ABSTRACT

Relationships Between College Knowledge and College-Going Beliefs of Eighth Grade Students

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The present study examined the relationships of college knowledge and parent education level with these college-going beliefs: (a) self-efficacy, (b) outcome expectations, (c) likelihood both to go to and graduate from college, (d) choice intentions, and (e) educational goals of eighth grade students. Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994) provided the theoretical framework. Data collected included the following instruments: *College-Going Self-Efficacy Scale* (Gibbons, 2005), *College-Going Outcome Expectations Scale - Positive* (Gibbons, 2005), *Career Expectation and Intentions Scale - Revised* (Betz & Voyten, 1997) and the *Texas College Knowledge Inventory* (TCKI) (Wisely, 2012), a revision of the *North Carolina College Knowledge Inventory,* (NCCKI) (GEAR UP, 2008). The study defined parent education level as one of two conditions: either one or both parents had more than a high school education, or parent(s) did not have more than a high school education. Participants included 324 inner-city public middle school students from a school district in central Texas. Ninety percent of the sample were on free and reduced lunch; 54% were female (46% male); 68% were Hispanic, 24% African American, 8% White, 1% other; and

51.5% were prospective first-generation college students (48.5% non-first-generation). Simple linear regression analyses indicate that, in general, college knowledge accounted for between 1-10% of the variance, while parent education level accounted for up to 2% of the variance in college-going beliefs. Although analyses failed to detect an interaction effect between the predictors, including both predictors in the model was an improvement over either predictor model alone, accounting for up to 11% of the variance. Multinomial logistic regression determined that increasing college knowledge or parent education level greatly improved the odds of a student choosing educational goals of four-year institutions or graduate school over the educational goal of high school or less. A secondary purpose of the study was to assess the TCKI as a tool to measure college knowledge. Implications of these findings extend to school personnel, researchers and public policy advocates.

Relationships Between College Knowledge and College-Going Beliefs
of Eighth Grade Students

by

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A Dissertation

Approved by the Department of Educational Psychology

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Marley W. Watkins, Ph.D., Chairperson

Submitted to the Graduate Faculty of
Baylor University in Partial Fulfillment of the
Requirements for the Degree
of

Doctor of Philosophy

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August 2013

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ACKNOWLEDGMENTS

I have known for a long time that nothing in life is accomplished alone. If it were not for my dissertation committee, family and friends, and the eighth grade participants, the present study would not have come to fruition. Thanks especially to my advisor Dr. Susan Johnsen for professional guidance throughout this endeavor. Her work carries the signature of excellence, and I have been honored and privileged to work with her. To Dr. Alex Beaujean, for expert help consisting of thorough analysis, challenging feedback, and large blocks of dedicated time. To Dr. Janet Bagby, for encouraging me in the first place to undertake this pursuit, for providing insights on human development, and for believing in my work every step of the way. To Dr. Terrill Saxon who taught me theory and my first class in statistics, and offered a balanced perspective throughout along with terrific editing. To Dr. Robyn Driskell, for becoming an engaged reader on my committee and providing advice on demographic terminology and survey design.

To my family (Andy – my husband; Barbara and Norman – my parents; Kendra – my step-daughter; Mark and Karen, Mike and Margie, David, Chris and Helen, Rachel and Roy – my siblings and spouses) and friends (Angela Tekell, Barbara Guardenier, Danielle Fearon, Donna Ring, Greta Knoll, Jan Evans, Jeff Heiple, Jo Driver, Karen Rollins, Katherine Weaver, Leti Deaver, Lori Lutz, Mary Curlew, Mary DeWalt, Maurine Frost, Melissa Riesling, Melyn Galbreath, Meredith Candler, Parke Duing, Rafer Lutz, Ronda McCarthy, Sarah Downs, Sheila Druck, Tracy Kelly, William Shiu, and many others I've left off this list), thank you for believing in the future of this project and for sustaining me with your faith in me. To Murphy, my golden retriever, thank you

for going the extra mile, reminding me that walking through the dissertation was important. The present study belongs as much to my family and friends as it does to me. With God's blessings, we did it!

I want to thank the principals, teachers and counselors at the schools where this research was conducted. I also want to acknowledge the 324 eighth grade student participants who helped me with this research. Thank you—and may you continue to aspire to post-secondary education, gain in college knowledge throughout high school, and commence a life of life-long learning. Finally, I need to acknowledge the practical support from various venders for their donations toward this project. Naming them would identify the city where this research took place, so they will remain nameless.

Education opens doors not only of the mind, but also of the heart. This belief is what has inspired me to seek the field of education as a vocation.

DEDICATION

To Andy – my very dear other
To Barbara and Norman Woodward – for instilling in me the value of education

CHAPTER ONE

Introduction

Adolescence, the transition between childhood and adulthood, is an exhilarating time in human development. Marked by physical changes, myriads of emotions, the developing ability to think conceptually and a budding interest in the future (Piaget & Inhelder, 1969), adolescents engage in the process of forming identity (Erikson, 1968). The process of identity development "involves defining who you are, what you value, and the directions you choose to pursue in life" (Berk, 2010, p. 402). Biologically indicated by the onset of puberty, these changes occur in most adolescents during middle school: grades 6, 7, and 8. In the United States, adolescents often wrestle with the process of identity development in the context of school where they spend ten months per year, five days per week, and eight hours per day. Society has a collective opportunity and responsibility to help these children form their identity and plan for their future in the context of their education.

Context: Why Is Higher Education Important?

Education benefits both the individual and society. Relatives, teachers, civic groups, community leaders, and mentors of all kinds encourage students to reach the end of high school prepared to consider and enter college. Legislation such as "No Child Left Behind" (107th Congress, 2002), concepts such as K-16, K-20, and phrases such as *College For All*, or *College Readiness* are peppering the national discussion. In his first joint address to Congress on February 24, 2009, President Barack Obama instituted a goal for the United States to have the highest proportion of college graduates in the world

by 2020 (U. S. Department of Education, 2011). It is generally believed that higher education advances one's life materially, leads to greater opportunity, encourages better citizenship, and enriches one's overall quality of life.

The financial advantages of attaining a higher education are clear. Based on year 2009 statistics, poverty rates were lower for young adults with higher levels of educational attainment. For 18 to 24 year olds, 21 percent lived in poverty. Of those without a high school diploma, 31 percent lived in poverty. Of those who had completed high school, 24 percent lived in poverty. Of those who earned a bachelor's or higher degree, 14 percent lived in poverty (Aud, KewalRamani, & Frohlich, 2011). In real dollar figures, "in 1979, the average college graduate earned 38 percent more than the average high school graduate, according to Ben Bernanke, the Fed Chairman. Now the average college graduate earns more than 75 percent more" (Brooks, 2011, A27). A U.S. Census report entitled, *The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings* (Day & Newburger, 2002), stated that in 1999, the average annual earnings ranged from $18,900 for high school dropouts, to $25,900 for high school graduates, to $45,400 for college graduates, and $99,300 for holders of professional degrees (medical doctors, dentists, veterinarians and lawyers). More recent information is cited in *America's Youth: Transitions to Adulthood* (Aud et al., 2011): "In 2009, full-time, full-year workers, ages 16 to 24, with a bachelor's or higher degree had median earnings of $33,000, compared with earnings of $18,000 for their peers who had not completed high school" (p. vii.).

Higher earnings do not comprise the sole benefit of education. Consider that those who share similar experiences tend to form a collective identity. Such is the case

with investing in, and benefiting from social capital—defined as "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu & Wacquant, 1992, p. 119). The university is an example of an institutionalized network allowing for its members to contribute to and benefit from social capital. In general, social capital allows for workers in an organization to be more productive, and individuals in a social group more inclined to help others, as well as receive help from others. With respect to health, participating in social capital contributes to decreases in suicide rates, strokes, and colds, and increases in psychological well-being (Putnam, 2000). Relative to the current study, social capital leads to increased graduation rates. Peer groups matter. As Putnam (2000) summarized, one's friends aid in navigating life. Friends "remember our birthdays even when we forget them" (Putnam, 2000, p. 4); they provide job leads when we are unemployed, meals when we are ill, and even study groups when we are learning. Social capital opens doors that create greater opportunities.

Federal, state and local governments enjoy increased tax revenues from college graduates and spend less on income support programs for them, providing a direct financial return from investments in postsecondary education (Baum, Ma, & Payea, 2010). The *Trends in Higher Education* (2010) report also highlights other distinct differences between those with a college degree and those without, e.g., decreased smoking rates, increased leisure-time exercise, lower rates of obesity, fewer obese children in the home, and a higher likelihood to vote, to name only a few.

As we continually face a global economy, it is also important that our democracy stands on a well-informed and educated society. In general, education is associated with greater community and civic involvement. Despite a national concern over decreasing civic involvement (Putnam, 2000), the trends persist that those with more education are more involved in their communities than those with less education (Helliwell & Putnam, 2007).

Fortunately, students remain in the school system now more than ever, earning a high school diploma and continuing on in college. Prior to the late 1940s, less than 20 percent of all high school graduates went on to college (Kinzie et al., 2004) and in 2009, 66 percent of male and 74 percent of female high school completers enrolled in college directly after high school (Cataldi & KewalRamani, 2009). When current high-school students are asked if they want to go to higher education, 95 percent reply affirmatively (Adelman & Taylor, 2002). But something happens between intentions and reality for many, and for those that do enroll in college, many do not remain to complete their degree.

Equity Issues

It has been noted that "education is the civil rights issue of today" (Christie, 2010, n.p.). While college enrollments are increasing, not all members of society are experiencing the positive momentum in the same way. For example, not all those who enroll in post-secondary education complete their degrees: in fact, most do not. The graduation rate at two-year or four-year programs within three or six years respectively is not encouraging. According to the U.S. Department of Education, from the cohort year of 2006, only 29.2 percent of young people who began their higher education at two-year

institutions graduated with a degree within three years. In the same report, from the cohort year of 2003, 55 percent of those who began their education at four-year institutions earned degrees within six years (U. S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education System [IPEDS], 2010). There are various reasons for the relatively low success rate of enrollment to degree completion, but chief among them is that many new college students are not academically prepared for college-level rigor (ACT, 2008). Many students have not taken and mastered the material in high school that would prepare them for entry-level college courses. Based on 2008 ACT test results, only one in five high school graduates are prepared for college-level courses in English composition, college algebra, social science, and biology (ACT, 2008). Another major consideration is the financial constraint of paying for college (De La Rosa, 2006). Ethnic constituencies in the U. S. do not enroll at two-year and four-year programs equally; greater percentages of ethnic minorities populate two-year institutions (NCES, 2012). Students from low-income families, a group often including a greater percentage of first-generation college-going students, tend also to enroll at two-year institutions at a disproportionately higher rate than those from middle- or upper-income brackets (McDonough, 1997).

Gaps persist between young men and young women as well. Because males and females have different patterns in the college process, sex differences have received considerable study in college and career decision-making (Fouad et al., 2010; Hackett & Betz, 1981; Williams & Subich, 2006). Although colleges now are populated with higher percentages of females than males, females' median salaries at the level of a bachelor's or higher degree, are 25 percent lower than males' median salaries (Aud et al., 2011).

Females often choose careers that earn lower salaries (U. S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education System (IPEDS), 2010) and in some fields continue to be paid less for equal work. One of the first articles to discuss research on sex, self-efficacy and vocation, Hackett and Betz (1981) found sex differences: they report, "[relative to men] woman lack expectations of personal efficacy in relationship to many career-related behaviors" (p. 326).

Ethnic differences in college choice, attendance and persistence have also been studied. For example, Hispanics are the ethnic group with the lowest parental education attainment levels (Hurtado, Sáenz, Santos, & Cabrera, 2008). African American, White and Hispanic populations are also entering, dropping out or graduating in varied proportions. In Texas, only 56 percent of Hispanic students graduate from high school (Young, Lakin, Courtney, & Martiniello, 2012). Quoting from NCES 2005 statistics, Gross and Goldhaber (2009) report that in 2005, minority students represented 37 percent of community college students as compared to 27 percent of students in four-year institutions. Texas Higher Education Plan's report *Closing the Gaps* (Texas Higher Education Coordinating Board, 2000) highlights the growing minority population in the state, warning that if more minority students fail to graduate with degrees, the state will fall increasingly behind in its yield of college graduates. Moreover, students from various racial and ethnic groups think about their anticipated college experiences and benefits differently, and therefore make choices based on their perceptions (McDonough & Antonio, 1996). Some of these perceptions among middle school students in a low-income, culturally diverse, inner-city public school also involve discrimination, which may create additional barriers to success (Jackson & Nutini, 2002).

Children from families with incomes of $35,000 or less populate community colleges at 30 percent but constitute only 23 percent of those attending four-year institutions (Gross & Goldhaber, 2009). Community colleges provide an affordable entryway for many in the underserved population. Over the past three decades, community colleges have experienced a 200 percent growth as compared to a 75 percent growth for other postsecondary institutions (Gross & Goldhaber, 2009). While community colleges provide a necessary bridge, current degree completion success for two-year versus four-year enrollees is concerning, especially if the statistics hold true for decades to come. The gaps may continue to widen if no efforts are made to understand and counterbalance the inequities.

Research on differences in college-going behavior has consistently and unequivocally identified the parents as having a key influence (Bell, Rowan-Kenyon, & Perna, 2009; Ceja, 2000; Eccles, Vida, & Barber, 2004; Fann, Jarsky, & McDonough, 2009; Horn & Nuñez, 2000). Children of parents who have not attended any post-high school education are at a disadvantage when it comes to learning about and navigating the college process. Those students who cannot turn to knowledgeable parents for information must seek other means to learn about the uncharted path toward college. Bloom (2007) conducted a one-year qualitative study among three high schools in New York City in high poverty areas. She reminds the reader that middle-class students move in a culture that supports post-secondary knowledge with exposure to conversations about *alma maters* and memories of days in college from their parents and friends of the family. Bloom (2007) presents an analogy that when children of non-college educated parents consider attending college, it is akin to considering moving to another planet (involving a

shift of their world view), a disturbance even more tangible when measured against the experience of their peers who have parents with some college education. Children in the latter group are considering a less dramatic paradigm shift and may, by comparison, be thinking about moving to another state.

In her oft-cited *Choosing Colleges: How Social Class and Schools Structure Opportunity,* Patricia McDonough (1997) features her qualitative study of students in California from four different high schools: private, parochial, inner-city public and suburban public. She concludes that those whose parents did not attend college had a significantly higher hurdle in the process than those with families who had prior postsecondary experience. As a result of research claiming the clear difference between these two groups of students, Gibbons (2005) followed McDonough's study by comparing two groups of middle school students using college-going indicators: prospective first-generation college students versus those students who had one or more parents who attended at least some post-high school education. She claims that when researchers control for family income, academic preparation, and ethnicity, first-generation status is a unique contributor to differences in college preparation, attendance, and persistence.

Governmental and educational communities have reacted to these inequities by calling for students to be educated at a younger age about the benefits of post-secondary education and about the choices they need to make along the way regarding academic requirements, financial aid awareness, college options, and extracurricular activities (Bell et al., 2009; Vargas, 2004). Research supports early intervention with middle school students (Horn & Nuñez, 2000; Tierney, Corwin, & Colyar, 2004), as it has been

determined that most high school students have made their decisions about postsecondary education by their freshman or sophomore year in high school (Hossler, Braxton, & Coopersmith, 1989). Those who wait until junior and senior year to consider post-secondary education are frequently too late to enroll in the coursework necessary for becoming college ready. The assumption made in the push for earlier information is that this acquired knowledge will translate into better decision-making and ultimately better preparedness for college enrollment and completion. To date, however, there has been no identifiable research that assesses the relationship between students' knowledge about college and their college-going beliefs.

Factors Influencing College-Going Behaviors

Social support has been documented as a contributing factor toward college-going behavior (Contreras, 2011; Gibbons & Borders, 2010). Besides having parents who support attending college, having support from teachers and counselors also carries weight. It has been proposed that for those students whose parents did not attend college, the counselor assumes a more significant role in decision-making behaviors (Vargas, 2004). Communicating about post-secondary options and how to navigate school to reach these goals falls within the domain of our educational system.

A high school's college-going habitus (McDonough, 1997) plays a large role in shaping students' goals for post-secondary education. Habitus is understood as "a social-class-based set of subjective perceptions that shapes expectations, attitudes and aspirations" (McDonough, Korn & Yamasaki, 1997, p. 301). To what extent is it expected of the students that they will attend college? What in the culture supports this notion? Are there visits from college representatives? Are there trips to visit college

campuses? Is there someone with whom students can talk about the various postsecondary options? Do the high school graduates who enroll in college return to high school to visit and talk about their experiences at college?

Being academically prepared by the end of high school is a key factor in college enrollment and degree completion. Regardless of a student's sex, family income or racial/ethnic background, a student has a greater likelihood of attaining postsecondary goals by taking the recommended curriculum consisting of: four years of English, three to four years of math (including Algebra II and Geometry), three to four years of social studies and three to four years of science (including Physics, Chemistry and Biology) (ACT, 2006; Texas Higher Education Coordnating Board, 2012; The College Board, 2011). College Board has also conducted research examining the relative influence of rigor in the classroom for college success. A correlation exists between increased rigor in the classroom and increased performance on college admission tests and college coursework. Much research supports the notion that students should enroll in Algebra I in eighth grade, for example, in order to be prepared for increased rigor and eventual college enrollment without having to resort to remedial coursework once in college (Contreras, 2011).

Knowing about financial costs and resources contributes to informed college-going behavior. It has been found that prospective first-generation college students (more than non-first generation peers), as well as their non-college educated parents, traditionally overestimate the costs of college. This tendency to overestimate becomes a further barrier to college-going behavior, causing families to construe education as well beyond their reach. In her research with high school seniors in New York City, Bloom

(2007) reported that when they were asked if anything might get in their way of plans for the next year, those from middle or higher income levels either replied negatively, supplied no answer, or left the question blank, while students from the lower income levels almost universally wrote "money, finances," "money," "money" (p. 351). Because of being aware that some students start but do not finish post-secondary schooling, or finish but struggle to find high paying work, this lower-income cohort expressed particular apprehension about taking out loans.

Social Cognitive Career Theory

Social Cognitive Career Theory (SCCT) provides a framework for understanding how students make the decisions they do on the path to post-secondary education. "College" and "career" are words most often used in tandem in the literature regarding the counseling of adolescents. Since 1994, a way to understand career decision-making has been proposed by Lent, Brown, and Hackett, (1994) through Social Cognitive Career Theory. SCCT is founded on Bandura's Social Learning Theory (Bandura, 1977, 1992), which claims that a way to understand human agency is to consider the person, environment and behavior in a way that allows for bi-directional influences. Bandura entitles this relationship "triadic reciprocal causation" (Bandura, 1992, p. 6). Engaging in this dynamic process, people exercise control on their environment through their behavior that is influenced in turn by their perceptions. Bandura calls self-efficacy a fundamental component of human behavior: one's "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (1992, p. 3). If a person has high self-efficacy, she is more likely to engage in behaviors to

complete the task. If her self-efficacy is low, she is more likely to avoid the situation altogether or to desist in the face of difficulties.

Self-efficacy is domain specific. One can have high self-efficacy in one area, and low self-efficacy in another. Not to be confused with self-concept, self-concept is to be understood as one's set of attributes, values, and attitudes that define oneself (Berk, 2007). Self-concept crosses domains and is more a construct of general self-understanding. Self-esteem, another concept worth clarifying, reflects a judgment of oneself and the feelings that arise from that judgment. It, too, is not domain specific, though success in domain activities may result in an increase in one's self-esteem.

Applying Bandura's theory to career development, Bandura highlights three "building blocks:" self-efficacy ("beliefs about one's performance," Hackett & Betz, 1981, p. 328), outcome expectations ("beliefs about the consequences of behaviors," Hackett & Betz, 1981, p. 328) and personal goals. Lent, Brown and Hackett (1994) propose a relationship among these three components of social cognitive career theory that includes antecedents of "person inputs" and "background variables." These variables, in turn, through learning experiences relate to both self-efficacy and outcome expectations, ultimately feeding interests and goals. SCCT is applicable to specific domains such as mathematics, golf and, for our interests, college-going, but it is not a trait theory such as extraversion or introversion.

Research around self-efficacy and Social Cognitive Career Theory (SCCT) has been robust. Much of the research has focused on scale development to measure the constructs in various domains (Bandura, 2006; Betz, 2007; Betz & Hackett, 2006; Forester, Kahn & Hesson-McInnis, 2004; Fouad & Smith, 1997; Gibbons, 2005; Lent,

2006), as well as the model fit of the theory. Among the first to consider the relationship between self-efficacy and sex differences, Hackett and Betz (1981) explored self-efficacy beliefs of women versus men with respect to career field choice. They found women's lower self-efficacy for some fields actually created barriers for them that led to lower persistence in tasks related to that field. Hackett and Betz are often credited with beginning to bridge Bandura's Social Learning Theory with application to the career process.

Fouad and Smith (1996) contributed to the research on SCCT with primary focus on several key constructs: self-efficacy, outcome expectations, interests and goals with an ethnically diverse middle school population. They selected and tested three of the twelve propositions originally presented in the Lent, Brown and Hackett (1994) seminal article. Specifically, Fouad and Smith were interested in assessing (a) whether a person's interests are a result of self-efficacy and outcome expectation in that domain, (b) whether self-efficacy beliefs affect goals/actions, and finally (c) whether outcome expectations affect goals/actions. Studying race/ethnicity and sex, Fouad and Smith (1996) additionally examined Lent et al.'s (1994) proposal that background variables mediate learning experiences in forming the two main constructs of self-efficacy and outcome expectations. The results from this middle school population supported the propositions. The team later sought to measure these constructs (academic self-efficacy, outcome expectations, interests and goals) across four subject matter areas with a university student sample (Smith & Fouad, 1999). As this study also supported four distinct constructs, their research added to the literature establishing the domain specificity of self-efficacy and the relationship of the other measures against it (Betz, 2007).

Gibbons (2005) continued to study SCCT with middle school students. In particular, she studied the college-going beliefs of middle school students with attention to self-efficacy, outcome expectations, perceived social support, perceived barriers, and goals of prospective first-generation college-going students. Gibbons was also interested in comparing result models for prospective first-generation college students versus their non-first generation peers. Her research concluded that the SCCT model is a good fit, notwithstanding some differences per group. She recommended considering outcome expectations as distinctly positive and negative, and considering parent education level as a background influence in understanding the factors affecting prospective first-generation college students' thoughts and decisions regarding college.

Interventions typically include communicating knowledge about the various components of the college process. It is assumed that increased knowledge will increase a student's domain-specific beliefs. Gibbons' (2005) model included background characteristics and person inputs as affordance variables, as well as outcome variables (self-efficacy, outcome expectations, and choice intentions), but she did not assess the impact of knowledge—or in Lent et al.'s (1994) terminology, learning experiences—about the college process on the outcome variables. Considering the national goal of increasing college-going and college-completion rates, and in light of research emphasizing that college knowledge is important (Coleman, 2007; Contreras, 2011; McDonough, 1997; Vargas, 2004), institutions such as ACT, College Board, and The American School Counselor Association recommend communicating the information early and often. Programs targeted at communicating information to certain groups of students have met with success (e.g., GEAR UP, AVID, and Upward Bound) in seeing

higher percentages of students graduate from high school and enroll in postsecondary institutions (Flores, 2007).

Statement of the Problem

Three related problems have been identified: First, research suggests that having college knowledge will result in students making better decisions about: (a) academic course planning, (b) extracurricular activities, (c) searching and applying for college and financial aid, and (d) persisting once in college (Bell et al., 2009; Conley, 2005). Yet a review of the literature has exposed a lack of research on the specific relationship between college *knowledge* and college-going *beliefs* such as self-efficacy, outcome expectations and choice intentions.

Second, it has been argued defensibly that individuals and society benefit from students pursuing postsecondary education (Baum et al., 2010; Putnam, 2000). Inequities exist; in particular, research has identified that students who come from families where neither parent has education past high school score lower on college-going belief measures (Gibbons, 2005). It has been suggested that further studies be conducted to determine if this finding is consistent across different geographic samples of middle school students (Gibbons, 2005).

Finally, imparting college knowledge in middle school is viewed as a way to level the playing field (De La Rosa & Tierney, 2006), but research in this area is lacking. Does having college knowledge in middle school moderate the effects of background characteristics on college-going beliefs?

Purpose of the Study

The primary purpose of the current study was to examine the strength of the relationships between college knowledge and college-going beliefs, as well as parent education level and college-going beliefs in eighth grade students. In addition, this study examined if college knowledge moderated the relationship between parent education level and college-going beliefs. College-going beliefs were operationalized by measures of (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions and (e) educational goals. A secondary purpose of this study was to further assess the *Texas College Knowledge Inventory*, (Wisely, 2012) (Appendix A.7, Part II), a revision of the *North Carolina College Knowledge Inventory* (GEAR UP, 2008) (Appendix B.3), as a tool to measure college knowledge. This study adds to the growing literature on the application of social cognitive career theory (Lent et al., 1994) to a middle school population by considering the background variable of parent education level, as well as considering a measure of learning experiences—defined in this study as college knowledge.

Research Questions

1. What is the relationship between college knowledge and each of the following college-going belief variables in eighth-grade students: (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals?

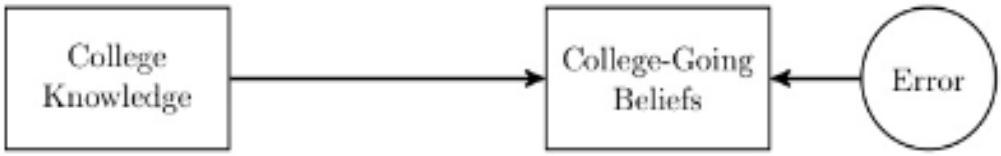

Figure 1. *Path Model for the Question: What Are the Relationships Between College Knowledge and College-Going Beliefs?*

2. What is the relationship between parent education level and each of the following college-going belief variables in eighth-grade students: (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals?

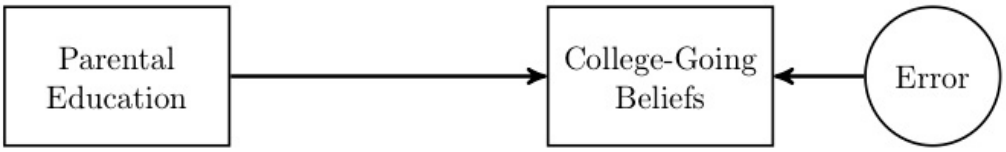

Figure 2. *Path Model for the Question: What Are the Relationships Between Parent Education Level and College-Going Beliefs?*

3. Does college knowledge moderate the relationship between parent education level and each of the following college-going belief variables in eighth-grade students: (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals?

Definition of Terms

Choice intentions: Student likelihood of attending and graduating from post-secondary education has traditionally measured choice intentions (Gibbons, 2005). Scores range from 1 – 18. For the purposes of this study, two additional indices of choice intentions were considered: the results of the career explorations intentions scale, range of 5 – 25, and student stated goals for post-secondary education.

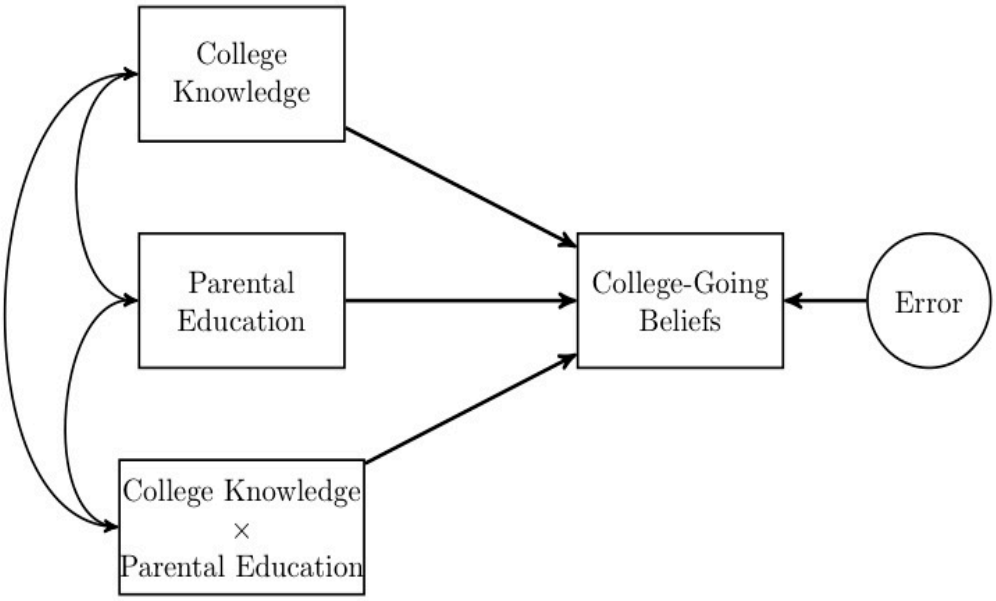

Figure 3. *Path Model for the Question: Does College Knowledge Moderate the Relationships Between Parent Education Level and College-Going Beliefs?*

College-going beliefs: For the purposes of this study, five variables were considered: college-going self-efficacy, outcome expectations, and the three variables indicating choice intentions (see Choice Intentions).

College-going outcome expectations: Beliefs about the favorable results from pursuing post-secondary education. For the purposes of this study, the positive subscale of the *College-Going Outcome Expectations Scale* (Gibbons, 2005) was used. A totaled score ranges from 15 – 60.

College-going self-efficacy: One's belief in one's ability to be successful in attending and persisting in college. For the purposes of this study, the *College-Going Self-Efficacy Scale* (Gibbons, 2005) was used. A totaled score ranges from 30 – 120.

College knowledge: Understanding the terms and procedures involved in planning for and enrolling in college. For the purposes of this study, a revised version of the *North Carolina College Knowledge Inventory* (GEAR UP, 2008) was used and is called the *Texas College Knowledge Inventory* (TCKI) (Wisely, 2012). It examines knowledge and comprehension in five major areas: meaning and significance of terms commonly encountered in preparing for a post-secondary program; facts about two-year, four-year, and private college options; benefits of pursuing post-secondary education; financial aid awareness, and miscellaneous information (e.g., on-line education, earned grades between institutions). A totaled score ranges from 0-20.

Parent (Guardian) education level: Categorically defined as one of two conditions: one or both parents have more than a high school education, or parent(s) does not have more than a high school education.

Prospective first-generation college-going student: A student who comes from a family where neither parent has more than a high school education.

Racial ethnic group: Student response to questions on ethnicity and race were collapsed and dummy coded into one variable. There are four categories: "Black or African American," "Hispanic," "White or Caucasian" and "Other."

Social cognitive career theory: Proposed by Lent, Brown and Hackett (1994), this theory seeks to explain the various factors involved in how people make academic and career decisions.

CHAPTER TWO

Review of Literature

This review of the literature is presented in three main sections: (a) first, a brief overview of adolescent development theory, (b) second, an elaboration of social cognitive career theory including the specific variables assessed in this study and finally, (c) a discussion of what constitutes college knowledge.

Adolescent Development

Adolescence is often referred to as the period of transition between childhood and adulthood. Although individuals remain unique in their progress through development, generalizations can be made about children as they mature. Theorists have approached these changes from various perspectives. G. Stanley Hall (1904) recognized the onset of adolescence as beginning with biological changes. Using the phrase "sturm und drang," Hall (1904) characterized adolescence as a time when the individual recapitulates both his own experience (ontogeny) and the experience of the whole human race (phylogeny) as he matures. Anna Freud (Freud, 1958) proposed understanding adolescent development from a psychological perspective maintaining that the young adolescent is seeking equilibrium as biological forces wrestle with psychological (i.e., id, ego and superego) forces for dominance. Erikson (1968) presented a stage theory of development based on psychosocial factors, to the effect that e.g., once resolving "industry versus inferiority," the child now explores "identity versus role confusion." Moreover, Piaget (Piaget & Inhelder, 1969) investigated the development of cognitive abilities in stages

positing that adolescence is marked by the beginning of formal operational thinking, the ability to think in the abstract and to use deductive reasoning.

Late in the twentieth century, consideration of context gained popularity as a way to understand behavior. Bronfenbrenner (1994, 2005), for example, offered a way to understand human behavior as only existing in the context of one's environment. His "ecological theory" consists of concentric spheres of influence in four (and later, five) levels functioning bi-directionally with the individual at the core. The microsystem, the inner sphere, includes one's pattern of activities, social roles and interpersonal relations in a face-to-face setting with family, school or workspace. The mesosystem involves linkages between two or more of these areas while still including the individual directly. The third sphere, the exosystem, consists of two or more linkages that do not involve the individual directly. An example would be the individual's school that contains the individual's peer group. Finally, the fourth level is the macrosystem. This level includes the three prior systems in the context of a given culture or subset of culture: the cultural and societal beliefs and material resources, for example. Years after the initial study, Bronfenbrenner added a fifth sphere, the chronosystem to designate the pattern of environmental events in the person's history. For example, did the person enjoy consistency, or did various factors in her environment change? Examples of change might include moving, swings in financial resources, employment opportunities, and changes in family structure (Bronfenbrenner, 1994). These systems interact with the individual throughout life and shape his or her development.

Another developmental psychologist, Albert Bandura, has built his reputation on social learning theory as a way to understand development. Not convinced by the many

theories postulating adolescence as marked universally by storm and stress, Bandura (1977b) insists instead that expectations influence behavior, especially within social learning situations. More than his peer psychologists, Bandura credits the individual with control over destiny. Human agency is thus foundational in his theory. One's self-efficacy (the belief that one can accomplish a task) is largely what leads to one's behavior. Bandura argues that self-efficacy can be increased via mastery experiences (previous success in like endeavors), vicarious reinforcement (watching someone similar to oneself accomplish a task), verbal persuasion (encouragement), and physical arousal (e.g., decreasing anxiety).

It stands to reason that since young adolescents: (a) are cognitively ready to think in abstract terms, (b) have a developing interest in their future, (c) are more engaged intellectually, (d) are beginning to focus on role models, (e) seek personal identity, and (f) seek greater independence (American Academy of Child & Adolescent Psychiatry, 2011; Spano, 2012), then adolescence is an optimal time for influence. Introducing young adolescents to and challenging them about their educational plans and goals regarding high school and beyond is developmentally appropriate.

Social Cognitive Career Theory

Lent, Brown and Hackett (1994) provide a framework to incorporate what had, prior to 1994, been identified in research as three distinct aspects of career development: the formation of interests relative to careers, the selection of academic and career options, and finally, the performance and persistence in educational and occupational endeavors. They claim that the model can be applied equally well in academic as well as career domains. Building on Bandura's (1986) social learning theory, Lent et al. (1994)

incorporate the predominant concept of self-referent thinking and personal human agency in decision-making *with* recognition of the role of contextual influences, be they biological, affective, economic or cultural. Recalling Bandura's (1999) triadic reciprocal causality, they remind us of person, behavior and environment as three angles of an isosceles triangle, each influencing and being influenced by the other. They posit that learning experiences mediate background variables in their relationship with self-efficacy and outcome expectations.

Lent et al. (1994) conducted a thorough meta-analysis from research with six career-relevant sociocognitive variables in both adolescent and adult sample sizes ranging from 339 to 1829. They produced an intercorrelation table using averaged weighted correlations from at least three studies per variable combination. The following five relationships at $p < .001$ had the strongest average weighted correlation: (a) interests and choice goals shared $r = .60$, (b) self-efficacy and outcome expectations shared $r = .49$, (c) self-efficacy and interests shared $r = .53$, (d) self-efficacy and choice goals shared $r = .40$, and (e) outcome expectations and interests shared $r = .52$. Self-efficacy and outcome expectations each account for approximately 27% of the variance in interests. As a result, Lent et al. (1994) developed a model to explain how people make career decisions and what factors contribute to them.

Lent et al. (1994) originally claimed that social cognitive career theory was intended for the late adolescent and early adult population cautioning against its use as a grand theory of human development. However, subsequent research on the applicability of the theory to various age groups has found it robust. Drawing on Bandura (1986), Lent et al. (1994) focused on the following relationships: self-efficacy, expected

outcome, interest and goal choices, and how person, context and learning factors affect these three. The social cognitive career theory is unique as a career theory in that it is to be understood as domain-specific (e.g., learning mathematics, running a race, writing a dissertation) versus trait-specific (e.g., introversion/extraversion, conscientiousness, neuroticism). In other words, one might have high self-efficacy for learning the high jump, but low self-efficacy for swimming a mile, despite possessing a consistent personality trait.

What follows is an explanation as well as research about the variables specific to the current study: person input or background variables (i.e., sex, race/ethnicity, socioeconomic status, parental education level), self-efficacy, outcome expectations, interests or intentions, goal choices, and learning experiences. This section will conclude with a discussion of the application of the social cognitive career theory to the adolescent population.

Person Factors and Background Variables

Sex or gender. Aware of the myriad differences listed by other researchers (Super, 1990), Lent et al. (1994) focused on gender and race/ethnicity as personal factors to help understand how people might experience career decision-making differently. Although at one level sex and race are biological differences, the authors use the terms gender and race/ethnicity to recognize the profound effect of these differences at both the psychological and social levels. These are important considerations precisely because contextual factors "(a) help shape the learning experiences that fuel personal interest and choices, and (b) comprise the real and perceived opportunity structure within which career plans are devised and implemented" (Lent et al., 1994, p. 107). Environmental

events such as discrimination may also play a role in shaping one's choice patterns. Lent et al. (1994) discussed how gender and racial or ethnic differences in self-efficacy beliefs are mediated largely by differential access to sources of efficacy information. Lent et al. (1994) hypothesized that these differences are reduced when differences in efficacy source experiences are controlled. In other words, leveling the playing field will more likely occur as recognition of prior differences are considered and interventions are made. Gender and racial differences in outcome expectations, additionally, are mediated largely by differential access to direct and vicarious reinforcement experiences. Implied is the notion that influencing learning experiences helps to change self-efficacy and outcome expectations.

Recent research has explored the notion of personality as another contributing person input to the SCCT model. For example, Schaub and Tokar (2005) reported testing the effects of personality on interests with a sample of college students. They found that personality's relation to interests was mediated by learning experiences. Their study contributed to the SCCT model by supporting the hypothesized relationship among the variables self-efficacy, outcome expectations and learning experiences.

Combining personality with gender, Tokar, Thompson, Plaufcan, and Williams (2007) specifically studied gender, gender role conformity and personality in the context of SCCT variables. Using the rubric proposed by J. Holland (1997)—i.e., The Holland Code—with six unique categories (realistic, investigative, artistic, social, enterprising and conventional) to which individuals are vocationally drawn, Tokar et al. (2007) hypothesized that personality (as one of five types: neuroticism, extraversion, openness, agreeableness, and conscientiousness) as one person input, and gender (male, female) as

another person input, were mediated by adherence to conformity to gender roles in how individuals experienced the learning experiences, or indicated which of the six Holland themes to which they were drawn. Results supported the hypothesis that gender significantly contributes to learning experiences. Conformity to gender role norms also proved to at least partially mediate learning experiences.

From this research two conclusions become clear: first, sex or gender, remains a significant person input to be considered as it relates to interests and goals and may be mediated by learning experiences; second, learning experiences relates to the other two variables, self-efficacy and outcome expectations.

McWhirter (1997) focused her research interest on the career development of women and minorities. She wondered about the assumption that women and minorities held different perceived barriers from males and majority students. With continued interest in adolescents and assessing their held beliefs prior to college choice, McWhirter studied 1,139 junior and senior high school students. Specific to the SCCT model, she focused on Lent et al.'s (1994) hypothesis that perceived barriers mediate the relationship between career interests and career goals. McWhirter created a scale to assess those perceived barriers. Analysis from her study demonstrated significant gender and ethnic differences without significant interaction effects. For example, with respect to their future occupations, women perceived greater discrimination than did men, and Mexican American adolescents perceived greater barriers than European American adolescents. McWhirter suggests that although her research found support for Lent et al.'s (1994) proposition that perceived barriers mediate interests and goals, the influence of perceived

barriers on interest-choice congruence might indeed be mediated by self-efficacy expectations.

Ethnicity and race. Lent et al. (1994) claim that research prior to their article viewed sex and race/ethnicity from the perspective of decision outcomes rather than as a possible source affecting career development. Race and sex are biological attributes: however, Lent et al. emphasized the significance of these variables within a larger social and psychological context. How one experiences gender and ethnicity in the context of his or her environment can dramatically influence experiences and expectations. Researching SCCT variables and race, Alliman-Brisset and Turner (2010) studied perceptions that a racial group of African American middle school adolescents had of racism and its effects on career interests, efficacy and outcome expectations in math-related occupations. "Perceived racism was predictive of efficacy (at 6%) and outcome expectations (at 14%), while 13% of interests was predicted by both poor academic performance in math and perceived racism" (Alliman-Brissett & Turner, 2010, p. 215). As a result, the authors recommended that race be considered in future studies examining the development of math or science interests of African American middle school students. Others have also contributed to the research in the area of race and ethnicity and the unique contribution it has to experience (Flores, Navarro, & DeWitz, 2008; Gushue, Clarke, Pantzer, & Scanlan, 2006; Gushue & Whitson, 2006).

Socioeconomic status (SES). Lent et al. (1994) allowed for "contextual affordances" (p. 93) to exercise influence in their model. They acknowledged that, for example, "extreme poverty can powerfully affect career choice options based, in part, on their impact on other system elements, such as learning opportunities" (p. 88). Huang

and Hsieh (2011) investigated socioeconomic status (SES) as a predictor of other career decision-making variables in the SCCT model. With a sample of 738 college students in Taiwan, they conducted a partial least squares analysis using the variables SES, career decision self-efficacy, career decision-making outcome expectations and career exploratory intentions. The results indicated that while SES significantly predicted self-efficacy, it did not significantly affect outcome expectations. Consistent with prior research, Huang and Hsieh (2011) found that self-efficacy has both a direct and indirect (by way of outcome expectations) effect on career exploratory intentions (goals).

Ali, McWhirter, and Chronister (2005) applied SCCT to a group of lower socioeconomic ninth grade students. Ali et al., (2005) were interested in assessing the relationship among several of the socio-cognitive variables (i.e., support systems, SES and barriers as they relate to self-efficacy and outcome expectations) with respect to vocational and educational perceptions of 114 ninth grade students. Results from their analysis demonstrated significant correlations between SES and self-efficacy ($r = .25$, $p < .05$) and SES and outcome expectations ($r = .22$, $p < .05$); however, in conducting subsequent regression analysis, they failed to establish a causal relationship. In interpreting their results, Ali et al. (2005) suggested that their assessment of SES, as determined by parent occupation and level of education, might not have been sensitive enough to discriminate between the nuances of the sample. They consider that a subjective, theory-driven assessment of socioeconomic status may prove more informative. They did find that for these lower SES students, peer and sibling support systems served as a significant factor in self-efficacy expectations, more so than perceived parental support. The role of Bandura's (Bandura, 1982) vicarious

reinforcement as a source of self-efficacy was emphasized in understanding the results from their research. For those from a lower SES, the success of a sibling or peer in navigating the paths ahead appears to have an impact on one's self-efficacy.

Ali and Sanders (2006) studied 87 Appalachian youth and their expectations regarding college. They reported that students in this community experience twice the rate of poverty as the overall United States average, and that only 12.3 percent of people in the community over age 18 held a college degree, versus 21 percent of the general US population (based on 2000 U. S. Census data). All gathered data was from the survey administered to the students, including parent education level and parent occupation. Unique in their study was their separation of parental education from occupation, as an indicator of SES. They suggested that these variables might differentially contribute to expectations of Appalachian high school students. They did this in light of previous research maintaining that students from families where neither parent has any college experience are less likely to intend to enroll in college. The conclusion drawn from their hierarchical analysis was that self-efficacy and parental support play a significant role in student expectations of attending college, more so than either the parent occupation or the parent education level. Ali and Saunders (2006) claimed that this outcome is consistent with Lent et al.'s (1994) statement that self-efficacy and perceived support may be more influential than background variables in the development of career goals.

Included in this dissertation study, SES is indicated by the student's participation in the federal Free and Reduced Lunch Program. Parent education level was a separate person input variable and was obtained from the parents directly. Parent support will not be measured.

Parent education level. Research has repeatedly found that students from families where neither parent attended post-high school education are at a disadvantage in learning about post-high school educational options. Horn and Nuñez (2000) compared first-generation students with their peers whose parents attended college on whether or not the students took eighth grade algebra; they also examined the differences in planning strategy revealed by the two groups. When controlling for math ability and for qualification for college admission, Horn and Nuñez (2002) report that first-generation students pursue post-secondary education at a lower rate than their non-first-generation peers. Gibbons (2005) and Nailor (2008) each based their dissertation research on comparing the two groups. Gibbons (2005) reports that prospective "first-generation students were less likely to report an intention to go to and/or graduate from a four-year university or graduate school than were non-first-generation students" (104-105). Nailor (2008) investigated seventh graders' perceived barriers to post-secondary education and found on the whole, that although seventh graders were optimistic about attending, there were significant differences between prospective first-generation college-going students and their peers on perceived barriers. Prospective first-generation college-going students were more concerned about not having enough money, family responsibilities, the length of time it might take to complete a degree and having to work while in college. Ikenberry and Hartle (1998) noted that perhaps most troubling in their research was the finding that first-generation college families are among the most uninformed and fearful about the process of applying to and attending college.

Self-efficacy

Self-efficacy refers to "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 361). Not connected to measured ability so much as to belief, self-efficacy seeks to answer the question, "Can I do this?" Self-efficacy is the root of one's effort to the extent that it affects patterns of thought and emotional reactions, especially in the face of difficulties. It stands to reason that if one has higher self-efficacy for a goal, he or she is more likely to persist toward that goal. Too much ill-founded self-efficacy will be counterproductive, however, because once the performance feedback is considered, the discrepancy between self-efficacy confidence and measured achievement becomes too disparate. Where self-efficacy and ability overlap, on opposite extremes are for those students who overestimate or underestimate their ability as measured in grades or test scores. Bandura posited that students who "slightly overestimate" their abilities are in the best situation to achieve. "Such modest 'over-confidence' encourages people to take on challenges that promote skill development and self-efficacy" (Lent et al., 1994, p. 101). In Lent et al.'s (1994) model, the authors asserted—again consistent with Bandura—that self-efficacy beliefs derive from four main areas: "performance accomplishments, vicarious learning, social persuasion, and physiological reactions (e.g., emotional arousal) in relation to particular educational and occupationally relevant activities" (p. 103). Performance accomplishments or otherwise called mastery experiences have the strongest connection to self-efficacy of the four areas. One's understanding of and competence in a field increases self-efficacy. In his review of the literature, Gore (2006) reported that 11% of all research recorded between 2000 and 2005 in the two journals

Journal of Counseling Psychology and *Journal of Vocational Behavior* included a reference to self-efficacy in their titles and/or abstracts. Self-efficacy for a domain, it is postulated, leads to choice patterns consistent with performance and persistence (Betz, 2007). As previously discussed, Hackett and Betz (1981) were among the earliest to study SCCT in light of person input variables. They explored the access women and men had to learning experiences for careers in mathematics, science and engineering. They suggested that differential access for other groups (e.g., socioeconomic status, or people with disabilities) to learning opportunities might also affect self-efficacy beliefs. Research has been robust in the area of self-efficacy beliefs (Artino, 2006; Bandura, 1977b, 1997; Betz & Hackett, 2006; Betz, 2007; Gibbons & Borders, 2010; Rottinghaus, Larson, & Borgen, 2003). Domains considered include: science, engineering, mathematics, social studies, art, English, six themes of Holland's theory, vocational activities such as leadership and public speaking, competency research in counseling, computer science general academic self-efficacy, and—pertinent to the present study—college-going self-efficacy beliefs of middle school students.

Self-efficacy has received the greatest attention of all of the SCCT variables. It has been determined to have the largest impact on interests and goals and has often been found to mediate outcome expectations and its impact on interests and goals.

Outcome Expectations

What one expects to happen as a result of pursuing and attaining the goal is termed outcome expectations. Different from self-efficacy—a belief in one's ability—outcome refers to beliefs about results. This category involves imagination, "If I do this, what will happen?" Bandura (1986) claimed that the consideration of outcomes consists

of three areas—the anticipation of physical, social and self-evaluative outcomes. With respect to a college degree, possible positive outcomes might include greater earning potential, a rung up on the social ladder and/or the personal satisfaction of knowing or learning a skill, while negative outcomes might include the financial cost of earning a degree, the possible separation from family or social group as a result of having the degree, or the possibility that the sought-after job may not be all that one has expected. These anticipated outcomes, both positive and negative, influence motivation and present decisions in choosing actions. Bandura recognized the dual role of self-efficacy and outcome expectations in behavior choice; however, self-efficacy typically sustains great effort even where outcome is uncertain. It is seen as the predominant causal factor and as a partial determinant of outcome expectations (Lent et al., 1994).

In seeking a better understanding of the role of the variables in SCCT, Fouad and Smith (1996) tested 380 seventh and eighth grade students on certain propositions made in Lent, Brown and Hackett's 1994 article, namely "that an individual's vocational interests are reflective of his or her concurrent self-efficacy beliefs and outcome expectations, that self-efficacy beliefs affect choice goals and actions, and that outcome expectations affect choice goals and actions" (Fouad & Smith, 1996, p. 338). Since Lent et al. (1994) also proposed that demographic and individual difference variables (such as gender or race-ethnicity) mediate learning experiences that play a role in forming self-efficacy beliefs and outcome expectations, Fouad and Smith (1996) researched these variables as well. They maintained that studying this model with middle school students in the domains of math and science was "critical" because of students' developing interests and the impact of present choices on future consequences: for example, courses

in high school, persistence in those courses, and choices of extracurricular activities. Fouad and Smith (1996) made slight modifications to Lent et al.'s (1994) original model for their work with middle school students. Arguing that middle school students have not yet reached high school, the authors cannot study choice actions as originally modeled. Instead, Fouad and Smith (1996) studied the intentions of these students as a proxy for actions (Fouad & Smith, 1996). Isolating person inputs, self-efficacy, outcome expectations and choice intentions, Fouad and Smith (1996) acknowledged that they did not study learning experiences. They write that, "the exclusion of this variable [learning experiences] from our study does not allow for the evaluation of the additional influence that important learning experiences have on self-efficacy and outcome expectations" (p. 340). I highlight this omission, because this study assessed the relationship of learning experiences to the other SCCT variables of self-efficacy, outcome expectations and choice intentions. Results of Fouad and Smith's (1996) study supported all three tested propositions with this middle school sample. The variables are distinct and fit the model.

Later, Smith and Fouad (1999) studied high school students in four academic subjects: math and science, social studies, English and art. Their intent was to assess SCCT's claim toward domain specificity. Prior to their research, most studies had assessed the model in the domains of math and science only. Through their analysis, they were able to demonstrate that the constructs within the SCCT model are, in fact, distinct measureable attributes within specific domains. The model is robust across domains.

Interests

As distinct from goals, interests are often assessed by asking participants how interested they are in performing domain-specific activities. Blanco (2011) asked

participants to indicate their interest on a scale of 1 (very low interest) to 6 (very high interest) in statistics-related activities. For example,

> Indicate how interested you are in the following professional activities: (1) Designing a statistical study in your professional area (a survey, an experiment, etc.), (2) Planning statistical analysis for a study in your professional area, (3) Analyzing and interpreting data to understand a problem in your professional area, (4) Writing a results and conclusions report on an empirical study in your professional area, (5) Reading academic or professional documents involving statistics (e.g., research articles, professional reports), and (6) Following a non-compulsory statistics course to extend your statistics competencies. (pp. 56-57)

With adolescents, interests in the SCCT model have been assessed via the *Investigative Scale of Mapping Vocational Challenges* which consists of 15 various math and science career titles (Alliman-Brissett & Turner, 2010), and asking the student to indicate interest in the occupation by indicating one of three levels of interest from low to high. A more thorough use of the *Mapping Vocational Challenges* scale was conducted in the research of Lapan, Hinkelman, Adams and Turner (1999). The scale took three 50-minute class periods to complete, and high school students again had to indicate their level of interest from low to high. Lent et al. (1994) suggested that self-efficacy beliefs and outcome expectations were significant predictors of interests. They believed that the cycle of developing interests repeats itself continuously throughout life, although its most fluid period is during adolescence. They wrote, "Once interests crystallize, it may take compelling experiences to provoke a fundamental reappraisal of career patterns" (p. 89). Feedback is also a part of the process of developing interests.

Sheu, Lent, Brown, Miller, Hennessy and Duffy (2010) studied the social cognitive career theory across Holland themes through a meta-analysis. They defined interests as "the extent to which an individual likes a particular activity, academic subject, college major, or occupation" (p. 253). Sheu et al. (2010) posited that both self-

efficacy and outcome expectation variables are both directly and indirectly affected through interests. They differentiated goals and claimed that they are affected by exposure to environmental supports and barriers. The authors concluded that the results from the model comparisons suggest that the role of supports and barriers relative to career choice goals may differ from SCCT's original hypotheses. Supports and barriers are noted as having an indirect pathway through self-efficacy and outcome expectations. Further, interests partially mediate the relationship between self-efficacy and outcome expectations to choice goals (p. 263).

Gibbons (2005) in her research with middle school students assessed plans and goals with two questions on the demographic form: "What are your educational plans (check all that apply)," and "What is your highest educational goal – how far do you want to go in school" (p. 187). In her model of the SCCT, she collapsed these questions into one variable and labeled it "interests." Additionally, she assessed "choice intentions" as the student's strength of belief in the likelihood he or she would attend and graduate from college (M. Gibbons, personal communication, September 10, 2012). With young adolescents, it appears to be difficult to differentiate among interests, intentions/goals, choice actions and performance attainments, as originally modeled by Lent et al. (1994).

Goals

A goal may be understood as the determination to begin and sustain a particular activity toward a future achievement (Bandura, 1986). Social cognitive theory recognizes that while environmental influences and personal history help shape behavior, humans are not passive agents in life. By setting goals, people adopt the perspective that they can take initiative in reaching desired outcomes. Goals take the form of intentions

and are measured as positive (involvement) and negative (avoidance). Blanco (2011) assessed 'choice-content goals' with six aspirational questions. Each started with the stem "I intend." For example, "I intend to avoid professional and academic statistics-related activities" or "I intend to take more statistics courses than are required of me." (p. 57). Goals serve to help people organize and guide their behavior, as well as maintain effort over time. Because goals are set in terms of what is anticipated, they require forethought, and achievements are represented symbolically. Goals are motivating in that they connect anticipated self-satisfaction with measured self-set standards to attain them. Incorporated in the theory is a reciprocal relationship among self-efficacy, outcome expectations and goal intentions. Lent et al. (1994) define goal mechanisms as including "career plans, decisions, aspirations, and expressed choices" (p. 85). This is important in considering how middle school students think about postsecondary options. As per the model, choice goals are to be understood as "the intention to engage in a particular action or series of actions" (p. 94).

Betz and Voynten (1997) created a *Career Expectations and Intentions Scale* for their research on the SCCT and its applicability to a college age population. On the five-item scale, a student answers on a 5-point Likert-type scale. The items are: "I intend to spend more time learning about careers than I have been;" "I plan to talk to lots of people about careers;" "I am committed to learning more about my abilities and interests;" "I intend to get all the education I need for my career choice;" and "I plan to talk to advisers or counselors in my college about career opportunities for different majors." The authors reported a Cronbach's α of .73 in their study. Huang and Hsieh (2011) used this scale

with their study of the SCCT on a college sample of 738 Taiwanese students and reported a Cronbach's α of .83.

Declaring a goal—as an eighth grader—of a post-secondary education may be considered a distal goal, since it is five years hence. A concern of this study was to additionally measure a more proximal goal as an indication of the long-term goal. For example, a decision to pursue talking to more people about college while in high school may be interpreted as a choice goal more congruent with the intention of attending and attaining a college education. Recognizing two previously mentioned factors—(a) Bandura's caution that self-efficacy research should involve proximal goals, and (b) the finding that most middle school students report a plan to enroll in college and pursue challenging occupations—it is proposed here that "choice intentions," be measured by three separate variables: likelihood both to go to and graduate from college, choice intentions as per Betz and Voynten's (1997) scale, and educational goals.

Learning Experiences

Lent and his colleagues believe that the "effects of gender and ethnicity on career interests, choices, and performances will be partly mediated by the differential learning experiences and consequences that give rise to self-efficacy and outcome expectations" (Lent et al., 1994, p. 105). They additionally claim that "effects of learning experiences on future career behavior are largely mediated cognitively" (p. 87), thus recognizing that many factors contribute to one's assessment while learning. This constructivist theory involves "feed-forward" mechanisms in which anticipation, imagination and making sense or meaning of these events informs present and future behavior.

Three years before the 1994 study, Lent, Lopez, and Bieschke (1991) found that when efficacy-building experiences were applied, gender differences in math self-efficacy beliefs were eliminated, which suggests that learning experiences may help to mediate background variables. Lent et al.'s 1994 article proposed further investigation of learning experiences that shape self-efficacy and outcome expectations, including factors that may bias the cognitive processing of these experiences (Lent et al., 1994).

Williams and Subich (2006), using a sample of 319 undergraduate students, studied differences in career related learning experiences between men and women. They studied the SCCT variables across the Holland (1997) themes of Realistic, Investigative, Artistic, Social, Enterprising and Conventional (RIASEC). Consistent with prior research, they found gender differences in the context of learning experiences. Women reported more learning experiences in the social domain, while men reported more learning experiences in the realistic and investigative domains, for example. Of interest in this dissertation study are the findings that indicate that more learning experiences in a given domain relate to increased measures of self-efficacy and outcome expectations in that same domain. Apart from assessing learning in the context of the RAISEC model, not much research has been done on learning experiences (Thompson & Dahling, 2011; Tokar et al., 2007).

Recently, Blanco (2011) tested nine hypotheses of SCCT with 1,036 psychology students (as non-mathematics students) from five universities in Spain for their interests and goals in statistics. The first five of his nine hypotheses have received strong empirical support from prior research: namely, the relationship among self-efficacy, outcome expectations, interests and goals. Hypothesis six and seven explored the

relationship of mastery experiences—which may be considered a proxy for learning experiences—to the other variables. He created two path models: one in which mastery experience has both an indirect effect through self-efficacy and a direct effect on intentions and goals and one in which mastery experiences has an indirect effect through self-efficacy on intentions and goals. The last two hypotheses consider variance across groups (students from different universities) and differences across time of prior exposure to the domain (one, two or three years since having taken Statistics). In order to conduct his study, Blanco created instruments to measure self-efficacy, outcome expectations, interests and goals/intentions. He used perceived personal performance accomplishment in mathematics and statistics as his indicator of mastery experiences. Blanco's study confirmed that his research supported SCCT. It proved not only a good way to predict interests in statistics, but also a good way to gauge students' intentions to engage in either academic or professional activities where statistics is used (Blanco, 2011). With respect to hypotheses six and seven, Blanco (2011) found that mastery experience had both an indirect (through self-efficacy) and a direct effect on interests and goals. The predictors accounted for 50 percent of the variance with respect to interests and 77 percent of the variance with respect to goals.

Flores (2009) isolated the impact of learning experiences in her study on the effectiveness of outreach programs on the acquisition of knowledge about the college process for minority students, students from low-income backgrounds, as well as students considered prospective first-generation college-going students. Her sample included 58 high school students in grades nine through eleven enrolled in Upward Bound (n = 18), GEAR UP (n = 29), and a control group (n = 11). Her results supported that both

Upward Bound and Gear-UP programs had a significant impact on the measured college knowledge scores of the students as compared to the group of students not participating in either program. Seventy-five percent of the students in her study were considered prospective first-generation college-going.

Research on SCCT With Middle School Students

Lent et al. (1994) regret that the sources for their meta-analysis relied heavily on college-aged students and other privileged samples. They raised the question of the applicability of SCCT to other populations with limited economic conditions or limited educational opportunities. The studies of Fouad and Smith (1996) and Smith and Fouad (1999) with middle school and high school populations respectively have already been addressed in this document. As a review, they examined person inputs and background variables of SES, gender and ethnicity. Specific to this current research, Gibbons (2005) studied the social cognitive career theory in the domain of college-going beliefs for seventh graders for her dissertation. Besides testing the overall SCCT model, she wanted to see if the model explained well for both prospective first-generation college-going students and prospective non-first generation college-going students. Gibbons (2005) both adapted and created the various scales used in her research. She designed the *College-Going Self-Efficacy Scale* and the *College-Going Outcome Expectations Scale*. Additionally, she revised the *Perceived Educational Barriers Scale* (McWhirter, Rasheed, & Crothers, 2000) to include several more reported barriers based on Gibbons' research. Since the role of support systems is hypothesized to have an effect in the model, she also used the *Child and Adolescent Social Support Scale* (Kerres Malecki &

Kilpatrick Demary, 2002). Her sample included 275 seventh-grade students from four schools in three North Carolina counties.

One of her research questions asked whether the SCCT model (including perceived educational barriers, school support, parent support, self-efficacy, outcome expectations, intentions) provided a good fit for both first-generation and non-first-generation students. In this question of the model, she included neither background characteristics (gender, ethnicity) nor learning experiences or goals. She did not include goals, she argued, since most middle school students indicate that they plan to attend college and desire professional degrees, thus making comparisons futile. Instead, she measured "intent" and defined it as the strength of intentions to go to and complete college. Two questions informed this variable: the student's likelihood they would go to college (range 0 – "not at all likely," to 9 – "positive") and the likelihood that they would graduate from college (same range). She did not find support for the proposed SCCT model as tested for her total sample, however the following paths were supported: perceived barriers had an effect on self-efficacy; self-efficacy had a direct effect on *positive* outcome expectations and an indirect effect on intentions mediated by *positive* outcome expectations; and self-efficacy had a direct effect on intentions (Gibbons, 2005). Note that the variable outcome expectations is reported as *positive*. In Gibbons' analysis, she recognized that her scale contained in effect two scales: one for positive outcome expectations, and one for negative outcome expectations. Since they were not mutually exclusive (having high positive outcome expectations did not necessarily mean that one had low negative outcome expectations), she suggested the subscales be used separately

in subsequent research. In this study, self-efficacy, outcome expectations-positive, intentions and college knowledge, as a proxy for learning experiences, were studied.

The charge rendered in 1994 and taken up by researchers since that time was to explore the application of SCCT with other cultures, domains, populations of interest, as well as further explore the differences between gender and among ethnic groups. Turner and Lapan (2005) studied this question via an intervention to increase career awareness and exploration for students in non-traditional careers. After a computer-assisted intervention, males showed an increase in areas previously dominated by females, i.e., artistic, social and conventional, while girls reflected an increase in the areas previously dominated by males, i.e., areas of realistic, enterprising and conventional interests. Interventions have been shown to have an effect on factors in the SCCT model, leading to a change in interests.

College Knowledge

The goal of achieving access and equity depends on *"...availability of necessary information, and financial aid adequate to the task of facilitating relatively unconstrained choice among institutions—and an understanding of how individuals make choices about college"* (McDonough & Antonio, 1996, p. 1).

Hossler and Gallagher (1987) propose a three-stage model to understand how students progress through the college decision-making process. The first stage is called "predisposition," "a developmental phase in which students determine whether or not they would like to continue their education beyond high school" (p. 208). Students must first be awakened to the notion of college, and see it as a possibility for themselves. Since most students make their decisions about career and post-high school education

between 8th and 10th grade (Hossler & Maple, 1993), college intervention programs need to be focused on middle school students in order to help them make informed decisions about their future (Gibbons & Borders, 2010). Increasingly, researchers suggest that an optimal time to awaken students is late elementary (Vargas, 2004) and middle school (Hooker & Brand, 2010; Hossler et al., 1989; Wimberly & Noeth, 2005), since waiting for high school may be too late to influence college-going decision behaviors. In order for students to best navigate high school with thoughts of postsecondary education and subsequent degree completion, students need information about four basic areas: academic planning, costs and financial aid related to attaining a college education, various college options, and specifics about the application process (Hooker & Brand, 2010; Vargas, 2004). Using his research with the Bridge Project at Stanford University, Conley (2005) concluded that students know little about college entrance requirements, including college course requirements, standardized admission testing, and financial aid. Since school counselors are given the task of aiding students in their curricular and career planning, both the American School Counselor Association and The College Board are good resources to turn to for guidance on what is important for students to know. The National Office for School Counselor Advocacy (2010), an entity within The College Board (2010), has announced, through their division for National School Counselor Advocacy, *Eight Components of College and Career Readiness Counseling*. The key components are "increasing student college aspirations, aid in college and career exploration and selection, aid in college admission processes, and aid in college affordability planning at a young age" *(The College Board, 2011, p. 44)*. They advocate providing information about college starting in middle school.

Before proceeding to a discussion of the four basic components of college knowledge, it is important to reflect on what recent literature has revealed about how subgroups of the population navigate the process. McDonough and Antonio (1996) cite Hossler and Gallagher's (1987) three-stage model, but criticize that it does not take into account the complexity of the issues, given cultural experiences and perspectives. Although Hossler and Gallagher (1987) allow for socio-economic status as the most important background characteristic affecting the rest of the model, McDonough and Antonio (1996) incorporate individual perspectives. McDonough and Antonio (1996) argue that "students conceptualize their college choices differently based on how they perceive their anticipated college experiences and the conversion capacity of their college degree for further education and occupational attainment" (p. 1). McDonough and Antonio (1996) include both the econometric (cost-benefit) and the status-attainment (achieving levels in socieity) models. It is simultaneously an individual, subgroup and collective experience. Not unlike Bronfenbrenner's (1994, 2005) ecological theory, McDonough and Antonio (1996) assert a student's community—family, neighborhood and school—play a significant role in a student's decision. In other words, it is not an individual choice as much as a choice made in the context of one's environment. An oft-cited resource in studying culture is Bourdieu's (1977) work that coins the term *habitus*. *Habitus* can be understood as one's internalized held beliefs, experiences, and perspectives, shaped by one's context and culture (McDonough & Antonio, 1996).

Research has found that often Hispanic and African American students (as compared to non-Hispanic and non-African American peers), as well as first generation students (as compared to peers whose parents have at least some post high school

education), come to the college decision process later in high school and perceive more barriers along the way (Ikenberry & Hartle, 1998). Communicating information as students proceed through middle school, at the predisposition stage, is an effort to influence habitus and level the playing field enabling all subgroups to consider options for their educational future in time for them to make good decisions for their future.

Academic Planning

Academic planning involves determining which courses are best to take: not only in order to meet entrance qualifications of colleges, but perhaps more importantly in order to perform well once there (Conley, 2005, 2010). Colleges list on their websites those courses they expect a high school graduate to have taken in order to be considered for admission (e.g., http://admission.universityofcalifornia.edu/freshman/requirements/a-g-requirements/index.html). ACT's (2006) recommended core curriculum consists of four years of English and three years each of mathematics, science, and social studies. In Texas, the recommended degree plan has been called the "four by four," including four credits in each of these same subjects (Texas Higher Education Coordnating Board, 2012). More recently, ACT research has also shown that taking certain specific courses in high school, such as "Biology, Chemistry, Physics, and mathematics courses including Algebra II and beyond, substantially increases students' readiness for college-level work" (ACT, 2006, p. 1). Taking more rigorous subjects is also highly correlated with future success in college (ACT, 2006; Conley, 2005; Hooker & Brand, 2010). As schools seek to have students more prepared for college level work, they are making available high school-level coursework in middle school (Durham Pulbic Schools, n.d.). For example, high school-level Algebra I is often offered in the seventh and eighth grade. Specific

research has isolated the positive correlation between students taking Algebra I in eighth grade and their future success in college (Long et al. 2012). Taking Algebra I in middle school allows for the possibility that the student may take calculus while still in high school (College Board, 2011), which in turn allows the door to careers—in engineering and sciences, for example—to remain open for more students.

In a recent report entitled *The Forgotten Middle* (ACT, 2008), the authors noted that the level of "academic achievement students attain by eighth grade has a larger impact on their college and career readiness by the time they graduate from high school than anything that happens academically in high school" (p. 2). The report suggests that "students' academic readiness for college and career can be improved when students develop behaviors in the upper elementary grades and in middle school that are known to contribute to successful academic performance" (p. 2).

Various programs in high school have been implemented to provide access to increased rigorous curriculum and give students the opportunity to earn college credit before officially enrolling in college. These include, for example: (a) Advanced Placement (AP), overseen by The College Board, (b) International Baccalaureate (IB), (c) Dual Credit (earning high school and college credit simultaneously through a partnership with a college), and (d) Early College Programs (compressing the time it takes to earn a high school diploma). School counselors are expected to help students use a curricular plan in an effort to help students understand that present decisions have future consequences (Gandara & Bial, 2001). The high school transcript, understood as recording all courses taken and grades earned in each class throughout high school,

would be appropriate to introduce to a middle school student in an effort to prove that all of high school predicts post-high school educational opportunities.

Confusion exists for students over the various acronyms and degree titles: Associates and Bachelors, arts and sciences, business, engineering, fine arts (A.A., A.S., B.A., B.S., B.B.A., B.S.E., B.F.A.), etc. Most understand that to be a lawyer, doctor or professor requires even more education past college, but most are also confused about the length of time that further education typically takes. As students consider careers, it is a natural time to introduce the degree requirements, as well as the financial benefits of earning these various degrees.

Financial Matters

The second category of knowledge needed for students consists of information surrounding money. For example, a person who earned a bachelor's degree in 2000 will earn twice as much over her lifetime—amounting to one million more dollars—than will a person with a high school degree alone (Day & Newburger, 2002). Knowing just how much more money, on average, a graduate earns may indeed provide motivation for any student. Since African Americans—more than any other subgroup— report attending college for economic mobility (McDonough & Antonio, 1996), this knowledge may be useful in particular for this subgroup to persist.

Ikenberry and Hartle (1998) conducted a study involving 16 focus groups and 2,000 phone interviews across the United States in an effort to assess what the public knows and thinks about paying for college. Pertinent to the concerns addressed in the present study are their following conclusions:

> 1. The public thinks that higher education is vitally important and a good value for the money. All racial-ethnic groups and all income groups share this perspective.
> 2. The public has a distorted view of what it costs to attend college, and
> 3. The public does not know how much financial aid is available to help meet college bills, where it comes from, and how to get it. (p. v.)

Although people are familiar with the phrase *financial-aid*, they interpret it differently. Regarding the second and third points above, De La Rosa (2006) studied how low-income students hear about college and financial aid information and whether the information impacted their college opportunities. They found low-income students "make sense of this information within their school culture, perceptions of college affordability, and family backgrounds" (p. 1670). Lee (2004) conducted a phone survey on Latino perspectives of financial aid with 1,222 parents of college-age adults and 1,204 college-age student respondents. He reported that greater than 50% of Latino parents and 43% of Latino college-age adults could not name a single source of financial aid. Concerning the general public, Ikenberry and Hartle (1998) found that the public overestimates the average price of tuition at four-year public colleges and misjudges the total cost of attendance by 99 percent. Many in the study did not understand the difference between the cost of tuition and the price of college (including room and board, transportation, fees, and other expenses). Although all sampled subgroups overestimated costs, those students and parents from underrepresented populations, low-income, minority and first-generation groups, overestimate to a greater degree. Believing the cost of something to be so far beyond their ability to pay may deter families from further considering college as an option, simply because they cannot imagine being able to afford it (Hossler & Gallagher, 1987). All lose as a result. Ikenberry and Hartle (1998) suggest that educating the public on the true costs of education is essential. Policy makers and

the public view education as paving the way for economic growth and social development at the individual as well as the societal level. The future of the nation depends on equity and access to education.

Accurate information is necessary about the differing costs of technical, two-year and four-year education at private and/or public institutions. Those families with no experience in the college process may not know that the cost of enrolling in college includes tuition, room and board (even the expense of the student staying at home should be considered), books and personal expenses, transportation and school fees. Financial aid needs are often based on the cost of all of the above, not simply tuition alone. Perhaps more importantly, accurate information about types of available financial assistance and how one can apply and qualify for that assistance is necessary. The Consortium Chicago School Research report, entitled *From High School to the future: Potholes on the Road to College* (Roderick, Nagaoka, Coca, & Moeller, 2008), reported that "filing a FAFSA [Free Application for Federal Student Aid] and applying to multiple colleges shape students' likelihood of being accepted to and enrolling in a four-year college" (p. 4). Applying for financial aid is not an easy task, but it is arguably "the most critical step for low-income students on the road to college" (p. 4). In applying for federal student aid, students must initially log on to the site to get a Personal Identification Number (PIN). Their parents also need a separate PIN. Each PIN needs to be connected to an email address; some students report having to create an email address for the parents since their parents do not have an email address. If the federal government needs to contact either the student or parent, it will resort to the email address. For those students and parents who created an account only for this process, it is

unlikely that they will check this account often and may miss important communication in the process of applying for aid (Venegas, 2006). For those students in the Consortium Chicago School Research who completed the FAFSA, they were 50 percent more likely to enroll than students who had not completed the FAFSA. Educating students about this gateway and helping them later in high school to follow through with an application of the FAFSA in January of their senior year is another necessary step to ensure all students have access to further education.

Financial aid consists of many facets. Students need to know that money may be awarded on the basis of need and/or merit. Bell et al. (2009) found that although most students in ninth grade were aware that scholarships were awarded based on academic and athletic achievements, they were not aware of much knowledge past this fact. Need relates to the difference between a family's demonstrated ability to pay and the cost of enrolling at the college. A fact often eluding families is that if a family is estimated (through federal methodology) to need to contribute, for example, $1,000 per year for their child to enroll in college, and college A costs $6,000 while college B costs $12,000, it is not necessarily the case that College B will cost the family more. Via financial aid award packages, it ultimately may cost the family the same amount, or less to enroll at College B. In effect, this enables the student the freedom to choose on the basis of the best fit for his or her academic abilities and career aspirations versus out-of-pocket expenses. A financial aid package often consists of Scholarship and Grants (money awarded that does not need to be paid back), loans (offered at various rates of interest and due dates), and work-study (often in the form of an on-campus job with the expectation that earned income goes toward school expenses). In general, colleges seek to meet the

difference between the school's total costs and the estimated family contribution (EFC – the amount determined via the federal methodology). Websites are available for families to learn what their EFC is under their current economic circumstances (e.g., http://www.finaid.org/calculators/finaidestimate.phtml). As students and families understand how financial aid works, they may see doors open and students move from predisposition, to search, and finally to choice stages in the college decision process.

The college application process also incurs expenses along the way. Registering for admission tests and filing applications often come with fees. Both the SAT and the ACT have fee waiver criteria to help needy families, and many colleges will waive application fees for students who qualify and access standardized test fee waivers, but low-income families need to know about the fee waivers and how to get them so they can enjoy equity in access on these measures (Bonous-Hammarth & Allen, 2005).

Searching for Colleges

"College," in this present study, broadly refers to postsecondary education at technical, trade, two-year and four-year institutions. Students need to know about the various options and be reminded of them via their social network—their *habitus*—including teachers, counselors and family members. There are over 4,400 colleges and universities offering two- and four-year degrees in the United States alone (Digest of Education Statistics, 2010). Middle schools and high schools can play an instrumental role in this education process by inviting representatives from the various options to present to students of younger ages, or by providing advertising and transportation to area College Night events where many schools are represented. Colleges are interested in marketing their programs, and often all that is needed is a structured format for this

exchange to take place. Living near a college campus may also have an impact on students ultimately choosing post-secondary education. While Anderson, Bowman, and Tinto (1972) discovered that proximity to a college campus had little effect on college enrollment of area youth, in more recent research, Turley (2009) determined that not only does proximity increase the likelihood of students applying to college, but that this small but significant difference is noted in matriculations at four-year institutions. Since students have a higher rate of degree completion from four-year schools than two-year schools, this is research worth noting.

The Chicago Consortium research (Roderick, Nagaoka, Coca, & Moeller, 2008) studied whether those students aspiring to four-year colleges were effectively engaging in the college search and application stages. They asked: Were the Chicago Public School (CPS) students taking the necessary steps to meet this goal? Where were they getting the support to make informed choices? Only 59 percent of CPS students originally desiring a four-year degree applied to a four-year institution, and even fewer—41 percent—enrolled in a four-year college. Latino students fared worse, by 13 percentage points, than their African American classmates in this rate of matriculation to four-year colleges. It was further discovered that Latino students' "college plans and behaviors…in CPS are particularly shaped by the expectations of their teachers and counselors and by connections with teachers" (p. 3). Students were not effectively navigating the search process. As previous research revealed, students with less educated parents and from low-income families were more likely to enroll at lower-selectivity institutions than their peers with similar academic abilities and achievements (Gandara & Bial, 2001; Hearn, 1991). What increased the likelihood these students would reach the goal was the culture

of the school. The single biggest predictor of whether or not students would eventually enroll in a four-year college was whether the faculty at the school indicated that there was a college-going culture (Roderick et al., 2008). Despite research that suggests it is in the junior and senior year that students engage more fully in this process, there is nearly universal recommendation that students begin this process earlier, in seventh and eighth grade (Cabrera & La Nasa, 2000; DeLa Rosa & Tierney, 2006; MacAllum et al., 2007).

Technology has extended the reach of colleges to more students. Colleges have largely transitioned from mailing glossy paper brochures, to websites, blogs, posts, tweets and Facebook as a means of communication with the prospective college population. Yet not all college-going adolescents have equal access to technology (MacAllum et al., 2007; Vargas, 2004). Bell et al. (2009) found that ninth graders reported, besides family and friends, the Internet as the source for information pertaining to the college process, but they failed to specify websites in particular. Most public schools and public libraries provide access to the Internet free of charge, a good first step. However, in contrast stand the students who own personal laptops or handheld devices for ready access to information. This highlights the need for more effort on behalf of schools to seek a way to extend electronic information access liberally with respect to college planning. Access is not the answer alone, however, as teachers and counselors need to know how to navigate these sites in order to be a more helpful resource for the students (Bell et al., 2009; Tornatzky, Cutler, & Lee, 2002; Venegas, 2006).

Various electronic search tools exist to help students learn more about postsecondary options (e.g., www.naviance.com, www.careercruising.com). Naviance (2012) is a web-based college-counseling tool that provides career guidance, course

planning, and search software for colleges and scholarships. Students and their parents have a unique account, and school counselors can monitor and manage progress. Naviance additionally offers students assessments of their learning styles and personality type, as well as a resume building function. Students maintain a list of possible colleges on their account and in their senior year may request that their transcripts and supporting documents be sent to colleges to which they apply. This program is not free, yet over 5,400 schools use it (Naviance, 2012), from small private to large public school systems. Houston Independent School District recently implemented the program in middle and high school (Smith, 2012), for example. While another district in Texas that uses Naviance, Clear Creek Independent School District, reported an increase in the number of students attending 4-year colleges after implementing the tool. One school within the district increased nine percentage points from 53 percent to 62 percent in only a two-year time period (Thomas, n. d.). Additionally, both at the state and national level, there have been efforts to develop a one-stop place for college information. Recent examples include at the state level, www.collegeforalltexans.com, and at the national level, www.KnowHow2Go.org.

Some argue that pointed interventions with those students most underrepresented in the ranks of college enrollment may help increase equity. The National Postsecondary Education Cooperative commissioned a report entitled *Paving the Way to Postsecondary Education: K-12 Intervention Programs for Underrepresented Youth* (Gandara & Bial, 2001). The authors conducted a thorough study of various programs offered in five major categories: private nonprofit, university-based, government-sponsored, community-based, and K-12, directed at increasing college-going behaviors in

underrepresented groups. They found it most alarming and a "great challenge" that many programs exist, but there is little assessment to determine whether or not they work, for whom they work, and under what circumstances they work best. Much money is at stake. For example, in the state of California, in the years 1998-1999 and 1999-2000, the California legislature designated $38.5 million to augment university outreach programs. If they proved successful, there was promise of continued funding. Peers, educators, counselors, college representatives, computer search tools and various intervention programs all aid in alerting students to various college options, but measurement tools are needed to assess success.

College Application Process

Gone are the days when high school headmasters and principals would call the local college and request acceptance of one of their charges to college. That was a time when fewer than 10 percent of people in the country earned a college degree and competition to gain admission was not as fierce. With enrollment figures now showing that over 56 percent of high school graduates pursue education (National Center for Higher Education Management Systems [NCHEMS], 2012), applying and getting accepted to college has become a business venture. Increased high school graduates have led to increased competition for freshmen spots (Conley, 2005). It is more complicated than it once was; books on strategizing and independent college counselors are in demand to assist students and families on how to optimize options for postsecondary education (Conley, 2005; McDonough, 1997).

After searching and creating a list of colleges to which students might apply, students have to navigate filling out the application, sending test scores from standardized

tests to respective colleges, asking teachers to write letters of recommendation, sending their transcripts, writing essays, creating personal resumes—all while attending academic classes their senior year of high school. Although information is plentiful on various sites, in schools, and through state and federal resources, it is often an overwhelming process. Once again, having the knowledge and familiarity early will help students proceed more smoothly through the stages, from aspiration and predisposition, to search and application, and ultimately to choice.

With respect to applications, over 400 colleges and universities accept the Common Application (www.commonapp.org). The Common Application is a generic application informing holistic admission processing, meaning that an admission decision is informed not on grades earned and test scores alone, but is influenced by extracurricular activities, personal essays, recommendations, and other factors that bear consideration. Many of these schools add supplement forms, but this common application is an effort to reduce the time students spend filling out paperwork. Although there are some public member institutions on the list, most are private institutions. Some states also offer a common application that is accepted at that state's public institutions (e.g., www.applytexas.org). These applications were created to try to streamline the application process so students would have more time to devote to their studies and extracurricular activities while in high school.

In studying patterns of application, various subgroups proceed differently. Students from low-income families approach the process later than their middle or high-income peers. It has also been reported that students who would be first in their families to attend college begin the search and application process later than their peers. Add to

this the fact that these subgroups often apply and enroll at institutions that are below their academically matched peers. Students from these categories are at a distinct disadvantage not only in their knowledge about what postsecondary options exist for them, but also about how to navigate and use the resources available in the process of applying.

Understanding college preparation involves examining the various facts and factors that influence students in the college choice process, as well as their college-going beliefs.

CHAPTER THREE

Method

Researchers (Conley, 2005; Gibbons & Borders, 2010; Hooker & Brand, 2010; Hossler et al., 1989; McDonough & Antonio, 1996) suggest that college knowledge leads to college-going beliefs and behaviors. They describe how communicating college-related information during middle school influences student decision-making in high school and educational goals after high school. Moreover, giving information early to students whose parents did not attend post high school education is seen as a way to address information inequities (Gibbons, 2005). Social cognitive career theory (Lent et al., 1994) proposes a way to understand educational decision-making and the variables affecting this complex process. The present study examined the following questions.

Research Questions

1. What is the relationship between college knowledge and each of the following college-going belief variables in eighth-grade students: (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals?

2. What is the relationship between parent education level and each of the following college-going belief variables in eighth-grade students: (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals?

3. Does college knowledge moderate the relationship between parent education level and each of the following college-going belief variables in eighth-grade students:

(a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals?

Sample

Power analysis was used to determine the sample size needed to sufficiently address the research questions. Following a description of the analysis is a description of the school, student and parent participants.

Power Analysis

Moderation effects are typically difficult to detect, so sample size determination was based on finding an interaction effect (Aiken & West, 1991). The Type 1 error rate was set at 0.05, power was set at 0.80 and the effect size, f^2, was set at .15 (this is equivalent to an R^2 value of 0.13). Using G* Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009), the sample size required was 77.

Two of the instruments' reported reliabilities are relatively low (.73 and .79). Aiken and West (1991) claim, "when reliabilities drop from 1.00 to .80, the sample size required to reach power .80 at α = .05 is slightly more than doubled. When reliabilities drop to .70, the sample size requirement is over three times higher than when reliabilities are 1.00" (p. 163). Consequently, a sample size of 3 x 77 = 231 was the target *N* for this study.

Participants

Participants in this study were from two schools in a public school district in central Texas. The district's superintendent and Institutional Review Board (IRB), and the researcher's University IRB granted permission to conduct the study. The school

district is located in a small city of 125,000 in a county of approximately 220,000 people. The city is one of four Urban Enterprise Communities in the state of Texas; 30.1% of the city residents live below the poverty level (vs. 17% in the state of Texas as a whole) (U. S. Department of Commerce, 2013). Within the city are one research university, one community college and one technical college. This district is ethnically diverse and has more than 85% of its students on free and/or reduced lunch. As income level and education level are closely related, it was hoped that this sample might provide the opportunity for comparison between prospective first-generation and non-first-generation college-going students. See Table 1 for district and state demographic information.

Table 1

District and State Demographic Information

Variable	ISD	State
African American	31.4	12.9
Hispanic	55.3	50.3
White	11.2	31.2
American Indian	0.4	0.5
Asian	0.3	3.4
Pacific Islander	0.0	0.1
Two or more races	1.3	1.6
Economically Disadvantaged	86.7	59.2

Note. ISD = Independent School District. Each column lists percentages (Texas Education Agency, 2011).

I anticipated that not every eighth grade student in the two schools I asked to participate would do so. Thus, I extended the invitation to participate to all eighth grade students in both schools ($N = 486$). The final sample size I obtained for this study was 324.

Table 2 reports demographics for each surveyed middle school, Grades 6–8, as well as overall district population percentages. Table 3 reports demographics for eighth grade students in the sample. School I had 205 (63.13%) of the total sample and School II had 119 (36.7%). Within School II, the gifted and talented program consisted of 66 (20.4%) of the overall sample.

The participants' educational plans are given in Table 4. For this question, students were invited to check as many response options as applied. A large majority (74.7%) indicated plans of graduating from high school and enrolling in a four-year college. More specifically, two Hispanic males from low-income backgrounds indicated they did not plan to graduate from high school. Male and female differences were also evident: 13% of males versus 3% of females indicated plans for the military; 2% of males versus 16% of females indicated plans for trade school; 73% of males versus 87% of females indicated plans to graduate from high school, and 34% of males versus 24% of females indicated plans to become professional athletes. Students' enrollment in the Free and Reduced Lunch Program was considered an indicator of socioeconomic status. There was a large difference between those students on Free and Reduced Lunch Program and those not on the program in the selection of entering a four-year college or university: 88% of those not on the program versus 73% of those on the program selected four-year educational plans. Racial/ethnic group differences were also detected. Selecting two-year college plans were: 28% of Hispanic, 28% of White and 16% of Black or African American students. Selecting four-year college plans were: 73% Hispanic, 75 % Black or African American and 92% of White students. Finally, those

Table 2

School Demographic Information

Category	School I *N* = 952 *Grades 6-8*	School II Inc. G/T *N* = 838 *Grades 6-8*	School II G/T only (*N* = 263) *Grades 6-8*	District Total *All grades*
Ethnicity/Race				
African American	23.5%	34.9%	(23.9%)	32.9%
Hispanic	72.7%	52.9%	(59.6%)	56.9%
White	9.5%	19.2%	(22.0%)	18.3%
Other	0.2%	.95%	(0.02%)	2.1%
Gender				
Male	52.73% *N* = 501	51.55% *N* = 429	(48.28%) (*N* = 127)	51.5% 48.4%
Female	47.27% *N* = 449	48.45% *N* = 410	(51.71%) (*N* = 136)	
Enrollment in Free and Reduced Lunch	95.4%	85.9%	(85.5%)	88.6%
8th Grade Population	*N*=310	*N*=276	(*N* = 90)	*N* = 586

Note. Adapted from District Audit Fact Sheet in Percent (9.17.12) and District and Campus Ethnicity Breakdown available on district website (3.9.13). School II percentage column includes both the special G/T program and the regular program. The following races were sparsely represented in the sample so were collapsed into the *other* category: American Indian, Asian, Pacific Islander and two or more races.

Table 3

Participant Demographic Information, Grade 8

Category	School I *N* = 205	School II Non G/T *N* = 66	School II G/T *N* = 53	Sample Total *N* =324
Ethnicity/Race				
African American	17.1% *N* = 35	27.3% *N* = 18	43.4% *N* = 23	23.5% *N* = 76
Hispanic	79.5% *N* = 163	53.0% *N* = 35	39.6% *N* = 21	67.6% *N* = 219
White	2.4% *N* = 5	18.2% *N* = 12	15.1% *N* = 8	7.7% *N* = 25
Other	0.5% *N* = 2	1.5% *N* = 1	1.9% *N* = 1	1.2% *N* = 4
Gender				
Male	47.3% *N* = 97	40.9% *N* = 27	49.1% *N* = 26	46.3% *N* = 150
Female	52.7% *N* = 108	59.0% *N* = 39	50.9% *N* = 27	53.7% *N* = 174
Enrollment in Free and Reduced Lunch	92.2% *N* = 189	83.3% *N* = 55	88.7% *N* = 47	89.8% *N* = 291
Have visited a college campus	72.7% *N* = 149	89.4% *N* = 59	86.8% *N* = 46	78.6% *N* = 254

Note. Age of participants, *M* = 13.95, *SD* = .44.

Table 4

Response to the question, "What Are Your Educational Plans After High School?"

Response Options	*N*	Percentage
"I don't plan to graduate from High School"	2	.6
Enter Military	25	7.7
Enter Trade School	30	9.3
Graduate High School	261	80.6
Enter Community College	82	25.3
Enter Four- Year College/University	242	74.7
Become a professional athlete	92	28.4
Become a rock Star	12	3.7

selecting plans to become professional athletes were largely African American (45%), versus Hispanic (24%) and White (20%).

Parents of the participants were asked to indicate their highest level of education (for both the mother and father). Results are given in Table 5. While the majority of middle school students indicated plans and goals for post-secondary education, in sharp contrast is the educational attainment of the parents: 70% of fathers and 57% of mothers hold no more than, at most, a high school diploma.

Table 5

Mother's and Father's Education Level

Level of Education	Frequency	Percent
Some HS-or Less		
Mother	113	35.5
Father	128	45.9
Graduated HS		
Mother	67	21.4
Father	68	24.0
Some Coll. or Tech.		
Mother	60	18.9
Father	34	12.2
Cert. or Tech. degree		
Mother	26	8.2
Father	18	6.5
Graduated 2-yr College		
Mother	19	6.0
Father	8	2.9
Graduated 4-yr College		
Mother	19	6.0
Father	15	5.4
Graduate School		
Mother	13	4.1
Father	9	3.2
Missing		
Mother	6	
Father	45	
Total		100.00

Instruments

The participants completed *The Eighth Grade Survey* (see Appendix A.7) in two parts. Part I included: (a) Demographic form, (b) *The Career Explorations Intentions - Revised*, (c) *The College-Going Self-Efficacy Scale*, and (d) the positive subscale of the *College-Going Outcome Expectations Scale*. Part II consisted only of the *Texas College Knowledge Inventory* (Wisely, 2012). The sequence of instruments was intentional (Trochim & Donnelly, 2006). Easiest questions were asked first, i.e., demographic

questions. Next, the Likert-type scale response instruments measuring student self-efficacy, outcome expectations and choice intentions followed. The *Texas College Knowledge Inventory* (Wisely, 2012) (TCKI) was placed last as familiarity with this instrument might bias the students' answers on the other scales if taken before. The survey had five sections with a total of 86 questions.

Both English and Spanish versions of the instruments were available. The parent consent, student assent and survey were translated into Spanish by a translator, and then translated back into English by a bi-lingual native Spanish speaker. See Appendix A.7 and A.8 for English and Spanish versions of these documents. Four students chose to take the survey in Spanish.

Demographic Form

Included on the demographic form are two questions asking the student to indicate his or her likelihood of first going and then graduating from college. These two questions are answered on a 0-9 Likert-type scale and then summed for total score. A higher summed score indicated the student's increased likelihood that he or she will do both. Gibbons (2005) labeled this measure choice intentions (M. Gibbons, personal communication, September 10, 2012). This research has labeled this measure Gibbons "choice intentions."

In addition, the form asked about the students' educational plans (previously reported in Table 4) and highest educational goals. For this later question, they were to select one answer. The results are given in Table 7, and it is this answer that constitutes the variable labeled "educational goals."

Career Expectations and Intentions – Revised

This study only used a 5-item subset of the *Career Expectations and Intentions Scale – Revised* (Betz & Voyten, 1997). This subset of items is designed to measure students' intentions to engage in behaviors that lead to college decision-making (see Appendix A.7, items 14 - 18 of *The Eighth Grade Survey*). With Betz's permission to modify the scale for this current project (N. Betz, personal communication, 2012), the word *college* was substituted for the word *career*. Students indicated their agreement to each of the items using a 5-point Likert-type scale (1 – strongly disagree, to 5 – strongly agree).

Item responses on these 5 items are summed to form a single aggregate score, with higher scores indicating more intention of going to college. Total scores ranged from 5 to 25. As a measure of internal consistency, Betz and Voyten (1997) reported Cronbach's α of .73 for these 5 items with a sample of 350 college-age students. The revised subscale had not yet been used with a middle school population.

College-Going Self-Efficacy Scale

The *College-Going Self-Efficacy Scale* (Gibbons, 2005) is a measure of beliefs about attending, and persisting, in college. The 30 questions are worded as either "I can…" or 'I could…." Fourteen items relate to college attendance, and 16 items relate to persistence in college. This scale uses a 4-point Likert-type response (1 = not at all sure, 2 = somewhat sure, 3 = sure, 4 = very sure), and the items are summed to form a total score, with higher scores reflecting greater college-going self-efficacy. The total score ranges from 30 to 120. Gibbons's (2005) reported a Cronbach's α of .94 in her study

with 272 seventh grade students. Gibbons gave permission to use the scale for this current project (M. Gibbons, personal communication, September 10, 2012).

College-Going Outcome Expectations Scale – Positive

The *College-Going Outcome Expectations Scale – Positive* (Gibbons, 2005) assesses positive outcome expectations as a result of going to college. The scale includes five domains for outcome expectations: (a) material (the physical effects given the behavior), (b) social approval (involving reactions from others), (c) self-evaluation (recognizing the inner feelings given the behavior), (d) relational (the effect of the behavior on relationships), and (e) generative (what is perceived as one's ability to give back to others given the behavior). The total score on the scale ranges from 15 to 60, with higher scores indicating greater anticipated positive outcome expectations. Gibbons (2005) reported Cronbach's α of .84 for the score based on her sample of 272 seventh graders. Gibbons granted permission to use the scale in this current study.

Texas College Knowledge Inventory

This study edited and revised the *North Carolina College Knowledge Inventory* (2008) (NCCKI) test to be more specific to students in the state of Texas, hereafter called the *Texas College Knowledge Inventory* (TCKI) (Wisely, 2012). The NCCKI is a 26-item knowledge inventory developed in North Carolina by GEAR UP for high school students (GEAR UP, 2008). It was designed to assess students' current level of knowledge via knowledge of significant terms, facts about admission requirements and financial costs, economic and social benefits of higher education, financial aid and loan information, and grade and credit transfer information. For the TCKI, each four response multiple-choice item was scored as either correct or incorrect resulting in a single

aggregate score ranging from 0 – 20. Since the TCKI was developed specifically for this study, a pilot study was conducted in the spring of 2012 with 52 seventh and eighth grade parochial school students. Based on the pilot study, the internal consistency reliability reported Cronbach's α of .74. The results of the pilot study, including the items changed in the TCKI from the NCCKI, are given in Appendix B. The TCKI questions are 64 through 86, Part II on *The Eighth Grade Survey*.

Procedures

The researcher collected data from the two selected schools targeting classes in two subject areas (Professional Communications and TS Data) in which 83% of eighth graders were enrolled. The school principals and district counselors determined these classes gave the best opportunity to access as many students as possible without disruption to the class day. Two weeks before data collection, over a four-day span, the researcher went to twenty-six classrooms of eighth graders to invite participation, explain compensation (explained in next paragraph) and distribute parent consent forms. The researcher told the students: (a) there were two parts to the survey with each taking approximately twenty minutes to complete; (b) their participation was voluntary; (c) there would be no negative consequences if they chose not to participate, and (d) their responses would be kept confidential and known only to the researcher (see Appendix A.1 for the Invitation to Participate). In order to encourage participation, the principals recorded a telephone voice message that was sent to all eighth grade students' parents reminding them to return the parental consent form. Additionally, for the week preceding and during administration, each school posted a notice on their website explaining the survey. Finally, the teachers reminded students daily to return the parent consent form.

The researcher gave different types of compensation to increase student participation. Every student who returned a signed parent consent form received a large Snickers® bar. Each teacher who had greater than 60% of the students returning signed parent consent forms received a gift bag with gift certificates to local vendors. If greater than 50% of students from an individual school participated in the study, the researcher agreed to help plan, in conjunction with the counseling staff, a Parent College Information Night for all parents of eighth graders in that school. A total of 348 signed parent consent forms were returned, yielding a 71.6% return rate. For all students who also participated in the study, they received a dress code skip day pass, the chance to win one of four $25 gift cards to an electronic game store, and the opportunity to win a grand prize of an IPOD. A total of 324 students participated in the survey, yielding a 66.6% participation rate overall, 72.2% at School I and 58.6% at School II.

Data collection took place over a two-week period in December 2012 in individual classrooms. Although parent and student forms bore the student's name, the surveys were coded anonymously so they included no identifying information. On the day of administration, the parent forms were returned to the students. Student assent forms were distributed and upon obtaining student signatures, Part I of the survey was distributed. When students finished Part I, they were instructed to raise their hands and Part II was then distributed to them. Teachers remained in the rooms during the entire data collection process and students not participating remained in their seats or at their computers. Students took between 30-45 minutes to complete the full inventory.

Data Analyses

Simple linear regression was used to answer the first and second research questions. The outcomes for both questions were the same: college-going self-efficacy, positive outcome expectations, likelihood both to go to and graduate from college, choice intentions, and educational goals. The predictor variable for question one was college knowledge, a continuous variable, while the predictor variable for question two was parent education level, a categorical variable.

As the educational goals variable is nominal with four distinct options, a multinomial logistic regression was used for the data analysis. For the third research question, a multiple regression and a multiple multinomial logistic regression were used with college knowledge as the moderator and parent education level as the predictor variable. The outcome variables remained the same as in the previous two questions.

For all the linear regressions, R^2 was used as the measure of the effect size. In logistic regression, however, R^2 does not have the same meaning since the outcome is categorical. In logistic regression, the *odds ratio* (*OR*) is typically used as the effect size measure which is obtained by exponentiating the regression coefficient (Szumilas, 2010). If the value of the *OR* is one, the predictor is not related to the odds of the outcome. If the *OR* is much greater than 1, or very close to 0, the predictor is associated with higher or lower odds, respectively.

CHAPTER FOUR

Results

The primary purposes of this study were threefold: (a) to examine college knowledge as a predictor of college-going beliefs of eighth grade students, (b) to examine parent education level as a predictor of college-going beliefs of eighth grade students, and (c) to investigate college knowledge as a moderator between parent education level and college-going belief variables. Five outcome variables were used as measures of college-going beliefs: college-going self-efficacy, college-going outcome expectations, Gibbons' choice intentions, choice intentions and educational goals. In this chapter, I discuss missing data, data inspection, and assumptions. Next, I examine the properties of the *Texas College Knowledge Inventory* (Wisely, 2012) scores, since this is the first study to use this revised instrument. Finally, I examine the regression models.

Missing Data

One student completed the demographic portion of the survey as well as the TCKI, but did not complete the other measured scales. The researcher used this student's information for the analyses of the TCKI, but deleted this student's data for the regression analysis.

Parent Education

Information on parent level of education was missing for 45 (13.9%) fathers and 6 (1.9%) mothers. In those cases, the highest level of education was determined based on one parent. All cases had information on at least one parent.

Texas College Knowledge Inventory

The TCKI had $n = 18$ cases with greater than 50% of item response missing; those cases were deleted from the analysis involving that instrument. For participants missing between one and ten responses, missing responses were coded as "0," wrong. During administration of the TCKI, one student bubbled answers at random completing the instrument in less than one minute. Since it is impossible to complete this survey in this time, this student's responses on the TCKI were deleted from the final data set. In total, 19 cases were deleted from the 324 TCKI responses.

Gibbons Choice Intentions

Gibbons Choice Intentions variable is comprised of the sum of two questions. Seven participants were missing one or both of those item responses, so were deleted from the analysis involving that instrument.

Self-Efficacy, Outcome Expectations, Choice Intentions

Missing data was minimal (less than 1.9%) for the items informing the final three scale scores used in the regression analyses. $\text{Mean}_{\text{person}}$ substitution (Hawthorne & Elliott, 2005; J. W. Osborne, 2012; Roth, Switzer, & Switzer, 1999) was employed in calculating the total score for the scale for each case with missing data on college-going self-efficacy, college-going outcome expectations and choice intentions. The following equation gives the formula for $\text{Mean}_{\text{person}}$ substitution for a 10 item scale with $m < 10$ responses present (Hawthorne & Elliott, 2005, p. 585):

$$Y_i = \frac{10 \text{ x } Y_{i1} + Y_{i2} + Y_{i4} + Y_{i5} + Y_{i8} + Y_{i9} + Y_{i10}}{7}$$

$Mean_{person}$ substitution uses the information available from the case in computing a total score. In contrast to listwise or pairwise deletion methods, data is preserved for analysis. In contrast to $Mean_{item}$ substitution, the estimates provided through $Mean_{person}$ substitution more likely reflect the individual's response pattern.

Data Inspection

The data were examined for outliers. I used a box and whisker plot to assess scores in the extreme high or low of the distribution (Cohen, Cohen, West, & Aiken, 2003; Pallant, 2010). Based on univariate Box-plots, no more than 3.7% of cases on any given scale score were identified as outliers. The trimmed mean method—removing the top and bottom five percent of cases and calculating a new mean—is considered a robust method and was used to additionally examine the data for extreme scores (Brown & Forsythe, 1974; National Institute of Standards and Technology, 2003). The trimmed means were less than a Standard Error different from the reported means in all cases indicating the absence of extreme scores in the data. Additionally, to continue to assess for cases that might have undue influence in the models, Cook's distance, leverage and Mahalanobis distances were examined. With respect to Cook's distance, values greater than 1 indicate there may be cause for concern. No values exceeding one were detected. The leverage "gauges the influence of the observed value of the outcome variable over the predicted values," (Field, 2009, p. 217). In this study, values close to or greater than .03 [3*(k + 1 / n)] might be cause for concern. There was some concern in two cases out of the 324 as they approached .04 and .05, but given the sample size and how negligibly these scores were above the cut-off, analysis continued without adjustment to the cases. The Mahalanobis distances measure the cases' distance from the mean of the predictor

variable. In general, with a sample of 200 and 1 predictor, values above 15.99, and for samples above 500 and 1 predictor, values above 18.12 would be cause for concern (Stevens, 1984). In our sample of 300, one case only approached 15.48, which is below the cut-off for cause for concern. All cases were retained in analyses. After transformation, the Mahalanobis measurements were no larger than 1.06.

Ideally, all possible cell combinations in multinomial logistic regression will have data; otherwise the standard errors of the coefficients may be unreasonably large. It is not unexpected, however, when the covariate is continuous that some cells will be empty (Field, 2009; Garson, 2012b). With college knowledge as the predictor variable, there were 23.3 percent cells missing information. Although the college knowledge scale is from zero to twenty, the range of scores attained by participants was two to sixteen, which by definition would leave ten cells (5 points by 4 categories) empty, or 20%. Standard errors for the coefficients were not large; however empty cells are noted.

Assumptions

The following main assumptions for the simple and multiple regression models were examined: (a) variables are measured reliably, (b) variables are normally distributed, (c) a linear relationship exists between independent and dependent variables, (d) residuals for any two observations are uncorrelated, and (e) error variances are equal (Field, 2009; Garson, 2012b; Osborne & Waters, 2002). Logistic regression does not have as stringent requirements, but does require that observations be independent and that continuous independent variables be linearly related to the logit—the natural log of the odds of the probability of an event occurring divided by the event not occurring (Vogt, 2005) of the dependent variable (Garson, 2012a).

Measurement error is a concern in social science research. Unreliable measurement may lead to under-estimated relationships which in turn may increase the risk of Type II errors (J. Osborne & Waters, 2002). In this study, instruments reached reliability estimates ranging from α = .73 to α = .94; however, none reached perfect reliability. This is a limitation in the study. See Table 8 for reliability statistics. I tested the normality assumption by creating a histogram and a probability-probability (P-P) plot of the scaled outcome variables. Based on visual inspection, these variables did not appear to meet the conditions for normality due to negative skew and data points deviating from the diagonal on the P-P plots. Therefore, a transformation was necessary. An inverse normal transformation called Van der Waerden (G. Morgan, personal communication, Feb. 10, 2013; Sheskin, 1997) was implemented for four variables measuring self-efficacy, outcome expectations, Gibbons' choice intentions and choice intentions. Van der Waerden's formula is:

$$Z_i = \Phi^{-1}\left(\frac{R_i}{n+1}\right)$$

where ϕ^{-1} is the standard normal quantile, R_i is the ordinary rank of the *i*th case and *n* is the sample size (Beasley, Erickson, & Allison, 2009). After applying the transformation, three of the resulting variables (self-efficacy, outcome expectations and choice intentions) appeared normally distributed and thus were used in the subsequent analyses (see Appendix C for Assumption Graphs). Histograms reflect data that follows the normal curve, and P-P data points more closely align with the diagonal. For the Gibbons choice intentions variable, however, Van der Waerden's as well as the following two transformations were ineffective for correcting normality: reflect and inverse, and reflective log. Choosing an incorrect transformation may be more detrimental than

leaving the data in its imperfect state (Cohen et al., 2003; Field, 2009). Therefore, the Gibbons choice intentions variable was not transformed (also pictured in Appendix C).

Scatterplots were examined to assess linearity. Ideally, data points should spread without discernable patterns and with even distribution in the top and bottom halves of the grid. Assessing the relationship between college knowledge and parent education level (separately) with each of the three transformed outcome variables, plots indicated the assumption of linearity was tenable. The fourth outcome variable, Gibbons choice intentions, did not appear to have a clear linear relationship with the predictor variables as the data points were sparse in the lower right of the graph with each predictor. This violation may lead to under-estimation of the relationship, which may increase the risk of a Type II error. In testing the assumption of linearity for the logistic regression with a continuous predictor, the interaction of the predictor variable and its natural log, as well as the predictor alone were modeled with the outcome variable. The likelihood ratio test was not significant for either the predictor or the interaction variable indicating that the assumption of linearity is tenable (Field, 2009).

For the third and fourth assumptions—independence of errors and equal error variances across levels of the predictor variables—scatterplots of the residual values from the regression model and the predicted values of the scaled outcome variables were produced (see Appendix C). Ideally, these scatterplots would take the appearance of a random cloud of points with no identifiable patterns. If the error variances were not equal, the scatterplot points may indicate a wider variation on one end than the other, resembling a megaphone. This pattern raised concern for Model 3 and Model 4, but not for Model 1 or Model 2. When the variance of errors differs markedly, it can lead to a

distortion of the standard error, which may increase the risk of a Type I error (Osborne & Waters, 2002). To further assess this assumption, a quantitative analysis of equal error variance, the Durbin-Watson test, was considered with each model. The Durbin-Watson test assesses for serial correlations between errors (Field, 2009). Scores range between zero and four on the Durbin-Watson, and a number close to two indicates that independence of errors is not a problem (Field, 2009). The assumption of the independence of errors was not rejected as each statistic is very close to two. The reported Durbin-Watson statistics for continuous outcome variables are in Table 6.

Table 6

Durbin-Watson statistics for Linear Regression Models 1 - 4; 6 - 9; 11 - 14

Models	Outcome	Predictor	Durbin-Watson
1	CGSE	CK	1.79
2	OE	CK	1.90
3	GCI	CK	1.89
4	CI	CK	1.93
6	CGSE	PtEd	1.86
7	OE	PtEd	1.96
8	GCI	PtEd	1.90
9	CI	PtEd	1.96
11	CGSE	CK, PtEd, CK*PtEd	1.80
12	OE	CK, PtEd, CK*PtEd	1.90
13	GCI	CK, PtEd, CK*PtEd	1.90
14	CI	CK, PtEd, CK*PtEd	1.93

Note. Variables: CK = college knowledge; PtEd = parent education level; CGSE = college-going self-efficacy; OE = outcome expectations; GCI = Gibbons choice intentions; CI = choice intentions.

Considering parent education level, a binary predictor variable, a Levene's test was also implemented to assess equality of error variance. The results indicate that the residual variances between prospective first-generation and prospective non-first-generation college-going students are roughly equal.

Evaluating overdispersion or underdispersion is a way to assess for independence of errors in logistic regression. The Deviance and Pearson χ^2 statistics relative to their degrees of freedom were considered as indicators of over- or under-dispersion. The ratio between the deviance goodness-of-fit to its degrees of freedom was 1.17, close to the ideal of 1. Moreover, the ratio of the Pearson χ^2 to its degrees of freedom was 1.0. Overdispersion or underdispersion does not appear to be an issue with this model.

Analysis of the Texas College Knowledge Inventory

For analysis on the *Texas College Knowledge Inventory* (TCKI) (Wisely, 2012), the 52 cases from the pilot study were added to the 305 complete cases from the main study. I deleted item 64 before doing any analysis as this item was typed incorrectly on the inventory.

College knowledge is assumed to be a continuous construct, however dichotomously scored, 1 = "right," and 0 = "wrong," multiple-choice items comprise the measurement instrument. Descriptive statistics were run to assess proportions and frequencies. Item loading and construct reliability were measured via an item-level factor analysis using the tetrachoric correlations (see Appendix B, Table 17). Unlike Cronbach's α, factor analytic measures of reliability such as McDonald's ω (McDonald, 1999) do not assume that each item is equal in its contribution or in its variance to the scale (Graham, 2006).

Next, parallel analysis and Minimum Average Partial (MAP) analyses were run to explore the factor structure of the TCKI. While MAP criterion indicated there is one factor, parallel analysis indicated there are between 6-8 factors. Using the tetrachoric correlations (Joreskog, 1994) with 22 items, between 1 and 4 factors were explored using

oblimin rotation. A table was made using a 2P IRT (Embretson & Reise, 2000) to identify how much information there is for each item. This process can be helpful in test development, especially item pruning (Edelen & Reeve, 2007; Wilson, 2005). It was determined that items 76 and 83 were not contributing much information to the scale so were removed from the analysis. Factor analysis was redone on the pruned 20-item TCKI using full-information item factor analysis. As no more than two items loaded on any possible factor solution above one, and conventional wisdom attests to factors being informed by at least three items (Mulaik, 1972), it was decided that the 20-item instrument was uni-dimensional in the measurement of college knowledge. Although additional pruning may improve the *Texas College Knowledge Inventory* (Wisely, 2012), the decision was made to retain the twenty items in the instrument to more closely align with the original *North Carolina College Knowledge Inventory* (GEAR UP, 2008) as well as the pilot study. *North Carolina College Knowledge Inventory* test developers also concluded that the inventory was uni-dimensional (Sathy, 2008).

Proportion variance explained by the one-factor model is 16%. The computed ω (McDonald, 1999) with a sample size of 357 was .77. The 20-item scale was used in the analysis of the research questions in this dissertation study (see Appendix B.2 for a Summary of Changes).

Descriptive Statistics

The frequencies of the students' educational goals, one of the outcome variables, are given in Table 7. Ninety-one percent of the students planned to enroll in a higher education institution following high school graduation with almost one-third of these planning to go to graduate school. Consistent with reported goals of similar populations

(Gibbons, 2005), the goals are in sharp contrast to the parent educational attainment. Seventy percent of fathers, and 57% of mothers earned no more than a high school degree, while no more than 12% of fathers and 16% of mothers earned a two-year degree or higher.

Table 7

Frequency of Student Response to Highest Educational Goal

Education Level	Frequency	Valid Percent
High School or less	29	9.1
Enroll/Graduate trade or 2-year	35	10.9
Enroll/Graduate 4-year	144	45.0
Enroll/Graduate Graduate School	112	35.0
Missing Data	4	
Total	324	

Table 8 provides the descriptive data and reliability measures for the participants on the continuous variables used in the analyses. College knowledge and Gibbons choice intentions raw data were used, while self-efficacy, outcome expectations and choice intentions data were transformed as noted. Reported measures of reliabilities were acceptable.

Table 8

Descriptive Data and Reliability Measures on Continuous Variables

Variable	*N*	Min.	Max.	Mean	*SD*	*SE*	Reliability
College Knowledge	305	2	16	8.12	2.96	0.17	$\omega = .77$
College-Going Self-Efficacy (Normal)	323	-2.74	2.60	-0.01	0.98	0.05	$\alpha = .94$
College-Going Outcome Expectations (Normal)	323	-2.74	2.16	0.00	0.98	0.05	$\alpha = .86$
Gibbons Choice Intentions	317	2	18	14.27	3.64	0.21	$\alpha = .73$
Choice Intentions (Normal)	323	-.274	2.74	-0.01	0.97	0.05	$\alpha = .76$

Note. Van der Waerden's inverse normal transformation was applied to college-going self-efficacy, college-going outcome expectations and choice intentions data.

Research Questions

Research Question 1

In order to answer the first research question, a series of simple regression models using college knowledge as the sole predictor examined the relationships between college knowledge and each of the following college-going belief variables in eighth-grade students: (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals.

The results for the first four outcomes are shown in Table 9 and indicate that college knowledge is positively related to the college-going belief variables, although rather minimally for self-efficacy and outcome expectations. Caution should be exercised in interpreting the relationship with choice intentions, however, as choice

intentions did not appear to follow a normal distribution. One measure of effect size for regression models is R^2, which indicates the amount of variance in the outcome that the predictor, or linear combination of predictors, explains. College knowledge explained between 1 – 10% of the variance in the four continuous college-going belief variables.

Students' educational goals were coded categorically, so a typical regression model could not be used to establish the relationship with college knowledge. Instead, I used a multinomial logistic regression model. Logistic regression estimates the relationship between a predictor and a categorical outcome using a logit transformation of the dependent variable (Garson, 2012a). The regression coefficients from a logistic regression are easier to understand if they are exponentiated, as their metric becomes that of an *odds ratio*: a ratio of odds that an individual will be in one outcome state given one value of the predictor to the odds that the person will not be in that category given the value of the predictor one unit lower (Cohen et al., 2003). To clarify, odds ratios are to be distinguished from probabilities (i.e., proportion or percentage), and from odds (i.e., probability of occurrence divided by the probability of the event not occurring) (Garson, 2012a; Grimes & Schulz, 2008). Multinomial logistic regression fits multiple logistic models simultaneously, so the results need to be interpreted somewhat differently than with a typical regression. For all analyses, the reference category was having an educational goal of High School or less. The results are shown in Table 10. At the most general level, the results indicate that college knowledge is related to educational goals. At a more specific level, college knowledge appears to be related to having the goal of going to a four-year university, as well as to graduate school, as opposed to not attaining any post-secondary education. College knowledge was not strongly related to

Table 9

Regression Analysis Summary for College Knowledge Predicting Continuous College-Going Belief Variables

Model	Outcome	B(SE)	ß	95% CI B	R^2	*Intercept*
Model 1	Self-efficacy	0.06 (.02)	.18	[0.02, 0.10]	.03	-0.48
Model 2	Outcome Expectations	0.03 (.02)	.08	[-0.01, 0.06]	.01	-0.20
Model 3	Gibbons Choice Intentions	0.39 (.07)	.31	[0.25, 0.52]	.10	11.17
Model 4	Choice Intentions	0.06 (.02)	.20	[0.03, 0.10]	.04	-0.51

Note. B = unstandardized coefficient. SE = standard error. ß = standardized coefficient. CI = confidence interval.

differentiating students who wanted to attend a two-year/technical school versus not obtaining any post-secondary education.

The results indicate as college knowledge increases one unit, the odds of a student choosing a post-secondary educational goal of four years (rather than no post-secondary education) increase 17% (i.e., *OR* of 1.17). Likewise, the same unit increase in college knowledge increases the odds of selecting graduate school as the educational goal (over no post-secondary education) 30%.

Table 10

Logistic Regression Analysis Summary for College Knowledge Predicting Educational Goals, Model 5

Goals[a]	Predictor	B (SE)	Exp(B) Odds Ratio	95% CI of the Odds Ratio	Intercept
Enroll/Grad trade or 2-yr	TotCK	.06 (.09)	1.06	[0.88, 1.28]	-0.19
Enroll/Grad 4-yr	TotCK	.15 (.08)	1.17	[1.00, 1.36]	0.51
Enroll/Grad Grad. School	TotCK	.26 (.08)	1.30	[1.11, 1.51]	-0.71

Note. CI = confidence interval. The predictor variable is college knowledge. [a.] The reference category is: High School or less. Model fit: $X^2_{(3)} = 15.987$ and $p = .001$.

Research Question 2

In order to answer the second research question, a series of simple regression models using parent education level as the sole predictor examined the relationships between parent education level and each of the following college-going belief variables in eighth-grade students: (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals.

The results for the first four continuous outcomes are shown in Table 11 and indicate that parent education level is positively related to the college-going belief variables, although minimally for outcome expectations and choice intentions. Parent education more clearly related to college-going self-efficacy and likelihood both to go to and graduate from college; students whose parent(s) had education past high school scored higher on these two measures. As previously mentioned, caution must be exercised in interpreting the relationship with Gibbons choice intentions (the likelihood questions) since Gibbons choice intentions did not appear to follow a normal distribution. As a measure of effect size, R^2 was considered. Parent education level explains approximately 2% of the variance in the continuous college-going belief variables.

Students' educational goals were coded categorically, so I used a multinomial logistic regression model. We can understand this as looking at the relationship of each level of parent education as it relates to student selection of educational goals. Parent education level was coded dichotomously: (a) parents with no more than a high school education, versus (b) parents with at least some higher education. The results are shown in Table 12. Multinomial logistic regression allows for continuous, categorical or multiple predictor variables so it was used for all three research questions. At the most general level, the results indicate that parent education level is related to educational goals. At a more specific level, parent education level appears to be related to having the goal of going to a four-year university (over the goal of no postsecondary education) and the goal of attending graduate school (over the goal of no postsecondary education). Parent education was not strongly related to differentiating students who wanted to attend a two-year/technical school versus no educational plans past high school.

A measure of effect in logistic regression is the *odds ratio*, as previously discussed. The results from this analysis indicate that if a student has at least one parent who has education past high school, then the odds of that student selecting a goal of a four-year degree, over High School or less, are 3.8 times greater. Similarly, if a student has at least one parent who has education past high school, the odds of that student selecting graduate school goals, over High School or less, are 4.8 times greater.

Table 11

Regression Analysis Summary for Parent Education Level Predicting Continuous College-Going Belief Variables

Model	Outcome	B(SE)	ß	95% CI B	R^2	*Intercept*
Model 6	Self-efficacy	0.26 (.11)	.13	[0.04, 0.47]	.02	-0.13
Model 7	Outcome Expectations	0.06 (.11)	.03	[-0.15, 0.28]	.00	-0.03
Model 8	Gibbons Choice Intentions	1.13 (.41)	.16	[0.33, 1.93]	.02	13.73
Model 9	Choice Intentions	0.11 (.11)	.06	[-0.10, 0.32]	.00	-0.06

Note. B = unstandardized coefficient. SE = standard error. ß = standardized coefficient. CI = confidence interval.

Table 12

Logistic Regression Analysis Summary for Parent Education Level Predicting Educational Goals, Model 10

Goals[a]	Predictor	B (SE)	Exp(B)	95% CI	Intercept
Enroll/Grad trade or 2-yr	Parent Ed	0.82 (.58)	2.27	[0.73, 7.01]	-0.04
Enroll/Grad 4-yr	Parent Ed	1.34 (.49)	3.83	[1.47, 9.97]	1.14
Enroll/Grad Grad. School	Parent Ed	1.56 (.50)	4.75	[1.80, 12.57]	0.78

Note. The predictor variable is parent education level. The reference category is: High School or less. Model fit: $X^2_{(3)} = 13.65$ and $p < .01$.

Research Question 3

The third research question asks, does college knowledge moderate the relationship between parent education level and each of the following college-going belief variables in eighth-grade students: (a) self-efficacy, (b) outcome expectations, (c) likelihood of going and graduating, (d) choice intentions, and (e) educational goals?

As this question required the use of regression models with multiple predictors, prior to running analyses, I checked for multicollinearity using the Variance Inflation Factor (VIF). The VIF is an "index of the amount that the variance of each regression coefficient is increased relative to a situation in which all of the predictor variables are uncorrelated" (Cohen et al., 2003, p. 423). VIF numbers in excess of 5 typically warrant further investigation and values greater than 10 indicate that there are serious problems with multicollinearity (Cohen et al., 2003). The VIF values did not exceed 2.5 for any model (see Table 13) indicating assumption of no multicollinearity among the predictor variables of college knowledge, parent education level and their interaction.

Table 13

Variance Inflation Factors for Multiple Regression Models

Model	Outcome	Variables	V.I.F.
Model 11	Self-efficacy	Parent Education	1.02
		College Knowledge	2.40
		Parent Ed*College Know.	2.38
Model 12	Outcome Expectations	Parent Education	1.02
		College Knowledge	2.40
		Parent Ed*College Know.	2.38
Model 13	Gibbons Choice Intentions	Parent Education	1.02
		College Knowledge	2.40
		Parent Ed*College Know.	2.34
Model 14	Choice Intentions	Parent Education	1.02
		College Knowledge	2.40
		Parent Ed*College Know.	2.38

Note. College knowledge was mean-centered for all analyses.

In order to detect an interaction effect, I ran multiple regression analyses using college knowledge (mean-centered), parent education and the interaction of the two as predictor variables. The results are displayed in Table 14.

The results indicate that the models predicted between 1 and 11 % of the variability in college-going beliefs. Considering the individual predictors' coefficients, standard errors and confidence intervals, there does not appear to be an interaction between college knowledge and parent education level in predicting the four continuous measures of college-going beliefs. Analyses were next conducted including college knowledge and parent education, but without the interaction (results not shown). Comparing the two models indicated that model fit did not worsen by excluding the interaction terms, indicating the interaction term can be excluded from the model.

In order to assess the model for the student educational goals outcome, a multinomial multiple logistic regression was conducted. The results are given in Table 15. Similar to the results obtained in logistic regression with question two, parent education was a relatively strong predictor of whether a student would select the educational goals of enrolling or graduating from four-year college (over selecting high school or less), as well as enrolling or graduating from graduate school (over enrolling in high school or less). The *odds ratio (OR)* tells us that as the parent education level changes from parent(s) with a high school degree or less to parent(s) with education more than a high school degree, the change in odds of the student selecting a four year option over high school or less are 3.26 times higher (Field, 2009). Given the same parent educational level increase, the odds are 3.28 times greater that those students will choose graduate school goals over the reference category of high school or less.

This model including both predictors and the interaction did not clearly indicate that a unit increase in college knowledge predicts students choosing educational goals at the four-year level as compared to high school or less. It is clear, as guided by the confidence interval not spanning 1, that college knowledge did predict students selecting the goal of graduate school enrollment as compared to choosing high school or less. Students with a unit increase in college knowledge scores were 28% more likely to choose educational goals of graduate school versus high school or less. The confidence interval (CI) tells us about the precision of the *OR*. If the CI does not span 1, then the *OR* may be interpreted as statistically significant (Szumilas, 2010). We would expect that in 95% of samples, the likelihood of selecting graduate school goal category given a unit increase in college knowledge would fall between 4% and 57%. Overall, both college

knowledge and parent education level predict student selection of higher educational goals as compared to selecting the educational goals of no more than a high school degree.

In answer to the third research question, college knowledge did not appear to moderate the relationship between parent education level on college going beliefs. However, in general, including both predictors in assessing the relationship with college going belief variables explains more of the variability in the outcomes than either predictor model alone with the outcome variables.

The present study used acceptable techniques for missing data, and the data appeared to meet the assumptions of regression analyses; therefore, the results can be generalized to similar populations. The *Texas College Knowledge Inventory* (Wisely, 2012) appears to measure college knowledge. Results from analyses indicate that with increases in college knowledge, student college-going beliefs also increase. Of particular interest is that with one unit increase in college knowledge, the odds of students selecting educational aspirations toward four-year and graduate school goals (over goals of high school or less) increase significantly. Parent educational level also has a relationship with students' college-going beliefs, most noticeably with students' expressed educational goals of either four-year or graduate institutions as well.

Table 14

Multiple Regression Analysis Summary with Interaction Predicting Continuous College-Going Belief Variables

Model	Outcome	Variables	B(SE)	ß	95% CI B	R^2	*Constant* (SE)
Model 11	Self-efficacy				[-0.23, 0.07]	.04	-.08 (.08)
		Parent Education	.18 (.11)	.09	[-0.04, 0.40]		
		College Knowledge	.06 (.03)	.17	[-0.00, 0.11]		
		Parent Ed*College Know.	-.00 (.04)	.00	[-0.08, 0.08]		
Model 12	Outcome Expectations				[-0.16, 0.15]	.01	-.01 (.08))
		Parent Education	.03 (.11)	.02	[-0.19, 0.25]		
		College Knowledge	.02 (.03)	.07	[-0.03, 0.08]		
		Parent Ed*College Know.	.00 (.04)	.00	[-0.07, 0.08]		
Model 13	Gibbons Choice Intentions				[13.35, 14.48]	.11	13.92 (.29)
		Parent Education	.83 (.41)	.11	[0.03, 1.64]		
		College Knowledge	.40 (.11)	.33	[0.20, 0.61]		
		Parent Ed*College Know.	-.06 (.14)	-.04	[-0.33, 0.21]		
Model 14	Choice Intentions				[-0.16, 0.14]	.05	.01 (.08)
		Parent Education	.04 (.11)	.02	[-0.18, 0.25]		
		College Knowledge	.09 (.03)	.29	[0.04, 0.15]		
		Parent Ed*College Know.	-.05 (.04)	-.12	[-0.13, 0.02]		

Note. B = unstandardized coefficient. SE = standard error. ß = standardized coefficient. CI = confidence interval.

Table 15

Multinomial Logistic Regression Analysis Summary for Interaction Predicting Educational Goals, Model 15

Goals[a]	Predictor	B (SE)	Exp(B)	95% CI	Intercept (SE)
Enroll/Grad trade or 2-yr					.13 (.34)
	Parent Ed	.60 (.61)	1.82	[0.55, 6.07]	
	College Knowledge	.12 (.12)	1.13	[.89, 1.43]	
	Parent Ed*College Know.	-.17 (.21)	.85	[.57, 1.27]	
Enroll/Grad 4-yr					1.32 (.34)
	Parent Ed	1.18 (.52)	3.26	[1.18, 9.00]	
	College Knowledge	.17 (.10)	1.19	[.98, 1.45]	
	Parent Ed*College Know.	-.09 (.17)	.91	[.65, 1.28]	
Enroll/Grad Grad. School					.95 (.30)
	Parent Ed	1.19 (.53)	3.28	[1.16, 9.31]	
	College Knowledge	.24 (.11)	1.28	[1.04, 1.57]	
	Parent Ed*College Know.	-.04 (.18)	.96	[.68, 1.37]	

Note. Parent education level, 0 = high school or less, 1 = more than high school. [a]The reference category is: High School or less. Mean centered college knowledge scores were used in analyses.
Model fit: $X^2_{(9)} = 26.29$ and $p < .05$.

CHAPTER FIVE

Discussion and Implications

This study measured the college knowledge of eighth graders and examined the relationship of that knowledge to their college-going beliefs. This study also examined parent education level and its relationship to the college-going beliefs of eighth graders. Additionally, this study examined whether college knowledge moderates parent educational level as it relates to students' college-going beliefs. College knowledge was measured via the *Texas College Knowledge Inventory* (Wisely, 2012), while parent education level was defined and coded as parent(s) with education beyond a high school degree, versus parent(s) with no more than a high school degree. College-going belief measures assessed were: (a) self-efficacy, (b) outcome expectations, (c) likelihood both to go to and graduate from college, (d) choice intentions, and (e) educational goals. Students completed *The Eighth Grade Survey*, which included the following seven instruments: *The College-Going Self-Efficacy Scale* (Gibbons, 2005); *The College-Going Outcome Expectations Scale* (Gibbons, 2005); two questions asking students about their likelihood both to go to and graduate from college; *Career Expectations and Intentions Scale* (Betz, 1997); the question, "What is your highest educational goal;" a demographic survey; and the *Texas College Knowledge Inventory* (Wisely, 2012). It was hypothesized that both college knowledge and parent education level would have a positive relationship to eighth grade students' college-going beliefs. It was also hypothesized that college knowledge would moderate parent education level as it relates to eighth grade students' college-going beliefs. College knowledge and parent education level did have

effects on college-going beliefs, however analysis failed to determine college knowledge as a moderator of parent education level. The results from this study have implications for school personnel (e.g., counselors, teachers, principals), researchers who study student college-going decision-making, and educational policy makers and funding organizations. The *Texas College Knowledge Inventory* (Wisely, 2012) also provides a means for examining students' college knowledge and suggesting areas that might be included in such events as College Nights or interventions for students at the middle school level. Finally, the results help to inform further research on the Social Cognitive Career Theory (Lent et al., 1994).

Overview of Findings

The primary purposes of this study were (a) to examine the relationship between college knowledge and college-going beliefs, (b) to examine the relationship between parent education level and college-going beliefs in eighth graders, and (c) to determine if college knowledge moderates the relationship between parent education level and each of the college-going belief variables. A secondary purpose was to further assess the *Texas College Knowledge Inventory* (Wisely, 2012) as a measurement tool to determine college knowledge. Three hundred twenty-four public middle school students from two inner-city schools completed *The Eighth Grade Survey*. Three research questions guided the study, and the results from the analysis are now discussed.

Question One

The first question sought to answer whether college knowledge was related to college-going belief variables of self-efficacy, outcome expectations, likelihood both to

go to and graduate from college, choice intentions, and educational goals. A significant relationship to college knowledge was detected with four of the five measured variables.

It is important to remember that regression does not establish causality; however, results suggest that college knowledge does have a significant effect on college-going beliefs. Simple linear regression established, in general, that as college knowledge increases, so do students' beliefs that they can both attend and persist in college (self-efficacy). Since self-efficacy is arguably the most powerful construct in the Social Cognitive Career Theory decision-making model (Hackett & Betz, 1981; Lent et al., 1994), it is worth noting that as students gain college information, their self-efficacy is likely to increase. Increasing self-efficacy is the desired outcome, since greater self-efficacy leads to choice patterns consistent with performance and persistence (Betz, 2007) in the domain. The relationship between having knowledge and self-efficacy within the domain had not previously been established.

Choice Intentions was measured via three outcome variables. The first was a student's response to the likelihood of both going to and graduating from college. The second was the student's intentions to pursue college-going behaviors in high school (e.g., learning more about colleges, seeking information from resources, etc.), and the third was assessed by the student's response to his or her highest educational goal. It has been identified that a large majority of the middle school population is overly optimistic about their plans to pursue post-high school education (Adelman & Taylor, 2002; Ali & Saunders, 2006). Bandura (2006) cautions the researcher to include proximal goals in assessing self-efficacy and outcome expectations. Fouad and Smith (1996) claimed that middle school students are not developmentally prepared to set long-term goals, per se.

In light of these difficulties to measure choice intentions with this population, this research study included all three of these tools to better identify interests, intentions and goals. Analysis demonstrated that college knowledge had a positive relationship with all three measures. Students with greater college knowledge set higher educational goals, claimed that the likelihood of following through on their goals was greater, and maintained that their intentions to pursue high school-related behaviors to support those goals were greater.

On the other hand, the relationship between college knowledge and outcome expectations was not detected. Outcome expectations address the question, "If I do this, what will happen?" In answering this question, the student anticipates physical, social and self-evaluative outcomes. Fouad and Smith (1996) found that outcome expectations affected choice goals and actions in a middle school population, but they did not examine the relationship of learning experiences to outcome expectations. Fouad and Smith (1996) called for further research to examine the complex relationship of learning experiences to the other variables in the model proposed by Lent et al. (1994). The present study sought to do precisely that: to better understand the role of learning experiences, measured by college knowledge, as it relates to variables in the model. In considering why the relationship was not detected with outcome expectations, a return to the literature shed some light: forming outcome expectations necessarily involves imagination. One could speculate that younger adolescents, although ready to think in abstract terms, are not yet developing their abilities to imagine distal outcomes, and therefore the answers to these questions may be unpredictable. Measuring outcome expectations with older adolescents (i.e., high school and college-age students) may yield

different results more consistent with the literature. A second consideration for why there may not have been a measured effect relates to what was specifically tested. Thompson and Dahling (Thompson & Dahling, 2011) comment that research is only now moving to understand learning experiences' relationship to antecedents in the social cognitive career theory model. Although their research detected a relationship between learning experiences (as defined by mastery experiences, vicarious reinforcement, verbal persuasion and physiological arousal) and outcome expectations, the relationship strength was small relative to that of self-efficacy. Further use of the outcome expectations and the college knowledge scales, as well as consideration for background variables, would add to the research on the role of knowledge in forming expectations.

Since the relationship between college knowledge and all five college-going outcome variables had not previously been studied, this research is novel. The relationship has been assumed, but prior to this study the relationship was not statistically demonstrated as it has been with four of the five measured college-going belief outcome variables.

Question Two

The second question examined whether there was a relationship between parent education level and college-going beliefs of eighth grade students. Parent education level was categorized into two groups: parent(s) with no more than a high school diploma and parent(s) with more than a high school diploma. The sample in this research was split evenly: 51.5% and 48.5% respectively. Parent education level had a statistically significant positive relationship to three of the five measured eighth graders' college-

going beliefs, specifically self-efficacy and likelihood both to go to and graduate from college, as well as students' educational goals.

Parental encouragement is often considered the strongest factor in students' educational planning (Cabrera & La Nasa, 2000; Wimberly & Noeth, 2005). However, parents without post-secondary education have less knowledge and less experience about the process (Bell et al., 2009; McDonough, 1997). Students who live in a home where one or more parents have attended post-secondary education are exposed to conversations regarding alma maters and memories of the days of college. They participate in a social capital that includes models of postsecondary experiences; students without that exposure, however, are left to learn about opportunities from outside the home. Results from this research detected differences between students with parents who have more than a high school education and students who have parents without more than a high school education. Though significant, the effects detected were relatively small explaining approximately 2% of the variance in college-going self-efficacy and a student's likelihood to both go to and graduate from college. In considering the question of why the detected effect did not appear larger, it is possible that other unmeasured variables may provide further insight into the factors influencing an eighth grade student's college-going beliefs. For example, because peer groups rise in importance during this time of adolescent development, assessing for peer social supports might add to the overall understanding. Additionally, controlling for socioeconomic status in assessing the influence of parent education level on college-going beliefs may yield significant findings.

In Gibbons's (2005) research, 109 students (40%) of the 272 sampled students were prospective first-generation college students. Gibbons (2005) found that 95% of the total sample aspired to some education past high school, with 85% aspiring to four-year or graduate school, similar to this study's results. Additionally, Gibbons compared the difference between first-generation and non-first-generation students on their likelihood both to go to and graduate from college, determining that "first-generation students were slightly less likely to report an intention to go to and/or graduate from a four-year university or graduate school than were non-first-generation students" (p. 105). Comparing first-generation students with non-first-generation students in this research produced similar results on this intentions measure, thus adding to the validity of these questions.

Where parent education level showed the strongest relationship was in student selection of educational goals. Specifically, if a student had at least one parent who had education past high school, the odds a student would choose goals of a four-year degree over the goal of high school or less were 3.8 times greater, and the odds of a student choosing goals of a graduate degree versus the goal of high school or less were 4.8 times greater. Changing parent education level from no education past high school to education past high school is beyond the scope of realistic expectation. However, this research speaks to the significant effect of family educational background on student educational aspirations.

According to Gibbons's (2005) study on outcome expectations, first generation college-going students had lower positive outcome expectations than their non-first generation peers. This research study found different results from Gibbons. Analysis

failed to detect a relationship between parent education level and the subscale of positive outcome expectations.

For Question Two, it can thus be concluded that parent education level was significantly related to college-going belief variables of students' self-efficacy and likelihood both to go to and graduate from college, and strongly predicted students' higher educational aspirations.

Question Three

According to Baron and Kenny (1986), "a moderator is a qualitative (e.g., sex, race, class) or quantitative (e.g., level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable" (p. 1174). Because it is hoped that providing college knowledge to students will level the differences between prospective first-generation students and their non-first-generation peers with respect to college-going beliefs, this question was designed to assess if college knowledge changed the relationship of parent education level to the measured college-going outcomes. Assessing this involved including the interaction of parent education level with college knowledge. Although main effects remained in each model containing both college knowledge and parent education level as predictor variables, analysis from this study did not support an interaction effect (i.e., college knowledge as a moderator) between college knowledge and parent education level with any of the five measured college-going beliefs of eighth graders.

This results were somewhat surprising, given the expectation that having college knowledge helps to address inequities between prospective first-generation college-going students and prospective non-first-generation college-going students. It is possible that

assessing parent education on an increasing ordinal scale (versus a forced dichotomous scale) might have detected more of an influence on the various beliefs. It is also possible that other unmeasured variables might prove moderators of parent education level, such as parent educational expectations for their children.

It was decided that including both predictors (without the interaction) is a stronger model than a model with either predictor variable alone. The model with college knowledge and parent education level explains between 1-11% of the variability in college-going beliefs. Since this question had not previously been studied, it too is a novel addition to the research on variables affecting college-going beliefs.

Texas College Knowledge Inventory

A large component of this study was to locate—and eventually revise—an instrument to measure college knowledge. Instruments detected through the literature review lacked rigorous psychometric analysis. Most were used as formative, not summative, assessments to get a general sense of knowledge. At most, a Cronbach's α as a measure of internal consistency was reported, but little more was discussed in terms of instrument development. One instrument, the *North Carolina College Knowledge Inventory* (GEAR UP, 2008) showed promise. Fifty-six questions were administered to over 1500 high school students in North Carolina. Based on exploratory factor analysis (EFA) and item analyses, a final 26-item version was developed. Results from the multiple-choice inventory were coded right/wrong as a measure of college knowledge. As this scale was used with high school students in North Carolina, it required revision in order to use it with eighth graders in Texas. A pilot study of the revised instrument was

conducted in Spring 2012 and further revisions (as explained in Chapter 4) were made to the instrument to more accurately assess college knowledge (see also Appendix B).

Bell et al. (2009) claimed that a student with more information was more likely to enroll in college. They studied high school students that came from low-, middle- and high-resource schools in four states in an effort to answer just what it is that 9th and 11th graders know, how do they acquire what they know, and how what they know and the sources they access vary across school and state. Bell et al. (2009) gathered data on knowledge, in part, via group interviews. They found that 9th and 11th graders engaged differently in the process. Ninth graders were passive learners, while 11th graders sought information more actively. Citing one of the authors' (Perna, 2006) earlier works, they claimed college enrollment predictors are "academic preparation and achievement, financial resources, knowledge and information about college, and family support" (Bell et al., 2009, p. 667), in that order. They additionally claimed that both quantity and quality of information about college influences the various layers by which a student learns and navigates the college process. What the *Texas College Knowledge Inventory* (TCKI) (Wisely, 2012) and other college knowledge instruments have in common is the inquiry into student knowledge of costs and financial aid, course planning and college preparation, and information about the sources of this information (Bell et al., 2009; C. A. Flores, 2009; Vargas, 2004). The TCKI may now be used as an assessment tool.

Questions from the *North Carolina College Knowledge Inventory* (GEAR UP, 2008) and a revision of it, the *Texas College Knowledge Inventory* (Wisely, 2012), have now been used in three settings: with high school students in grades 9 through 12 in North Carolina, with students in grades 7 and 8 at a parochial school in Texas, and with

low-income, urban students in grade 8 in Central Texas. Continued use of this instrument with other populations will further add to the accumulation of reliability and validity information.

Implications

Based on results, it appears that college knowledge and parent education level affect college-going beliefs of eighth grade students. Particularly noteworthy is the relationship that each factor has to students' self-efficacy, to their expressed likelihood both to go to and graduate from college, and to their post-secondary educational goals. Additionally, college knowledge is also related to students' intentions toward college-related behaviors in high school. Implications of these findings are extensive.

At the individual school level, teachers and counselors can survey middle school students on their current knowledge via the *Texas College Knowledge Inventory* (Wisely, 2012), and with the results, target students on aspects of college knowledge at relatively little expense. Communicating this information may take the form of a weekly college knowledge announcement over the loudspeaker, or of structured sections in the curriculum on topics such as financial aid, types of institutions, possible majors, benefits of higher education, and the college application process. Building college knowledge among middle school students at regular intervals may well influence and reinforce college-going beliefs, behaviors and goal setting.

At the conclusion of *Making the Grade in College Prep*, Tierney and Hagedorn (2002) wrote that, "the single most important area for research to be done in the coming years is an analysis of the related costs of [intervention] programs to their benefits" (p. 10). The *Texas College Knowledge Inventory* (Wisely, 2012) might serve as a

measurement tool in assessing the impact of various college-focused programs on student knowledge.

Students form post-secondary aspirations as young as elementary (Vargas, 2004) or middle school (Hossler & Maple, 1993). Since so many more students aspire to post-secondary education than actually enroll, researchers who study students' college-going decision-making may find the results of this study interesting by examining the strength of the relationship between the variables. Educating students with college knowledge may well move students from the predisposition stage—where middle school students are hypothesized to be in the college decision-making process—to the search stage in high school, and finally to the choice stage their senior year of high school (Hossler et al., 1989; Hossler & Gallagher, 1987).

Results from this low-income, urban study sample are similar to results from previous studies (Gibbons, 2005) with similar demographics on questions of likelihood both to go to and graduate from college, as well as on student-stated educational goals. The results of this study add to the concurrent validity of the questions informing these variables.

Of statistical and practical significance are the measured effects of college knowledge on college-going beliefs of eighth grade students in general, more so than the measured effects of parent education level on the same indicators. Further, both college knowledge and parent education level showed a strong, positive relationship to students' expressed educational goals. Having college knowledge appears to make a difference in eighth graders' college-going beliefs. Since middle school has been identified as a time when students are forming ideas regarding their future, the results of this study lend

credibility to educational and intervention efforts to communicate college information in the middle school years.

Recommendations for Further Study

This research raises several new questions. What follows are suggestions for further research grouped into three major categories having to do with: (a) comparing group differences on college-going knowledge and beliefs, (b) developing further the *Texas College Knowledge Inventory* (Wisely, 2012), and (c) researching further the social cognitive career theory model in the domain of college-going decision-making.

Lent et al. (1994) propose that background variables and "person inputs" are antecedents in the decision-making process. Further research might study group differences on the measured variables in this dissertation study. Are groups that are classified according to gender, ethnicity, race, socioeconomic status, school group, and/or identified gifted and talented any different in their college knowledge, self-efficacy, outcome expectations, and choice intentions, for example? The data from this study would enable such analysis to add to the literature on group differences in college-going beliefs. Additionally, further research might compare between or among group differences on college-going knowledge and beliefs. For example, if a student is designated as gifted and talented, yet comes from low income and/or is a prospective first-generation college student, how might their cluster of affiliations affect or influence their likelihood to respond to college-belief measures and ultimate college choice? Research has revealed that by and large, high-ability, high-poverty students do not apply and enroll at highly selective institutions (Hoxby & Avery, 2012). What role does college knowledge play in the patterns of behavior for this group relative to their high-

ability non-poverty peers, for example? Information gleaned from this research would better inform educational and intervention efforts.

With respect to the *Texas College Knowledge Inventory* (Wisely, 2012), additional research might include applications of the instrument to other demographic groups. The population in this research was low-income, ethnically diverse eighth graders. In order to assess the robustness of the instrument, it would be advisable to administer it to middle school students from middle- and high-income families. Further research might also include administering the survey to students in grades 9-12, as was the sample population age group of the original *North Carolina College Knowledge Inventory* (GEAR UP, 2008). How do different aged students compare on this instrument? Given Bell et al.'s (2009) findings—based on qualitative interviews—that 9th and 11th graders differ in their college knowledge, does this finding hold true based on the TCKI? A further suggestion is to test the *Texas College Knowledge Inventory* (Wisely, 2012) with high school seniors and then analyze their scores relative to their college application process and ultimate college choice. The research question might well become: Does having college knowledge predict more than the choice to go to college, but also the choice of college-type when controlling for confounding variables?

Regression, as was used in this study, does not establish causality. Further research might consider a controlled experiment to establish whether acquiring greater college knowledge makes a difference in students' college-going beliefs. This might be done using an experimental design, including random assignment of subjects to a control and experimental group. The researcher would pre-test using *The Eighth Grade Survey* (Appendix A.7), including the *Texas College Knowledge Inventory* (Wisely, 2012), and

then implement a semester-long curriculum with the experimental group focused on various components of college knowledge such as financial aid information, course planning, college types and costs, and benefits of higher education. Analysis of a post-test on the same survey with both groups would reveal effects of the intervention and add to the research on the instruments' stability reliabilities.

An important suggestion for further research involves revising the *Texas College Knowledge Inventory* (Wisely, 2102). Factor analysis on the TCKI suggested that there might be between one and six factors. As no more than two items loaded on a single factor and conventional wisdom suggests a minimum of three items per factor, the authors of the *North Carolina College Knowledge Inventory* (GEAR UP, 2008) as well as this researcher concluded that the instrument was unidimensional. Examining further at the item and the person level of response through Item Response Theory (IRT) might shed light on further item pruning (Edelen & Reeve, 2007) and strengthening of the instrument.

Finally, Social Cognitive Career Theory, which has been applied to various domains, has proven to be a robust assessor of career decision-making. Other variables in the full model that were not assessed in this research might be beneficial to measure in light of research on college knowledge and college-going beliefs. Gibbons (2005) included perceived educational barriers and social supports, for example. It might be interesting to assess additionally these two measures in light of college knowledge. Do those who have higher scores on social supports also have higher scores on college knowledge? Does one predict the other? Are perceived educational barriers affected by greater college knowledge? Research to further test the application of the theory to

college decision-making would add to the larger discussion about increasing college-going rates for all groups.

Limitations of the Study

In considering the generalizability of this study, several limitations need to be mentioned. Although the student participation rate on the survey was high at 66.6%, results do not account for the entire population. In addition, self-report surveys are always a limitation because the researcher cannot be sure the participants are expressing true attitudes and interests as opposed to "socially acceptable" answers (Gay, Mills, & Airasian, 2012).

On the whole, eighth grade students are developmentally at early adolescence, with its attendant physical, emotional and social characteristics. No longer in the structured, supportive elementary school years, middle school students are not yet at the independent high school age either. At such a developmental stage, many middle school students anticipate what may be unrealistic. On one question inviting students to indicate all that apply, 28% of this sampled eighth grade population indicated their plan to become professional athletes, for example (see Table 4). However, based on National Collegiate Athletic Association (NCAA) statistics, only .02 - .6% of all high school student athletes in six major sports eventually compete in professional sports (Manfred, 2012).

Another limitation involves the administration of the survey. It was given in classroom settings as a practical necessity, but the possible threat to validity due to 29 different administrations merits mention. Sampling error may also have affected results. Since income and education level are closely linked, including data from students in

higher income brackets, who might also have been exposed to more college knowledge in the home, may have provided more robust data to generalize beyond low-income populations.

Yet another limitation has to do with the definition of some of the variables. Collapsing parent education level into two categories—those with and those without post-secondary education—forces a dichotomy that does not allow for assessing the impact on student beliefs of increasing incremental years of parent education past high school. Do parents with increasing levels of education have children with increasing scores on college-going beliefs, for example?

Finally, the instruments themselves may prove a limitation. With the *Texas College Knowledge Inventory* (Wisely, 2012) in particular, the 20-item instrument is newly revised and may benefit from further pruning of items, as well as further validity studies to assess its use with other similar populations. While the specific instrument measures college knowledge to some degree, the reliability of the scale to other similar age and demographic populations has yet to be tested. The use of the other college-going belief scales for this research with eighth graders specifically is also new. Further testing with similar demographic populations would add to the validity information on these scales.

Despite these limitations, this research contributes to the growing body of literature on college-going beliefs and decision-making. The assumptions of the data were tenable, the model analyses determined effect sizes between a predictor and an outcome variable accounting for up to 11% of the variance, and the confidence interval ranges were relatively small indicating statistical significance; the results thus indicate

that a relationship exists. Given these results, the research may be generalizable to similar low-income and ethnically diverse population groups.

Conclusions

This research examined the relationship between college knowledge and middle school students' college-going beliefs. Prior to measuring the relationship, however, an instrument tool to assess college knowledge was revised and piloted. With a fuller understanding of the relationship, interested parties such as schools, researchers, and public policy advocates will now be better equipped to direct valuable resources and targeted interventions to teach college knowledge in an effort to improve college-going beliefs and subsequent behaviors. This research also examined the relationship between parent education level and middle school student's college-going beliefs. This research study determined that: (a) college knowledge may be measured; (b) results from this sample comparing prospective first-generation college-going students with their prospective non-first-generation college-going peers were similar to prior research with similar demographic populations; (c) increases in college knowledge have a positive relationship with eighth graders' college-going beliefs of self-efficacy, their likelihood to both go to and graduate from college, their intentions to pursue college-related behavior in high school, and their higher educational goals, and (d) students with at least one parent who had post-secondary educational experience scored higher on indicators of college-going self-efficacy, likelihood both to go to and graduate from college, and their aspirations toward higher educational goals. The strongest effects for both college knowledge and parent education level were detected with students' educational goals.

APPENDICES

APPENDIX A

Study Documents

A.1 *Invitation to Participate*

College-Going Beliefs of Middle School Students:
Exploring Five Social Cognitive Career Theory Variables
Lynn W. Wisely, Principal Investigator
Invitation to Participate
Fall 2012

I want to learn more about what 8th graders think about their future and I need your help. Honestly, my study would not be successful without you and your classmates at this school. I hope you can help me. When the study is done, I plan to write a report so other schools across the country that work with 8th graders can do a better job helping students.

I am in your class today to invite you to participate. Your class will take the survey in ON _____. IT IS ESTIMATED THE SURVEY WILL TAKE ABOUT 45 MINUTES, 20 to 25 minutes per part. On the first day (PART ONE), the survey will ask you what you believe about your future. On the second day (PART TWO), it will ask you what you know about the choices you have.

I will ask you NOT to put your name on the survey. Your answers will remain confidential. Your teachers won't know what you ANSWER, only I will.

You can choose to participate or not to participate at any time. It is your choice. Unfortunately, because you are under the age of 18, I can't give you the survey without your parent's written permission. This is really important. I will pass out a form called the Parent Consent Form. It tells your mom/dad/guardian about the study. It asks them for two things: their signature, and to check a box about their own educational experience. It is in both English and Spanish. (PLEASE TAKE THE LANGUAGE VEARSION YOU THINK YOUR PARENTS WANT TO READ). This form must be returned to your teacher in this class. If you **RETURN THIS FORM Signed and filled out**, you will win a free PASS FOR A dress code skip day (THE DATE WILL BE DETERMINED BY YOUR PRINCIPAL).

If you participate in the survey, AS A THANK YOU, your name will be entered in a drawing for a $25 gift card to Game Stop. ONE GIFT CARD PER TEACHER'S STUDENTS. I'M DOING THIS STUDY AT _____ AND _____. One GRAND PRIZE will also be given to one lucky winner – an IPOD! Which school will have the winner? These prizes will be given in the spring semester.

So here are the two things I need:

(1) Your signed Parent Consent Form returned to your teacher.
(2) Your participation when I return to give the survey.

Any questions?
Thank you / Lynn W. Wisely Fall 2012

A.2 *Parental Consent: English*

Baylor University

Statement of Parental Consent for Minor Children to Participate
Principal Investigator: Lynn W. Wisely, M.C.S.

I am seeking your permission for your 8th grade child to participate in a survey. If you agree to allow participation, I would like you to sign below and for you to indicate the level of education of the parents' (or guardian) of your child. The purpose of the survey is to learn what 8th graders know and believe about their post high school plans. The results of the survey will inform the researcher (Lynn Wisely) as well as educators across the country. It is estimated to take about 45 minutes to complete and will be given over two class periods in December 2012.

The invitation to participate is extended to all 8th grade students taking technology and speech classes at _____ and _____ with permission from Dr. ____, the Superintendent of _____ Independent School District as well as the Principals of each school—_____ and _____.

I will give the survey during class time to every student who agrees to participate and who has returned this signed form to the teacher. Students will be instructed NOT to put their name on the survey so that their answers will be kept confidential, known only to me via a unique identifying code. A key associating the consent form with the survey responses will be stored separately from survey results. The survey results, without the students' name, will be transferred and stored on an electronic file on my password protected computer. This parent consent form and the survey results will be stored in the School of Education at Baylor University in a locked file cabinet to protect the privacy of individuals who participate.

The study meets the American Psychological Association's standards for "Minimal Risk" and poses no major risks or dangers for your child as a participant. There will be no physical risks at any time during the completion of the survey. Although it is hoped that your child will participate, he/she may elect not to at any point with no penalty or loss of benefits. Those students participating in the survey will have the opportunity to contribute to valuable research and will be entered into a raffle: a $25 gift certificate to Game Stop will be awarded to a participant from each school and a grand prize of an IPOD will be awarded to one participant. Those students choosing not to participate will have the opportunity to read a book silently during the period of administration. The prizes will be awarded to the winning students at the *Family College Night for 8th Graders* to be held at each school, date to be determined early Spring semester 2013.

While only you as a parent or legal guardian are capable under the law to consent to your child's participation in this study, it is preferable that your child be made aware (consistent with your child's age and level of understanding) that they are part of a study. If you discern that your child is not comfortable with participating in the study, you may consider (as a parent or legal guardian) not consenting to your child's participation in the study.

Please direct all inquiries to Lynn Wisely, Doctoral Candidate in the School of Education (254-644-5029) or Dr. Susan Johnsen, the faculty sponsor for this research. Dr. Susan Johnsen can be reached at the School of Education, Baylor University, One Bear Place # 97301, Waco, TX 76798-7301, 254-710-6116. If you have any questions regarding your rights as a participant, or any other aspect of the research as it relates to you as a participant, please contact the Baylor University Committee for Protection of Human Subjects in Research, Dr. David W. Schlueter, Ph.D., Chair Baylor IRB, Baylor University, One Bear Place #97368, Waco, TX 76798-7368. Dr. Schlueter may also be reached at 254-710-6920 or 254-710-3708.

I have read and understood this form, am aware of my rights as a participant, and have agreed to participate in this research.
DATE: _____

Parent (signature) _____ **Parent Name (printed)** _____

Student Name (printed) _____

***Dad's highest level of education: (please check one) (please check one)**

_____ Some high school
_____ Graduated from high school
_____ Some college or technical school (no degree) (no degree)
_____ Earned certification or tech. degree
_____ Graduated from two-year college
_____ Graduated from four-year college
_____ Graduate School

***Mom's highest level of education:**

_____ Some high school
_____ Graduated from high school
_____ Some college or technical school

_____ Earned certification or tech. degree
_____ Graduated from two-year college
_____ Graduated from four-year college
_____ Graduate School

A.3 *Parental Consent: Spanish*

Baylor University

Declaración de consentimiento de los padres de hijos menores de edad a participar
Investigador principal: Lynn W. Wisely, M.C.S.

Este formulario le pide su firma indicando su permiso para su hijo/a del octavo grado a participar en una encuesta. Y por último, pide que indique el nivel de educación de los padres (o tutores). El propósito de la encuesta es aprender lo que los estudiantes del octavo grado saben y creen acerca de sus planes de enseñanza superior después de la secundaria. Los resultados de la encuesta informará al investigador (Lynn Wisely) así como de educadores en todo el país. Se estima que toma aproximadamente 45 minutos para completar y se dará durante dos periodos de clase en diciembre de 2012.

Se extiende la invitación a participar a todos los estudiantes del octavo grado que toman clases de tecnología y discurso en las escuelas de _____ y _____ con permiso del Dr. _____, el Superintendente del Distrito Escolar Independiente de _____así como los directores de cada escuela, _____ y _____.

El investigador dará la encuesta durante la hora de clase a cada estudiante que ha traído este formulario firmado al maestro. Se indicará a los estudiantes que no pongan su nombre en la encuesta para que sus respuestas se mantendrán confidenciales, sólo conocidos por el investigador a través de un número de identificación. Una clave que asocia el formulario de consentimiento con las respuestas de la encuesta será almacenada por separado de los resultados de la encuesta. Los resultados de la encuesta, sin nombre de los estudiantes, serán transferidos y almacenados en un archivo electrónico en la computadora del investigador guardado por contraseña. Esta forma de consentimiento de los padres y los resultados de la encuesta se guardarán en un armario cerrado con llave en la escuela de educación en la Unversidad de Baylor para proteger la privacidad de los individuos que participan.

El estudio satisface las normas del *American Psychological Association* en cuanto al "riesgo mínimo" y no plantea grandes riesgos ni peligros para el niño como participante. No habrá ningún riesgo físico en cualquier momento durante la realización de la encuesta. Aunque se espera que su hijo/a participe, él o ella puede elegir no hacerlo en cualquier momento sin pena o pérdida de beneficios. Aquellos estudiantes que participan en la encuesta tendrán la oportunidad de contribuir a una investigación valiosa y también se entrarán en un sorteo: se otorgará un certificado de regalo de $25 para Game Stop a un participante de cada escuela y se otorgará el gran premio de un IPOD a un participante. Los alumnos que eligen no participar tendrán la oportunidad de leer un libro en silencio durante el período de administración. Los premios se otorgarán a los estudiantes ganadores en el *Family College Night for 8th Graders* que se celebrará en cada escuela, fecha que se determine en la primavera de 2013.

Mientras que sólo usted como padre o tutor legal es capaz bajo la ley de consentir la participación de su hijo en este estudio, es preferible que su hijo se haga consciente (consistente con la edad y el nivel de comprensión de su hijo) que el o ella es parte del estudio. Si usted discierne que su hijo no está cómodo con participar en el estudio, puede considerar (como un padre o tutor legal) no dar su consentimiento para la participación de su hijo en el estudio.

Por favor, dirija todas las preguntas a Lynn Wisely, candidato al doctorado en la facultad de educación (254-644-5029) o Dr. Susan Johnsen, el patrocinador de la facultad para esta investigación. Dr. Susan Johnsen puede ser contactado en la escuela de educación de la Universidad de Baylor, One Bear Place # 97301, Waco, TX 76798-7301, 254-710-6116. Si tiene alguna pregunta sobre sus derechos como participante, o cualquier otro aspecto de la investigación que le pertenece como participante, póngase en contacto con la Comisión de la universidad de Baylor para la protección de sujetos humanos en investigación, Dr. David W. Schlueter, IRB Baylor University, One Bear Place #97368, Waco, TX 76798, 254-710-6920 or 254-710-3708.

He leído y entiendo este formulario, soy consciente de mis derechos como participante y acepto participar en la investigación.
Fecha: _____

Padre (firma) _____ **Nombre de padre** _____

Nombre del estudiante _____

***Nivel de educación más alto del padre: (escoge uno) (escoge uno)**

_____ Parte de la secundaria
_____ Título de la secundaria
_____ Parte de la universidad o escuela técnica (sin título)
_____ Certificado o título técnico
_____ Título de dos años
_____ Título de cuatro años
_____ Escuela graduada

***Nivel de educación más alto de la madre:**

_____ Parte de la secundaria
_____ Título de la secundaria
_____ Parte de la universidad o escuela técnica (sin título)
_____ Certificado o título técnico
_____ Título de dos años
_____ Título de cuatro años
_____ Escuela graduada

A.4 *Student Assent Form: English*

STUDENT ASSENT FORM

COLLEGE-GOING BELIEFS OF MIDDLE SCHOOL STUDENTS:
EXPLORING FIVE SOCIAL COGNITIVE CAREER THEORY VARIABLES

I would like to invite you to take part in this survey. I am asking you because you are an eighth grade student in your school.

In this survey, I want to learn what you know and think about your plans after high school. The survey will involve part of two class periods (between 10 and 40 minutes on two occasions) and will be given during your speech or technology class.

There is no risk to you in this study. You will be given a unique identifying code so that your answers will be kept confidential. The results of the study will help other students and educators across the country learn how better to help 8th grade students plan for their future.

You do not have to be in this study if you do not want to. If you decide to participate in the study, you can stop at any time.

If you have any questions at any time, please ask me (Lynn Wisely). My contact information is listed below.

If you have questions regarding your rights as a participant, or have other questions regarding this research, please contact the Baylor University Committee for Protection of Human Subjects in Research IRB, Baylor University, One Bear Place #97368, Waco, TX 76798-7368. Baylor IRB Chair Dr. David Schlueter may also be reached at 254-710-6920 or 254-710-3708.

IF YOU SIGN THIS FORM IT MEANS THAT YOU HAVE DECIDED TO PARTICIPATE AND HAVE READ EVERYTHING THAT IS ON THIS FORM. YOU AND YOUR PARENTS WILL BE GIVEN A COPY OF THIS FORM TO KEEP.

_____ _____
Signature of Student Date

INVESTIGATOR INFORMATION:

PRIMARY INVESTIGATOR
Lynn W. Wisely
Lynn_Wisely@baylor.edu; 254-644-5029

FACULTY CHAIR
Baylor University
Dr. Susan Johnsen
Susan_Johnsen@baylor.edu; 254-710-6116

Dr. David W. Schlueter, Ph. D., Chair Baylor IRB
Baylor University
One Bear Place #97368
Waco, Texas 76798-7368
Dr. Schlueter may also be reached at (254) 710-6920 or (254) 710-3708

A.5 *Student Assent Form: Spanish*

FORMULARIO DE CONSENTIMIENTO DEL ESTUDIANTE

CREENCIAS DE LOS ESTUDIANTES DE ESCUELA INTERMEDIA EN IR A LA UNIVERSIDAD: EXPLORAR CINCO VARIABLES DE LA TEORÍA SOCIAL COGNITIVA DE CARRERA

Me gustaría invitarte a participar en esta encuesta. Te estoy pidiendo porque eres un estudiante del octavo grado en la escuela.

En esta encuesta, quiero aprender lo que sabes y piensas acerca de tus planes después del high school. La encuesta tomará parte de dos períodos de clase (de 10 a 40 minutos en dos ocasiones) y se dará durante tu clase de retórica o tu clase de tecnología.

No hay ningún riesgo para ti en este estudio. Te le daré un código de identificación único para que tus respuestas se mantengan confidenciales. Los resultados del estudio ayudarán a otros estudiantes y educadores en todo el país en aprender cómo mejor ayudar a los estudiantes de octavo grado a planificar su futuro.

No tienes que tomar parte en este estudio si no quieres. Si decides participar en el estudio, puedes salir en cualquier momento.

Si tienes cualquiera pregunta en cualquier momento, por favor pregúntame (Lynn Wisely). Mi información de contacto se enumera a continuación.

Si tiene alguna pregunta sobre sus derechos como participante, o cualquier otro aspecto de la investigación que le pertenece como participante, póngase en contacto con la Comisión de la universidad de Baylor para la protección de sujetos humanos en investigación, Dr. David W. Schlueter, IRB Baylor University, One Bear Place #97368, Waco, TX 76798, 254-710-6920 or 254-710-3708.

SI FIRMAS ESTE FORMULARIO SIGNIFICA QUE HAS DECIDIDO PARTICIPAR Y HAS LEÍDO TODO LO QUE ESTÁ EN ESTA FORMA. TÚ Y TUS PADRES RECIBIRÁN UNA COPIA DE ESTE FORMULARIO PARA GUARDAR.

_____ _____
Firma del estudiante Fecha

INFORMACIÓN DEL INVESTIGADORA:

INVESTIGADORA PRIMARIA:
Lynn W. Wisely
Lynn_Wisely@baylor.edu; 254-644-5029

PATROCINADOR DE LA FACULTAD:
Baylor University
Dr. Susan Johnsen
Susan_Johnsen@baylor.edu; 254-710-6116

Dr. David W. Schlueter, Ph. D., Chair Baylor IRB
Baylor University
One Bear Place #97368
Waco, Texas 76798-7368
Dr. Schlueter: (254) 710-6920 or (254) 710-3708

A.6 *Directions for Administration*

Directions for Administering the
Eighth Grade Survey About You

Thank you for participating in this research survey. The results from it will help adults across the country learn how to help other eighth graders prepare for their future.

Today you will be taking Part I [and/or Part II] of the *Eighth Grade Survey About You*. It is estimated that each part will take approximately 20 to 25 minutes to complete. It is not a timed test and you may take as long as you need. At the top of the survey is a Unique Identifying Number, please do *not* put your name on the survey anywhere. By *not* putting your name on the survey, we can ensure that your results will be confidential.

We will pass out the survey packets now. Please do not put any marks on the survey until you are told to do so.

(Read while it is being passed out)

[To be read re. Part I: Part I of the survey has four sections. I am interested in your honest answers to the questions and statements. Read each one carefully and fill in the circle that best represents what you think and feel.]

[To be read re. Part II: Part II of the survey consists of questions about what you know about your educational options after high school. Some of the questions may be difficult, just do your best. Each question has four answer options. Pick the one that best answers the question and bubble in the circle.]

Please use a number 2 pencil. You are being provided a pencil for this survey. If you change your mind about an answer, please thoroughly erase your first response. Only one question asks you to fill in more than one circle (Question 9), all other items ask you to fill in only one answer. If you are unsure what your answer is for any question, please make your best guess.

If you have a question during the survey, please raise your hand. Once you are done, please raise your hand and I will be by to collect it. When your survey is collected, you may get out a book and read until all surveys are collected.

We greatly appreciate your help on this research project.

Lynn W. Wisely
Principle Investigator (Fall/Winter 2012)

A.7 *The Eighth Grade Survey: English*

Identifying Code #

The Eighth Grade Survey

Part I. About You

Read each statement or question and give your best answer. There are no "right" or "wrong" answers, so tell me what YOU think.

Marking instructions:

- Use a No. 2 pencil only. Fill in the circle that best answers the question asked.

Like this: ● Not like this: ✓ ✗ /

I. A—About You

1. What is your gender?

Ⓐ Male
Ⓑ Female

2. What is your date of birth?

M	M	D	D	Y	Y
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

3. What grade are you in?

Ⓐ Seventh Grade
Ⓑ Eighth Grade
Ⓒ Other

4. Which school do you attend?

Ⓐ Atlas Academy
Ⓑ Cesar Chavez
Ⓒ Tennyson (not including Atlas Academy)
Ⓓ Other

5. Are you Hispanic or Latino? (A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race)

Ⓐ Yes
Ⓑ No

6. Please select the racial category with which you most closely identify.

- Ⓐ American Indian or Alaska Native
- Ⓑ Asian or Asian American
- Ⓒ Black or African American
- Ⓓ Hispanic
- Ⓔ Native Hawaiian or Other Pacific Islander
- Ⓕ White or Caucasian

7. In which math class are you currently enrolled?

- Ⓐ Basic mathematics
- Ⓑ Algebra I
- Ⓒ Algebra I (for high school credit)
- Ⓓ Geometry
- Ⓔ Other

8. What math class do you plan to take in ninth grade?

- Ⓐ Algebra I
- Ⓑ Geometry
- Ⓒ Algebra II
- Ⓓ Other

9. What are your educational plans (mark ALL that apply)?

- Ⓐ I don't plan to graduate from High School
- Ⓑ Enter Military
- Ⓒ Enter Trade School (like Cosmetology)
- Ⓓ Graduate High School
- Ⓔ Enter Community College (2-yr)
- Ⓕ Enter Four-Year College/University
- Ⓖ Become a professional athlete
- Ⓗ Become a rock star

10. What is your <u>highest</u> educational goal – how far do you want to go in school (pick ONE answer):

- Ⓐ Enter High School
- Ⓑ Graduate High School
- Ⓒ Enter Trade School (for example Cosmetology or Culinary)
- Ⓓ Graduate from Trade School
- Ⓔ Enter 2-yr Community College
- Ⓕ Graduate from 2-yr Community College
- Ⓖ Enter 4-yr College or University
- Ⓗ Graduate from 4-yr College or University
- Ⓘ Enter Graduate School (for example law school, medical school, or a Master's or PhD)
- Ⓙ Graduate from Graduate School
- Ⓚ Other

	Not at all likely		Somewhat likely		Likely		Very Likely		Positive	
11. In your opinion, how likely is it that you will go to college after high school?	0	1	2	3	4	5	6	7	8	9
12. In your opinion, how likely is it that you actually will graduate from college within five years after high school?	0	1	2	3	4	5	6	7	8	9

13. Have you visited (been on) a college campus?

Ⓐ Yes
Ⓑ No

I. B — Your Intentions

Please read each statement carefully. Decide how strongly you agree or disagree with each statement.

	Strongly Disagree	Moderately Disagree	Aren't Sure or Neutral	Moderately Agree	Strongly Agree
14. I intend to spend more time learning about colleges and universities than I have been.	①	②	③	④	⑤
15. I plan to talk to lots of people about colleges and universities.	①	②	③	④	⑤
16. I am committed to learning more about my abilities and interests.	①	②	③	④	⑤
17. I intend to get all the education I need for my college	①	②	③	④	⑤
18. I plan to talk to advisers or counselors in my school about college opportunities for different majors.	①	②	③	④	⑤

I. C — College-Going Self-Efficacy

Fill in the circle that best describes how sure you feel about each of the following statements. Remember that college means any type of schooling after high school (technological school, community college, four-year university).

	Not at all sure	Somewhat sure	Sure	Very Sure
19. I can find a way to pay for college	①	②	③	④
20. I can get accepted to a college	①	②	③	④
21. I can have family support for going to college	①	②	③	④
22. I can choose a good college	①	②	③	④
23. I can get a scholarship or grant for college	①	②	③	④
24. I can make an educational plan that will prepare me for college	①	②	③	④
25. I can make my family proud with my choices after high school	①	②	③	④
26. I can choose college courses that best fit my interests	①	②	③	④
27. I can pay for college even if my family cannot help me	①	②	③	④
28. I can get good grades in my high school math classes	①	②	③	④
29. I can get good grades in my high school science classes	①	②	③	④
30. I can choose the high school classes needed to get into a good college	①	②	③	④
31. I can know enough about computers to get into college	①	②	③	④
32. I can go to college after high school	①	②	③	④

***If you do go to college**, how sure are you about being able to do the following:*

	Not at all sure	Somewhat sure	Sure	Very Sure
33. I could pay for each year of college	1	2	3	4
34. I could get A's and B's in college	1	2	3	4
35. I could get my family to support my wish of finishing college	1	2	3	4
36. I could take care of myself at college	1	2	3	4
37. I could fit in at college	1	2	3	4
38. I could get good enough grades to get or keep a scholarship	1	2	3	4
39. I could finish college and receive a college degree	1	2	3	4
40. I could care for my family responsibilities while in college	1	2	3	4
41. I could set my own schedule while in college	1	2	3	4
42. I could make friends at college	1	2	3	4
43. I could get the education I need for my choice of career	1	2	3	4
44. I could get a job after I graduate from college	1	2	3	4
45. I would like being in college	1	2	3	4
46. I could be smart enough to finish college	1	2	3	4
47. I could pick the right things to study at college	1	2	3	4
48. I could do the classwork and homework assignments in college classes	1	2	3	4

I.D—College-Going Outcome Expectations

What do you believe? Please read each of the following statements and answer them as honestly as possible. There are no right or wrong answers.

	Don't Believe at all	Somewhat Believe	Believe	Definitely Believe
49. I will be able to pay for college	1	2	3	4
50. I will impress my family	1	2	3	4
51. I will have better opportunities in life	1	2	3	4
52. I will have the same friends as I do now	1	2	3	4
53. I will contribute more to society as a result of going to college	1	2	3	4
54. I will make new friends	1	2	3	4
55. I will make other people's lives better because of my college experiences	1	2	3	4
56. I will gain respect from others	1	2	3	4

If I go to college, I believe:

	Don't Believe at all	Somewhat Believe	Believe	Definitely Believe
57. I will be proud of myself	1	2	3	4
58. I will be prepared academically	1	2	3	4
59. My parents will support my decision	1	2	3	4
60. I will be successful in college	1	2	3	4
61. My parents will approve of me	1	2	3	4
62. My friends will be happy for me	1	2	3	4
63. I will make a lot of money after I graduate	1	2	3	4

Identifying Code #

The Eighth Grade Survey

Part II. Texas College Knowledge Inventory

Put on your thinking caps. Read each question carefully, and then consider each answer option. Fill in the circle that best answers the question.

64. If I go to college, I will:

- (A) be a full-time student
- (B) be a part-time student
- (C) take courses online
- (D) All of the above

65. Which option below is the *recommended* set of core courses to take in High School in order to be prepared to enroll in college? (Please circle the best answer)

- (A) English 4 yrs., Math 4 yrs., Science 4 yrs., Social Studies 4 yrs., Foreign Language 2 yrs.
- (B) English 4 yrs., Math 4 yrs., Science 3 yrs., Social Studies 3 yrs., Foreign Language 2 yrs.
- (C) English 4 yrs., Math 3 yrs., Science 3 yrs., Social Studies 2 yrs., Foreign Language 1 yr.
- (D) English 4 yrs., Math 3 yrs., Science 2 yrs., Social Studies 2 yr., Foreign Language 1 yr.

66. Define general college core requirements:

- (A) Common courses that all students take during the early years of college regardless of the major they choose
- (B) Basic writing, literature, math, history, and science courses
- (C) Specialized, advanced classes taken during the final years of college to complete a certain major
- (D) A and B only

67. What is a SAT (a standardized admission test) fee waiver?

- (A) A document that can be used like a coupon to pay for the SAT registration–for eligible students
- (B) A document that says your test scores will not count for college admission requirements
- (C) Permission to sit out of taking the SAT
- (D) Permission to take a different standardized test instead of the SAT

68. Which is the best time to take the SAT or ACT, college admission tests, in high school?

- (A) 9th grade
- (B) 10th grade
- (C) 11th grade
- (D) 12th grade

69. What is the difference between the SAT and the PSAT?

- (A) The SAT is a college entrance exam for most colleges in TX and the PSAT is a practice test
- (B) The PSAT is used by high schools to determine which students will be allowed to apply for college, and the SAT is used as a graduation requirement
- (C) The SAT measures a student's verbal reasoning, critical reading, and math problem solving skills; the PSAT measures a student's aptitude to do a specific job in the military
- (D) The only difference is the name, they are the same test

70. A student who goes to a community college and then transfers to a four-year college/university to receive a degree would most likely experience which of the following?

- (A) More options for courses and degree programs are available at community colleges
- (B) Less cost in obtaining the 4-year degree
- (C) Most credit for courses taken at community colleges transfers to 4-year colleges
- (D) B and C only

71. The best definition of a **bachelor's degree** is:

- (A) A 2-year degree that is usually earned at a community or technical college
- (B) A 4-year degree that is usually earned at a private or public university
- (C) An advanced degree that usually requires at least six years to complete
- (D) A term for the status of a male college student who is unmarried by graduation day

72. The best definition of an **associate's degree** is:

- (A) A 2-year degree that is usually earned at a community or technical college
- (B) A 4-year degree that is usually earned at a public or private university
- (C) An advanced degree that usually requires at least six years to complete
- (D) A term for the status of any student who held associate-level positions in extracurricular activities while in college

73. Which of the following careers require more education than a four-year college degree?

- (A) Doctor
- (B) Teacher
- (C) Lawyer
- (D) A and C only

74. Which of the following are considered advanced degrees?

- (A) Associates, Bachelor's, Master's, Ph.D., and Professional Degrees (such as medical doctor or lawyer)
- (B) Bachelor's, Master's, Ph.D., and Professional Degrees
- (C) Master's, Ph.D., and Professional Degrees
- (D) Ph.D. and Professional Degrees

75. What is an example of a **private** (vs. public) university in the state of TX?

- (A) Baylor University
- (B) University of Texas, Austin
- (C) Texas A&M University
- (D) Sam Houston State University

76. What is the 2011-2012 average cost per year at a private four-year college/university in Texas for tuition and fees, books/supplies, room & board, transportation and personal expenses?

- (A) $0 - $15,000
- (B) $15,001 - $30,000
- (C) $30,001 - $45,000
- (D) $45,001 - $60,000

77. What expenses are not included in college tuition?

- (A) Cost of registering for and attending classes
- (B) Books and other supplies
- (C) Living expenses such as renting a dorm room or an apartment and food
- (D) B and C only

78. What is a **need-based scholarship**?

- (A) A scholarship offered to high school students with a high GPA and SAT/ACT score
- (B) A scholarship offered to students who have athletic skill
- (C) A scholarship offered to students who do not have enough financial resources
- (D) A scholarship offered to students in the fine arts

79. What do you need to qualify for most scholarships?

- (A) A GPA above a certain minimum
- (B) A GPA and an SAT/ACT score above certain minimums
- (C) A high school diploma
- (D) Extracurricular activities

80. Why is it important to fill out the FAFSA (Free Application for Federal Student Aid) if you plan to attend college?

- (A) It will reduce the cost of applying to college
- (B) To determine if you are eligible for federal and state student financial aid
- (C) To qualify for many institutional grants
- (D) B and C only

81. Which of the following types of financial aid do you have to repay?

- (A) Grants
- (B) Scholarships
- (C) Loans
- (D) All of the above

82. What can be done at the applytexas.org website?

- (A) Research public colleges/universities in Texas
- (B) Apply for scholarships
- (C) Apply to public and some private TX colleges
- (D) All of the above

83. What does the admission committee at a college consider the most important part of a student's application to college?

- (A) Essay(s)
- (B) Letter(s) of Recommendation
- (C) Record of high school courses taken and grades earned
- (D) Standardized test scores

84. The average college graduate earns how much more than the average high school graduate over his/her entire working career?

- (A) $40,000
- (B) $150,000
- (C) $650,000
- (D) $1,000,000

85. After assessing the FAFSA (Free Application for Federal Student Aid), the federal government decides how much money a family should be able to give toward their child's college education. This figure is called:

- (A) Grants
- (B) Loans
- (C) Expected family contribution (EFC)
- (D) Cost of attendance (COA)

86. In Texas, students who rank in the top 10% of their high school when they apply to college can get:

- (A) Free tuition at any private institution
- (B) Automatic acceptance to most public colleges/universities in the state
- (C) A national award in the amount of $2,500
- (D) Accepted to college without filling out an application

Thank you!

A.8 *The Eighth Grade Survey: Spanish*

Identifying Code #

La encuesta del octavo grado

Parte I. Acerca de Ti

Lea cada pregunta o instrucción y de la mejor respuesta. No hay respuestas "buenas" o "malas", así que dime lo que piensas.

Instrucciones:

- *Utilice sólo un lápiz no. 2. Rellene el círculo que mejor responde a la pregunta.*

Like this: ● Not like this: ✓ ✗ /

Parte I. A—Acerca de ti

1. ¿Cuál es tu sexo?

Ⓐ Hombre
Ⓑ Mujer

2. ¿Cuál es tu fecha de nacimiento?

M	M	D	D	Y	Y
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

3. ¿En qué grado estás?

Ⓐ Séptimo Grado
Ⓑ Octavo Grado
Ⓒ Otro

4. ¿A qué escuela asistes?

Ⓐ Atlas Academy
Ⓑ Cesar Chavez
Ⓒ Tennyson (no incluyiendo Atlas Academy)
Ⓓ Otro

5. ¿Eres hispano o latino? (Una persona de herencia cubana, mexicana, puertorriqueña, sudamericano o centroamericano, o de cualquier otro origen hispano, sin tomar en cuenta la raza)

Ⓐ Sí
Ⓑ No

6. Selecciona la categoría racial con la cual más te identificas.

Ⓐ Indígena americana o nativa de Alaska
Ⓑ Asiática o asiática americana
Ⓒ Negra o africana americana
Ⓓ Hispana
Ⓔ Nativa de Hawaii u otro isleño pacífico
Ⓕ Blanco

7. ¿Qué curso de matemáticas estás tomando?

Ⓐ Basic mathematics
Ⓑ Algebra I
Ⓒ Algebra I (para crédito de high school)
Ⓓ Geometry
Ⓔ Otro

8. ¿Qué curso de matemáticas piensas tomar en el novena grado?

Ⓐ Algebra I
Ⓑ Geometry
Ⓒ Algebra II
Ⓓ Otro

9. ¿Cuáles son tus planes educacionales? (selecciona TODOS que te corresponden)

Ⓐ No tengo planes de terminar el High School
Ⓑ Pienso entrar en la fuerza militar
Ⓒ Pienso entrar en un instituto profesional (como la Cosmetología)
Ⓓ Pienso terminar el High School
Ⓔ Pienso entrar en el Community College (2 años)
Ⓕ Pienso entrar en una universidad (4 años)
Ⓖ Pienso hacerme atleta profesional
Ⓗ Pienso hacerme estrella musical

10. Cuál es tu meta educacional más alto – hasta dónde quieres llegar en la escuela (selecciona una respuesta):

Ⓐ Entrar en el High School
Ⓑ Graduarme del High School
Ⓒ Entrar en un instituto professional (por ejemplo la escuela cosmetológica o culinaria)
Ⓓ Graduarme del instituto profesional
Ⓔ Entrar en el Community College (2 años)
Ⓕ Graduar del Community College (2 años)
Ⓖ Entrar en la universidad (4 años)
Ⓗ Graduarme de la universidad (4 años)
Ⓘ Entrar en la escuela graduada (por ejemplo la escuela del derecho, de la medicina, o en una maestría o doctorado)
Ⓙ Graduarme de la escuela graduada
Ⓚ Otro

	No muy probable		Poco Probable		Probable		Muy Probable		Seguro
11. En tu opinión, ¿cuál es la probabilidad de que entrarás en la universidad o Community College después de terminar el High School?	⓪	①	②	③	④	⑤	⑥	⑦	⑧	⑨
12. En tu opinión, ¿cuál es la probabilidad de que te graduarás de la universidad dentro de cinco años después de terminar el High School?	⓪	①	②	③	④	⑤	⑥	⑦	⑧	⑨

13. ¿Has visitado el campus de una universidad?

Ⓐ Sí
Ⓑ No

Parte I. B—Intenciones

Por favor lee cada oración con cuidado. Decide cuánto estás de acuerdo o no estás de acuerdo con cada oración.

	No estoy de acuerdo para nada	No estoy de acuerdo	No sé muy bien	Estoy de acuerdo	Estoy muy de acuerdo
14. Quiero pasar más tiempo aprendiendo sobre las universidades.	①	②	③	④	⑤
15. Pienso hablar con muchas personas sobre las universidades.	①	②	③	④	⑤
16. Estoy dedicado/a a aprender más sobre mis habilidades e intereses.	①	②	③	④	⑤
17. Pienso obtener toda la educación que necesito para la universidad.	①	②	③	④	⑤
18. Pienso hablar con consejeros en mi escuela sobre las oportunidades universitarios para carreras diferentes	①	②	③	④	⑤

Parte I. C—La autoeficacia universitaria

En esta sección, por favor lee cada pregunta y responde lo más honestamente possible. Escoge la respuesta que mejor corresponde a qué tan seguro estás de cada pregunta. No hay respuestas buenas o malas. Cuando respondes a estas preguntas toma en cuenta que la universidad puede ser cualquiera escuela después del high school (instituto técnico, community college, o universidad de cuatro años).

	No muy seguro/a	Poco seguro/a	Seguro/a	Muy seguro/a
19. Puedo encontrar una manera de pagar por la universidad	①	②	③	④
20. Puedo ser aceptado/a a una universidad	①	②	③	④
21. Puedo tener el apoyo de mi familia de ir a la universidad	①	②	③	④
22. Puedo escoger una universidad buena	①	②	③	④
23. Puedo recibir una beca o subsidio para la universidad	①	②	③	④
24. Puedo hacer un plan educacional que me preparará para la universidad	①	②	③	④
25. Puedo hacer mi familia orgullosa con mis elecciones después del high school	①	②	③	④
26. Puedo escoger cursos universitarios que mejor quedan con mis intereses	①	②	③	④
27. Puedo pagar por la universidad aunque mi familia no me pueda ayudar	①	②	③	④
28. Puedo sacar buenas notas en mis clases de matématica de high school	①	②	③	④

	No muy seguro/a	Poco seguro/a	Seguro/a	Muy seguro/a
29. Puedo sacar buenas notas en mis clases de ciencia de high school	1	2	3	4
30. Puedo escoger las clases de high school que necesito para entrar en una universidad buena	1	2	3	4
31. Puedo saber lo suficiente sobre las computadoras para entrar en una universidad buena	1	2	3	4
32. Puedo ir a la universidad después de high school	1	2	3	4

Si no vas a la Universidad, qué tan seguro/a estás de lo siguiente:

	No muy seguro/a	Poco seguro/a	Seguro/a	Muy seguro/a
33. Podría pagar por cada año de la universidad	1	2	3	4
34. Podría sacar buenas notas en la universidad	1	2	3	4
35. Podría tener el apoyo de mi familia en mi deseo de terminar la universidad	1	2	3	4
36. Podría cuidar de mi mismo/a en la universidad	1	2	3	4
37. Podría adaptarme a la universidad	1	2	3	4
38. Podría sacar notas suficientemente buenas para obtener o quedarme con una beca	1	2	3	4
39. Podría terminar la universidad y recibir un título universitario	1	2	3	4
40. Podría cuidar de mis responsabilidades familiares mientras estar en la universidad	1	2	3	4
41. Podría poner mi propio horario mientras estar en la universidad	1	2	3	4
42. Podría encontrar amigos en la universidad	1	2	3	4
43. Podría obtener la educación que necesito para mi carrera	1	2	3	4
44. Podría obtener trabajo después de graduarme de la universidad	1	2	3	4
45. Me gustaría estar en la universidad	1	2	3	4
46. Podría ser lo suficiente inteligente para terminar la universidad	1	2	3	4
47. Podría escoger lo que necesito estudiar en la universidad	1	2	3	4

	No muy seguro/a	Poco seguro/a	Seguro/a	Muy seguro/a
48. Podría hacer la tarea en las clases universitarias	①	②	③	④

Parte I. D—Resultados esperados de ir a la universidad

Por favor lee cada oración y responde lo más honestamente posible. No hay respuestas correctas o incorrectas..

	No lo creo para nada	Lo creo más o menos	Lo creo	Lo creo por cierto
49. Podré pagar por la universidad	①	②	③	④
50. Impresionaré a mi familia	①	②	③	④
51. Tendré mejores oportunidades en la vida	①	②	③	④
52. Tendré los mismos amigos que tengo ahora	①	②	③	④
53. Contribuiré más a la sociedad como resultado de ir a la universidad	①	②	③	④
54. Encontraré nuevos amigos	①	②	③	④
55. Haré que la vida de otros sea mejor como resultado de mis experiencias en la universidad	①	②	③	④
56. Ganaré el respeto de otros	①	②	③	④

Si voy a la universidad, creo que:

	No lo creo para nada	Lo creo más o menos	Lo creo	Lo creo por cierto
57. Estaré orgulloso/a de mi mismo/a	①	②	③	④
58. Estaré preparado/a académicamente	①	②	③	④
59. Mis padres apoyarán mi decisión	①	②	③	④
60. Tendré éxito en la universidad	①	②	③	④
61. Mis padres estarán contentos conmigo	①	②	③	④
62. Mis amigos estarán felices para mí	①	②	③	④
63. Ganaré mucho dinero después de graduarme de la universidad	①	②	③	④

Identifying Code #

La encuesta del octavo grado

Parte II. Texas Universidad Conocimiento Inventario

Piénsalo un momento. Lea cada pregunta con cuidado y selecciona la mejor respuesta. Si no sabes la respuesta, puedes adivinar. Responde a cada pregunta.

64. Si voy a la Universidad:

- Ⓐ Seré estudiante de tiempo completo
- Ⓑ Seré estudiante de tiempo parcial
- Ⓒ Tomaré cursos por internet
- Ⓓ Todo lo de arriba

65. ¿Cuál de los siguientes cursos se *recomienda* tomar en el High School para estar preparado/a para entrar en la universidad? (Selecciona la mejor respuesta)

- Ⓐ 4 años de inglés, 4 años de matemáticas, 4 años de ciencias, 4 años de estudios sociales, 2 años de lenguas extranjeras
- Ⓑ 4 años de inglés, 4 años de matemáticas, 3 años de ciencias, 3 años de estudios sociales, 2 años de lenguas extranjeras
- Ⓒ 4 años de inglés, 3 años de matemáticas, 3 años de ciencias, 2 años de estudios sociales, 1 años de lenguas extranjeras
- Ⓓ 4 años de inglés, 3 años de matemáticas, 2 años de ciencias, 2 años de estudios sociales, 1 años de lenguas extranjeras

66. Define los requisitos básicos de la universidad:

- Ⓐ Cursos communes que todos los estudiantes toman al empezar la universidad sin tener en cuenta su especialización
- Ⓑ Cursos básicos de escritura, literatura, matemáticas, historia, y ciencias
- Ⓒ Cursos avanzados especializados que los estudiantes toman al final de la universidad para terminar alguna especialización
- Ⓓ Solamente A y B

67. ¿Qué es un SAT (un examen de admisión estandarizadas) exención de la cuota?

- Ⓐ Un documento que puede utilizarse como un cupón para pagar la inscripción de SAT–para estudiantes elegibles
- Ⓑ Un documento que dice sus notas no contarán para los requisitos de admisión de la universidad
- Ⓒ Permiso de no tomar el SAT
- Ⓓ Permiso de tomar un examen estandarizado diferente en lugar del SAT

68. ¿Cuándo es major tomar el SAT o ACT, los exámenes de admission estandarizadas, en el high school?

- Ⓐ Grado 9
- Ⓑ Grado 10
- Ⓒ Grado 11
- Ⓓ Grado 12

69. ¿Cuál es la diferencia entre el SAT y el PSAT?

Ⓐ El SAT es un examen de ingreso universitario para la mayoría de las universidades en TX y el PSAT es un examen de práctica

Ⓑ El PSAT se utiliza por los high schools para determinar cuales estudiantes podrán solicitar la universidad, y el SAT se utiliza como un requisito de graduación

Ⓒ El SAT mide el razonamiento verbal, la lectura crítica y las habilidades para resolver problemas de matemáticas del estudiante mientras que el PSAT mide los aptitudes de un estudiante para hacer un trabajo específico en el ejército

Ⓓ La única diferencia es el nombre, son la misma prueba

70. ¿Un estudiante que va a un Community College y, a continuación, se transfiere a una universidad de cuatro años para recibir un título muy probablemente experimentarían cuál de las siguientes? B y C sólo

Ⓐ Más opciones de cursos y programas están disponibles en Community Colleges

Ⓑ Menos costo para obtener el título de 4 años

Ⓒ La mayoría del crédito para cursos tomados en los Community Colleges se transfiere a las universidades de 4 años

Ⓓ Solamente B y C

71. ¿Cuál es la mejor definición de **bachelor's degree**?

Ⓐ Un título de 2 años que normalmente se recibe en un Community College o una escuela técnica

Ⓑ Un título de 4 años que normalmente se recibe en una universidad privada o pública

Ⓒ Un título avanzado que normalmente requiere por lo menos 6 años para completar

Ⓓ Un término para el estatus de un estudiante hombre que no se ha casado cuando se gradúe

72. ¿Cuál es la mejor definición de **associate's degree**?

Ⓐ Un título de 2 años que normalmente se recibe en un Community College o una escuela técnica

Ⓑ Un título de 4 años que normalmente se recibe en una universidad privada o pública

Ⓒ Un título avanzado que normalmente requiere por lo menos 6 años para completar

Ⓓ Un término para el estatus de cualquier estudiante que ha tenido puestos de "associate" en las actividades extracurriculares mientras estar en la universidad

73. ¿Cuál de las siguientes carreras requiere más de un título de cuatro años?

Ⓐ Doctor/a

Ⓑ Maestro/a

Ⓒ Abogado/a

Ⓓ Solamente A y C

74. ¿Cuáles de los siguientes se consideran títulos avanzados?

Ⓐ Associates, Bachelor's, Master's, Ph.D., y títulos profesionales (como para ser un doctor médico o abogado)

Ⓑ Bachelor's, Master's, Ph.D., y títulos profesionales (como para ser un doctor médico o abogado)

Ⓒ Master's, Ph.D., y títulos profesionales (como para ser un doctor médico o abogado)

Ⓓ Ph.D. y títulos profesionales (como para ser un doctor médico o abogado)

75. ¿Cuál es un ejemplo de una universidad privada (en contraste a pública) en el estado de Texas?

Ⓐ Baylor University
Ⓑ University of Texas, Austin
Ⓒ Texas A&M University
Ⓓ Sam Houston State University

76. ¿Cuál es el costo promedio por año en 2011–2012 en una universidad privada de cuatro años en Texas para la matrícula y cuotas, los libros y materiales, la pensión completa, y los gastos personales?

Ⓐ $0 – $15,000
Ⓑ $15,001 – $30,000
Ⓒ $30,001 – $45,000
Ⓓ $45,001 – $60,000

77. ¿Cuáles gastos no se incluyen en la matrícula universitaria?

Ⓐ El costo de registrarse en y asistir a las clases
Ⓑ Los libros y otros materiales
Ⓒ Los gastos como el alquiler de una habitación o apartamento y la comida
Ⓓ Solamente B y C

78. ¿Qué es un **need-based scholarship**?

Ⓐ Una beca que se ofrece a los estudiantes de high school con una buena nota en el SAT/ACT o un GPA alto
Ⓑ Una beca que se ofrece a los estudiantes que tienen una habilidad atlética
Ⓒ Una beca que se ofrece a los estudiantes que no tienen suficiente dinero
Ⓓ Una beca que se ofrece a los estudiantes en los artes finos

79. ¿Qué necesitas para ser calificado para la mayoría de las becas?

Ⓐ Un GPA arriba de cierto mínimo
Ⓑ Un GPA y una nota del SAT/ACT arriba de cierto mínimo
Ⓒ Una diploma del high school
Ⓓ Actividades extracurriculares

80. ¿Por qué es importante llenar el FAFSA (solicitud gratuita para ayuda estudiantil federal) si piensas asistir la universidad?

Ⓐ Reducirá el costo de solicitar a la universidad
Ⓑ Para determinar si eres elegible para ayuda financiera federal y estatal
Ⓒ Para calificarse por muchas becas intitucionales
Ⓓ Solamente B y C

81. ¿Cuál de los siguientes tipos de ayuda financiera tienes que repagar?

Ⓐ Subvenciones
Ⓑ Becas
Ⓒ Préstamos
Ⓓ Todo lo de arriba

82. ¿Qué se puede hacer en el sitio de web applytexas.org?

Ⓐ Investigar universidades públicas en Texas
Ⓑ Solicitar becas
Ⓒ Solicitar universidades públicas y algunas universidades privadas en Texas
Ⓓ Todo lo de arriba

83. ¿Qué considera el comité de admisión de una universidad la parte más importante de un solicitud de la universidad?

- Ⓐ Ensayo(s)
- Ⓑ Letra(s) de recomendación
- Ⓒ Registro de cursos tomados y notas del high school
- Ⓓ Calificaciones de los exámenes estandarizados

84. ¿Una persona graduada de la universidad gana un promedio de cuánto más de una persona graduada del high school durante toda su carrera?

- Ⓐ $40,000
- Ⓑ $150,000
- Ⓒ $650,000
- Ⓓ $1,000,000

85. Después de evaluar el FAFSA (solicitud gratuita para ayuda estudiantil federal), el gobierno federal decide cuánto dinero la familia debe ser capaz de dar a su hijo/a para su educación universitaria. Esta figura se llama:

- Ⓐ Subvenciones
- Ⓑ Préstamos
- Ⓒ Contribución familiar esperada (EFC)
- Ⓓ Costo de asistencia (COA)

86. En Texas, los estudiantes que se encuentran en el 10% más alto de su high school cuando solicitan una universidad pueden recibir:

- Ⓐ Matrícula gratuita en cualquiera universidad privada
- Ⓑ Aceptación automatic a la mayoría de universidades del estado
- Ⓒ Un premio nacional de $2,500
- Ⓓ Ser aceptado a la universidad sin solicitar

¡Gracias!

APPENDIX B

Instrument Revision Documents

Table B.1. *Table of Specifications for 20-item TCKI*

Objectives/Content Areas/ Topics	Knowledge	Comprehension	% of Test	N Items
1. Know the meaning and significance of terms commonly encountered when choosing or preparing for a post-secondary education program	CK65, CK66, CK67, CK71, CK72, CK74	CK68, CK69	40.0%	8
2. Know facts about the TX two-year, four-year, public/private campuses, especially related to admissions requirements, tuition costs, and program availability	CK75, CK86	CK70	15.0%	3
3. Know economic and social benefits of post-secondary education	CK73, CK84		10.0%	2
4. Know the meaning and significance of terms related to financing a post-secondary education, including educational loans	CK78, CK85	CK77, CK79, CK80, CK81	30.0%	6
5. Know miscellaneous and emerging information about post-secondary education in TX, including on-line education, transfer of credit and earned grades between institutions, and issues		CK82	5.0%	1
				Total: 20 items

(ω = .77)
(*M* = 8.12)
(*SD* = 2.96)

Area:
1. Knowledge: Recall data or information
2. Comprehension: Understand the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words.

Scale adapted from the *North Carolina College Knowledge Inventory* Table of Specifications, NCKKI, 2008. CK 64 was incorrectly written on the inventory, and item CK 76 and CK 83 did not contribute much information to the scale; all three were deleted prior to analyses.

B.1 *Pilot Study*

Pilot Study

Since the *Texas College Knowledge Inventory* (Wisely, 2012) was revised and edited from the *North Carolina College Knowledge Inventory* (2008) specifically for this study, a pilot study was conducted in the spring of 2012 with 52 seventh and eighth grade parochial students. The pilot study's purpose was to answer the following research questions: (a) do the items discriminate between those students who have college knowledge and those who do not, (b) what is the internal consistency reliability with this population, and (c) are there any problems with the readability of the *Texas College Knowledge Inventory*? The TCKI included six demographic questions and 31 questions assessing college knowledge across several categories.

Design of the TCKI. After a thorough search on library electronic resources, Google, Educational Testing Service, ACT, and various educational programs both at the state and national level for a measurement tool to assess students' current knowledge about college-related information, the only instrument identified with psychometric properties was the *North Carolina College Knowledge Inventory* (GEAR UP, 2008). Various knowledge surveys were identified, but upon probing with the authors the other surveys lacked validity and reliability information. The purpose for many of these other tools was to peak college-related interest in students rather than assess students as a way to inform subsequent instruction and intervention. Researchers at GEAR UP in North Carolina (NC) authored the *North Carolina College Knowledge Inventory* (NCCKI) in 2008; they designed a table of specifications and piloted 51 multiple-choice questions to 1619 high school students, grades nine through twelve, in the state of NC. Sathy (2008)

reported, "Cases where more than 50% of the data were missing or contained invalid responses were deleted. All other invalid responses were changed to missing" (Sathy, 2008, n.p.). Results were then subjected to psychometric analysis. An Exploratory Factor Analysis (EFA) was conducted to evaluate the dimensions of the data and a version including 26 final questions was presented. Sathy (2008) reported, "EFA using maximum likelihood and a promax rotation indicated that the NCCKI items were essentially unidimensional." Scores obtained from the final 26-item *North Carolina College Knowledge Inventory* were reported to have a reliability alpha coefficient of .79; Sathy (2008) encouraged subsequent use and analysis with future applications of this tool to student populations in other areas of the country. Tillery (C. Tillery, personal communication, March 6, 2012), on behalf of GEAR UP North Carolina, gave permission to revise and use the inventory for the purposes of this study.

Revisions to the NCCKI involved changing North Carolina (NC) specific information to Texas (TX) specific information where possible. For example, "What is the average cost per year at a NC public university for tuition and fees" was edited to ask for the average cost per year at a TX public university for tuition and fees. Although the NCCKI was written at the eighth grade reading level, careful attention was paid in the revisions to simplify vocabulary in both questions and answer options. Several questions were added which were informed by the literature review; for example, in light of the incentive of the value added from a college degree, the question was asked, "The average college graduate earns how much more than the average high school graduate over his/her entire working career?" Some questions were deleted that referred to NC information where there was no TX parallel, for example, "What does CFNC stand for?"

It stands for a specific foundation in NC. In all, two questions were deleted, six were added, and four were edited to include a fourth answer option to be consistent with the other items on the test.

The revised TCKI was then presented to two middle school counselors at two different schools to assess face validity. One counselor suggested the inclusion of a question asking whether the student had visited a college campus or not. This same counselor suggested adding the option of military to the question regarding the highest amount of education one plans to complete. The first suggestion was added to the inventory demographic portion, the second suggestion was not added to educational goals as attending the military is not necessarily a degree pursuit, however it was included in a question asking students their educational plans. Both counselors assessed the inventory as appropriate and commented that the questions asked what was taught to students during middle and high school and covered basic knowledge about the college process.

Administration of the TCKI. An invitation to participate was extended to all seventh and eighth grade students, $N = 80$, at a parochial middle school. First the superintendent of the Diocese, then the Principal and Vice-Principal, and finally the researcher's Institutional Review Board granted permission to conduct the study. Meeting with all 80 students, the researcher explained the study and distributed parent consent forms and parent surveys to each student. Students were told their answers to the inventory would be anonymous. Teachers reminded students throughout the week to bring in their signed parent consent forms and surveys if they wanted to participate. On Friday of the same week, the researcher returned to administer the inventory to all who had brought the necessary forms. Students were then given student assent forms to sign

prior to the study. Although parent consent and student assent forms had student names on them, the parent survey and the inventory did not. Each student placed all four documents in an individual envelope that the researcher collected and took from the testing site. Fifty-two students participated in the survey. A small token of appreciation (a bag with Smarties® candies, pencils and college stickers) was distributed to all participants once the inventory was collected. Sixteen of the students not participating expressed their wish to participate, but they were prevented from doing so because they forgot to bring in the signed parent form and survey.

Overall readability and administration. Respondents were asked at the conclusion of the TCKI for their written feedback on (a) questions that were hard to understand, (b) what was confusing about them, and (c) if they had suggestions on how to improve the TCKI. Questions that were difficult to understand included the various acronyms associated with the college process, such as FAFSA, PSAT, SAT, ACT. It was recommended that these terms be explained better, where possible. There was concern over the race and ethnicity questions on the demographic portion. Those who identified as Hispanic in response to their ethnicity did not know what to select in response to the question on race. Although Hispanic is an ethnic group, a decision was made to add "Hispanic" to other race options on the dissertation survey for an eighth grade population. The word "waiver" was listed as confusing by some. As part of the inventory was to assess knowledge, questions that sought to assess a student's awareness of a college term were not changed. Many indicated they felt the inventory was of good length and made sense to them. While most completed the 39 questions in 25 minutes, one finished in 20 minutes while one took 50 minutes to complete the survey. The one student taking 50

minutes was observed to sit without action for the last ten minutes before handing in his inventory. Analysis of the inventory, written anecdotal feedback, as well as the Table of Specifications informed the final revisions.

Data Analysis of the TCKI – Pilot Study. Frequencies were run on the full data sample, $N = 52$. There were 18 males (34.6%), and 34 females (65.4%); 21 Hispanic (40.4%) and 31 Non-Hispanic (59.6%) students. All students indicated a post-secondary education goal of at least Trade School. Five students indicated their goal was to earn a two-year college degree or less, while 22 indicated goals of a four-year degree, and 25 indicated a goal of obtaining a graduate degree. The possible score range of the inventory was from 0 – 32. The score range from the pilot administration was 7 – 27. The reliability coefficient on this 32-item instrument with this sample was Cronbach α of 0.62. Ten items with correlations between -.089 and .246 were deleted. Eight deleted items were from the original 26 on the NCCKI and two were from the additions made to the TCKI. The final inventory had 22 questions with a score reliability Cronbach's α of 0.74, $M = 12.79$ and SD of 3.99, with this sample.

B.2 *Summary of Changes*

1. NCCKI: Items deleted from original NCCKI were 6, 10, 14, 18, 20, 25, 27 (based on TCKI pilot study analysis)
2. NCCKI: Items specific to North Carolina, 28 and 29, were changed to reflect Texas specific information; they became items 82 and 86 on the TCKI
3. NCCKI modified questions: NCCKI 17 became TCKI 75, NCCKI 19 became TCKI 76
4. TCKI: The following items were added to the TCKI instrument: 82, 83, 84, 85, 86
5. TCKI final 20-item version deleted TCKI 64 (original NCCKI 4 – item written incorrectly on final version), TCKI 76 (modified NCCKI 19-didn't add much information and so was deleted), and TCKI 83 (new item – also didn't add much information and so was deleted)

Key: NCCKI, North Carolina College Knowledge Inventory

Key: TCKI, Texas College Knowledge Inventory

Table B.2: *Tetrachoric Correlation Matrix for CK Instrument*

	CKQues	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
CK65Scored	1.00	1.00	0.10	0.01	-0.04	0.12	0.14	-0.02	0.05	0.22	0.15	-0.04	-0.00	0.17	0.21	0.04	0.07	0.15	0.30	-0.03	0.06	0.26	0.10
CK66Scored	2.00	0.10	1.00	0.24	0.25	0.15	0.28	0.05	-0.06	0.42	0.27	0.17	-0.02	0.28	0.28	0.18	0.35	0.10	0.43	0.04	0.10	0.19	0.08
CK67Scored	3.00	0.01	0.24	1.00	0.05	0.35	-0.06	0.12	-0.03	0.18	0.05	0.10	-0.06	0.09	0.20	0.56	0.27	-0.01	0.18	-0.17	0.24	0.07	0.22
CK68Scored	4.00	-0.04	0.25	0.05	1.00	-0.00	-0.04	-0.01	0.04	0.32	-0.05	0.26	0.01	0.12	-0.02	0.24	0.20	0.06	0.01	0.22	0.07	0.11	0.20
CK69Scored	5.00	0.12	0.15	0.35	-0.00	1.00	0.04	0.18	0.25	0.19	0.33	0.11	-0.23	0.11	0.26	0.23	0.16	0.20	0.14	-0.16	-0.01	0.16	0.13
CK70Scored	6.00	0.14	0.28	-0.06	-0.04	0.04	1.00	0.03	0.04	0.16	0.12	0.03	0.13	0.24	0.03	0.01	0.18	-0.04	0.34	0.07	-0.00	0.12	-0.10
CK71Scored	7.00	-0.02	0.05	0.12	-0.01	0.18	0.03	1.00	0.56	0.14	0.23	0.05	0.04	0.04	0.15	0.11	0.08	0.10	-0.04	-0.08	0.06	0.18	0.01
CK72Scored	8.00	0.05	-0.06	-0.03	0.04	0.25	0.04	0.56	1.00	0.17	0.24	0.23	-0.02	0.05	0.12	0.24	0.10	0.17	-0.10	-0.15	0.04	0.12	-0.03
CK73Scored	9.00	0.22	0.42	0.18	0.32	0.19	0.16	0.14	0.17	1.00	0.11	0.06	0.00	0.45	0.24	0.15	0.31	0.15	0.34	0.05	-0.08	0.19	0.19
CK74Scored	10.00	0.15	0.27	0.05	-0.05	0.33	0.12	0.23	0.24	0.11	1.00	-0.02	-0.04	0.29	0.31	0.07	0.14	0.14	0.20	-0.14	-0.01	0.23	0.05
CK75Scored	11.00	-0.04	0.17	0.10	0.26	0.11	0.03	0.05	0.23	0.06	-0.02	1.00	-0.04	0.01	0.07	0.28	0.15	0.21	-0.06	-0.06	0.11	-0.10	0.04
CK76Scored	12.00	-0.00	-0.02	-0.06	0.01	-0.23	0.13	0.04	-0.02	0.00	-0.04	-0.04	1.00	-0.09	-0.08	-0.25	0.13	0.00	-0.03	0.09	-0.14	-0.06	-0.04
CK77Scored	13.00	0.17	0.28	0.09	0.12	0.11	0.24	0.04	0.05	0.45	0.29	0.01	-0.09	1.00	0.10	0.06	0.42	-0.02	0.24	0.06	0.05	0.21	0.25
CK78Scored	14.00	0.21	0.28	0.20	-0.02	0.26	0.03	0.15	0.12	0.24	0.31	0.07	-0.08	0.10	1.00	0.16	0.22	0.46	0.35	0.01	0.10	0.28	0.13
CK79Scored	15.00	0.04	0.18	0.56	0.24	0.23	0.01	0.11	0.24	0.15	0.07	0.28	-0.25	0.06	0.16	1.00	0.26	0.07	0.02	-0.26	0.15	0.12	0.05
CK80Scored	16.00	0.07	0.35	0.27	0.20	0.16	0.18	0.08	0.10	0.31	0.14	0.15	0.13	0.42	0.22	0.26	1.00	0.17	0.39	0.09	0.19	0.22	0.13
CK81Scored	17.00	0.15	0.10	-0.01	0.06	0.20	-0.04	0.10	0.17	0.15	0.14	0.21	0.00	-0.02	0.46	0.07	0.17	1.00	0.18	-0.00	-0.06	0.24	0.05
CK82Scored	18.00	0.30	0.43	0.18	0.01	0.14	0.34	-0.04	-0.10	0.34	0.20	-0.06	-0.03	0.24	0.35	0.02	0.39	0.18	1.00	0.27	0.16	0.22	0.12
CK83Scored	19.00	-0.03	0.04	-0.17	0.22	-0.16	0.07	-0.08	-0.15	0.05	-0.14	-0.06	0.09	0.06	0.01	-0.26	0.09	-0.00	0.27	1.00	-0.06	-0.02	0.07
CK84Scored	20.00	0.06	0.10	0.24	0.07	-0.01	-0.00	0.06	0.04	-0.08	-0.01	0.11	-0.14	0.05	0.10	0.15	0.19	-0.06	0.16	-0.06	1.00	0.04	0.04
CK85Scored	21.00	0.26	0.19	0.07	0.11	0.16	0.12	0.18	0.12	0.19	0.23	-0.10	-0.06	0.21	0.28	0.12	0.22	0.24	0.22	-0.02	0.04	1.00	0.03
CK86Scored	22.00	0.10	0.08	0.22	0.20	0.13	-0.10	0.01	-0.03	0.19	0.05	0.04	-0.04	0.25	0.13	0.05	0.13	0.05	0.12	0.07	0.04	0.03	1.00

B.3 *North Carolina College Knowledge Inventory*

The North Carolina College Knowledge Inventory (NCCKI)

Marking Instructions

- Use a No. 2 pencil only.
- Do not use ink, ballpoint, or felt tip pens.
- Make solid marks that fill the oval completely.

INCORRECT MARKS

CORRECT MARK

1. What is your current grade level?

A ◯ 9th grade
B ◯ 10th grade
C ◯ 11th grade
D ◯ 12th grade

2. What is your gender?

A ◯ Male
B ◯ Female

3. What is your ethnicity?

A ◯ Caucasian/White
B ◯ African American/ Black
C ◯ Hispanic
D ◯ American Indian or Alaska Native
E ◯ Asian or Pacific Islander
F ◯ Multi-Racial
G ◯ Other

4. Which of the following are options when you go to college?

A ◯ Being a full-time student
B ◯ Being a part-time student
C ◯ Taking courses online
D ◯ All of the above

5. Define **general college core requirements**:

A ◯ Common courses that all students take during the early years of college regardless of the major they choose
B ◯ Basic writing, literature, math, history, and science courses
C ◯ Specialized, advanced classes taken during the final years of college to complete a certain major
D ◯ A and B only

6. The SAT includes the following sections:

A ◯ Math and reading
B ◯ Math, reading, and writing
C ◯ Math, reading, and science

7. What is a SAT fee waiver?

A ◯ A document that can be used like a coupon to pay for the SAT registration for eligible students
B ◯ A document that says your test scores will not count for college admission requirements
C ◯ Permission to sit out of taking the SAT

8. Which is the best time to take the SAT in high school?

A ◯ 9th grade
B ◯ 10th grade
C ◯ 11th grade
D ◯ 12th grade

9. What is the difference between the **SAT** and **PSAT**?

A ◯ The SAT is used as the official college entrance exam for most colleges in NC and the PSAT is a practice test
B ◯ The PSAT is used by high schools to determine which students will be allowed to apply for college, and the SAT is used as a graduation requirement
C ◯ The SAT measures a student's verbal reasoning, critical reading, and math problem solving skills; the PSAT measures a student's aptitude to do a specific job in the military

10. There are several steps you need to do in order to complete a college application. Which answer below has them in the correct order?

A ◯ 1) set up a CFNC account, 2) submit the online FAFSA, 3) submit an online college application
B ◯ 1) complete all scholarship applications, 2) conduct college visits, 3) ask teachers for recommendation letters for the scholarship applications
C ◯ 1) review the online materials about all the colleges in NC, 2) apply to all colleges in NC, 3) wait until August before deciding which one to attend
D ◯ 1) make a list of the colleges that most interest you, 2) research or visit those colleges, 3) submit an online application using CFNC to the colleges that are best matched with your career and personal interests

11. A student who goes to a community college and then transfers to a four-year university to receive a Bachelor's degree would experience which of the following?

A ◯ More options for courses and degree programs are available at community colleges
B ◯ Less cost in obtaining the 4-year degree
C ◯ Most credit for courses taken at community colleges transfers to 4-year colleges
D ◯ B and C only

12. The best definition of **bachelor's degree** is:

A ◯ A 2-year degree that is usually earned at a community college
B ◯ A 4-year degree that is usually earned at a public or private university
C ◯ An advanced degree that usually requires at least six years to complete
D ◯ A term for the status of a male college student who is unmarried by graduation day

13. The best definition of **associate's degree** is:

A ◯ A 2-year degree that is usually earned at a community college
B ◯ A 4-year degree that is usually earned at a public or private university
C ◯ A 2-year degree that can be earned in high school if a student is enrolled in an early college high school
D ◯ A and C only

14. Studies show that if you continue your education beyond high school you will make more money in your lifetime. What else is likely to happen if you continue your education after high school?

A ◯ You are less likely to be unemployed
B ◯ You are likely to have better health and live longer
C ◯ If you have children, they are likely to do better in school and continue their education beyond high school
D ◯ All of the above

PLEASE DO NOT WRITE IN THIS AREA

SERIAL #

15. Which of the following careers require more education than a four-year college degree?

A ◯ Doctor
B ◯ Teacher
C ◯ Lawyer
D ◯ A and C only

16. Which of the following are considered advanced degrees?

A ◯ Associates, Bachelor's, Master's, Ph.D., and Professional Degrees (such as medical doctor or lawyer)
B ◯ Bachelor's, Master's, Ph.D., and Professional Degrees
C ◯ Master's, Ph.D., and Professional Degrees
D ◯ Ph.D. and Professional Degrees

17. Which of the following **institutions** is a women's college?

A ◯ Peace College
B ◯ Davidson College
C ◯ Gardner-Webb University
D ◯ Wake Forest University

18. What is the average cost per year at a community college in North Carolina for a NC resident (including tuition and fees)?

A ◯ $0 - $5,000
B ◯ $5,000 - $10,000
C ◯ $10,000 - $15,000
D ◯ $15,000 - $20,000

19. What is the average cost per year at a public four-year university in North Carolina for a NC resident (including tuition, fees, room and board)?

A ◯ $5,000 - $10,000
B ◯ $10,000 - $15,000
C ◯ $15,000 - $20,000
D ◯ $20,000 - $25,000

20. When deciding how much it will cost to attend a certain college, what types of expenses must be considered?

A ◯ Tuition and fees
B ◯ Room, board, and transportation
C ◯ Books and supplies
D ◯ All of the above

21. What expenses are not included in college tuition?

A ◯ Cost of registering for and attending classes
B ◯ Books and other supplies
C ◯ Living expenses such as renting a dorm room or an apartment and food
D ◯ B and C only

22. What is a **need-based scholarship**?

A ◯ A scholarship offered to high school students with a high GPA and SAT/ACT score
B ◯ A scholarship offered to students who have athletic skill
C ◯ A scholarship offered to students who have financial need

23. What do you need to qualify for most scholarships?

A ◯ A GPA above a certain minimum
B ◯ A GPA and an SAT/ACT score above certain minimums
C ◯ A high school diploma
D ◯ Extracurricular activities

24. Why is it important to fill out the FAFSA if you plan to attend college?

A ◯ It can help you get into college
B ◯ It will reduce the cost of applying to college
C ◯ To determine if you are eligible for federal and state student financial aid
D ◯ To qualify for many institutional grants
E ◯ C and D only

25. When do you have to begin repaying a federal student loan?

A ◯ After completing your first semester of college
B ◯ The day after you leave college or drop to less than half-time enrollment
C ◯ Six to nine months after you leave college or drop to less than half-time enrollment
D ◯ Two years after you leave college or drop to less than half-time enrollment

26. Which of the following types of financial aid do you have to repay?

A ◯ Grants
B ◯ Scholarships
C ◯ Loans
D ◯ All of the above

27. What is a **Pell Grant**?

A ◯ A tract of land named for Claiborn Pell in New Jersey
B ◯ The largest source of federal student aid that is available based on income
C ◯ A state scholarship program
D ◯ A major at the University of North Carolina

28. What does **CFNC** stand for?

A ◯ College Funding source for North Carolina
B ◯ Collegiate Foundation for North Carolina students
C ◯ College Foundation of North Carolina
D ◯ Carolina Foundation for North Carolina colleges

29. What services does CFNC provide to high school seniors?

A ◯ Opportunity to apply to all NC colleges online
B ◯ Ability to complete an online FAFSA on the CFNC.org website
C ◯ Free money for college
D ◯ A and B only

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APPENDIX C

Assumption Graphs

C.1 – 8. *Figures and Diagrams*

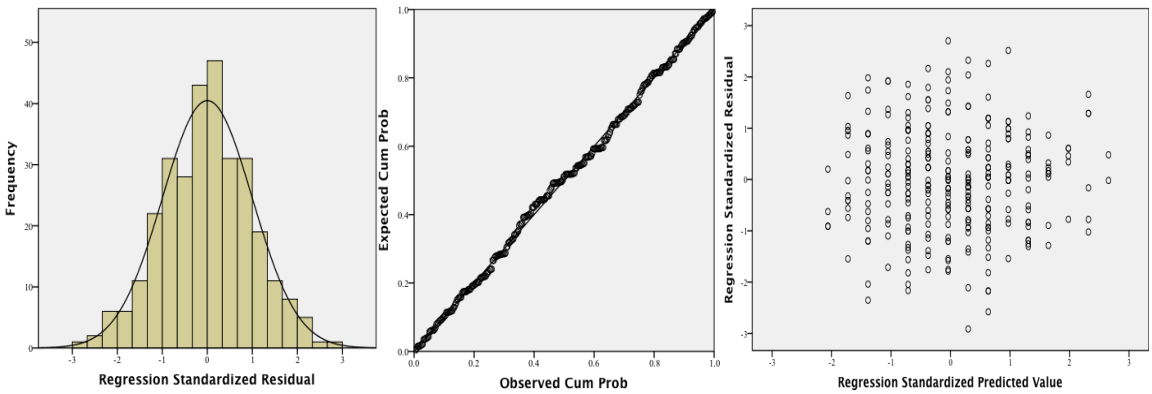

Figure C.1 *Model 1. College Knowledge and College-Going Self-Efficacy (CGSE): Histogram, Prob-Prob Plot, Scatterplot. CGSE Transformed Using Van der Waerden's Formula*

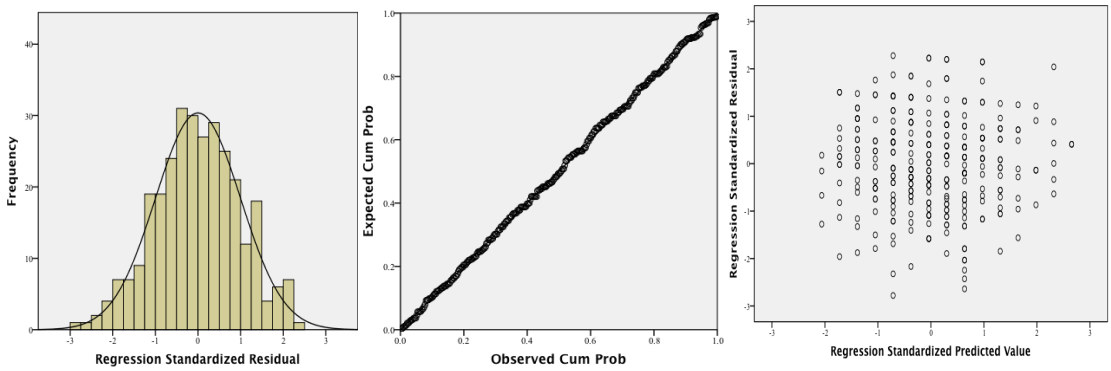

Figure C.2. *Model 2. College Knowledge and College-Going Outcome Expectations (CGOE): Histogram, Prob-Prob Plot, Scatterplot. CGOE Transformed Using Van der Waerden's Formula*

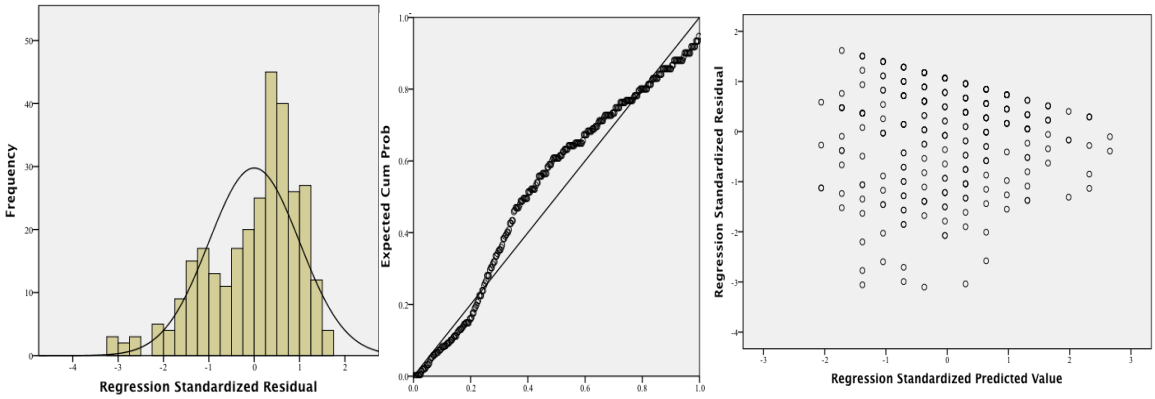

Figure C.3. *Model 3. College Knowledge and Gibbons Choice Intentions: Histogram, Prob-Prob Plot, Scatterplot. Gibbons Choice Intentions Was Not Transformed.*

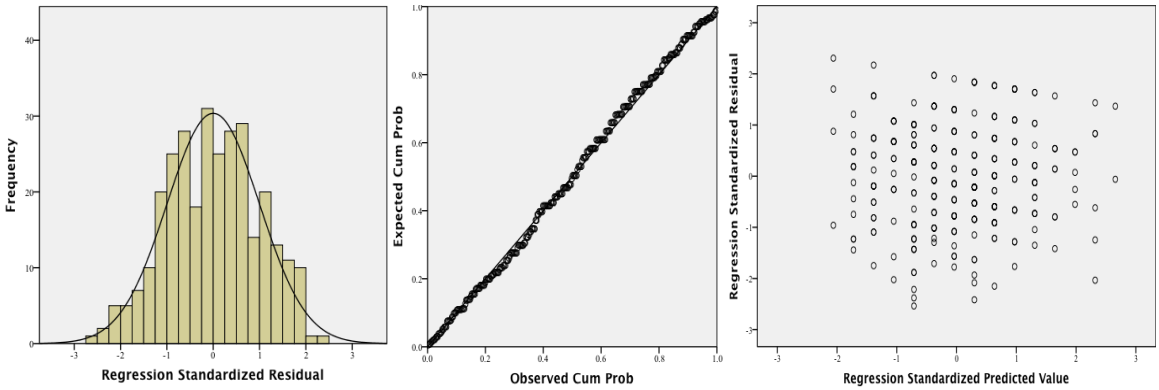

Figure C.4. *Model 4. College Knowledge and Choice Intentions: Histogram, Prob-Prob Plot, Scatterplot. Choice Intentions Transformed Using Van der Waerden's Formula.*

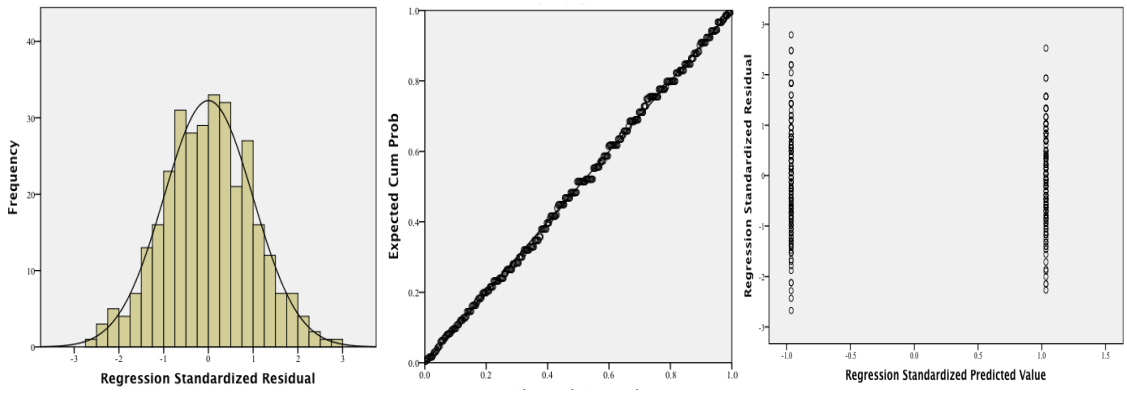

Figure C.5. *Model 6. Parent Education Level and College-Going Self-Efficacy: Histogram, Prob-Prob Plot, Scatterplot. College-Going Self-Efficacy Transformed Using Van der Waerden's Formula.*

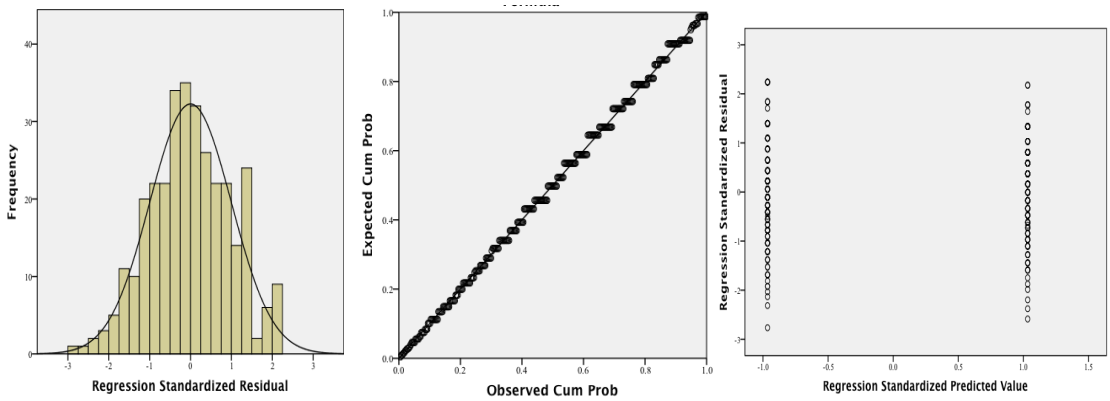

Figure C.6. *Model 7. Parent Education Level and College-Going Outcome Expectations: Histogram, Prob-Prob Plot, Scatterplot. College-Going Outcome Expectations Transformed Using Van der Waerden's Formula.*

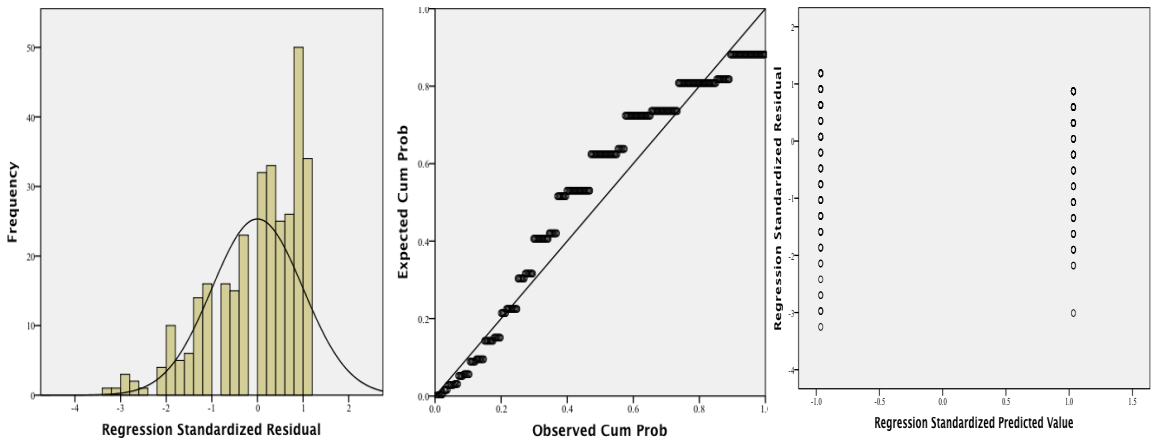

Figure C.7. *Model 8. Parent Education Level and Gibbons Choice Intentions: Histogram, Prob-Prob Plot, Scatterplot. Gibbons Choice Intentions Was Not Transformed.*

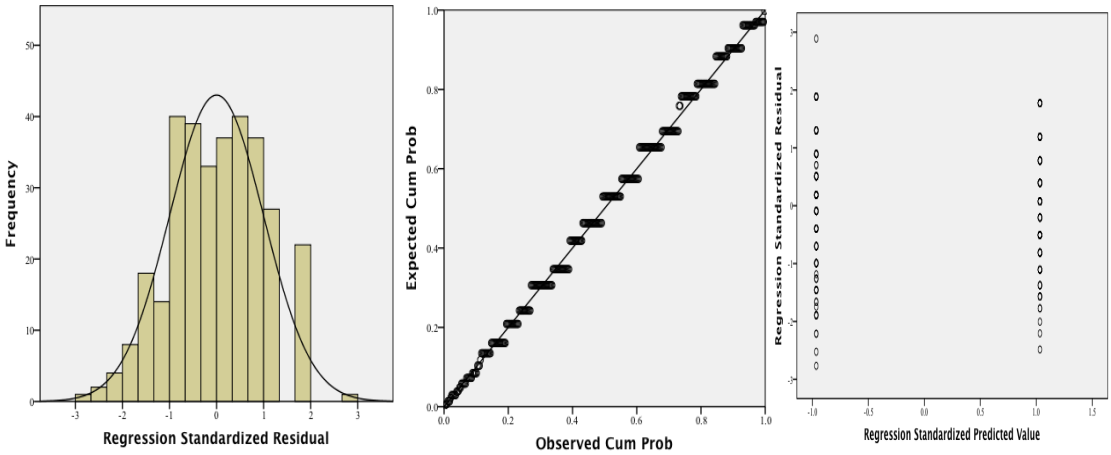

Figure C.8. *Model 9. Parent Education Level and Choice Intentions: Histogram, Prob-Prob Plot, Scatterplot. Choice Intentions Transformed Using Van der Waerden's Formula.*

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