievement of students enrolled in a developmental course. Academic procrastination and procrastination traits were measured with the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984).

Prior academic skills were also considered and measured by scores on the Computer-Adapted Placement Assessment and Support Services (COMPASS; ACT 2012) Writing Skills Placement Test. The criterion variable, academic achievement, was defined as end-of-course grade in a developmental academic English course. The research questions for this study were:

1. What are the academic self-efficacy beliefs, academic procrastination traits, and prior academic skills of college students in a developmental course?
2. How do task aversiveness and fear of failure factors explain the underlying reasons developmental education students procrastinate in college as represented by the Procrastination Assessment Scale-Students (PASS)?
3. What is the relationship between academic self-efficacy, academic procrastination, and prior academic skills to academic achievement of college students in a developmental course?

Theoretical Framework

Social cognitive theory (Bandura, 1986), a psychological theory of human learning and development, provided the theoretical foundation for this study. Social cognitive theory explains that student learning occurs through an interaction of behavior, cognitive factors, and the environment. Bandura (1986) believed that as students learn they self-direct or self-regulate their environment depending on their self-efficacy or perception of their capability to deal with their current reality. Students who can self-regulate should be able to monitor or keep track of their own behaviors, evaluate their actions for effectiveness, and respond to their behavior by modifying, rewarding, or discounting it.

Social cognitive theory assumes that self-regulation is dependent on goals. Students are able to manage their thoughts and actions in order to reach specific outcomes such as improved

academic achievement (Schunk, 2001). Behaviors such as procrastination demonstrate a lack of self-control or self-regulation and may be related to lower academic self-efficacy and lower academic achievement. According to social cognitive theory, students who report frequent procrastination may also have lower levels of academic self-efficacy resulting in lower academic achievement. Academic self-efficacy is specific to certain environments or situations. In educational environments, students must adapt self-directed learning processes to specific domains and feel efficacious about it (Schunk, 2001). Students have the ability to choose and direct their own actions. In educational environments, the ability to self-direct learning depends on motivation set by a student's internal standards and self-evaluative reactions to actions (Bandura, 1986).

Self-efficacy is the "belief in one's capabilities to organize and execute the courses of action required, producing given attainments" (Bandura, 1997, p. 3). Academic self-efficacy is defined as individuals' belief in their ability to successfully achieve an academic goal (Bandura, 1977). In an academic environment, academic self-efficacy influences achievement behaviors of students by choice of activities, effort, expenditure, persistence, and learning. Students who feel efficacious about learning expend more effort and persist longer (Schunk, 1991, 2001). In turn, students' actions modify their self-efficacy. As students work on tasks, they note their progress toward learning goals. Progress indicates they are performing well and enhances their academic self-efficacy (Schunk, 2004). Students develop perceptions of their academic self-efficacy in reference to specific capabilities (Pajares, 1996). Students with high self-efficacy for academics have been found to have high achievement regardless of ability levels (Collins, 1982).

Social cognitive theory (Bandura, 1986) is particularly well-suited to explain the complex relationships of academic procrastination, academic self-efficacy, and academic achievement in

the context of student learning. Academic procrastination in college students demonstrates a lack of self-control and, when combined with lower self-efficacy for academics, can lead to lower academic achievement (Bandura, 1997; Burka & Yuen, 1983; Judge & Bono, 2001).

Academic procrastination is easily identified as a behavior linked to students' ability to self direct learning. Social cognitive theory indicates that students with a high sense of academic self-efficacy make greater use of cognitive strategies, manage their time and learning environments better, and monitor and regulate learning more closely (Pintrich & Schraubern, 1992). It is likely that students who procrastinate less also possess higher academic self-efficacy and, ultimately, higher achievement in school.

Importance of Study

Educators, advisors, counselors, and psychologists have all contributed to research and literature about student behaviors such as academic procrastination. They are challenged within their areas of practice to apply sound intervention approaches to these complex behaviors (Schouwenburg et al., 2004). Knowledge from studies conducted since the 1980s has confirmed that behavioral, cognitive, and emotional components (Ferrari, Johnson, & McCown, 1995), as well as academic self-efficacy beliefs (Bandura, 1986), contribute to students' procrastination tendencies. Educators continue to interpret the multiple causes of academic procrastination and apply specific intervention techniques such as counseling and workshops for helping students achieve success. Because there are many causes for academic procrastination, educators must be aware of the major factors and acknowledge different approaches to support students' efforts to change (Shouwenburg et al., 2004).

To date, studies have not closely examined relationships of academic procrastination tendencies and academic self-efficacy beliefs for students taking developmental courses.

Coordinated interventions for students in developmental education have historically focused on three areas: (a) restructuring curriculum, (b) developing new institutional structures, and (c) employing specific instructional strategies or technologies that are designed to enhance learning (Levin & Calcagno, 2008). Trends in education are forcing colleges to take a closer look at developmental education including (a) large numbers of non-traditional students entering colleges, (b) institutions voicing moral and financial concerns about retention, and (c) legislators and taxpayers requiring a higher level of accountability (Shaw, 2000).

Included in the reexamination of developmental education must be academic support programs and interventions offered by educators, advisors, and counselors who witness specific negative student behaviors such as procrastination. Findings from this study may contribute to a deeper understanding of students in developmental education courses by providing useful insight to develop targeted intervention strategies designed to reduce procrastination behaviors, regulate learning, and raise academic achievement.

CHAPTER 2

REVIEW OF LITERATURE

This chapter provides a review of the literature pertaining to students in developmental education. The review begins with the background of developmental education, an examination of students in developmental education, and the impact of developmental education. The use of the COMPASS test for placement of students in college is also discussed. The impact of the study's predictor variables including academic procrastination, academic self-efficacy, and prior academic skills as reflected by the COMPASS Writing Skills Placement Test follows. Finally, a discussion of social cognitive theory concludes this review.

Developmental Education

The evolution of developmental education begins with a discussion of the use of the term remedial education. From the 1860s through the 1960s the term remedial education was used to describe the developmental education field. The term remedial is an approach to educating students with specific skill deficits and addresses programs and curriculum that target these deficits. The term remedial often refers to fixing or correcting a deficit and is often associated with or compared to medical models in which students are assessed for an academic weakness and then prescribed a treatment (Clowes, 1980). The term remedial shares its roots with the word remedy meaning to cure or make whole. Use of the term remedial can be interpreted to describe students as academically backward or less able, with the focus on bringing them up to an acceptable skill level or competence (Clowes, 2001). Viewing remedial education in this light indicates that students repeat academic treatments until they achieve the desired results. The

focus of remedial education in this definition is about improving cognitive deficits (Arendale, 2005). Reviews of the literature in developmental education reveal that remedial is a commonly used term across educational levels to describe student's weaknesses or deficiencies (Casazza, 1999). Remedial education is also the term most often associated with underprepared students.

The College Reading and Learning Association Taskforce on Professional Language (Rubin, 1991) defines remedial as "instruction designed to remove a student's deficiencies in the basic entry or exit level skills at a prescribed level of proficiency in order to make him/her competitive with peers" (p. 30). This definition implies that students are required to participate in academic improvement courses or programs as a condition of entry into college or before taking college credit courses (Arendale, 2005). The current Glossary of Developmental Education and Learning Assistance Terms (Arendale, 2007) defines a remedial student as "a student having potential for college success after completing required academic improvement courses due to significant underpreparation in one or more academic skill areas" (p. 10). The term remedial has not changed significantly from its earlier interpretations.

Beginning in the 1970s the term developmental education began to emerge as a term in the field of education borrowed from the study of college student personnel. This view is based on the assumption that all students are developmental (Arendale, 2005). The view of developmental education using this terminology is seen as a more comprehensive model of education because it focuses on the holistic development of the student in both academic and affective domains and is rooted in developmental psychology (Boylan, Bonham, & White, 1999). This perspective assumes that each student has skills or knowledge that can be developed. The latest definition for developmental education has been revised and expanded by the National Association for Developmental Education (2012) stating that "developmental education is a field

of practice and research with a theoretical foundation in developmental psychology and learning theory. “Developmental education promotes the cognitive and affective growth of all learners, at all levels of the learning continuum” (Arendale, 2007, p. 10). A developmental education student is a student assessed as having potential for college success when appropriate educational enrichment and support services are provided (Arendale, 2007).

In colleges today there is still confusion about whether or not to use the word remedial or developmental. Word choice between using remedial and developmental can be significant representing an approach or basic philosophy emphasizing different educational approaches. In the field and practice of developmental education, word choice is important and should be governed by the most appropriate phrase that accurately describes the services, targeted student population, and purpose of the field (Arendale, 2005). In most instances it is more appropriate to use the term developmental rather than remedial.

Students in Developmental Education

The National Study of Developmental Education II (Gerlaugh, Thompson, Boylan, & Davis, 2007) indicates that 28% of entering college students takes at least one developmental course in reading, writing, or mathematics and 42% of community college students enroll in at least one developmental course. There is wide variation across states and within each postsecondary sector. State-level remediation rates at public four-year colleges range from 6% to 50% (Education Commission of the States, 2002).

According to the National Center for Education Statistics National Postsecondary Student Aid Study (NPAS; 2010a), approximately 36% of first-year undergraduate students reported that they had ever taken a developmental course. Twenty percent of first-year undergraduates reported that they had taken at least one developmental course in 2007-2008. The statistical data

indicates that more students taking developmental courses are women. In 2007-2008, 39% of women reported taking a developmental course vs. 33% of men. The number of White first-year undergraduate students who reported taking a developmental course was 31%, a smaller number than all other racial/ethnic groups. Higher percentages of Black students (45%), Hispanic students (43%), and Asian student (38%) reported ever taking a developmental course. The students 18 years or younger who reported ever taking a developmental course was 29.7% and the percentage increased for each age group 19-23 (36%), 24-29 (42.5%), 30-39 (43.2%) and 40 years and older (40.8%). However in 2007-2008, most students who took a developmental course in that one year were 18 years or younger (29.7%), followed by 19-23 year olds (17.9%), 24-29 year olds (16.8%), 30-39 year olds (15.1%), and 40 year olds or older (13.7%). Low income students are most likely to take a developmental course with those with the lowest 25% income (41.9%), middle 50% income (38.1%), and the highest 25% income (31.3%). Most students taking developmental courses also work full time (35 or more hours per week) (40.9%), followed by part time workers (37.3%), and those who did not work (34.1%) (NPAS; 2010a).

Impact of Developmental Education

Many colleges and universities in the United States provide developmental education services to students. Developmental education may include a comprehensive range of services including assessment and placement, advising, developmental courses, supplemental instruction, and tutoring. The most commonly used intervention described in developmental education programs is the developmental education course. A structured course provides the most efficient means of conveying information to a large number of students at the same time (Boylan et al., 1999).

Developmental education courses at most colleges are offered each semester and numbered usually below the 1000 level. For example, Math 0099, English 0099, and Reading 0099 are courses which indicate levels below the 1000 level of courses. Most colleges have between one and three levels for developmental courses. The three main subject areas generally offered in developmental education courses include English, reading, and math. Basic English composition or basic writing skills courses are designed to develop a student's ability to write complete, grammatically correct sentences and to combine them into unified, coherent, complete paragraphs. An English faculty member or adjunct will teach these courses. Basic Math skills courses are designed to develop a student's computational skills through intensive coverage of arithmetic concepts. Basic Reading skills courses are designed to develop a student's ability to read critically in different formats, to expand vocabulary, and to adjust reading rates. Other courses offered in many institutions include library skills, basic study skills, and personal development (Farmer & Barham, 2001).

The number of levels of developmental courses has a direct impact on students. Research conducted by Bailey, Jeong, and Cho (2008) found that students placed in developmental courses many levels below college curriculum did not complete their courses. Between 40% and 50% of students who placed into two or three levels below college-level did not complete their first developmental courses. More than one-third of all students who did not finish the first developmental course in their sequence did not enroll in a college course in a subsequent semester within three years. For this reason, research about developmental education that considers the effectiveness of enrolling students in any developmental course seems to indicate that doing so has little effect since students are not completing the sequences.

Best practices for developmental education programs evolved from over thirty years of research. Examples of best practices include implementing mandatory assessment and placement, promoting an institutional commitment to developmental education, encouraging professional development for those who work with developmental students, engaging in regular program evaluation, and integrating classroom, learning assistance, and laboratory activities. Professionals in developmental education assess student needs and recommend the type and duration of developmental interventions to help students meet their academic goals. The interventions of professional developmental educators, counselors, and advisors, are usually comprehensive, combining instructional strategies with diagnostic testing, advising, and counseling services (Boylan et al., 1999).

Measuring the impact of developmental education in any given state or region has been problematic for many reasons. Methodological problems in studies comparing developmental and non-developmental students make it difficult to control for all student characteristics, which makes the study results unreliable. Few studies address the problem of unmeasured differences or selection bias in the research. In developmental education literature, three state studies used longitudinal data sets and quasi-experimental methods to derive causal estimates of the effects of developmental education (Bailey, 2009). Bettinger and Long (2005) examined data in Ohio from first-time degree seeking community college students who were eighteen, nineteen, or twenty years of age and who had taken the ACT assessment test. Positive outcomes were reported for students placed in math remediation. Those students were found to be 15% more likely to transfer to a four-year college, and they took approximately ten more credit hours than student with similar backgrounds who were not required to take developmental courses. Martorell and McFarlin (2011), examined students in Texas and found that remediation improved grades in the

first college-level math course but found no effect on transferring to a four-year college or completing a degree. Calcagno (2007) and Calcagno and Long (2008) found that students in Florida who scored just below the cutoff for taking college level math were more likely to persist to their second year than those who scored just above the cutoff. They also found that developmental math students accumulated more total credits (Bailey, 2009). These state studies provide mixed results about the effectiveness of developmental education courses. The Texas and Florida studies suggested students gained little from developmental education courses, and the Ohio study showed only marginal positive results. The results of all three longitudinal state studies were most reliable for students whose placement test results were near the cutoff for college level course placement. The results do not provide much insight into the effectiveness of developmental education for students with weaker skills (Bailey, 2009). These studies also provide an average statewide picture that obscures institutional-level variation.

Institutions that have achieved positive results from developmental education courses or interventions can provide valuable insight to educators if their programs are continuously evaluated and reported. It is also likely that some subgroups may benefit more from developmental programs than others. The Ohio study found positive results for traditional aged students, and the Calcagno (2007) study found positive results for older students. On average, studies show that developmental education as it is practiced is not very effective in overcoming academic weaknesses partly because many students do not finish the sequences to which they are referred (Bailey, 2009). This has justified a broad based effort to reform and rethink developmental education and the findings from research. Based on a review of the literature, Pascarella and Terenzini (1991, 2005) suggested that institutions can aid the academic adjustment of students in developmental education by providing extensive instruction in

academic skills, advising, counseling, and comprehensive support services (Bailey, 2009). Developmental education will evolve and very likely continue to be a part of education in the United States. The use of sound, research-based, developmental education practices and programs must be offered to support the requirements of an increasing number of students taking developmental courses in college today.

The COMPASS Test

The COMPASS Test is a computer or internet-delivered test that evaluates students' skills for placement in college. The subject areas measured by the COMPASS placement tests (ACT, 2012) are mathematics, reading, writing skills, and English as a second language. The COMPASS placement test is not a pass fail test but is used to measure academic skills. The COMPASS test is untimed and computer-adaptive, which means that the test adapts itself to test takers by selecting the next item to be presented based on the basis of performance of the previous items. Adaptive testing was first recognized in the early days of psychological measurement before the development of standardized conventional paper-and-pencil test by Alfred Binet who developed the Binet IQ test (Binet & Simon, 1905). Computer-adaptive testing (CAT) is the more powerful successor to adaptive testing. When a student answers the questions on a computer adaptive test, the testing will stop when the test-taker's ability is determined to the required accuracy.

Using placement tests, students receive numeric scores and course placement is based on whether or not a score is below a cutoff determined by the institution. Annually more than 1300 postsecondary institutions use COMPASS placement tests. Evidence about placement accuracy rates for the COMPASS can be found in a meta-analysis by American College Testing Program (ACT; 2006). Placement accuracy rates generally range between 60% and 80%. As Hughes and

Scott-Clayton (2011) indicate, there is limited evidence on placement test accuracy because much of the evidence on the predictive power of the placement tests comes from the test developers themselves. Success criterion for the validity of the test is usually defined as achieving certain minimum grades in the higher-level courses. Because many students may never enroll in the courses to which they are assigned or drop out before a grade is received, the evidence can be questionable (Bailey et al., 2008). From state to state there is a high degree of variation in which tests are used, how COMPASS tests are administered, whether tests are mandatory or voluntary, and when developmental courses must be completed (Hughes & Scott-Clayton, 2011). COMPASS tests are intended to be used in placing students into college courses. The COMPASS tests are considered valid if the tests measure the skills and knowledge students need to succeed in specific courses. Students who have the skills necessary to succeed are likely to perform satisfactorily on the COMPASS tests, and students without the skills are not. When ACT ran a validity check using 68 institutions, it found the median accuracy rate consisting of the percent of students appropriately placed in either the standard-level or the developmental English course was 66%. This represented a 19% increase in appropriate placement over using no placement test (ACT, 2006).

Procrastination

Procrastination occurs when one delays beginning or completing an intended course of action (Beswick & Mann, 1994; Ferrari, 1993; Lay & Silverman, 1996; Milgram, 1991; Silver & Sabini, 1981). Most definitions of procrastination have in common a postponing, delaying, or putting off of a task or decision. Academic procrastination can best be understood as the expression of procrastination in an academic situation. Academic procrastination is defined as failing to perform an *academic* activity within a desired timeframe or postponing until the last

minute activities one needs to complete (Wolters, 2003). Most procrastination behaviors in an academic situation concern the completion of academic assignments such as preparing for exams, doing homework, and writing papers (Schouwenburg et al., 2004). An alternative definition includes the postponement of academic goals to the point where optimal performance becomes highly unlikely (Ellis & Knaus, 2002). Authors of the instrument most widely used to measure academic procrastination, the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984), defined procrastination as the act of needlessly delaying tasks to the point of experiencing subjective discomfort. This definition identifies procrastination with dilatory behavior (procrastination in the strict sense) but also emphasizes *needlessly* and *subjective discomfort* (Ferrari et al., 1995), reflecting that academic procrastinators tend to experience problematic levels of anxiety associated with their procrastination (Rothblum, Solomon, & Murakami, 1986).

The Latin origin for the term procrastination includes the word *pro* meaning forward, forth, or in favor of and *crastinus* meaning of tomorrow (Klein, 1971). Procrastination behaviors have existed throughout history. In Latin texts the term *procrastinus* was used in reference to military battles indicating that deferred judgment and waiting out the enemy demonstrated a wise course of action. The term procrastination continued to be used commonly in the early 1600s as wisely chosen restraint (Ferrari et al., 1995). By the late 1600s the topic of procrastination began to emerge in religious sermons as ministers described it as a moral sin and rallied their congregations against such evil (Steel, 2007). It was not until around 1750 with the onset of the Industrial Revolution that procrastination took on an even more negative connotation (Ferrari et al., 1995). The more industrialized a society with its need to adhere to schedules and punctuality, the more that society casts procrastination negatively (Milgram, 1992). In 1749 Lord

Chesterfield wrote, “No idleness, no laziness, no procrastination; never put off till tomorrow what you can do today” (Steel, 2007, p. 66).

Procrastination is a personality trait (Schouwenburg et al., 2004). There is even support to indicate that genetic factors may be involved. In a study conducted with 118 sets of identical and fraternal twins, Arvey, Rotundo, Johnson, and McGue (2003) found that 22% of the variance on an item concerning procrastinators was associated with genetic factors. An additional study Elliot (2002) obtained long-term test-retest data for 281 participants who took the Adult Inventory of Procrastination (AIP; McCown & Johnson, 1989). In the time period of 10 years, the correlation was .77, an indication that procrastination is stable enough to be a trait. Academic procrastination occurs because of individual differences factors and is most often related to the Conscientiousness factor in the Big Five model of personality (Costa & McCrae, 1992). The Big Five model of personality includes the factors of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. The Conscientiousness factor includes the facets of order, dutifulness, self-discipline, achievement striving, competence, and deliberation.

Causes and correlates of procrastination have been studied extensively. Steel (2007) reported in a meta-analysis that the causes and correlates for procrastination are divided into four areas: task characteristics, individual differences, outcomes, and demographics. Research looking at task characteristics examines procrastination with an understanding that people who procrastinate voluntarily choose one behavior or task over another. Factors associated with task characteristics of procrastination (task aversiveness) include timing of rewards and punishments.

Procrastination behaviors relating to demographic factors such as age, gender, and year (progression of time) have yielded common views. It is believed that people may tend to procrastinate less as they age and learn to adapt new behaviors because they develop schemes to

overcome procrastination (O'Donoghue & Rabin, 1999). People also learn to avoid procrastination. Ainslie (1992) and Baumeister, Heatherton, and Tice (1994) both found that people tend to procrastinate less with repeated practice. This belief suggests that self-regulation and reduction of procrastination can be improved through exercise, just as a person can strengthen muscles. Self-regulation can be the trump card of personality. If a person's behavior reflects a lack of self-control, regular exertions of self-regulation in the form of activities (i.e., daily diaries, tracking food eaten, and consciously improving posture, can lead to steady reduction in these tendencies (Baumeister et al., 1994).

Studies about gender differences in procrastination yield mixed results (Feingold, 1994). Reviews of the literature and research in a meta-analysis indicate girls score higher on effortful control than boys and thus may procrastinate less (Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006). There is also a possibility that procrastination may be on the rise similar to other forms of self-regulatory behavior failure, e.g., obesity, gambling, and excessive debt (Kachgal, Hansen, & Nutter, 2001; Steel, 2007). Researchers should remain cautious, as with any other self-reported behavioral tendencies, because a trend could represent an overall greater willingness to admit procrastination rather than a true change in behavior within society (Steel, 2007).

Theoretical Framework of Procrastination

Psychoanalytic theories formed some of the earliest explanations of psychological behaviors including procrastination. Freud (1953) believed that anxiety was a warning signal to the ego of repressed unconsciousness and could result in a variety of defenses including procrastination. Freud believed that tasks not completed were avoided because they were threatening to the ego. According to psychoanalytic theories of procrastination, chronic lateness

is related to an unconscious fear of death, viewed as an unconscious attempt to delay mortality by showing contempt for constraints of the clock and calendar (Ferrari et al., 1995).

As views of psychoanalytic theories became less popular, emerging viewpoints about procrastination relied on psychodynamic theories. Psychodynamic theories emphasized the symbolic aspects of procrastination as it relates to previous childhood experiences, especially childhood traumas. It was believed that childhood experiences shaped the cognitive processes of adults. Procrastination in this view indicates that an adult confronted with a task evaluates his or her personal worth, resulting in a tendency to procrastinate rather than face the imposed demands (Van der Kolk, 1987). Ideas about faulty child-rearing also contribute to views about procrastination (MacIntyre, 1964; Spock, 1971). In these interpretations, a permissive parent is likely to produce a nervous underachiever, who is too anxious to meet future self-imposed deadlines. A parent who is too stern may produce an angry child who claims his or her independence and has a disregard for the authority of time constraints (Ferrari et al., 1995).

Academic Procrastination

Views about academic procrastination in student populations evolved from behavioral theories (Ferrari et al., 1995). A behavioral interpretation views academic procrastination as a task specific avoidance behavior. More specifically are Skinner's (1953) ideas about learning and reinforcement theories. Reinforcement theories view learning as the "reassortment of responses in a complex situation" (p. 65). In this view, academic procrastination depends on both punishments and rewards. Procrastination occurs most frequently in students who have either been rewarded for it or who have not been punished enough for the behavior (Ferrari et al., 1995). Students who procrastinate have a history of successful procrastination or at least finding more reinforcing tasks to do than studying (Bijou, Morris, & Parson, 1976).

Over time, ideas about academic procrastination have evolved to include cognitive components and cognitive-behavioral explanations. The first explanation of procrastination from a cognitive-behavioral perspective came from Ellis and Knaus (1977), who related procrastination tendencies to irrational fears and self-criticism (Ferrari et al., 1995). Cognitions that relate to academic procrastination behaviors in students include false estimates of time needed to complete a study task, misconceptions about the influence of discounting on study motivation, and low self-efficacy. These behaviors may be responsible for contributing to continued procrastination. Counselors who adopt this view believe that interventions aimed at changing student's cognitions could break these reinforcing effects (Schouwenburg et al., 2004). Most academic procrastination intervention methods used in colleges today have a basis in psychotherapy and rely on a cognitive-behavioral perspective.

Fear of failure and task aversiveness have received considerable support as two general primary motives for academic procrastination (Blunt & Pychyl, 1998, 2000; Milgram, Batori, & Mowrer, 1993; Schouwenburg, 1993; Solomon & Rothblum, 1984). Task aversiveness is defined in terms of how unpleasant or unenjoyable a task is to perform (Blunt & Pychyl, 2000). Factors associated with fear of failure include anxiety about meeting others' expectations, concerns about meeting one's own standards, and lack of self-confidence (Solomon & Rothblum, 1984). It seems evident that both the nature of the work tasks and students' personal attributes interact to produce a pattern of avoidance in academic procrastination (Schouwenburg, et al., 2004; Walker, 2004).

Academic procrastination is a behavior that is common among college students. Solomon and Rothblum (1984) found that 46% of undergraduates participating in their study procrastinated on writing term papers, 27.6% when studying for exams, and 30.1% when reading

weekly assignments. Onwuegbuzie (2004) reported even higher percentages using the Procrastination Scale-Students (PASS; Solomon & Rothblum, 1984), with 41.7% procrastinating on term papers, 39.3% when studying for exams, and 60% when reading weekly assignments. Academic procrastination also has been associated in college students with depression (Solomon & Rothblum, 1984), guilt (Pychyl, Lee, Thibodeau, & Blunt, 2000), anxiety (Rothblum et al., 1986), neuroticism (Watson, 2001), irrational thinking (Bridges & Roig, 1997), cheating (Roig & De Tommaso, 1995), and low self-esteem (Ferrari, 1992, 2000). Much research indicates that academic procrastination has a negative impact on academic achievement including lower grades and grade point averages (Beck et al., 2000; Clark & Hill, 1994; Ellis & Knaus, 2002; Harriott & Ferrari, 1996; Solomon & Rothblum, 1984; Wesley, 1994).

Low self-efficacy is also highly related to academic procrastination (Blunt & Pychyl, 2000; Ferrari, 2004). A current view of academic procrastination examines a pattern in which frequent delays in tasks is a way of life across settings and situations (Ferrari et al., 1995; Ferrari & Pychyl, 2000). It is believed that procrastination occurs in a variety of students with a wide range of characteristics. In short, there may be no typical profile of academic trait procrastinators to which one might address interventions because the network of psychological variables is so complex. Instead, there may be classes of typical profiles of procrastinators in academic settings such as underachiever procrastinators or perfectionist procrastinators (Ferrari, 2004).

More research about academic procrastination is needed to clarify antecedent factors that predict who will engage in academic procrastination, the role of social systems, and situations that promote the behavior. Additional development of the theoretical models is needed to explain why academic procrastination exists and what to do to help students. Since most of the research on academic procrastination has relied on self-report measures, it will be important in the future

to examine academic procrastination using other objective behavioral indexes and outcomes in the classroom like the time it takes to return class assignments, hours spent working on projects, cheating, and plagiarism as it relates to student performance (Ferrari, 2004).

Social Cognitive Theory

Social cognitive theory (Bandura, 1986) is a psychological theory of human learning and development. Originally referred to as social learning theory (Bandura, 1977), it challenged behavioral theories of the 1950s and 1960s, which emphasized learning by direct reinforcement. One of the main ideas of social cognitive theory is that learning occurs through observation of others (observational learning). Through observing and modeling behaviors, people form ideas about new behaviors, which are coded and used as a guide for action. People use several capabilities to control their self-development and move toward change including symbolizing, modeling, self-regulation, and self-reflection (Schunk, 2001).

Underpinning social cognitive theory is the belief that learning occurs within a social context. Social cognitive theory and its principles are applied extensively in healthcare, media, and education. A model of human functioning and learning known as triadic reciprocality explains that behaviors, cognitive factors, and environmental events all operate as influences and determinants of each other (Bandura, 1977, 1986). Within educational settings social cognitive theory provides a deeper understanding about how children, adolescents, and adults learn and develop. Today, this knowledge has expanded to include students in higher education, particularly relating to two important constructs: self-regulated cognitive development and perceived self-efficacy.

Academic Self-Efficacy

Self-efficacy is a key component of social cognitive theory. Academic self-efficacy is an individual's belief in his or her ability to successfully achieve an academic goal (Bandura, 1977). Bandura (1986) defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). Self-efficacy has been linked to motivational constructs like persistence and goal setting (Multon et al., 1991; Schunk & Ertmer, 1999), self-regulated learning (Pintrich & DeGroot, 1990), achievement (Pajares & Miller, 1995), and affective behaviors such as stress, distress, and anxiety (Finney & Schraw, 2003).

Efficacy beliefs operate with other sociocognitive factors governing human adaptation and change (Bandura, 1993). Effective functioning requires both skills and efficacy beliefs, meaning that a person must continuously adapt their subskills to manage ever-changing situations. Self-efficacy is not viewed as a trait, but as a differentiated set of self-beliefs that link to different situations. Efficacy beliefs determine a person's actions in concert with the self-regulation of thought processes, motivation, and affective and physiological states (Bandura, 1997).

People gain self-knowledge about their efficacy from four sources of information: performance attainments, vicarious experiences of observing performance of others, verbal persuasion, and their own physiological state (Bandura, 1986). Actual performance offers the most valid source for knowledge about self-efficacy. A person may also acquire knowledge about their own self-efficacy by observing others succeeding. Observing similar others succeed raises the observer's self-efficacy and motivates them to try tasks (Schunk, 2004).

Theoretical Framework of Academic Self-Efficacy

Social cognitive theory explains that social or environmental factors can affect many personal variables such as learner's goals, attributions, self-evaluations of learning progress, and self-regulatory processes (Schunk, 2004). Internalization of social variables is part of a learner's transformation. Learners alter and adjust their social environments to enhance achievement by increasing skills in a social-to-self transformation process (Schunk, 1999).

Typically, students who perform well have confidence in their learning capabilities and expect positive outcomes for their efforts. Bandura (1986) believed that self-efficacy exerts a more substantial impact on academic performance than skill development because it increases the quality of thinking, increases the student's acquisition of cognitive skills, and increases the student's persistence in their search for solutions. Academic self-efficacy has been linked to academic grades (Elias & Loomis, 2000; Lent, Brown, & Larkin, 1986), academic major selection (Betz & Hackett, 1983), academic major persistence (Lent et al., 1984), and academic motivation (Bandura, 1977).

According to Bandura (1997), academic self-efficacy is a better predictor of intellectual performance than skills alone. The influence of self-efficacy beliefs in academic functioning has strengthened Bandura's claim over time that self-efficacy plays a role in human agency. Students' behavior can more often be accurately predicted by self-efficacy beliefs rather than what they are actually capable of accomplishing. Self-efficacy in educational research has received much attention especially in studies of academic motivation (Pintrich & Schunk, 1995). In academics, efficacy can influence the choice of activities that student's make. Students with low efficacy for learning may avoid attempting tasks and those with high self-efficacy for learning may participate more eagerly. Efficacy also effects student effort and persistence.

Students who feel efficacious about learning expend greater effort and persist longer than students who doubt their capabilities, especially when they encounter difficult situations (Schunk, 2004).

There are three main areas of focus for self-efficacy research in academics. These include influence on career choices (Hackett, 1995), self-efficacy beliefs of teachers related to their instructional practices (Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998), and student's self-efficacy beliefs as they have been correlated with other motivational constructs and academic performance (Pajares, 1996, 1997). Even though efficacy beliefs play a vital role in social cognitive theory they are not the sole determinant of action because they operate in concert with other sociocognitive factors (Bandura, 1993). Self-efficacy should not be viewed as a trait but as a differentiated set of self-beliefs that link to different situations. Efficacy beliefs influence control over a person's actions and are combined with the self-regulation of thought processes, motivation, and affective and physiological states. Effective functioning requires both skills and high efficacy beliefs, and to achieve continuous effective functioning, a person must continuously adapt subskills to manage ever-changing situations. Self-influences can affect social environments for example when learners decide they need more instruction on a skill and seek out a qualified teacher. Internalization of social variables to self-influences is part of the learner's transformation into self-regulatory control. With increased skill acquisition the social-to-self transformation process becomes a bi-directional interactive process as learners alter and adjust their social environments to enhance achievement (Schunk, 1999).

Self-efficacy and outcome expectations are not the same thing. Self-efficacy refers to perceptions of one's capabilities to *produce actions*, while outcome expectations refer to beliefs about the *anticipated outcomes* of those actions. These concepts are distinct but are often related

(Schunk, 2004). The difference in outcome expectations and self-efficacy beliefs is illustrated with an example. If a student has high self-efficacy for learning they may still expect a low grade because they think the teacher does not like them. Self-efficacy is also often confused with self-concept. Academic self concept about content areas focuses on the past and implies that skills are fixed while academic self-efficacy focuses on the prospective performance and implies that skills are dynamic, generative capabilities (Lent, Brown, & Gore, 1997).

Academic self-efficacy is a concept that fits well with constructs of school learning and other achievement situations. As a key component of social cognitive theory, social or environmental factors may affect many personal variables such as learner's goals, attributions, self-evaluations of learning progress, and self-regulatory processes. Typically, students who perform well have confidence in their learning capabilities and expect positive outcomes for their efforts.

Academic Achievement

Academic achievement or student achievement is defined by the Student Learning, Student Achievement Task Force (Rubin, 2011) as "the status of subject-matter knowledge, understandings, and skills at one point in time" (p. 30). The concept of academic achievement has changed over time. Post-World War II instruction in American schools was heavily influenced by the concept of mental ability as an understanding of student functioning. Thurston's (1938) development of the Primary Mental Abilities Test was touted as providing the full measure and range of student abilities. During the 1960s, social and environmental formulations of achievement rose to prominence. There was less reliance on grading for promotion, more flexible curricular requirements, and added concern about student's social adjustment. Declines in educational standards and declining measures in national achievement

brought a new focus on a *back to basics* approach to learning aimed at raising standards, including the number of courses required in high schools and colleges, stringency of testing for school entrance, promotion, and graduation, and the qualifications for hiring teachers (Zimmerman, 1989).

Academic achievement is typically assessed in one of three ways: school grades, standardized test scores, or teacher ratings (Pinxten, Fraine, Van Damme, & D'Haenens, 2010). Teacher ratings are obtained from teachers about their students' levels of academic achievement, usually using a Likert scale. An example using teacher ratings is a study by Guay, Marsh, and Boivin (2003), which asked teachers to rate their students' achievement as (a) far under the mean, (b) slightly under the mean, (c) at the mean, (d) slightly above the mean, and (e) far above the mean. This type of rating is referred to as an indirect teacher rating given that teachers are not asked to estimate achievement test performance (Pinxten et al., 2010). Ratings may be used in instances where formal grades are not given, especially for early school years or where teachers' grades are idiosyncratic to each teacher (Guay et al., 2003). Ratings are not preserved in school records, whereas grades are assigned by teachers and are kept as official school records.

Grades are reflective of achievement in a particular course and in a snapshot of time (Pinxten et al., 2010). Grades are subjective as they may be influenced by a teacher's lenience or harshness and by a teacher's tendency to grade on a curve (Skaalvik & Hagtver, 1990). School grades may reflect more than just a student's course achievement level. Activities that teachers think should constitute academic achievement and how to handle student efforts varies from teacher to teacher. In addition grades often try to communicate multiple pieces of information about students that cannot be contained within a single academic mark (Allen, 2005). Grades

create a public record of a student's academic achievement that can communicate to others the level of mastery of a subject.

Curriculum-based standardized tests are also used to assess achievement. The most commonly used measure of student achievement is a standardized test. Standardized assessment measures are specific to areas of achievement and are best understood as one measure of a subset of a body of skills or knowledge. Although there are disadvantages to using standardized tests, this type of achievement indicator has some advantages over teacher ratings and school grades. Results from standardized tests can be generalized and compared over teachers, classes, and schools (Pinxten et al., 2010). There is some debate in the literature about whether to use standardized tests or grades as an indicator of academic achievement.

CHAPTER 3

METHOD

This chapter describes the methods and procedures used in this study. Social cognitive theory (Bandura, 1986), a psychological theory of human learning and development, provided the theoretical foundation for this study. Social cognitive theory explains that student learning occurs through an interaction of behavior, cognitive factors, and the environment. Bandura believed that as students learn they self-direct or self-regulate their environment depending on their perception of their capability to deal with their current reality or self-efficacy. One self-regulatory behavior that has been studied extensively is academic procrastination and its effect on student achievement. Academic procrastination in college students demonstrates a lack of self-control and, when combined with lower self-efficacy for academics, can lead to lower academic achievement (Bandura, 1997; Burka & Yuen, 1983; Judge & Bono, 2001).

Purpose of Study

The purpose of this correlational study was to explore the relationship between academic self-efficacy beliefs, academic procrastination, and prior academic skills on course outcomes for students who must take developmental college courses. Predictor variables of academic self-efficacy, academic procrastination, and prior academic skills were analyzed with the criterion variable academic achievement.

Research Questions

1. What are the academic self-efficacy beliefs, academic procrastination traits and prior academic skills of college students in a developmental course?
2. How do task aversiveness and fear of failure factors explain the underlying reasons developmental education students procrastinate in college as represented by the Procrastination Assessment Scale-Students (PASS)?
3. What is the relationship between academic self-efficacy, academic procrastination, and prior academic skills to academic achievement of college students in a developmental course?

Design

This correlational study explored relationships between academic achievement for students in an English developmental course and three predictor variables, including academic self-efficacy, academic procrastination, and prior academic skills. A correlational design was appropriate because the relationship between a single criterion variable and multiple predictor variables was of interest. Correlational designs are often used to study problems in education and the social sciences because several variables may influence a pattern of behavior (Gall, Gall, & Borg, 2007). Correlation studies can produce useful findings, but "lines of research and theory building" (p. 341) are necessary to understand fully the variables and linkages to behavioral patterns. Correlational designs are best utilized when a set of predictor variables that comprise a meaningful variable system – one in which the variables share a meaningful construct – are determined (Huberty & Petoskey, 1999).

Advantages of correlational research designs include the ability to analyze a large number of variables in a single study, provide information concerning the degree of the relationships

between variables being studied (Gall et al., 2007), the ease of administration of data collection, and ability to be repeated over time. One major weakness of a correlational design is that it is useful only in establishing relationships and cannot establish causation. When analyzing correlation studies, researchers must be cautious because extreme observations can strongly influence both the *r-value* and regression line. In addition, possible lurking variables, or variables that have an important effect but are not included among the predictor variables, could explain observed associations between variables (Moore, 2007).

A convenience sample of students enrolled in developmental college English courses (English 0099) at a 4-year college in the state of Georgia during a single semester was used for this study. A convenience sample was selected because the target group was easily accessible and willing to participate (Gall et al., 2007). The population of students who are enrolled in all developmental college English courses in the State of Georgia would not be easily identifiable or accessible. Results from this sample, because it was one of convenience, cannot be generalized. Students enrolled in the course were asked to complete the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984), the Academic Self-Efficacy Scale (ASES; Elias & Loomis, 2000), and a short demographic questionnaire.

Students in English 0099 at the college used in this sample are typically first-year students that do not have SAT or ACT scores high enough to place them into a college-level English composition course. During the admissions process, college personnel determine whether the student's SAT or ACT meets minimum scores for placement into college-level English or if further testing using the COMPASS placement test is required. Using the COMPASS Writing Skills Placement Test, students may be placed into either College English

1101 or English 0099, the developmental course for English. After placement, students register for the appropriate level of English course picking preferred times and days.

Participants

The target sample for this study was comprised of all students enrolled in a developmental college-level English course during a single semester at a 4-year college in the state of Georgia. This sample was similar to other students in the state of Georgia who take developmental courses. In the state of Georgia there were 46,500 first-year students enrolled in public colleges in fall 2008. Of those 46,500 students, 25% or 11,603 were required to take a developmental course (University System of Georgia, 2008). Participants for this study were enrolled in a 4-year college which had approximately 7,700 students. In fall 2011, 2% of students enrolled were joint-enrollment students, 57% freshmen, 17% sophomores, 12% juniors, and 11% seniors. The college was comprised of 54% women and 46% men with an average age of 23, many coming directly from high school. The college student population consisted of 45% White non-Hispanic, 31% Black non-Hispanic, 11% Hispanic/Latino, and 8% Asian. Twenty-five percent of new students were placed into a developmental course. This figure is comparable to other colleges in the state of Georgia where 25% of college freshmen in 2008 were required to take a developmental course. When only 4-year colleges in Georgia are considered, of those entering 4-year colleges directly from high school, 14% enrolled in developmental courses increasing to 31.5% for students receiving Pell Grants (Complete College America, 2011). Instructors in 13 English 0099 classrooms provided permission to visit their classes and conduct the study. Approximately 15 students were enrolled in each of 13 classes for a total of 195 potential participants. Of the potential 195 participants, 151 completed surveys resulting in a 77% participation rate. Four students withdrew from the course, and an additional 7 students

provided either missing or incomplete data resulting in a sample of 140 students. After 17 outliers were removed from the sample, 123 students remained for data analysis.

The final sample was analyzed using SPSS release 19.0 software (IBM, 2010). A sample size of 123 participants is considered sufficient for a multiple correlation study using Cohen's (1992) minimal sample size table. Cohen's (1992) table is based on four criteria; the significance criterion, either an estimate or the known population effect size, statistical power, and the number of predictor variables or predictors. An estimation of a medium effect size of .30, with an alpha level of .05, power of .80, and 3 predictor variables required a minimum of 76 participants. Sample demographic information is presented in Table 1. A majority of participants were traditional age college freshmen with over 65% either 18 or 19 years of age. A majority of the participants were African American and/or women enrolled in only one developmental education course.

Table 1
Demographic Characteristics for Study Participants (N = 123)

Variable	N	%[a]
Race/ethnicity		
American Indian or Alaska Native	3	2.4
Asian	3	2.4
Black or African American	76	61.8
Hispanic or Latino	18	14.6
White or Caucasian	20	16.3
Other	3	2.4
Age		
18	27	22.0
19	54	43.9
20	14	11.4
21-25	16	13.10
Over 25	12	.09
Gender		
Men	45	36.6
Women	78	63.4
Number of developmental courses		
1	54	43.9
2	49	39.8
3	20	16.3

Note. [a]*Percent of sample (N = 123).*

Instrumentation

Students completed two survey instruments (see Table 2), the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984) and the Academic Self-Efficacy Scale (ASES; Elias & Loomis, 2000). They were also asked to complete a short demographic questionnaire. Previous research and literature has claimed that self-efficacy beliefs can relate to or transfer across different performance tasks, especially when they require similar subskills. An overall academic self-efficacy scale is justified to increase the practical utility for the measure (Lent & Hackett, 1987; Multon et al., 1991). Self-efficacy should also generalize across academic domains when commonalities are cognitively structured across activities. When students realize that extra effort and persistence result in academic progress, they will likely make similar connections to other subject areas (Pajares, 1996).

Quality measures for academic self-efficacy have evolved from many areas, but mainly from career decision making self-efficacy literature and scientific and mathematics fields. The ASES was based on two previously used scales, the Self-Efficacy for Broad Academic Milestones scale developed by Lent et al. (1997) and the Self-Efficacy ER-S measure developed by Lent et al. (1986). Scores from the Broad Academic Milestones scale produced a coefficient alpha of .88. The ER-S scale produced a test-retest correlation over an 8-week period of .89, and a coefficient alpha used to estimate internal consistency reliability was .89. In the original development of the ASES, Elias and Loomis (2000) found coefficient alpha scores of .93 for Part 1 and .91 for Part 2.

College students' academic self-efficacy was measured using the Academic Self-Efficacy Scale (ASES; Elias & Loomis, 2000). Students were asked to rate their confidence for completing specific items that related to an academic task using a 10-point Likert scale

representing confidence levels from 0 (no confidence at all) to 9 (complete confidence). High scores indicated high academic self-efficacy. The ASES consists of two parts. The first part includes 23 items and addresses students' confidence in their ability to earn a grade of B in specific individual courses such as physics, psychology, composition, and tennis. The criterion of earning a letter grade of B was included by ASES authors (Elias & Loomis, 2000) to provide respondents with a concrete criterion to consider. The second part of the ASES contains 12 items and addresses academic milestones that students encounter during college. For example, students indicated how confident they were in their ability to complete 45 semester hours of upper-division (3000 and above) level courses. Items from the ASES were summed to provide an overall score for academic self-efficacy.

Academic procrastination levels were measured using the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984). The PASS is the most widely used measure to explore procrastination on academically-related tasks (Ferrari et al., 1995). It was developed to include the frequency of both cognitive and behavioral antecedents to academic procrastination. Studies exist indicating that scores from the PASS possesses adequate reliability and validity. Onwuegbuzie (2004) reported a coefficient alpha score reliability estimate of PASS scores of .84 (95% CI = .80, .88) for the procrastination scale. Ferrari (1989) found a coefficient alpha and test-retest reliability of a 6-week interval yielding .74 for prevalence of procrastination using the PASS. A Turkish version of the PASS (Ozer, Demir, & Ferrari, 2009) produced a Cronbach's alpha for scores produced from the entire PASS of .86.

When the PASS was constructed, there were 13 possible reasons for academic procrastination including perfectionism, evaluation anxiety, low self-esteem, task aversiveness, laziness, time management, difficulty making decisions, peer pressure, dependency, lack of

assertion, risk taking, fear of success, and rebellion against control. After Solomon and Rothblum (1984) conducted a factor analysis, they found that the two most often found antecedents to academic procrastination were *fear of failure* and *task aversiveness*. These factors accounted for most of the variance. Authors of the PASS (Solomon & Rothblum, 1984) recommended grouping five survey items together to analyze *fear of failure*. Fear of failure items on the PASS include reasons for procrastination (e.g., "you were concerned the professor would not like your work, you were worried you would get a bad grade, you didn't trust yourself to do a good job, you were concerned you wouldn't meet your own expectations, you set very high standards for yourself and you worried that you wouldn't be able to meet those standards"). Three survey items on the PASS were grouped together and are referred to as *task aversiveness*. Task aversiveness items include reasons for procrastination (e.g., "you really disliked writing papers, you didn't have enough energy to begin the task, and you felt it just takes too long to write a paper"). The remaining factors consist of two or fewer items and account for low amounts of variance.

The PASS is a two-part, 44-item scale developed in a study of 342 students measuring academic procrastination levels in a variety of academic pursuits. The first part of the PASS assesses the prevalence of procrastination in six academic areas, including (a) completing a writing assignment, (b) studying for exams, (c) keeping up with weekly reading assignments, (d) performing academic administrative tasks, (e) attendance tasks, and (f) school activities in general. This section of the PASS is used to ascertain the frequency of procrastination on tasks (e.g., "To what degree do you procrastinate on writing a term paper?"). Participants also use a 5-point Likert scale to rate the degree that procrastination on the task is a problem, and to what extent they want to decrease their tendency to procrastinate on the task. The PASS items

pertaining to (a) the frequency with which respondents procrastinate on tasks, and (b) whether their procrastination on the task is a problem were summed to provide an overall measure of academic procrastination, with total scores ranging from 12 to 60. Higher scores indicated higher levels of academic procrastination. The second part of the PASS describes a procrastination scenario, *delay in completing a writing assignment*, and then provides statements of many possible reasons for procrastinating. Students were asked to think of the last time they procrastinated on a writing assignment and to indicate how much each of 26 separate reasons reflected why they procrastinated. Respondents rated each statement on a 5-point Likert scale depicting the reasons they procrastinated (1 = Not at all reflects why I procrastinated; 5 = Definitely reflects why I procrastinated).

Student's *prior academic skills* were measured using scores on the Computer-Adapted Placement Assessment and Support Services (COMPASS; ACT, 2012) Writing Skills Placement Test. The COMPASS placement tests help educators evaluate incoming students' skill levels in many academic areas including reading, writing, math, and English as a Second Language. The criterion variable, *academic achievement* (end-of-course grade), was recorded as a percentage of 100 in a developmental college English course. The final course grade is an equal measure of achievement at the end of the course for all students in English 0099.

To address potential validity issues, a pilot study was conducted with a group of 10 college students to determine whether the ASES and PASS survey items possessed content validity. This process provided an opportunity to ensure that the ASES and PASS survey instruments were easy to understand and the directions were clear for the intended student sample. Gall et al. (2007) recommended a thorough pilot test of survey instruments before conducting research. Over a period of two weeks surveys were administered and reviewed by the

student panel. Suggested wording changes were made to items on the instruments after feedback. In addition, directions for completing the surveys were modified to eliminate confusion. Final survey packets were assembled and consisted of the demographic questionnaire, the ASES and PASS instruments, and two copies of the consent form.

Cronbach alpha was calculated for both the PASS and the ASES instruments to determine inter-item reliability. Because both instruments used Likert scales, the Cronbach alpha statistic was deemed the most appropriate indicator for inter-item reliability (Gloeckner, Gliner, Tochterman & Morgan, 2001; Huck, 2004). A Cronbach alpha score of .935 was calculated for the ASES. For the PASS Cronbach alpha scores of .841 was determined for Part 1 of the PASS and .788 for Part 2. A high value for internal consistency coefficient alphas indicate good reliability (Huck, 2004). A reasonable Cronbach alpha statistic above the .70 threshold indicated a reliable measure for both Academic Self-efficacy (ASES) and Academic Procrastination (PASS). Table 2 lists the instruments used in this study describing the construct being measured, the name of the instrument, a description of each instrument, score ranges, and the indicators for scores.

Table 2

Data Collection Instruments, Score Ranges, and Indicators

Construct	Instrument	Description	Score range	Indicators
Academic self-efficacy	Academic Self-Efficacy Scale Students (ASES)	Confidence for completing specific items relating to an academic task	33-330	High scores = high academic self-efficacy
Academic procrastination	Procrastination Assessment Scale-Students(PASS)	Overall procrastination on academically related tasks	12-60	High scores = high academic procrastination
Prior academic skills	Computer-Adaptive Placement Assessment and Support Services Test (COMPASS Writing Skills Placement Test)	Academic skills in English	0-79 (indicates cutoff scores for ENGL 0099course)	High scores = high skill levels in writing
Demographics	Demographic Questionnaire	Characteristics of Students	Age Gender M/W Race/Ethnicity Number of developmental courses 1-3	Descriptive
Academic achievement	End-of-course grade	Academic skills in developmental English course	0-100%	High scores = higher achievement in ENGL 0099 course

Procedure

Permission to conduct this study was obtained by the Human Subjects Office, Office of the Vice-President for Research at the University of Georgia and the Institutional Review Board at Georgia Gwinnett College, the college where the study was conducted. Students' identification remained confidential throughout the study. Student's surveys were matched to student records to determine COMPASS test scores, therefore students needed to be identified on the surveys. Students' names were not used for identification purposes. A coding system, reversing the last 4 digits of the student identification number, was used instead to protect confidentiality. A master list with the student's code was used to link the student to survey questionnaires. This list was maintained during the data collection period.

Course instructors were asked during a departmental meeting and through email to allow access to their classrooms and allocate 20 minutes of class time for students to participate in this study. If the instructor agreed, a date and time was established for a classroom visit. During each classroom visit, a verbal script was read aloud providing an explanation of the general purpose of the study and requesting participation. Students were not offered incentives for their participation. Students were informed that the survey would take approximately 20 minutes, was voluntary, and would not affect their course grade. Students agreeing to participate were distributed a packet of materials including the two survey instruments, the PASS (Solomon & Rothblum, 1984) and ASES (Elias & Loomis, 2000), a demographic questionnaire, and consent forms. Surveys were completed while the researcher remained in the classroom, and collected once students completed them. Students who were late to class did not participate in the research due to time constraints.

Data was collected over a period of two months beginning four weeks into the semester. It was estimated that four weeks provided enough time for students to acclimate to a new class and college in general. Once the data collection period ended, data from the surveys was summed to determine overall levels of academic self-efficacy, academic procrastination, and the mean scores for fear of failure and task aversivenss. Demographic information was recorded from the demographic questionnaire. Finally, schools records were accessed to obtain each student's scores on the COMPASS Writing Skills Placement Test.

Data Analysis

Data was analyzed using the Statistical Software Package for the Social Sciences (SPSS; IBM, 2010) release 19.0. A multiple correlation analysis (MCA, Huberty & Petosky, 1999) was deemed the best approach to examine the relationships between students' academic achievement and academic self-efficacy, academic procrastination, and prior academic skills. An MCA is used to (a) calculate the strength of relationships, (b) conduct a statistical test of the strength of these relationships, (c) interpret the relationship between a criterion variable and what is represented by collection of the predictor variables, and (d) determine the relative contribution of predictor variables to the relationship (Huberty & Petoskey, 1999). Academic achievement, the criterion variable, was analyzed with student's academic self-efficacy scores as measured by the ASES (Elias & Loomis, 2000), procrastination levels identified by the PASS (Solomon & Rothblum, 1984), and their COMPASS Writing Skills Placement test score obtained by school records. Pearson-Product-Moment correlation coefficients were used to analyze the relationship questions in this study. The Pearson *r* statistic reveals if relationships in a correlation study are strong or weak, positive or negative. Descriptive statistics were used to describe participants' academic self-efficacy scores, academic procrastination traits, prior academic skills, and

academic achievement (end-of-course grades). Descriptive statistics were also used to identify which procrastination antecedent, either fear of failure or task aversiveness, was the most important reason students procrastinated. Demographic and descriptive information was also collected about each student's gender, race/ethnicity, age, and number of developmental courses enrolled.

The criterion variable, academic achievement (end-of-course grade), was analyzed using a multiple correlation analysis (MCA) to determine relationships pertaining to the predictor variables including academic self-efficacy, academic procrastination, and prior academic skills. In an MCA, it is important to understand how the criterion variable is related to the construct defined by the linear composite of predictor variables. This was addressed by examining the simple correlations between each of the predictor variables and the linear composite or the definition of the construct defined by the composite (Huberty & Hussein, 2001). In keeping with recommendations by Huberty and Petoskey (1999), the estimation of the population product moment correlation, ρ^2, was based on R^2 adjusted, not R^2, to reduce bias in estimation. To complete the data analysis, a comparison of the absolute values or squares of the structure *r's* was made to determine the relative contribution of the predictor variables to the definition of the constructs represented in this study (Huberty & Hussein, 2001). A structure *r* is the correlation between each of the items in a construct (meaningful collection of items of interest) and the linear composite of the construct. A composite construct for the contributions to academic achievement variables was compiled and listed the variables indicating their importance to the criterion variable academic achievement. The last step of the MCA required an ordering of the variables to determine the relative contribution of the predictor variables to the criterion variable. Huberty and Petoskey's (1999) method to determine variable importance entails conducting an

MCA for each of the determined predictor variables and then deleting each variable, in turn, to determine the R^2 adjusted value based on the remaining variables. The variable which, when deleted, causes the largest drop in R^2 adjusted value is considered most important. Since an MCA was conducted, all variables were used as they provided a meaningful collection of variables to the construct of academic achievement. To analyze the effect size, Huberty and Hussein (2001) recommended interpreting results using an effect size value to see if results obtained are better than chance value. The formula to estimate the effect size index value is $Esc = R^2$adj-$p/(N-1)$, where p denotes the number of predictor variables and N denotes sample size. Table 3 details the overall approach to this study including research questions, predictor variables, the criterion variable, and statistical methods used.

Table 3

Data Analysis for Research Questions

	Research questions	Predictor variables	Criterion variable	Data analysis
1.	What are the academic self-efficacy beliefs, academic procrastination traits, and prior academic skills of college students in a developmental course?	Academic self-efficacy, Academic procrastination, Compass score for Writing Skills Placement Test		Means, standard deviations, percentile
2.	How do task aversiveness and fear of failure factors explain the underlying reasons developmental education students procrastinate in college as represented by the Procrastination Assessment Scale-Students (PASS)?	Procrastination antecedents; fear of failure, task aversiveness		Means, standard deviations, percentile
3.	What is the relationship between academic self-efficacy, academic procrastination, and prior academic skills to academic achievement of college students in a developmental course?	Academic self-efficacy, Academic procrastination, Compass score for Writing Skills Placement Test	Academic achievement (end-of-course grade) recorded as percentile	Multiple correlation analysis (MCA), Pearson correlation matrix

CHAPTER 4

RESULTS

This chapter presents findings of the relationships between academic self-efficacy, academic procrastination, and prior academic skills on academic achievement for college students enrolled in a developmental education course. The purpose of the study is restated followed by descriptive statistics and an analysis of the 123 study participants in response to the first two research questions. Question three is answered by the results of a multiple correlation analysis (MCA) examining the 3 predictor variables and 1 criterion variable in this study.

Purpose of Study

The purpose of this correlational study was to explore the relationship between academic self-efficacy beliefs, academic procrastination, and prior academic skills, on course outcomes for students who must take developmental college courses. Predictor variables of academic self-efficacy, academic procrastination, and prior academic skills, were analyzed with the criterion variable academic achievement. The purpose of the study was to address the following research questions:

1. What are the academic self-efficacy beliefs, academic procrastination traits, and prior academic skills of college students in a developmental course?
2. How do task aversiveness and fear of failure factors explain the underlying reasons developmental education students procrastinate in college as represented by the Procrastination Assessment Scale-Students (PASS)?

3. What is the relationship between academic self-efficacy, academic procrastination, and prior academic skills to academic achievement of college students in a developmental course?

Analysis of Research Questions

Two surveys and a demographic questionnaire were administered to students enrolled in a developmental college English course (ENGL 0099) at a 4-year college in the state of Georgia. Participants completed the surveys during class visits over a period of two months from January 2012 through February 2012. A total of 151 surveys were collected. The final sample consisted of 123 participants once 11 surveys with incomplete or missing responses and 17 outliers were removed. Outliers were removed to reduce error rates of influence and improve accuracy of the correlation measure (Zimmerman, 1994).

Research Question One

The first research question asked, "What are the academic self-efficacy beliefs, academic procrastination traits, and prior academic skills of college students in a developmental course?" Descriptive data are presented in Table 4. Participants' mean score for academic self-efficacy was in the high range, representing 78% of the possible total range. Mean scores for academic procrastination and prior academic skills were in the middle of the possible score range. The age of the sample was typical of students enrolled in a freshmen course. While some participants' end-of-course grades were very low (10%) and some very high (96%), the average percentile grade was 73.80. Most students were enrolled in one developmental course. Details of the predictor variables academic self-efficacy, academic procrastination, and prior academic skills are discussed in the following sections.

Table 4

Descriptive Statistics for Criterion and Predictor Variables

Variable	Minimum	Maximum	*M*	*SD*
Academic self-efficacy (score range 33-330)	172	321	258.92	31.65
Academic procrastination (score range 12-60)	12	54	31.01	7.62
Prior academic skills (COMPASS Writing Skills Placement Test score range 0-99)	4	97	50.76	18.28
Age	17	47	20.86	5.63
Number of developmental courses	1	3	1.73	.74
Academic achievement[a] (end-of-course grade)	10	96	73.80	17.63

[a]Range from 0-100 reflecting grade at end of term.

Academic self-efficacy. Academic self-efficacy beliefs are individuals' beliefs in their ability to achieve an academic goal (Bandura, 1977). Students enrolled in the developmental college English course were administered the Academic Self-Efficacy Scale (ASES; Elias & Loomis, 2000) and asked to rate their confidence for completing specific items relating to an academic task using a 10-point Likert scale. Possible scores ranged from 33-330, with higher scores indicating higher academic self-efficacy. Participants' mean scores ranged from 172 to 321. Participants' overall mean score was 258.92 on the ASES out of a total possible score of 330. This indicated a very high student perception of academic self-efficacy. Age and gender differences indicated that men and 21-25 year olds had higher scores for academic self-efficacy. Asian students had the highest academic self-efficacy and American Indian or Alaska natives the lowest. Surprisingly, the students enrolled in more developmental courses had higher academic

self-efficacy. Table 5 presents students' academic self-efficacy indicated by means, standard deviations, and percentiles for age, gender, race/ethnicity, and number of developmental courses.

Table 5

Academic Self-Efficacy for College Students in a Developmental Course

Measure	*M*	*SD*	%[a]
Overall level of academic self-efficacy (range 33-330)	258.92	31.65	100%
Age			
18	254.96	34.33	22.0%
19	259.94	31.32	43.9%
20	250.78	30.17	11.4%
21-25	260.89	24.26	13.10%
Over 25	254.70	35.00	9.6%
Gender			
Men	262.22	32.76	36.6%
Women	257.03	31.04	63.4%
Race/ethnicity			
American Indian or Alaska Native	244.67	46.72	2.4%
Asian	286.00	6.08	2.4%
Black or African American	256.76	32.49	61.8%
Hispanic or Latino	262.83	23.69	14.6%
White	264.90	32.73	16.3%
Other	237.67	39.82	2.4%
Number of developmental courses			
1	259.68	32.17	43.8%
2	255.65	32.05	39.8%
3	264.90	29.72	16.3%

Note. [a]*Percent of sample (N = 123).*

Academic procrastination. Academic procrastination is defined as failing to perform an academic activity within a desired timeframe or postponing until the last minute activities one needs to complete (Wolters, 2003). Students were administered the Procrastination Assessment Scale-Student (PASS; Solomon & Rothblum, 1984) and for the first part of the PASS used a 5-point Likert scale to indicate the frequency they procrastinate on six academic task areas including completing a writing assignment, studying for exams, keeping up with weekly reading

assignments, performing administrative tasks, attendance tasks, and school activities in general. Students were also asked to rate the degree that procrastination on these tasks were a problem for them. These two areas were summed to provide an overall academic procrastination level. Possible scores ranged from 12-60, with higher scores indicating higher levels of academic procrastination. Participants' overall mean score of 31.02 on the PASS was in the middle of possible scores, neither high nor low. The first part of the PASS revealed procrastination traits of the six academic areas students were most likely to procrastinate. Using a 5-point Likert scale students who selected nearly always or always procrastinate on these tasks were counted in the results. Students in this sample indicated they are most likely to procrastinate on studying for exams. Solomon and Rothblum (1984) found in the original study using the PASS instrument that most students in their sample procrastinated on completing a writing assignment (46%), followed by weekly reading assignment (30%), and 28% on studying for exams. Age and gender differences indicated that older students and men had higher academic procrastination levels. Table 6 presents students' overall level of academic procrastination indicated by the means, standard deviations, and percentiles for age, gender, race/ethnicity, and number of developmental courses.

Table 6

Prevalence of Academic Procrastination for College Students in a Developmental Course

Measure	*M*	*SD*	%[a]
Prevalence of overall academic procrastination (range 12-60)	31.02	7.62	100%
Age			
18	30.00	7.45	22.0%
19	31.92	7.26	43.9%
20	27.28	8.13	11.4%
21-25	30.50	32.60	13.10%
Over 25	32.40	8.18	9.6%
Gender			
Men	32.33	7.56	36.6%
Women	30.25	7.60	63.4%
Race/ethnicity			
American Indian or Alaska Native	35.00	12.53	2.4%
Asian	23.00	10.15	2.4%
Black or African American	31.16	7.44	61.8%
Hispanic or Latino	30.50	6.98	14.6%
White	31.40	7.50	16.3%
Other	32.00	11.36	2.4%
Number of developmental courses enrolled			
One	32.85	7.32	43.8%
Two	29.88	7.80	39.8%
Three	28.85	7.18	16.3%
Academic procrastination by task			
Completing a writing assignment			32.1%
Studying for exams			44.3%
Weekly reading assignment			35.0%
Academic administrative tasks			11.4%
Attendance tasks			13.6%
School activities in general			28.6%

Note. [a]*Percent of sample (N = 123).*

COMPASS Writing Skills Placement Test as indicator for success. Students' scores on the COMPASS Writing Skills Placement Test were calculated. Possible scores ranged from 0-99. Participants in this sample scored a wide range between 4 and 97 points. The mean COMPASS Writing Skills Placement Test score for this sample was 50.76 (*SD* = 18.28). According to COMPASS test developers (ACT, 2006), evidence of validity is defined by the

success criterion as achieving certain minimum grades in higher-level courses. Evidence of predictive validity of the COMPASS test is considered reasonably good at predicting whether students are likely to do well in college-level course work, if the goal is to ensure a minimum pass rate in college-level classes (ACT, 2006; Hughes & Scott-Clayton, 2011). In this sample, the students' mean scores at the time of placement represented the middle of the score range.

Research Question Two

Fear of failure and task aversiveness. Further analysis of the sample provided results to answer the second research question, how do task aversiveness and fear of failure factors explain the underlying reasons developmental education students procrastinate in college as represented by the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984). To gather this data, the second part of the PASS described a procrastination scenario, delay in completing a writing assignment. Students were asked to indicate which of 26 separate reasons reflected why they procrastinated using a 5-point Likert scale. The two most often found antecedents to academic procrastination from the original study using the PASS instrument (Solomon & Rothblum, 1984) was *fear of failure* and *task aversiveness*.

For this study, as in the original PASS, a factor consisting of five survey items were grouped together and referred to as *fear of failure*. Factors associated with fear of failure include anxiety about meeting others' expectations, concerns about meeting one's own standards, and lack of self-confidence (Solomon & Rothblum, 1984). Results of this study indicated that fear of failure was not as important as task aversiveness as an antecedent to academic procrastination. Older students (those over 21) most often attributed fear of failure as a reason for their procrastination. There was little difference between men and women on the fear of failure factor. Hispanic/Latino students attributed their procrastination to fear of failure more than Whites and

African American students. Asian students had the lowest fear of failure factor attributed to academic procrastination.

Three survey items on the PASS were grouped together and referred to as *task aversiveness*. Task aversiveness is defined in terms of how unpleasant or unenjoyable a task is to perform (Blunt & Pychyl, 2000). Task aversiveness accounted as the most important reasons that students in this sample procrastinated. Younger students were more task averse than older students and men were more task averse than women. Race/ethnicity differences indicated that American Indian or Alaska Native students accounted for higher levels of task aversivenss. Asian students had the lowest levels of task aversiveness. Mean scores and standard deviations for fear of failure and task aversiveness are presented in Table 7.

Table 7

Fear of Failure and Task Aversiveness for College Students in a Developmental Course

Factor	*M*	*SD*
Fear of failure (PASS items 19, 24, 33, 39, 42)	2.27	.98
Age		
18	2.24	1.11
19	2.19	1.02
20	2.29	1.07
21-25	2.46	.56
Over 25	2.40	.14
Gender		
Men	2.24	1.01
Women	2.27	.97
Race/Ethnicity		
American Indian or Alaska Native	2.27	1.33
Asian	2.00	.92
African American	2.17	1.02
Hispanic or Latino	2.55	1.14
White	2.27	.97
Number of developmental courses		
1	2.34	1.07
2	2.14	.93
3	2.37	.85
Task aversiveness (PASS items 27,34,35)	2.61	1.11
Age		
18	2.86	1.16
19	2.60	1.12
20	2.39	1.18
21 -25	2.75	.91
Over 25	2.60	.94
Gender		
Men	2.80	1.03
Women	2.50	1.15
Number of developmental courses		
1	2.83	1.08
2	2.92	1.15
3	2.46	1.03
Race/Ethnicity		
American Indian or Alaska Native	2.91	1.30
Asian	2.09	.79
African American	2.51	1.13
Hispanic or Latino	2.75	1.30
White	2.72	.93

Multiple Correlation Analysis (MCA)

Research Question Three

The third research question asked about the relationship between academic self-efficacy, academic procrastination, and prior academic skills to academic achievement for college students in a developmental course. To determine relationships that might exist between these variables, a multiple correlation analysis (MCA, Huberty & Petosky, 1999) was conducted. An MCA is used to (a) calculate the strength of relationships, (b) conduct a statistical test of the strength of the relationship, (c) interpret the relationship between a criterion variable and what is represented by a collection of predictor variables, and (d) determine the relative contribution of predictor variables to the relationship (Huberty & Petoskey, 1999).

Before the MCA could be conducted, certain conditions or assumptions about the data had to be met. The independence of scores was satisfied based on the design of the study using self-report surveys and through monitoring of the research process. The data set was inspected for outliers and for the condition of homogeneity of variance and Y-variate normality. Visual inspection of the data began with a graphical view of the boxplots and stem and leaf plots for the variables in the study. There appeared to be some outliers which prompted further examination. To investigate the data for outliers a couple of methods were used. An inspection and removal of the variables with scores more than three standard deviations from the mean (Grubbs, 1950) was used resulting in a deletion of 17 cases. In addition, weighted least squares, significant level testing Cook's *D* was used.

Participant data from surveys with missing or incomplete information were deleted and excluded from the dataset. Students who withdrew from their classes prior to data analysis were also removed from the sample. By removing outliers with mean scores more than three standard

deviations from the mean and any missing or incomplete surveys, a total of 28 cases were excluded from the original sample, leaving 123 participants. This inspection of the data including proof of assumption of normality and assumption of equal variance is indicated in two plots. Figure 1 represents the data in a linear relationship slightly skewed to the left as indicated by the curve (see Figure 1). Assumption of equal variance (see Figure 2) is indicated by a plot of the residuals versus the predicted Y. The pattern indicates that the data was spread throughout, and the residuals are normally distributed at each level of Y and constant in variance across levels of Y. This inspection of the data including proof of assumption of normality and assumption of equal variance were satisfied.

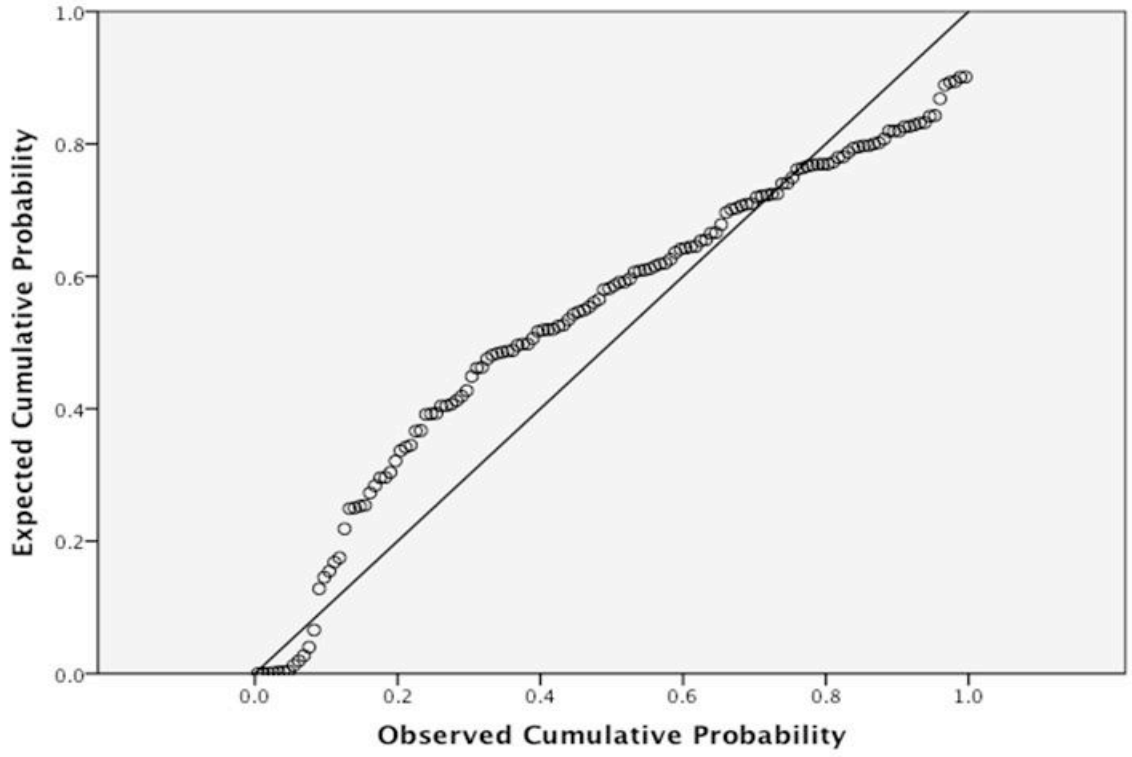

Figure 1. Normal P-P plot of regression standardized residual for academic achievement.

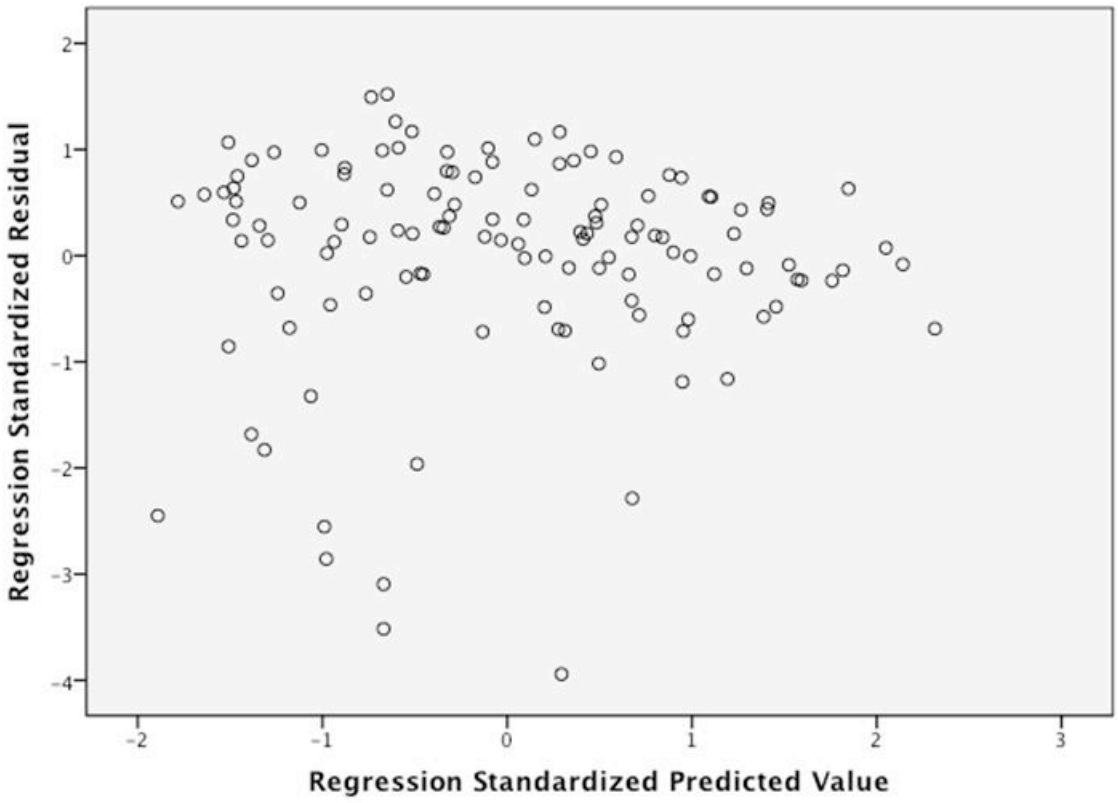

Figure 2. Standardized residual plot for criterion variable academic achievement.

In addition to visual inspection of the data, Huberty and Petoskey (1999) also recommended using the studentized deleted residuals, which consists of looking at all deleted residuals to identify extreme cases. For this step an examination of the estimates of the weights for the linear composite for the predictor variables was conducted. When reviewing statistics to discover extreme residuals, Pedhazur (1997) suggested that residuals greater than an absolute value of 2.00 be examined. Table 8 shows the value for studentized residual, and studentized deleted residual, along with Cook's *D* statistic. The studentized deleted residual value of the mean score of -.009 indicated that all data points fell within an acceptable range. The Cook's *D*

statistic resulted in a small value of .011 indicating that there were no significant outliers or bias of the estimates. These data led to a conclusion that the data was suitable for analysis.

Table 8

Residual Statistics for Criterion Variable Academic Achievement[a]

	Minimum	Maximum	M	SD
Predicted value	61.8128	88.4619	73.7967	6.33543
Standardized predicted value	-1.892	2.315	.000	1.000
Standard error of predicted value	1.663	5.604	2.900	.786
Adjusted predicted value	61.8382	89.1885	73.8525	6.35999
Residual	-65.65502	25.32518	.00000	16.45040
Standardized residual	-3.942	1.520	.000	.988
Studentized residual	-4.040	1.545	-.002	1.009
Deleted residual	-68.95862	26.55006	-.05574	17.16388
Studentized deleted residual	-4.331	1.555	-.009	1.035
Mahalanobis distance	.224	12.820	2.976	2.279
Cook's distance	.000	.292	.011	.036
Centered leverage value	.002	.105	.024	.019

[a]Criterion variable: Academic achievement.

The first step in an MCA is to calculate relationships between predictor and criterion variables using a correlation matrix. Predictor variables for this study included academic self-efficacy, academic procrastination, and prior academic skills. The criterion variable was academic achievement (end-of-course grade).

Simple correlations were analyzed between each of the predictor variables and the construct defined by the composite (Huberty & Hussein, 2001). The collection of predictor variables in an MCA should share interrelated attributes and form a composite system. The results of an MCA should yield an interpretation of the collection of predictor variables or composite to the criterion variable. This interpretation is made by examining the Pearson product correlations between each of the predictor variables and the linear composite or definition of the construct defined by the composite (Huberty & Hussein, 2001). The composite

construct representing the selected influences on academic achievement is provided in Table 9 and lists the variables indicating their importance to the criterion variable (academic achievement determined by end-of-course grade).

Table 9

Correlation Matrix for Academic Achievement

	Academic self-efficacy	Academic procrastination	Prior academic skills	Academic achievement
Academic self-efficacy		-.254** .005	.151 .095	.165 .068
Academic procrastination			.002 .986	-.186* .040
Prior academic skills				.298** .001
Academic achievement				

**$p < 0.01$, two-tailed.
*$p < 0.05$, two-tailed.

Calculating the strength of the relationship. The correlation matrix in Table 9 presents three statistically significant relationships. There was a statistically significant inverse relationship between academic self-efficacy and academic procrastination. Participants who had high academic procrastination levels also had lower academic self-efficacy. Approximately 6% of the variance between these two variables was explained by this relationship.

Academic procrastination yielded a negative relationship, which was statistically significant for academic achievement. Participants with higher academic procrastination scores did not perform as well on their end-of-course grade (academic achievement) as students with lower procrastination scores. Approximately 3% of the variance between these two variables was explained by this relationship.

There was also a significant relationship between prior academic skills as determined by the COMPASS Writing Skills Placement Test and academic achievement. Participants with

higher COMPASS scores also conveyed higher academic achievement (end-of-course grades). Approximately 8% of the variance between these two variables was explained by this relationship.

In respect to the criterion variable academic achievement, academic self-efficacy was not significantly related. Students with higher academic self-efficacy did not achieve higher academic achievement (end-of-course grades). Only about 2% of the variance between these two variables was explained by this relationship.

A multiple correlation analysis requires a statistical test of the strength of the relationship between predictor and criterion variables. Strength of the relationship is determined by calculating a correlation coefficient, *r*. The Pearson correlation *r* is a measure of a linear relationship between two variables. In regression, the proportion of the variance of the target variable for regression is given by the square of the Pearson correlation known as r^2 (Kinnear & Gray, 2009). Huberty and Petoskey (1999) posited that r^2 is a biased estimator for the population counterpart, p^2. They recommended using an adjusted r^2 to reduce bias in estimation. The adjusted r^2 value used in this study was available using SPSS software and is based on the formula proposed by M. Ezekeil (1930).

Regression analysis was conducted in this MCA with the composite of predictor variables including academic self-efficacy, academic procrastination, and prior academic skills in a model to predict academic achievement. For purposes of comparison with other measures of effect size, the square of the Pearson correlation —the proportion of the variance of the scores on the criterion variable accounted for by the regression upon another variable —was used (Kinnear & Gray, 2009).

There was a moderate correlation between the composite construct and academic achievement, $R = .359$, $R^2 = .129$. The R^2 adj. of .107 was statistically significant, $F = 5.88$, $p < .05$. The R^2 adj. of .107 indicates that approximately 11% of the change in academic achievement can be explained by the linear composite of the three predictor variables: academic self-efficacy, academic procrastination, and prior academic skills. Huberty and Hussein (2001) also recommended determining an effect size index to assess the degree that the results are better than chance values. This is to determine if the obtained percent of shared variance is greater than what would be expected by chance. Reporting an effect size index value is not common in multiple correlation studies, so there is no standard cut-off to define high and low effect size index values. The effect size in this analysis beyond that which may be obtained by chance was .082, meaning there was approximately an 8% better than chance value that the variance derived explains the relationship between academic achievement and the linear composite of the 3 variables academic self-efficacy, academic procrastination, and prior academic skills.

Statistical test of the strength of the relationship. An approach to determining the relative contribution of the predictor variables to the definition of the construct defined by the variable composite is to compare the absolute values or squares of the structure *r's.* This is to determine the relative contribution of the predictor variables to the definition of the constructs represented in this study (Huberty, 2001). The structure *r's* are the simple correlations between each of the three predictor variables and the linear composite of the entire model including all three of the predictor variables. The predictor variables for which the structure *r's* are the highest are considered to be the most influential variables for the construct.

A composite construct for the contributions to academic achievement variables was compiled and listed the variables indicating their importance to the construct or criterion variable

(academic achievement determined by end-of -course grade). Based on the structure *r's,* prior academic skills (as reflected on the COMPASS Writing Skills Placement Test) and academic procrastination were the most influential factors for academic achievement. Table 10 indicates the structure *r's* for the composite academic achievement.

Table 10

Structure Correlations for Academic Achievement

Component	Structure *r*	Academic achievement component correlation
Academic self-efficacy	.45	.165
Academic procrastination	.51	-.186
Prior academic skills	.83	.298

The last step in conducting an MCA requires ordering of the variables to determine the relative contribution of each predictor variable. Huberty and Petoskey's (1999) method to determine variable importance entails conducting an MCA for each predictor variable and then deleting each variable in turn to determine the adjusted R^2 value based on the remaining variables. Results are used to indicate which predictor variable is more important in establishing the relationship with the criterion variable. Table 11 presents the component analysis and ranking based on deleting one variable at a time to discover which variable caused the largest drop in the R^2 adjusted value influencing academic achievement. When the variable, academic self-efficacy is deleted from the linear composite, r^2 adjusted value increases to .109 from .107, the original correlation. Results indicated that prior academic skills were the most important to explain academic achievement, followed by academic procrastination. Academic self-efficacy was the least important.

Ranking of predictor variables.

Table 11

Results of the Component Analysis for Academic Achievement

Variable deleted	R^2	R^2 adjusted when variable deleted	Rank
Prior academic skills	.049	.034	1
Academic procrastination	.103	.088	2
Academic self-efficacy	.123	.109	3

CHAPTER 5

DISCUSSION

This chapter begins with a restatement of the purpose, rationale, and research questions of the study. A summary of the study and its findings is also included. Results from the data analysis, discussion and implications of the findings, and recommendations for future practice and further research regarding students in developmental education are also discussed.

Purpose of Study

The purpose of this correlational study was to explore the relationship between academic self-efficacy beliefs, academic procrastination, and prior academic skills on course outcomes for students who must take developmental college courses. The sample for this study was comprised of students enrolled in a developmental college English course during a single semester at a 4-year college in the state of Georgia. Predictor variables of academic self-efficacy, academic procrastination, and prior academic skills were measured using the Academic Self-Efficacy Scale (ASES; Elias & Loomis, 2000), the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984), and the COMPASS Writing Skills Placement Test (ACT, 2012). The criterion variable, academic achievement, was defined as the end-of-course grade in a developmental college English course. Findings from this study may contribute to a deeper understanding of students in developmental education courses by providing insight about intervention strategies designed to reduce procrastination behaviors, regulate learning, and raise academic self-efficacy beliefs. The study addressed the following research questions:

1. What are the academic self-efficacy beliefs, academic procrastination traits, and prior academic skills of college students in a developmental course?
2. How do task aversiveness and fear of failure factors explain the underlying reasons developmental education students procrastinate in college as represented by the Procrastination Assessment Scale-Students (PASS)?
3. What is the relationship between academic self-efficacy, academic procrastination, and prior academic skills to academic achievement of college students in a developmental course?

Research Summary

A correlational design was appropriate because the relationship between a single criterion variable and multiple predictor variables was of interest (Gall et al., 2007). Predictor variables of academic self-efficacy, academic procrastination, and prior academic skills were analyzed with the criterion variable academic achievement. Data in this study were collected from a survey using a convenience sample of 123 students enrolled in a developmental college English course (English 0099) at a 4-year college in the state of Georgia during a single semester. A convenience sample was selected because the target group was easily accessible and willing to participate (Gall et al., 2007). The population of students enrolled in all developmental college English courses in the state of Georgia would not be easily identifiable or accessible. However, this sample was similar to other students in the state of Georgia who take developmental courses. Using Cohen's (1992) guidelines for determining sample size, it was estimated that results would produce a medium effect size of .30, with an alpha level of .05, power of .80, and 3 predictor variables requiring a minimum of 76 participants. One hundred fifty-one college students in a developmental English 0099 course completed surveys. The final sample consisted of 123

participants once surveys with incomplete or missing responses and outliers were removed. Outliers were removed to reduce error rates of influence and improve accuracy of the correlation measure (Zimmerman, 1994).

Permission was obtained by the Human Subjects Office, Office of the Vice-President for Research at the University of Georgia, and the Institutional Review Board at Georgia Gwinnett College. Data collection began January 2012 and concluded in February 2012. Students were contacted in the classroom after permission was granted from course instructors. During each classroom visit, a script was read aloud that provided an explanation of the general purpose of the study and requested participation.

Students were asked to complete the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984), the Academic Self-Efficacy Scale (ASES; Elias & Loomis, 2000), and a short demographic questionnaire. College students' academic self-efficacy was measured using the Academic Self-Efficacy Scale (ASES; Elias & Loomis, 2000). Academic self-efficacy is an individual's belief in his or her ability to successfully achieve an academic goal (Bandura, 1977). Students were asked to rate their confidence for completing specific items relating to an academic task using a 10-point Likert scale representing confidence levels from 0 (no confidence at all) to 9 (complete confidence). The ASES consists of two parts. The first part includes 23 items and addresses students' confidence in their ability to earn a grade of B in specific individual courses such as physics, psychology, composition, and tennis. The criterion of earning a letter grade of B was included by the ASES authors (Elias & Loomis, 2000) to provide a concrete criterion to consider.

The second part of the ASES, items 24-35, addresses academic milestones that students encounter during college. Students indicated how confident they were in their ability to

complete 45 semester hours of upper-division (3000 and above) level courses. Items from the ASES were summed to provide an overall score for academic self-efficacy.

Academic procrastination levels were measured using the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984). Academic procrastination is defined as failing to perform an *academic* activity within a desired timeframe or postponing until the last minute activities one needs to complete (Wolters, 2003). The PASS is the most widely used measure to explore procrastination on academically-related tasks (Ferrari et al., 1995). It was developed to include the frequency of both cognitive and behavioral antecedents to academic procrastination. The PASS is a two-part, 44-item scale developed using a study of 342 students measuring academic procrastination levels in a variety of academic pursuits. The first part of the PASS assesses the prevalence of procrastination in six academic areas, including (a) completing a writing assignment, (b) studying for exams, (c) keeping up with weekly reading assignments, (d) performing academic administrative tasks, (e) attendance tasks, and (f) school activities in general. This section of the PASS is used to ascertain the frequency of procrastination on tasks (e.g., "To what degree do you procrastinate on writing a term paper?"). Participants use a 5-point Likert scale to rate the degree that procrastination on the task is a problem, and to what extent they want to decrease their tendency to procrastinate on the task. The PASS items pertaining to (a) the frequency with which respondents procrastinate on tasks and (b) whether their procrastination on the task is a problem were summed to provide an overall measure of academic procrastination, with total scores ranging from 12 to 60. Higher scores indicated higher levels of academic procrastination.

The second part of the PASS describes a procrastination scenario, delay in completing a writing assignment, and then provides statements of many possible reasons for procrastinating.

Students were asked to think of the last time they procrastinated on a writing assignment and to indicate how much each of 26 separate reasons reflected the reasons they procrastinated. Respondents rated each statement on a 5-point Likert scale (1 = Not at all reflects why I procrastinated; 5 = Definitely reflects why I procrastinated).

Student's *prior academic skills* were measured using scores on the Computer-Adapted Placement Assessment and Support Services (COMPASS; ACT, 2012) Writing Skills Placement Test. COMPASS placement tests help educators evaluate incoming students' skill levels in many academic areas including reading, writing, math, and English as a Second Language. The criterion variable, academic achievement (end-of-course grade) was recorded as a percentage, 0-100, in a developmental college English course. Cronbach alpha scores were calculated to show internal consistency of scores. A value of .935 was determined for the ASES. For the PASS a Cronbach alpha of .841 was calculated for Part 1 of the PASS and .788 for Part 2. Values greater than .70 are considered acceptable and indicators of good score reliability (Gall et al., 2007).

Academic achievement, the criterion variable, was analyzed with student's academic self-efficacy scores as measured by the ASES (Elias & Loomis, 2000), procrastination levels identified by the PASS (Solomon & Rothblum, 1984), and COMPASS Writing Skills Placement test scores obtained by school records. Data was analyzed using SPSS software release 19.0. Descriptive statistics described academic self-efficacy scores, academic procrastination traits, prior academic skills, and academic achievement (end-of-course grades). Descriptive statistics were also used to identify which procrastination antecedent; either fear of failure or task aversiveness, accounted for the most important reason students procrastinated as represented by the PASS. Descriptive information was also collected about each student's gender, race/ethnicity, age, and number of developmental courses enrolled.

As a last step in the analysis the criterion variable, academic achievement, was analyzed using a multiple correlation analysis (MCA). According to Huberty and Petoskey (1999), an MCA is best suited for analyzing a relationship between a single criterion variable and multiple predictor variables. In this study, relationships were explored pertaining to the construct defined by the predictor variables academic self-efficacy, academic procrastination, prior academic skills, and the criterion variable academic achievement. The interpretation of the relationships in the MCA was made by examining the Pearson product correlations between each of the predictor variables and the linear composite to the criterion variable academic achievement (Huberty & Hussein, 2001).

Results

The purpose of the first research question was to describe the academic self-efficacy beliefs, academic procrastination traits, and prior academic skills of college students in a developmental course. Academic self-efficacy beliefs are an individual's belief in his or her ability to achieve an academic goal (Bandura, 1977). Possible scores ranged from 33-330, with higher scores indicating higher academic self-efficacy. Participants' mean scores ranged from 172 to 321. Participants' overall mean score of 258.92 on the ASES indicated very high student perceptions of academic self-efficacy, especially considering that these students were enrolled in an academic developmental course. Age and gender differences indicated that men and 21-25 year olds had higher scores for academic self-efficacy. Asian students had the highest academic self-efficacy and American Indian or Alaska natives the lowest.

Academic procrastination is defined as failing to perform an academic activity within a desired timeframe or postponing until the last minute activities one needs to complete (Wolters, 2003). Possible scores ranged from 12-60, with higher scores indicating higher levels of

academic procrastination. Participants' overall mean score of 31.02 on the PASS represented 51% of a total possible score of 60. Participants' overall mean score on the PASS was in the middle of possible scores, neither high nor low.

The first part of the PASS revealed procrastination traits of the six academic areas students were most likely to procrastinate. Of the students in this study, 44% nearly always or always procrastinated on studying for exams, 35% on weekly reading assignments, 32% on completing a writing assignment, 29% on school activities in general, 14% on attendance tasks, and 11% on academic administrative tasks. The original research using the PASS (Solomon & Rothblum, 1984), indicated most students procrastinated on completing a writing assignment (46%), followed by weekly reading assignments (30.1%), and 27.6% on studying for exams.

Writing Skills Placement test scores were obtained from school records for each student in the sample. Participants scored a wide range on their placement tests, between 4 and 97 points, with a mean COMPASS Writing Skills Placement Test score for this sample of 50.76 (*SD* = 18.28). The students' overall mean score on the placement test indicated the middle of the possible score range or 52%.

Question two explored how task aversiveness and fear of failure factors explained the underlying reasons developmental education students procrastinate in college as represented by the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984). For purposes of this study, as in the original PASS (Solomon & Rothblum, 1984), a factor consisting of five survey items were grouped together and referred to as *fear of failure*. Factors associated with fear of failure included anxiety about meeting others' expectations, concerns about meeting one's own standards, and lack of self-confidence (Solomon & Rothblum, 1984). The overall mean score for fear of failure was 2.27 (*SD* = .98). In this sample, fear of failure was not as

important as task aversiveness as an antecedent to academic procrastination. Older students most often attributed fear of failure as a reason for their procrastination with a mean score of 2.60 (*SD* = .56). There was little difference between men and women on the fear of failure factor with a mean score for men equal to 2.24 and women equal to 2.27. Hispanic/Latino students attributed their procrastination to fear of failure more than Whites and Black or African American students. Asian students had the lowest fear of failure factor attributed to academic procrastination.

Three survey items on the PASS were grouped together and referred to as *task aversiveness*. Task aversiveness is defined in terms of how unpleasant or unenjoyable a task is to perform (Blunt & Pychyl, 2000). The overall mean score for task aversiveness was 2.61 (*SD* = 1.11). Task aversiveness was the most important reason that students in this sample procrastinated. For the factor of task aversiveness, younger students had a mean score of 2.86 (*SD* = 1.16) and were more task averse than older students. Men were more task averse than women. American Indian or Alaska Native students accounted for higher levels of task aversiveness, and all other races/ethnicities accounted for lower levels. Asian students had the lowest levels of task aversiveness.

The third research question in this study explored the relationship between academic self-efficacy, academic procrastination, and prior academic skills to academic achievement for college students in a developmental course. To determine this relationship, a multiple correlation analysis (MCA, Huberty & Petosky, 1999) was conducted. Three statistically significant relationships were discovered. There was a statistically significant inverse relationship between academic self-efficacy and academic procrastination. Participants who had high academic procrastination levels also had low academic self-efficacy (*R* = - .254), which indicated a

medium effect size of .06. Approximately 6% of the variance was explained by academic self-efficacy and academic procrastination.

Levels of academic procrastination also yielded a statistically significant negative relationship to academic achievement. Participants who had higher academic procrastination levels did not perform as well on end-of-course grades (R = - .186), which indicated a small effect size. A study by the authors of the PASS instrument found that self-reported procrastination was negatively correlated with grade point average for a semester (Rothblum et al., 1986). Approximately 3% of the variance in academic achievement was explained by academic procrastination.

There was also a significant relationship for prior academic skills as measured by the COMPASS Writing Skills Placement Test to academic achievement. Participants with higher COMPASS scores achieved higher end-of-course grades (R = .298), which indicated a medium effect size. Approximately 8% of the variance of the relationship between prior academic skills and academic achievement was explained by these variables.

There was not a significant relationship between academic self-efficacy and academic achievement. Students who had high academic self-efficacy levels did not achieve higher grades (R = .165). This is different from the findings in previous studies (e.g., Bong, 2001; Brown, Lent, & Larkin, 1989; Hackett, Betz, Casas, & Rocha-Singh, 1992; Lent, Brown, & Larkin, 1984; Multon, Brown, & Lent, 1991), which found academic self-efficacy to be a significant predictor of academic grades or achievement in college students. The authors of the ASES instrument found that academic self-efficacy was a significant predictor of grade point average (Elias & Loomis, 2002). Bong (2001) found a significant relationship between Korean undergraduate students' course-specific self-efficacy beliefs and final exam scores. Brown et al. (1989) found

that in a sample of college students who had high PSAT scores that their self-efficacy for academic milestones was a strong predictor of academic outcomes. Their results, and the results of this study, suggested that academic self-efficacy may improve performance when skills are adequate, but it would not likely counteract a lack of requisite skills. Approximately 2% of the variance between academic self-efficacy and academic achievement was explained by these variables in this study.

Discussion and Implications

Academic Procrastination

According to social cognitive theory (Bandura, 1986), students who report frequent academic procrastination also report lower levels of academic self-efficacy resulting in decreased academic motivation and lower academic achievement. This study supports previous research indicating that academic procrastination has a negative impact on academic achievement (Clark & Hill, 1994; Ellis & Knaus, 2002; Harriott & Ferrari, 1996; Solomon & Rothblum, 1984; Wesley, 1994). Findings contradict prior research stating that academic procrastination has little effect on academic achievement (Beck et al., 2000; 2000; Beswick, 1988; Lay, 1986; Pychyl et al.).

Overall levels of academic procrastination were significantly related to academic achievement. The trait of academic procrastination was widely dispersed among this sample of developmental education students. Those students with higher academic procrastination scores did have lower academic achievement (end-of-course grades). This supports findings from Ferrari (2004) who confirmed that there may not be a typical profile of academic procrastinators and that academic procrastination occurs in a variety of students with a wide range of characteristics.

Older students procrastinated at higher levels than the younger students. This is supported by additional research on procrastination tendencies of graduate students. Studies have confirmed that older students report higher rates of procrastination than the younger ones (Jiao & Onwuegbuzie, 1998; Onwuegbuzie, 2000, & 2004; Onwuegbuzie & Collins, 2001). It could reflect the complexity of course material and assignments at the graduate level. For example if students are intimidated by the academic standards and complexity of the material, they may procrastinate more (Onwuegbuzie, 2004). It could also indicate that graduate students, or older students, may procrastinate for different reasons such as perfectionists' tendencies. Undergraduates may procrastinate more as a result of low academic ability, low self-confidence, rebelliousness and resentment, or an attempt to protect their self-esteem. (Burka & Yuen 1983; Ferrari, 1989; Onwuegbuzie, 2004; and Rothblum et al.,1986). A larger proportion of students at the graduate level than the undergraduate level reported they nearly always or always procrastinate on studying for exams and on weekly reading assignments (Onwuegbuzie, 2004).

While the findings from this study implies that academic procrastination scores may be related to a tendency to postpone tasks, especially if they are undesirable, they may also relate to time demands imposed by economic factors, such as impediments due to students' lack of finances or work demands. It was surprising to note that students rated they procrastinated on school activities, in general, at 29%. The PASS defines school activities as club meetings and other school functions not associated with a particular classroom related activity. It is possible that students cannot fit other educationally purposeful activities, which occur outside the classroom into their college life, even if they wanted to. Students who have limited participation in school activities may have negative outcomes. Student engagement in educationally purposeful activities is positively related to both grades and persistence (Pascarella & Terenzini,

2005). Grades of lower ability students are positively affected by engagement in educationally purposeful activities to a greater degree than higher ability students (Kuh, Kinzie, Buckley, Bridges & Hayck, 2006). Students who procrastinate on school activities in general may be hindering their ability to be successful, especially if enrolled in a developmental course.

Of the students in this study, 44% nearly always or always procrastinated on studying for exams, 35% on weekly reading assignments, 32% on completing a writing assignment, 29% on school activities in general, 14% on attendance tasks, and 11% on academic administrative tasks. As noted by Solomon and Rothblum (1984), the high frequency of self-reported procrastination on studying for exams, completing a writing assignment, and keeping up with weekly reading assignments could indicate that these tasks are valued higher to students. Educators continue to interpret the multiple causes of academic procrastination and apply targeted specific intervention models for helping students achieve success. General themes across intervention programs involve the promotion of habit in working regularly, enhancing feelings of self-efficacy, and using group influences to support change. These interventions may be accomplished by introducing self-regulation training, reframing negative or irrational thoughts, and using group influences or peer models to enhance self-confidence in order to overcome dilatory behavior (Shouwenburg et al., 2004). Because there are many causes for academic procrastination, educators must be aware of the major causes and acknowledge different approaches to support students' efforts to change.

Task aversiveness, more than fear of failure, in this study was reported to be the primary motive for academic procrastination. Men were more task averse than women supporting a previous meta-analysis that indicated that girls scored higher on effortful control than boys (Else-Quest et al., 2006). Task aversiveness has been correlated positively with measures of

procrastination (Blunt & Pychyl, 1998; Lay 1990, 1992). In this study both women and men expressed similar mean scores relating to fear of failure as a reason for academic procrastination (women $\bar{x} = 2.27$, men $\bar{x} = 2.24$). This finding contradicts the original study using the PASS (Solomon & Rothblum, 1984) which found that women more often reported fear of failure as a motive for procrastination than men.

COMPASS Test

Colleges often place great importance on placement testing for students taking developmental courses. Assessment and placement determines entering first year students' academic strengths and weaknesses. In developmental education, assessment and placement is used to place students in an appropriate program of study to enhance their chance for success (Farmer & Barham, 2001). This study examined placement test scores as they related to other factors including course outcomes and academic achievement. A significant relationship was found between prior academic skills (COMPASS Writing Skills Placement Test) and academic achievement. In this study, the COMPASS test was a dominant predictor variable in students' academic achievement. This supports the claims by ACT (2006) that their placement tests scores are a valid indicator of future success in college courses.

Academic Self-Efficacy

The summed scores for overall level of academic self-efficacy in this sample of developmental education students were considerably higher than anticipated. I hypothesized that the very nature of a student being placed in a developmental course would lower academic self-efficacy. However, even though students were placed in a developmental course, they reported high academic self-efficacy scores. Generally, college students with high academic self-efficacy beliefs will do better than those with low academic self-efficacy beliefs. Brown et al. (1989)

suggested that self-efficacy may improve performance when skills are adequate but is not likely to counteract a lack of requisite skills. Their findings suggested that overestimates of self-efficacy could be negative for students with low aptitude because they may attempt activities beyond their reach leading to failure and distress. The findings from this study indicate that students' academic achievement (end-of-course grades) did not relate to their estimation of their academic self-efficacy. Possible causes for high academic self-efficacy in first year students could be, unconfirmed and unrealistic perceptions of their academic skills, or previous experiences with grade inflation.

Findings from this study indicate a need to understand what is defined as effective functioning of students, especially those in developmental education, which requires both skills and high efficacy beliefs. Bandura (1986) believed that efficacy judgments that are most effective are those that slightly exceed what one can do at a given time. To achieve continuous effective functioning, students must continuously adapt subskills to manage ever-changing situations. Self-influences can affect social environments, for example, when learners decide they need more instruction on a skill and seek out a qualified teacher. Students in developmental courses can learn to self-direct their learning through feedback from teachers about their skills, self-reflection, and continued practice.

An understanding of social cognitive theory (Bandura, 1986) and self-efficacy is especially germane to school learning and other achievement situations (Schunk, 2004). Interventions in academic settings aimed at reducing procrastination and raising academic self-efficacy are based in a students' internalization of social variables to self-influences to achieve self-regulatory control. With increased skill acquisition the unidimensional social-to-self transformation process becomes a bi directional interactive process as learners alter and adjust

their social environments to enhance achievement (Schunk, 1999). As students work on tasks, they evaluate their learning progress and these perceptions of progress substantiate their self-efficacy for learning. Observing similar peer models performing a task well can raise observers' self-efficacy. One way is to use c*oping models* who initially demonstrate the typical fears and deficiencies of observers but over time improve their performance on the task and gain confidence in their abilities. Students in this sample may have failed along the way to effectively monitor their learning process.

Developmental educators can use important learning theories and interventions derived from social cognitive theory emphasizing modeling, improved academic self-efficacy, and support structures built into the curriculum to improve self-regulation skills. Learners acquire an approximation of skills by observing models, applying practice of skills, and using teachers' corrective feedback. With this type of support, much could be done to improve the success rates of those students in developmental education. This lends credence to Elias and Loomis' (2000) suggestion that "by having instructors increase the amount of opportunities students have to be successful, they will be aiding in the development and strengthening of those students' academic self-efficacy" (p. 453). Any students with lower self-efficacy scores could be helped using a combination of timely assessment of academic self-efficacy and an instructional focus using coping models in the classroom. Students with lower academic self-efficacy scores could be readily identified and paired with students who have higher academic self-efficacy scores and slightly higher academic skill levels to work on tasks.

Students in developmental education courses may have unrealistic perceptions of their academic self-efficacy. Teachers can assess academic self-efficacy at different times during a semester establishing more realistic expectations of academic self-efficacy and setting up

realistic goals and appropriate feedback. This study lends support to research reports on overconfidence in low-achieving students. Hacker, Bol, Horgan, and Rakow (2000) found that high performing students were much more accurate in predicting their exam scores than lower performing students. They found that lowest performing students showed gross overconfidence in predictions of their grades and those judgments of performance were influenced by *prior judgments* and not prior performance. The key for developmental education students is to help them become better self-regulators aligning the realities of their performance so they may better prepare for tests, work harder, and persist in order to accommodate any knowledge deficits. Frequent feedback must be provided to students taking developmental courses so their perceptions of their work can indicate how hard they must prepare when studying for exams and submitting assignments.

Delimitations of the Study

Grades are reflective of achievement in a particular course and at one point in time (Pinxten et al., 2010). Grades are subjective as they may be influenced by a teacher's lenience or harshness or a tendency to grade on a curve (Skaalvik & Hagtver, 1990). School grades may reflect more than just a student's course achievement level. The activities that teachers believe constitute academic achievement may vary from teacher to teacher. In addition, grades often try to communicate multiple pieces of information about students that can not be contained within a single academic mark (Allen, 2005). Grades create a public record of a student's academic achievement that can communicate to others the level of mastery of a subject.

Grades for students enrolled in developmental classes have a possibility for grade bias and inflation. Students who do not achieve at least a C in the class cannot take the exit tests for moving out of that developmental area. In this study, even though all students had an equal

chance of achieving the end-of-course grade in the developmental English course, there was a possibility of bias in grading or inequities. Teacher training and education was not considered as a predictor variable, but could yield some differences in student's grades. Observations from a visual examination indicated some patterns or differences for higher or lower grades between teacher's grades in the 13 course sections for this developmental course.

Much research on procrastination has relied on self-reported measures. It is also important to measure the academic consequences of procrastination like time used to turn in assignments, time used to hand in term paper outlines, and hours spent studying or working on projects. Self-reported procrastination has been validated in prior studies against behavior measures of academic procrastination (Rothblum, Beswick & Mann, 1988; Rothblum et al., 1986; and Solomon & Rothblum, 1984). Future studies should consider using behavioral measures of academic procrastination in addition to the self-reported measures.

Recommendations for Future Practice

Teachers and educators who allow for assessment of academic self-efficacy, goal setting, modeling inside the classroom, and increased opportunities for students to have feedback and self-evaluations will help motivate students and insure they do not drop out of developmental education courses. When procrastinators find the tasks they postpone aversive and they lack self-efficacy this indicates a motivational problem (Blunt & Pychyl, 2000; Ferrari, J., 2004; Steel, 2003). Recommendation for interventions based on a motivational view are directed at (a) improving self-regulation setting goals, monitoring progress, and managing time, (b) enhancing self-efficacy, promoting success experiences, disputing unrealistic beliefs, and (c) protecting goal behavior from distractions (Schouwenburg, 2004). Counselors in colleges who adopt this explanation tend to include the context or situation of the behavior involved. They regard this

context as a choice situation. It would be interesting to explore these same constructs as they relate to self-control theory with current expectancy value theory or motivation constructs (Schouwenburg, 2004; Schouwenburg & Groenewoud, 1997; Steel, 2003).

In order to improve developmental education students' academic self-efficacy through interventions discussed in this study, goal setting must be included. Goals enhance self-efficacy, and Schunk (1983) found that children who received both goals and social comparative information improved their skill acquisition. Goals enhanced self-efficacy and comparative information promoted motivation. Self-reactions to goal progress are an important component of social cognitive theory as self-reactions motivate behavior (Bandura, 1986). For developmental education students, goal setting and self-evaluations are extremely important, and could possibly reduce the dropout rate of students. Developmental education students frequently get discouraged because they are taking non-credit courses, while their peers may be taking courses for degree credit. Students who realize that developmental education enhances their ability to improve their foundational academic skills and connect that with both short range and long range goals, can be motivated to work harder and not give up. Goal progress and attainment raises learners' self-efficacy and can lead to adopting new, more difficult goals (Schunk, 1990).

Knowing you may procrastinate and having coping skills to overcome it are two different things. Students need to feel like there is a solution available to them if they desire to improve their tendencies for procrastination. Colleges must provide solutions to students who seek them. Particularly as it relates to students in developmental courses, students' level of ability may determine whether or not they can get away with their tendency to procrastinate as indicated by Beck et al. (2000). There are a number of students who have succeeded in counteracting the effects of procrastination tendencies when it comes to academic achievement, but the significant

relationship found in this study indicates that some students have not. Solomon and Rothblum (1984) found in their original study using the PASS instrument that one-half of students admitted that procrastination was a moderate or severe problem. Approximately one-fourth of those students believed that their procrastination tendencies interfered with their grade point averages and the quality of their lives. So, while the literature and research studies remain inconsistent about whether academic procrastination may or may not have a direct impact on grades, this study suggests that students could improve their course grades through interventions for academic procrastination. Students are willing and able to self-report that they have a problem with academic procrastination. They have probably lived with this trait for some time, and have learned coping skills during their education. The problems for students may occur when they combine low academic self-efficacy with high procrastination tendencies. This study resulted in a negative relationship between these variables indicating that low academic self-efficacy and high procrastination tendencies could limit academic achievement. The risk may be higher for students with lower cognitive abilities or placement in a developmental education course. An understanding of student behaviors and an assessment of both procrastination behaviors and academic self-efficacy beliefs could help students persist longer and work harder in their classes.

To assist students' efforts to reduce procrastination, educators must learn to develop techniques that students can adopt to use in a project or task setting. As academic projects are assigned students may benefit from tools to help them reduce their procrastination tendencies. Use of daily diaries or logs as recommended in previous studies could move students to this new behavior (Pychyl, Lee, et al., 2000; Scher & Ferrari, 2000). The PASS instrument may have applicable use as a diagnostic tool in colleges, especially when used in a pre/post intervention. Students who build in rewards for not procrastinating sooner would benefit from feedback

resulting in a behavioral change, which could improve course outcomes.

Recommendations for Further Research

Academic procrastination and academic self-efficacy may interact with other variables and with varying levels of ability. It would be suggested to follow this study with an experimental program to measure academic procrastination and academic self–efficacy, offer counseling or project based interventions, and then follow up with a post test to see if improvements were made. It would also be interesting to include teaching training, education, and attitudes towards students in developmental courses as variables for further research. Finally, self-reported measures of academic procrastination should be combined with more behavioral assessments including time used to turn in assignments, time used to hand in term paper outlines, and hours spent studying or working on projects. Finally, the timing of academic self-efficacy assessment and skill levels of students should be considered in future research. It would be interesting to investigate differences in perceptions of academic reality and ability in developmental education students. Students' high perception of their academic self-efficacy was not related to their course achievement. The timing of the survey delivered after 4 weeks into the semester had an effect on these scores. It would be interesting to investigate how differing academic self-efficacy scores could be obtained if collected at other points during a semester.

REFERENCES

ACT. (2006). *COMPASS: ESL: A comprehensive computerized placement and diagnostic assessment and support system. Reference manual*. Iowa City, IA: ACT, Inc.

ACT. (2012). ACT's COMPASS: Computer-adapted placement assessment and support services test. Retrieved from http://www.act.org/compass/index.html

Ainslie, G. (1992). *Picoeconomics: The strategic interaction of successive motivational states within the person*. Cambridge, England: Cambridge University Press.

Allen, J. (2005). Grades as valid measures of academic achievement of classroom learning. *Clearing House, 78*, 218-223. doi:10.3200/TCHS.78.5.218-223

Arendale, D. R. (2005). Terms of endearment: Words that define and guide developmental education. *Journal of College Reading and Learning, 35*(2), 66-82.

Arendale, D. R. (2007) A glossary of developmental education and learning assistance terms. *The Free Library*. Retrieved from http://www.thefreelibrary.com

Arvey, R. D., Rotundo, M., Johnson, W., & McGue, M. (2003, April). *The determinants of leadership: The role of genetics and personality*. Paper presented at the 18th annual conference of the Society for Industrial and Organizational Psychology, Orlando, FL.

Bailey, T. (2009). Challenge and opportunity: Rethinking the role and function of developmental education in community college. *New Directions for Community Colleges, 145*, 11-30. doi:10.1002/cc.352

Bailey, T., Jeong, D. W., & Cho, S. (2008). *Referral, enrollment, and completion in developmental education sequences in community colleges*. New York, NY: Columbia University, Community

College Research Center.

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Upper Saddle River, NJ: Prentice Hall.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28,* 117-148. doi:10.1207/s15326985ep2802_3

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.

Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. San Diego, CA: Academic Press.

Beck, B. L., Koons, S. R., & Milgram, D. L. (2000) Correlates and consequences of behavioral procrastination: the effects of academic procrastination, self-consciousness, self-esteem, and self-handicapping. *Journal of Social Behavior and Personality*, *15,* 3-13.

Beswick, G., Rothblum, E., & Mann, L. (1988). Psychological antecedents of student procrastination. *Australian Psychologist, 23*, 207-217. doi:10.1080/00050068808255605

Beswick, G., & Mann, L. (Eds.). (1994). *State orientation and procrastination*. Gottiingen, Germany: Hogrefe & Huber.

Bettinger, E., & Long, B. (2005). Remediation at the community college: Student participation and outcomes. *New Directions for Community Colleges, 129,* 17-26. doi:10.1002/cc.182

Betz, N. E., & Hackett, G. (1983). The relationship of mathematics self-efficacy expectations to perceived career options in college women and men. *Journal of Vocational Behavior, 23*, 329-345. doi:10.1016/0001-8791(83)90046-5

Bijou, S., Morris, E., & Parsons, J. (1976). A PSI course in child development with a procedure for reducing student procrastination. *Journal of Personalized Instruction, 1*, 36-40.

Binet, A., & Simon, T. (1905). Méthode nouvelle pour le diagnostic du niveau intellectuel des anormaux. *L'Année Psychologique, 11*, 191-244. doi:10.3406/psy.1904.3675

Blunt, A. K., & Pychyl, T. A. (1998). Volitional action and inaction in the lives of undergraduate students: State orientation, procrastination, and proneness to boredom. *Personality & Individual Differences, 24*, 837-846. doi:10.1016/S0191-8869(98)00018-X

Blunt, A. K., & Pychyl, T. A. (2000). Task aversiveness and procrastination: A multidimensional approach to task aversiveness across stages of personal projects. *Personality & Individual Differences, 28*, 153-167. doi:10.1016/S0191-8869(99)00091-4

Bong, M. (2001). Role of self-efficacy and task-value in predicting college students' course performance and future enrollment intentions. *Contemporary Educational Psychology 26*, 553-570. doi:10.1006/ceps.2000.1048

Boylan, H. R., Bonham, B. S., & White, S. R. (1999). Developmental and remedial education in postsecondary education. *New Directions for Higher Education, 108*, 87-101. doi:10.1002/he.10806

Bridges, K. R., & Roig, M. (1997). Academic procrastination and irrational thinking: A re-examination with context controlled. *Personality and Individual Differences, 22,* 941-944. doi:10.1016/S0191-8869(96)00273-5

Brown, S. D., Lent, R. W., & Larkin, K.C. (1989). Self-efficacy as a moderator of scholastic aptitude: Academic performance relationships. *Journal of Vocational Behavior, 35*, 64-75. doi:10.1016/0001-8791(89)90048-1

Burka, J., & Yuen, L. (1983). *Procrastination: Why you do it, what to do about it.* Reading, MA: Addison-Wesley.

Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research*, *65*, 245-281. doi:10.3102/00346543065003245

Calcagno, J. (2007). *Evaluating the impact of developmental education in community colleges: A quasi-experimental regression-discontinuity design.* Unpublished doctoral dissertation, Columbia University, New York.

Calcagno, J., & Long, B. (2008). *The impact of postsecondary remediation using a regression discontinuity approach: Addressing endogenous sorting and noncompliance*. New York, NY: National Center for Postsecondary Research.

Casazza, M. E. (1999). Who are we and where did we come from? *Journal of Developmental Education, 23(1)*, 2-7

Castator, M., & Tollefson, N. (1996). Underprepared students and the college curriculum: Identifying high-risk courses. *Journal of Applied Research in the Community College, 3,* 179-200.

Clark, J., & Hill, O. (1994). Academic procrastination among African American college students. *Psychological Reports, 75,* 931-36. doi:10.2466/pr0.1994.75.2.931

Clowes, D. A. (1980). More than a definitional problem: Remedial, compensatory, and developmental education. *Journal of Developmental Education, 4*(1), 8-10. Retrieved from http://www.ncde.appstate.edu/publications/

Clowes, D. A. (2001). Program evaluation for remedial, compensatory, and developmental education: Definitional problems and design decisions. In V. L. Farmer & W. A. Barham (Eds.), *Selected models of developmental education programs in higher education* (pp. 341-357). Lanham, MD: University Press of America.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*, 155-159. doi:10.1037/0033-2909.112.1.155

Collins, J. L. (1982). *Self-efficacy and ability in achievement behavior*. Paper presented at the annual meeting of the American Educational Research Association, New York, NY.

Complete College America. (2011). *Time is the enemy of graduation*. Washington, DC

Costa, P.T., Jr., & McCrae, R. (1992). *The NEO personality inventory-revised.* Odessa, FL: Psychological Assessment Resources.

Crews, D. M., & Aragon, S. R. (2007). Developmental education writing: Persistence and goal attainment among community college students. *Community College Journal of Research & Practice, 31*, 637-652. doi:10.1080/10668920600859715

Education Commission of the States. (2002, September). *State policies on community college remedial education: Findings from a national survey*. Denver, CO: Boswell & Jenkins.

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.

Elias, S. M., & Loomis, R. J. (2002). Utilizing need for cognition and perceived self-efficacy to predict academic performance. *Journal of Applied Social Psychology, 32*, 1687-1702. doi:10.1111/j.1559-1816.2002.tb02770.x

Elliot, R. (2002). *A ten-year study of procrastination stability*. Unpublished master's thesis, University of Louisiana, Monroe.

Ellis, A., & Knaus, W. J. (1977). *Overcoming procrastination*. New York, NY: Institute for Rational Living.

Ellis, A. & Knaus, W. J. (2002). *Overcoming procrastination* (rev. ed.). New York, NY: New American Library.

Else-Quest, N. M., Hyde, J. S., Goldsmith, H. H., & Van Hulle, C. A. (2006). Gender differences in temperament: A meta-analysis. *Psychological Bulletin, 132*, 33-72. doi:10.1037/0033-2909.132.1.33

Ezekiel, M. (1930). *Methods of correlation analysis*. New York, NY: Wiley.

Farmer, V. L., & Barham, W. A. (2001). An integrated developmental education model: A comprehensive approach. In V. L. Farmer & W. A. Barham (Eds.), *Selected models of developmental education programs in higher education*. Lanham, MD: University Press of America.

Feingold, A. (1994). Gender differences in personality: A meta-analysis *Psychological Bulletin, 116*, 429-526. doi:10.1037/0033-2909.116.3.429

Ferrari, J. R. (1989) Reliability of academic and dispositional measures of procrastination. *Psychological Reports,* 64, 1057-1058. doi:10.2466/pr0.1989.64.3c.1057

Ferrari, J. R. (1992). Procrastinators and perfect behavior: An exploratory factor analysis of self-presentation, self-awareness, and self-handicapping components. *Journal of Research in Personality, 26*, 75-84. doi:10.1016/0092-6566(92)90060-H

Ferrari, J. (1993). Christmas and procrastination: Explaining lack of diligence at a "real-world" task deadline. *Personality & Individual Differences, 14*, 25-33. doi:10.1016/0191-8869(93)90171-X

Ferrari, J. R. (2000). Procrastination and attention: Factor analysis of attention deficit, boredomness, intelligence, self-esteem and task delay frequencies. *Journal of Social Behavior & Personality, 15*, 185-196.

Ferrari, J. (2004). Trait procrastination in academic settings: An overview of students who engage in task delays. In H. Schouwenberg, C. Lay, T. Pychl, & J. Ferrari (Eds.), *Counseling the procrastinator in academic settings*. Washington, DC: American Psychological Association.

Ferrari, J. R., Johnson, J. L., & McCown, W. G. (1995). *Procrastination and task avoidance: Theory research and treatment.* New York, NY: Plenum.

Ferrari, J., & Pychyl, T. (2000). The scientific study of procrastination: Where have we been and where are we going? *Journal of Social Behavior and Personality, 15 (5*), 3-13.

Finney, S. J., & Schraw, G. (2003). Self-efficacy beliefs in college statistics courses. *Contemporary Educational Psychology, 28*, 161-186. doi:10.1016/S0361-476X(02)00015-2

Freud, S. (1953). The ego and the id and other works. *The standard edition of the complete psychological works of Sigmund Freud, 19*, 66.

Gall, M., Gall, J., & Borg, W. (2007). *Educational research* (8th ed.). Boston, MA: Pearson.

Gerlaugh, K., Thompson, L., Boylan, H. R., & Davis, H. (2007). National study of developmental education II: Baseline data for community colleges. *Research in Developmental Education, 20*(4), 1-4.

Gloeckner, G., Gliner, J., Tochterman, S., & Morgan, G. (2001). Assessing validity and reliability for data collection instruments. In E.I. Farmer & J.W. Rojewski (Eds.), *Research pathways*. Lanham, MD: University Press of America.

Grubb, W. N., & Associates. (1999). *Honored but invisible: An inside look at teaching in community colleges*. New York, NY: Routledge.

Grubbs, F. E. (1950). Sample criteria for testing outlying observations. *Annals of Mathematical Statistics, 21*, 27-58. doi:10.1214/aoms/1177729885

Guay, F., Marsh, H. W., & Boivin, M. (2003). Academic self-concept and academic achievement: Developmental perspectives on their causal ordering. *Journal of Educational Psychology, 95*, 124-136. doi:10.1037/0022-0663.95.1.124

Hacker, D., Bol, L., Horgan, D. & Rakow, E. (2000). Test prediction and performance in a classroom

context. *Journal of Educational Psychology, 92*, 160-170. doi: 10.1037//0022-0663.92.1.160

Hackett, G. (1995). Self-efficacy in career choice and development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 232-258). New York, NY: Cambridge University Press.

Hackett, G., Betz, N. E., Casas, J. M., & Rocha-Singh, I. A. (1992). Gender, ethnicity, and social cognitive factors predicting the academic achievement of students in engineering. *Journal of Counseling Psychology, 39*, 527-538. doi:10.1037/0022-0167.39.4.527

Harriott, J., & Ferrari, J. (1996). Prevalence of procrastination among samples of adults. *Psychological Reports, 78,* 611-616. doi:10.2466/pr0.1996.78.2.611

Higbee, J., Arendale, D., & Lundell, D. (2005). Using theory and research to improve access and retention in developmental education. *New Directions for Community Colleges, 129*, 5-15. doi:10.1002/ca.181

Huberty, C. J., & Hussein, M. (2001). Reporting Information in Multiple Correlation and Multiple Regression Studies. In E. Farmer & J. Rojewski (Eds.), *Research pathways* (pp. 325-373). Lanham, MD: University Press of America.

Huberty, C. J., & Petoskey, M. (1999). Use of multiple correlation analysis and multiple regression analysis. *Journal of Vocational Education Research, 24*, 15-32.

Huck, S. (2004). *Reading statistics and research*. Boston, MA: Pearson.

Hughes, K. & Scott-Clayton, J. (2011). Assessing developmental assessment in community colleges. *Community College Review, 39*, 327-351. doi:10.1177/0091552111426898.

IBM Corporation. (2010). *Statistical software package for the social sciences (SPSS)*. Armonk, NY: SPSS, Inc.

Jiao, Q., & Onwuegbuzie, A. (1998). Understanding library anxious graduate student. *Library Review, 47,* 217-224.

Judge, T., & Bono, J. (2001). Relationship of core self-evaluations traits-self-esteem, generalized self-efficacy, locus of control, and emotional stability-with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology, 86*, 80-92. doi:10.1037/0021-9010.86.1.80

Kachgal, M. M., Hansen, L. S., & Nutter, K. J. (2001). Academic procrastination prevention/intervention: Strategies and recommendations. *Journal of Developmental Education, 25*, 14-24.

Kinnear, P., & Gray, C. (2009). *SPSS 16 made simple*. New York, NY: Psychology Press

Klein, E. (1971). *A comprehensive etymological dictionary of the English language*. New York, NY: Elsevier.

Knaus, W. J. (1998). *Do it now: Break the procrastination habit*. New York, NY: Wiley.

Knaus, W. J. (2000). Procrastination, blame, and change. *Journal of Social Behavior and Personality 15,* 153-166.

Kuh, G., Kinzie, J., Buckley, J., Bridges, B., Hayek, J. (2006). *What matters to student success: A review of the literature.* Commissioned Report for the National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success. Washington, DC : National Postsecondary Education Cooperative.

Lay, C. H. (1986). At last, my research article on procrastination. *Journal of Research in Personality, 20*, 474-495. doi:10.1016/0092-6566(86)90127-3

Lay, C. H. (1990). Working to schedule on personal projects: An assessment of person-project characteristics and trait procrastination. *Journal of Social Behavior & Personality*, *5,* 91-103.

Lay, C. H. (1992). Trait procrastination and the perception of person-task characteristics. *Journal of Social Behavior & Personality, 7*, 483-494.

Lay, C. H., & Silverman, S. (1996). Trait procrastination, time management, and academic behavior. *Personality and Individual Differences, 21*, 61-67. doi:10.1016/0191-8869(96)00038-4

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*, 307-315. doi:10.1037/0022-0167.44.3.307

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*, 356-362. doi:10.1037//0022-0167.31.3.356

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*, 265-269. doi:10.1037/0022-0167.33.3.265

Lent, R. W., & Hackett, G. (1987). Career self-efficacy: Empirical status and future directions. *Journal of Vocational Behavior, 30*, 347-382. doi:10.1016/0001-8791(87)90010-8

Levin, H. M., & Calcagno, J. C. (2008). Remediation in the community college. *Community College Review, 35*(3), 181-207. doi:10.1177/0091552107310118

MacIntyre, P. (1964). Dynamics and treatment of passive aggressive underachievers. *American Journal of Psychotherapy, 18*, 95-108.

Manhattan Institute for Policy Research. (2003, September). *Public high school graduation and college readiness rates in the United States* (Working Paper No. 3). New York, NY: Greene & Forster.

Martorell, P., & McFarlin, I. (2011). Help or hindrance? The effects of college remediation on academic and labor market outcomes. *Review of Economics and Statistics, 93*, 436-454. doi:10.1162/REST_a_0098

Mattson, C. E. (2007). Beyond admission: Understanding precollege variables and the success of at-risk students. *Journal of College Admission, 196*, 8-13.

McCabe, R. H., & Day, P. R. (Eds.). (1998). *Developmental education: A twenty-first century social and economic imperative*. Mission Viejo, CA: League for Innovation in the Community College.

McCown, W., & Johnson, J., (1989). *Validation of an adult inventory of procrastination*. Paper presented at the Society for Personality Assessment, New York.

Milgram, N. A. (Ed.). (1991). *Procrastination* (Vol. 6). New York, NY: Academic Press.

Milgram, N. A. (1992). El retraso: Una enfermedad de los tiempos modernos (Procrastination: A malady of modern time). *Boletin de Psicologia, 35*, 83-102.

Milgram, N. A., Batori, G., & Mowrer, D. (1993). Correlates of academic procrastination. *Journal of School Psychology, 31*, 487-500. doi:10.1016/0022-4405(93)90033-F

Moore, D. (2007). *The basic practice of statistics* (4th ed.). New York, NY: Freeman.

Multon, K. D., Brown, S. D., & Lent R.W. (1991) Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology, 38,* 30-38. doi:10.1037//0022-0167.38.1.30

National Association for Developmental Education (NADE). (2012). *2012 fact sheet: Responses to frequently asked questions about The National Association for Developmental Education.* Retrieved from http://nade.net/2documents/fact_sheet/2012 FactSheet.pdf

National Center for Education Statistics. (2010a). *National postsecondary student aid study* (NPSAS:08). Washington, DC: US Department of Education, Postsecondary Studies Division.

National Center for Education Statistics. (2003b). *Remedial education at degree granting postsecondary institutions in fall 2000 (NCES 2004-010)*. Washington, DC: U.S. Department of Education,

Institute of Education Sciences.

O'Donoghue, T., & Rabin, M. (1999). Incentives for procrastinators. *Quarterly Journal of Economics, 114*, 769-816. doi:10.1162/003355399556142

Onwuegbuzie, A. J. (2000). Academic procrastination and perfectionistic tendencies among graduate students. *Journal of Social Behavior and Personality, 15*, 103-109.

Onwuegbuzie, A. J. (2004). Academic procrastination and statistics anxiety. *Assessment & Evaluation in Higher Education, 29*, 3-19. doi:10.1080/0260293042000160384

Onwuegbuzie, A. J., & Collins, K. M. T. (2001). Writing apprehension and academic procrastination among graduate students. *Perceptual and Motor Skills*, 92, 560-562. doi:10.2466/pms.2001.92.2.560

Ozer, B. U., Demir, A., & Ferrari, J. (2009) Exploring academic procrastination among Turkish students: Possible gender differences in prevalence and reasons. *The Journal of Social Psychology, 149*, 241-257. doi:10.3200/SOCP.149.2.241-257

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66,* 543-578. doi:10.2307/1170653

Pajares, F. (1997). Current directions in self-efficacy research. In M. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 10, pp. 1-49). Greenwich, CT: JAI Press.

Pajares, F., & Miller, M. D. (1995). Mathematics self-efficacy and mathematics performances: The need for specificity of assessment. *Journal of Counseling Psychology, 42*, 190-198. doi:10.1037/0022-0167.42.2.190

Pascarella, E., & Terenzini, P. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco, CA: Jossey-Bass.

Pascarella, E., & Terenzini, P. (2005). *How college affects students: A third decade of research*. San

Francisco, CA: Jossey-Bass.

Pedhazur, E. J. (1997). *Multiple regression in behavioral research.* Fort Worth, TX: Harcourt Brace.

Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 451-502). San Diego, CA: Academic Press.

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*, 33-40. doi:10.1037/0022-0663.82.1.33

Pintrich, P., & Schrauben, B. (1992). Students' motivational beliefs and their cognitive engagement in classroom academic tasks. In D. H. Schunk & J. L. Meece (Eds.), *Student perceptions in the classroom* (pp. 149-183). Hillsdale, NJ: Erlbaum.

Pintrich, P. R., & Schunk, D. H. (1995). *Motivation in education: Theory, research, and applications*. Englewood Cliffs, NJ: Prentice Hall.

Pinxten, M., De Fraine, B., Van Damme, J., & D'Haenens, E. (2010). Causal ordering of academic self-concept and achievement: Effects of type of achievement measure. *British Journal of Educational Psychology, 80,* 689-709. doi:10.1348/000709910X493071

Pressley, M., Borkowski, J., & Schneider, W. (1987). Cognitive strategies: Good strategy users coordinate metacognition and knowledge. *Annals of Child Development, 4,* 89-129.

Pychyl, T. A., Lee, J. M., Thibodeau, R., & Blunt, A. (2000a). Five days of emotion: An experience sampling study of undergraduate student procrastination. *Journal of Social Behavior and Personality, 15*, 239-254.

Pychyl, T. A., Morin, R. W., & Salmon, B. R. (2000b). Procrastination and the planning fallacy: An examination of the study habits of university students. *Journal of Social Behavior and Personality, 15*, 135-150.

Roig, M., & De Tommaso, L. (1995). Are college cheating and plagiarism related to academic procrastination? *Psychological Reports, 77*, 691-698. doi:10.2466/pr0.1995.77.2.691

Rothblum, E. D., Solomon, L. J., & Murakami, J. (1986). Affective, cognitive, and behavioral differences between high and low procrastinators. *Journal of Counseling Psychology, 33*, 387-394. doi:10.1037/0022-0167.33.4.387

Rubin, M. (1991). A glossary of developmental education terms compiled by the CRLA Task Force on Professional Language for College Reading and Learning. *Journal of College Reading and Learning, 23*(2), 1-14.

Scher, S. J., & Ferrari., J. R. (2000). The recall of completed and non-completed tasks through daily logs to measure procrastination. *Journal of Social Behavior and Personality, 15,* 255-265.

Schouwenburg, H. C. (1993). Procrastination and failure-fearing students in terms of personality-describing adjectives. *Nederlands Tijdschrift voor de Psychologie en Haar Grensgebieden, 48,* 43-44.

Schouwenburg, H. C., & Groenewoud, J. (1997). *Study planning: A workbook for students*. Groningen, the Netherlands: Wolter-Noordhoff.

Schouwenburg, H.C. (2004). Procrastination in academic settings: General introduction. In H. Schouwenburg, C. Lay, T. Pychyl, & J.Ferrari (Eds.), *Counseling the procrastinator in academic settings*. Washington, DC: American Psychological Association.

Schouwenburg, H. C., Lay, C., Pychyl, T. A., & Ferrari, J. R. (Eds.). (2004). *Counseling the procrastinator in academic settings*. Washington, DC: American Psychological Association.

Schunk, D. H. (1983). Developing children's self-efficacy and skills: The roles of social comparative information and goal setting. *Contemporary Educational Psychology, 8*, 76-86.

Schunk, D. H. (1990). Goal setting and self-efficacy during self-regulated learning. *Educational Psychologist, 25*, 71-86.

Schunk, D. H. (1991). Self-efficacy and academic motivation. *Educational Psychologist, 26*, 207-231. doi:10.1207/s15326985ep2603&4_2

Schunk, D. H. (1999). Social-self interaction and achievement behavior. *Educational Psychologist, 34*, 219-227. doi:10.1207/s15326985ep3404_3

Schunk, D. H. (2001). Social cognitive theory and self-regulated learning. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (2nd ed., pp. 125-151). Mahwah, NJ: Erlbaum.

Schunk, D. H. (2004). *Learning theories: An educational perspective* (4th ed.). Upper Saddle River, NJ: Pearson.

Schunk, D. H., & Ertmer, P. A. (1999). Self-regulatory processes during computer skill acquisition: Goal and self-evaluative influences. *Journal of Educational Psychology, 91*, 251-260. doi:10.1037/0022-0663.91.2.251

Schunk, D., & Ertmer, P. (2000). Self-regulation and academic learning: Self-efficacy enhancing interventions. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 631-649). San Diego, CA: Academic Press.

Shaw, G. (2000). Professional standards: An emerging face of developmental education. In J. Higbee & P. Dwinell (Eds.), *The many faces of developmental education* (pp. 5-7). Warrenburg, MO: National Association for Developmental Education.

Silver, M., & Sabini, J. (1981). Procrastinating. *Journal of the Theory of Social Behavior, 11*, 207-221.

doi: 10.1111/j.1468-5914.1981.tb00033.x

Skaalvik, E. M., & Hagrvet, K. A. (1990). Academic achievement and self-concept: An analysis of causal predominance in a developmental perspective. *Journal of Personality and Social Psychology, 58*, 292-307. doi: 10.1037/0022-3514.58.2.292

Skinner, B. F. (1953). *Science and human behavior*. New York, NY: Free Press.

Solomon, L. J., & Rothblum, E. D. (1984). Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of Counseling Psychology, 31*, 503-509. doi:10.1037/0022-0167.31.4.503

Solomon, L. J., & Rothblum, E. D. (1988). Procrastination Assessment Scale-Students. In M. Hersen & A. S. Bellack (Eds.), *Dictionary of behavioral assessment techniques*. New York, NY: Pergammon.

Spock, B. (1971). Helping the procrastinating child. *Redbook, 136,* 20.

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin, 133*, 65-94. doi:10.1037/0033-2909.133.1.65

Thurston, L. L. (1938). *Primary mental abilities.* Chicago, IL: University of Chicago Press.

Tschannen-Moran, M., Woolfolk-Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research, 68*, 202-248. doi:10.1037/h0044251

University System of Georgia. (2008). *Learning support requirements for first time freshmen* (Table). Retrieved from http://www.usg.edu/research/students/ls/ls-reqs/ls_fall08.pdf

Van der Kolk, B. (1987). *Psychological trauma*. Washington, DC: American Psychiatric Association.

Walker, L. J. S. (2004). Overcoming the patterns of powerlessness that lead to procrastination. In H. C. Schouwenburg, C. H. Lay, T. A. Pychyl, & J. R. Ferrari (Eds.), *Counseling the procrastinator in academic settings*. Washington, DC: American Psychological Association.

Watson, D. C. (2001). Procrastination and the five-factor model: A facet level analysis. *Personality & Individual Differences, 30*, 149-158. doi:10.1016/S0191-8869(00)00019-2

Wesley, J. (1994). Effects of ability, high school achievement, and procrastinatory behavior on college performance. *Educational and Psychological Measurement, 54,* 404–408. doi:10.1177/0013164494054002014

Wolters, C. (2003). Understanding procrastination from a self-regulated learning perspective. *Journal of Educational Psychology*, *95*, 179-187. doi:10.1037//0022-0663.95.1.179

Zimmerman, B. J. (1989). Models of self-regulated learning and academic achievement. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement* (pp. 1-25). New York, NY: Springer-Verlag.

Zimmerman, B. J. (1994). Dimensions of academic self-regulation: A conceptual framework for education. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulations of learning and performance* (pp. 3-24). Hillsdale, NJ: Erlbaum.

Zimmerman, B. J., & Paulsen, A. S. (1995). Self-monitoring during collegiate studying: An invaluable tool for academic self-regulation. In P. R. Pintrich (Ed.), *Understanding self-regulated learning* (pp. 13-28). San Francisco, CA: Jossey Bass.

Zimmerman, D. W. (1994). A note on the influence of outliers on parametric and nonparametric tests. *Journal of General Psychology, 121*(4), 391-401. doi:10.2466/pms.1994.79.3.1160

APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

Role of Academic Procrastination, Academic Self-Efficacy Beliefs, and Prior Skills on Course Outcomes

This information is confidential and will not be disclosed to anyone outside of this research study. **Please complete all information**. If responding to a question that asks you to choose an answer, please select **one** response that best answers that question.

1. Student ID Number: _____

2. Gender (circle) Male or Female

3. What is your Date of Birth? (mo/day/year)_____

4. How do you describe yourself (please circle)?
    a. American Indian or Alaska Native
    b. Asian
    c. Black or African American
    d. Hispanic or Latino
    e. Native Hawaiian or Other Pacific Islander
    f. White or Caucasian
    g. Other

APPENDIX B

ACADEMIC SELF-EFFICACY SCALE FOR STUDENTS

Academic Self-Efficacy Survey

Assuming you were motivated to do your best, using the following 10-point scale, please indicate how much **confidence** you have that you could do each of the following at Georgia Gwinnett College (GGC):

No Confidence at all		Very Little Confidence		Some Confidence		Much Confidence			Complete Confidence
1	2	3	4	5	6	7	8	9	10

___ 1. Complete a course in composition with a grade of at least a "B".

___ 2. Complete a course in United States history with a grade of at least a "B".

___ 3. Complete a course in swimming with a grade of at least a "B".

___ 4. Complete a course in economics with a grade of at least a "B".

___ 5. Complete a course in introduction to computing with a grade of at least a "B".

___ 6. Complete a course in anthropology with a grade of at least a "B".

___ 7. Complete a course in biology with a grade of at least a "B".

___ 8. Complete a course in mathematics with a grade of at least a "B".

___ 9. Complete a course in geography with a grade of at least a "B".

___ 10. Complete a course in art appreciation with a grade of at least a "B".

___ 11. Complete a course in world history with a grade of at least a "B".

___ 12. Complete a course in health with a grade of at least a "B".

___ 13. Complete a course in religion with a grade of at least a "B".

___ 14. Complete a course in music appreciation with a grade of at least a "B".

REMINDER: This is the scale you are using to indicate how much **confidence** you have that you could do each of the following at Georgia Gwinnett College (GGC):

No Confidence at all		Very Little Confidence		Some Confidence		Much Confidence		Complete Confidence	
1	2	3	4	5	6	7	8	9	10

___ 15. Complete a course in English literature with a grade of at least a "B".

___ 16. Complete a course in chemistry with a grade of at least a "B".

___ 17. Complete a course in sociology with a grade of at least a "B".

___ 18. Complete a course in a foreign language with a grade of at least a "B".

___ 19. Complete a course in film with a grade of at least a "B".

___ 20. Complete a course in computer programming with a grade of at least a "B".

___ 21. Complete a course in psychology with a grade of at least a "B".

___ 22. Complete a course in physics with a grade of at least a "B"

___ 23. Earn a cumulative grade point average of **at least** 2.0 after two years of study (*a 2.0 is = to a C average at GGC*).

___ 24. Earn a cumulative grade point average of **at least** 3.0 after two years of study (*a 3.0 is = to a B average at GGC*).

___ 25. Earn a cumulative grade point average of **at least** 2.0 after three years of study (*a 2.0 is = to a C average at GGC*).

___ 26. Earn a cumulative grade point average of **at least** 3.0 after three years of study (*a 3.0 is = to a B average at GGC*).

___ 27. Complete all your junior and senior level courses in your major.

___ 28. Complete the requirements for your academic major with a grade point average of **at least** a 3.0 *(a 3.0 is = to a B average at GGC).*

___ 29. Successfully pass all courses enrolled in at GGC over the next two semesters (*no W's, F's or IP/In Progress grades*).

___ 30. Successfully pass all courses enrolled in at GGC over the next <u>three</u> semesters (*no W's, F's, or IP/In Progress grades*).
___ 31. Graduate from GGC with a grade point average of **at least** <u>2.0</u> (*a 2.0 is = to a C average at GGC*).

___ 32. Graduate from GGC with a grade point average of **at least** <u>3.0</u> (*a 3.0 is = to a B average at GGC).*

___ 33. Graduate from GGC with a Bachelors Degree.

APPENDIX C

PROCRASTINATION ASSESSMENT SCALE STUDENTS (PASS)

Procrastination Assessment Scale for Students (PASS)

Areas of Procrastination

For each of the following activities (*writing assignment, studying for exams, reading assignment, academic administrative tasks, attendance tasks, and school activities in general*), please rate the degree to which you delay or procrastinate.

Rate each item on a "1" to "5" scale according to how often you wait until the last minute to do the activity. Then indicate on a "1" to "5" scale the degree to which you feel procrastination on that task is a problem. Finally, indicate on a "1" to "5" scale the degree to which you would like to decrease your tendency to procrastinate on each task.

Circle the letter to indicate your response.

I. COMPLETING A WRITING ASSIGNMENT

1. To what degree do you procrastinate on this task?

Never Procrastinate	Almost Never	Sometimes	Nearly Always	Always Procrastinate
1	2	3	4	5

2. To what degree is procrastination on this task a problem for you?

Not At All a Problem	Almost Never	Sometimes	Nearly Always	Always a Problem
1	2	3	4	5

3. To what extent do you want to decrease your tendency to procrastinate on this task?

Never Procrastinate On this Task	Do not Want to Decrease Procrastination	Slightly Want to Decrease Procrastination	Often Want to Decrease Procrastination	Definitely Want to Decrease Procrastination
1	2	3	4	5

II. STUDYING FOR EXAMS

4. To what degree do you procrastinate on this task?

Never Procrastinate	Almost Never	Sometimes	Nearly Always	Always Procrastinate
1	2	3	4	5

5. To what degree is procrastination on this task a problem for you?

Not At All a Problem	Almost Never	Sometimes	Nearly Always	Always a Problem
1	2	3	4	5

6. To what extent do you want to decrease your tendency to procrastinate on this task?

Never Procrastinate On this Task	Do not Want to Decrease Procrastination	Slightly Want to Decrease Procrastination	Often Want to Decrease Procrastination	Definitely Want to Decrease Procrastination
1	2	3	4	5

III. KEEPING UP WITH WEEKLY READING ASSIGNMENTS

7. To what degree do you procrastinate on this task?

Never Procrastinate	Almost Never	Sometimes	Nearly Always	Always Procrastinate
1	2	3	4	5

8. To what degree is procrastination on this task a problem for you?

Not At All a Problem	Almost Never	Sometimes	Nearly Always	Always a Problem
1	2	3	4	5

9. To what extent do you want to decrease your tendency to procrastinate on this task?

Never Procrastinate On this Task	Do not Want to Decrease Procrastination	Slightly Want to Decrease Procrastination	Often Want to Decrease Procrastination	Definitely Want to Decrease Procrastination
1	2	3	4	5

IV. ACADEMIC ADMINISTRATIVE TASKS: FILLING OUT FORMS, REGISTERING FOR CLASSES, GETTING ID CARD

10. To what degree do you procrastinate on this task?

Never Procrastinate	Almost Never	Sometimes	Nearly Always	Always Procrastinate
1	2	3	4	5

11. To what degree is procrastination on this task a problem for you?

Not At All a Problem	Almost Never	Sometimes	Nearly Always	Always a Problem
1	2	3	4	5

12. To what extent do you want to decrease your tendency to procrastinate on this task?

Never Procrastinate On this Task	Do not Want to Decrease Procrastination	Slightly Want to Decrease Procrastination	Often Want to Decrease Procrastination	Definitely Want to Decrease Procrastination
1	2	3	4	5

V. ATTENDANCE TASKS: CLASSROOM ATTENDANCE, MEETING WITH YOUR ADVISOR, MAKING AN APPOINTMENT WITH A PROFESSOR

13. To what degree do you procrastinate on this task?

Never Procrastinate	Almost Never	Sometimes	Nearly Always	Always Procrastinate
1	2	3	4	5

14. To what degree is procrastination on this task a problem for you?

Not At All a Problem	Almost Never	Sometimes	Nearly Always	Always a Problem
1	2	3	4	5

15. To what extent do you want to decrease your tendency to procrastinate on this task?

Never Procrastinate On this Task	Do not Want to Decrease Procrastination	Slightly Want to Decrease Procrastination	Often Want to Decrease Procrastination	Definitely Want to Decrease Procrastination
1	2	3	4	5

VI. SCHOOL ACTIVITIES IN GENERAL: CLUB MEETINGS, OTHER SCHOOL FUNCTIONS NOT CLASSROOM RELATED

16. To what degree do you procrastinate on this task?

Never Procrastinate	Almost Never	Sometimes	Nearly Always	Always Procrastinate
1	2	3	4	5

17. To what degree is procrastination on this task a problem for you?

Not At All a Problem	Almost Never	Sometimes	Nearly Always	Always a Problem
1	2	3	4	5

18. To what extent do you want to decrease your tendency to procrastinate on this task?

Never Procrastinate On this Task	Do not Want to Decrease Procrastination	Slightly Want to Decrease Procrastination	Often Want to Decrease Procrastination	Definitely Want to Decrease Procrastination

1 2 3 4 5

Reasons for Procrastination

Think of the last time the following situation occurred. It's near the end of the semester. A paper you were assigned at the beginning of the semester is due very soon. You have not begun work on this assignment. There are reasons why you have been procrastinating on this task.

Rate each of the following reasons on a 5-point scale according to how much it reflects why you procrastinated at the time. Indicate your response (number 1-5) on the line next to the statement

Use the scale:

Not At All Reflects Why I Procrastinated		Somewhat Reflects		Definitely Reflects Why I Procrastinated
1	**2**	**3**	**4**	**5**

____19. You were concerned the professor wouldn't like your work.

____20. You waited until a classmate did his or hers, so that he/she could give you some advice.

____21. You had a hard time knowing what to include and what not to include in your paper.

____22. You had too many other things to do.

____23. There's some information you needed to ask the professor, but you felt uncomfortable approaching him/her.

____24. You were worried you would get a bad grade.

____25. You resented having to do things assigned by others.

____26. You didn't think you knew enough to write the paper.

____27. You really disliked writing papers.

____28. You felt overwhelmed by the task.

____29. You had difficulty requesting information from other people.

____30. You looked forward to the excitement of doing this task at the last minute.

____31. You couldn't choose among all the topics.

____32. You were concerned that if you did well, your classmates would resent you.

____33. You didn't trust yourself to do a good job.

____34. You didn't have enough energy to begin the task.

____35. You felt it just takes too long to write a paper.

____36. You liked the challenge of waiting until the deadline.

____37. You knew that your classmates hadn't started the paper either.

____38. You resented people setting deadlines for you.

____39. You were concerned you wouldn't meet your own expectations.

____40. You were concerned that if you got a good grade, people would have higher expectations of you in the future.

____41. You waited to see if the professor would give you some more information about the paper.

____42. You set very high standards for yourself and you worried that you wouldn't be able to meet those standards.

____43. You just felt too lazy to write the paper.

____44. Your friends were pressuring you to do other things.

APPENDIX D

INFORMED CONSENT

Consent Form

I, _____, agree to participate in a research study titled "ROLE OF ACADEMIC PROCRASTINATION, ACADEMIC SELF-EFFICACY BELIEFS AND PRIOR SKILLS ON COURSE OUTCOMES FOR COLLEGE STUDENTS IN DEVELOPMENTAL EDUCATION" conducted by DeAnna Jackson Doctoral Candidate from the Department Workforce Education, Leadership, and Social Foundations at the University of Georgia (404-697-5371) under the direction of Dr. Jay W. Rojewski, Department of Workforce Education, Leadership, and Social Foundations, University of Georgia (542-4461).

I understand that my participation is voluntary. I can refuse to participate or stop taking part at anytime without giving any reason, and without penalty or loss of benefits to which I am otherwise entitled. I can ask to have all of the information about me returned to me, removed from the research records, or destroyed.

There are no known risks associated with participating in this research except a slight risk of breach of confidentiality, which remains despite steps that will be taken to protect my privacy.

The reason for this study is to explore how student procrastination, confidence for completing academic tasks, and scores on the COMPASS Writing Skills Placement Test affects end-of-course grades.

I will receive no direct benefit from my participation in this study. My participation however may provide an understanding of student behaviors to assist in the development of programs to decrease academic procrastination and increase student's self-confidence for college.

My participation will involve completing 2 surveys a) The Procrastination Assessment Scale-Students and b) The Academic Self-Efficacy Scale. This should only take about twenty minutes. The researcher will also be requesting from my teacher my final ENGL 0099 course grade and accessing my COMPASS Writing Skills Placement Test score in the Banner Student Information System at the end of the semester.

The results of the research study may be published, but identifying information about me will not be used. The published results will be presented in summary form only. My identity will not be associated with my responses in any published format, and at no point in time will my course instructor know who did or did not participate in the study. When the researcher receives my surveys/questionnaires, my student identification number will be removed and replaced with a new non identifying student code. The master list or key to the student codes will be kept only by the researcher in a separate and locked file drawer from the survey questionnaires. This master list will be destroyed after 1 year.

The investigator will answer any further questions about the research, now or during the course of the project.

- **I agree that DeAnna Jackson, the individual conducting this research, has permission to access my final course grades and my COMPASS Writing Skills Placement Test score.**

- **I agree to take part in this research project. I will receive a signed copy of this consent form for my records.**

_____	_____	_____
Name of Researcher	**Signature**	**Date**

Telephone: _____
Email: _____

_____	_____	_____
Name of Participant	**Signature**	**Date**

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.