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# THE EFFECT OF A COLLEGE-GOING INTERVENTION ON THE COLLEGE-GOING SELF-EFFICACY BELIEFS OF MIDDLE SCHOOL STUDENTS

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THE EFFECT OF A COLLEGE-GOING INTERVENTION ON THE COLLEGE-  
GOING SELF-EFFICACY BELIEFS OF MIDDLE SCHOOL STUDENTS

by

Kaley D. Mitchell

A dissertation submitted in partial fulfillment


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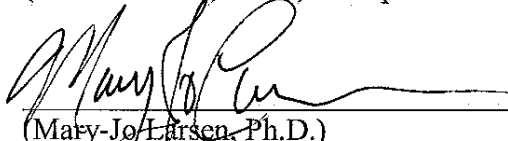
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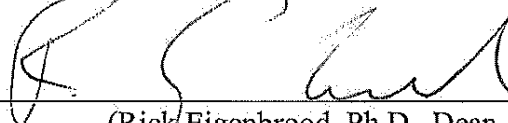
  
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## **Abstract**

The need for students of all backgrounds to access and persist in postsecondary education informs a need for additional support related to postsecondary attainment for all people. Social cognitive theory (SCT; Bandura, 1987) and social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994) both support the design, implementation, and measurement of college-going interventions that work to enhance self-efficacy, a mediator in college interest, choice, and attendance. Thus, the purpose of this study was to investigate the effect of a college-going intervention on the college-going self-efficacy beliefs of a group of diverse middle school students. Specifically, this study examined the effect of an eight-week college-going mentorship program rooted in Bandura's four sources of self-efficacy on college-going self-efficacy.

A quasi-experimental non-equivalent group design was employed in this study. Participants were seventh-grade students from a large urban school district in the Pacific Northwest. The control group was students who participated in the college-going intervention. The intervention group consisted of a comparable group of students who did not participate in the intervention. The dependent variable was college-going self-efficacy measured on the College-Going Self-Efficacy Scale (Gibbons, 2005) at pretest and posttest.

Descriptive and inferential statistics were computed to respond to the research question. Inferential statistics were derived from a one-way ANCOVA after data were analyzed to confirm the assumptions of an ANCOVA. The pretest scores on the College-Going Self-Efficacy scale were treated as the covariate. Tests of statistical significance were analyzed at the .05 level.

A one-way ANCOVA revealed that there was no statistically significant difference between the intervention and the control group on college-going self-efficacy following the college-going intervention and after controlling for the covariate. Thus, the obtained data did not support the findings and hypotheses of recent studies that interventions rooted in sources of self-efficacy have significantly affected self-efficacy.

## **CHAPTER I: Introduction**

Participation in postsecondary education provides monetary and other individual and societal benefits (Mudge & Higgins, 2011; Rose, 2013; Tate et al., 2015; Wobmann & Schütz, 2006). As a result, politicians, researchers, and practitioners have attempted to increase access and success to postsecondary education for all people in a global, competitive, and diversifying economy (Mudge & Higgins, 2011; Tate et al., 2015). In 2009, former President Obama initiated the college completion agenda, setting a goal that by 2020 the United States will have more college degrees earned than anywhere else in the world (White House Office of the Press Secretary, 2009). Theoretically supported by social cognitive theory (SCT) (Bandura, 1986) and social cognitive career theory (SCCT) (Lent, Brown, & Hackett, 1994), research in college-going self-efficacy (Gibbons, 2005), specifically college-going interventions in middle school that promote college-going self-efficacy, may provide some explanations for promoting student access and persistence in postsecondary education.

### **Benefits of Postsecondary Education**

The rationale for improving degree completion is largely one of economics. Advancements in technology and the expansion of more jobs that require complex skills has led to greater opportunity for those who earn a Bachelor's degree or higher and less opportunity for students with only a high school diploma (Autor, 2014; Carnevale, Jayasundera, & Gulish, 2016; Mudge & Higgins, 2011). Today, nearly two out of three jobs require some form of postsecondary education, which has reduced the demand for relatively low-skilled workers and increased the demand for high-skilled workers (Carnevale et al., 2016). An advanced economy in technology requires a literate,

scientific, numerate, and technically trained workforce, increasing the value of postsecondary degrees and providing an enormous benefit to individuals seeking employment (Autor, 2014; Kelly & Prescott, 2007; Mudge & Higgins, 2011).

A postsecondary degree, defined as a degree from a two- or four-year granting institution, has large economic and occupational payoffs for graduates (Carnevale et al., 2016). In general, the more education one achieves the more money one earns (Belfield & Bailey, 2017). The National Center for Education Statistics (NCES, 2015) reported that in 2015 the annual median income of a young person who earned a bachelor's degree was \$50,000, 64% higher than a young person with only a high school diploma who earned a median income of \$30,500. This large income gap gives people with bachelor degrees greater earnings across a lifetime, earning over one million dollars more than those with just a high school diploma across the span of a person's life (Autor, 2014; Boulard, 2004; Carnevale et al., 2016; Mudge & Higgins, 2011). Purcell, Iams, and Shoffner (2015) cited how greater earnings also affect the amount of money earned into retirement, extending the benefits of higher education to life after work.

Increasing levels of education has also led to lower levels of unemployment (Boulard, 2004; Tate et al., 2015). According to the U.S. Bureau of Labor Statistics (2016), 7.4% of people who earned less than a high school diploma were unemployed in 2016 as opposed to only 2.5% of people who earned a bachelor's degree or higher. In 2015, 66.9% of 25-64 year olds with only a high school diploma were employed compared to 88.9% of 25-64 year olds who earned a bachelor's degree (Kena et al., 2016). Following the Great Recession of December 2007 to June 2009, the economy added 11.6 million jobs with ninety-nine percent of them going to workers with a college

education (Carnevale et al., 2016). Jobs barely grew for those who did not hold a postsecondary degree. Only a small fraction of the 5.6 million jobs lost in the recession for workers with a high school diploma have been recovered by 2016. Thus, a college degree means more accessibility to today's job market. Overall, a person who earns a bachelor's degree will more than likely have a stronger monetary safety net than those with only a high school diploma.

The benefits of a college diploma for an individual, however, are not limited to increased salary and lower levels of unemployment (Mudge & Higgins, 2011; Rose, 2013). Non-monetary benefits and social benefits cited in literature include better health and greater civic involvement (Ma, Pender, & Welch, 2016; Mudge & Higgins, 2011; Wobmann & Schütz, 2006). Baum, Ma, and Payea (2013) noted that college graduates are more likely to vote. In the 2016 presidential election, 64.1% of citizens with a high school diploma were registered to vote compared to 81.2% of citizens with a bachelors degree (United States Census Bureau, 2016). This suggests that college graduates are more likely to participate in the civic process, giving them greater voice in government decisions than those without a college degree. College graduates also have lower rates of obesity as well as participation in smoking and a higher rate of physical activity (Baum, Ma, & Payea, 2013). Thus, greater health is another benefit of obtaining a college degree.

The United States economy also largely benefits from individuals participating in postsecondary education (Ma et al., 2016). Wobmann and Schütz (2006) suggested that increased human capital, productivity, and output as well as increased innovation and knowledge due to college degree attainment have led to economic growth. Researchers have also indicated that degree attainment increases tax revenues, goods consumptions,



and decreases human dependence on the government for financial support (Ma et al., 2016). Researchers found that on average people with postsecondary degrees pay 91% more in taxes in a year than high school graduates, which largely contributes to overall federal income tax revenue and consumption directly benefiting society (Ma et al., 2016). Other benefits of college attendance and completion noted in literature include stronger social cohesion, lower inequality, democratization, and political stability (Wobmann & Schütz, 2006). The pattern is clear – a college education or the earning of a postsecondary degree translates into increased opportunities for individuals and society.

### **Current Disparities in Higher Education**

Throughout history, discrimination of races, ethnicities, national origin, gender, and socioeconomic status (SES) have become commonplace, resulting in large gaps in educational attainment between groups of people (Carnevale et al., 2016; Fraser, 2010). To combat such inequities on a national level, a series of constitutional decisions and movements have taken place including the Civil Rights Acts of 1964 (Title IV), the Elementary Secondary Education Act of 1965 (ESEA), the Higher Education Act of 1965, No Child Left Behind of 2001 (NCLB), Common Core State Standards of 2010 (CCSS), and more recently the Reach Higher Initiative and the reauthorization of the ESEA in 2015 under the label Every Student Succeeds Act (ESSA). Each movement has left a mark on higher education, giving students from disadvantaged backgrounds better access to postsecondary options and more support to earn college degrees than what was offered before (Astin & Oseguera, 2004; Fraser, 2010).

However, while over fifty years have passed since the ESEA and Higher Education Act of 1965, students who come from disadvantaged backgrounds continually

enter postsecondary institutions and complete postsecondary degrees at much lower rates than their more advantaged peers (Ross et al., 2012; Tate et al., 2015). Racial and ethnic identity (Owens, Lacey, Rawls, & Holbert-Quince, 2010; Shapiro et al., 2017), family income (Ma et al., 2016), and parental education (Radford, Berkner, Wheelless, & Shepherd, 2010) are significant contributors to attendance and success in postsecondary schooling.

**Enrollment rates.** Despite increases in overall postsecondary attendance, large disparities between African Americans, Hispanics, Native Americans and their White counterparts are evident in college enrollment rates (Kelly & Prescott, 2007; Owens et al., 2010; Ross et al., 2012; Snyder & Dillow, 2015). Literature continuously cites the overrepresentation of White students in four-year public universities, leaving both African Americans and Hispanic students underrepresented in overall post-secondary enrollment (Ma et al., 2016; Owens et al., 2010; Ross et al., 2012). In 2015, 42% of all White 18-24 year olds enrolled in postsecondary education compared to 35% of Hispanic 18-24 year olds and 34% of Black 18-24 year olds in the United States (Ma et al., 2016).

Socio-economic disparities in enrollment are also significant. Among students with similar math scores from the graduating class of 2004, postsecondary enrollment rates were higher for those from high socioeconomic status (SES) groups than those from low SES groups (Ma et al., 2016). SES was measured by a composite score inclusive of parental education, occupation, and family income. In 2015, 82% of students from the high SES group entered postsecondary education directly out of high school compared to 58% of their peers from the low SES group (Ma et al., 2016). In Washington State, following the 2013 school year, 67% of high-income students enrolled in some type of

postsecondary education compared to 47% of their low-income peers (Office of Superintendent of Public Instruction [OSPI], 2016). Further, Ma et al. (2016) suggested that these gaps are likely even more significant due to high mobility pervasive in low-income communities who were not included in the statistics.

**Degree completion rates.** Large gaps between people of various races and ethnicities also exist for college completion. In 2013, the percentage of people who held a bachelor's degree varied among 25-29 year olds of different racial/ethnic groups: 60% Asian, 40% White, 20% Black, and 16% Hispanic (Snyder & Dillow, 2015). In Washington State, Blacks (21.4%), Hispanics (30.4%), and Pacific Islanders (26.7%) completed four-year degrees within four years at a much lower rate than White (43.7%) and non-Pacific Islander Asian (47.7%) students (OSPI, 2016). Further, research shows that completion rates specific to bachelor degrees (not including two-year college or technical institutions) have even a larger gap between racial and ethnic groups (Pike, Hansen, & Childress, 2014; Snyder & Dillow, 2015). Nationally, African American, Hispanic, and Native American students drop out of postsecondary education at much higher rates than their White counterparts (Ma et al., 2016; Shapiro et al., 2017). In a sample of N = 2,823,678 students, Shapiro et al. (2017) found that after six years of entering a postsecondary institution, only 20% of Asian and 26.9% of White students dropped out compared to 35% of Hispanic and 44.6% of Black students.

College completion rates are also much lower for students in lower SES groups. Data analysis by Ma et al. (2016) found that in the high school graduating class of 2004, degree completion was higher for those students from the high SES group compared to

the low SES group despite obtaining similar math scores. Within the high SES group, 84% of students earned a degree compared to 78% of students from the low SES group.

Prospective first-generation college students (PFGCS) also leave college at much higher rates than their non-first generation college peers (Radford et al., 2010). A prospective first-generation college student is a K-12 student whom neither parent have completed a bachelor's degree (Davis, 2012). As of 2013, one-third to one-half of K-12 students in the United States will be the first in their family to both attend college and earn a bachelor's degree (Snyder & Dillow, 2015). In a 2004-2009 longitudinal study using statistics from the U.S Department of Education, National Center for Education Statistics, Radford, Berkner, Wheelless, and Shepherd (2010) found that for students who entered a postsecondary institution, 15% of the PFGCS earned a bachelor's degree compared to 49.4% of non-PFGCS after six years. In another longitudinal study on first-generation college students, Chen (2005) found that between 1992 and 2002 43% percent of first-generation college students who entered postsecondary education left without a degree while only 32% of their non-first generation peers did not finish college. In a more recent study, Pike, Hansen, and Childress (2014) also found that first-generation status is directly related to degree attainment. Researchers found a negative relationship between first-generation status and degree attainment while studying over 4,006 bachelor-seeking students over six years.

### **The Problem**

Given the monetary and other benefits to an individual and society regarding attendance and persistence in postsecondary education, it is imperative that all people access postsecondary education (Mudge & Higgins, 2011; Rose, 2013; Tate et al., 2015;

Wobmann & Schütz, 2006). These large gaps in college attendance and persistence between socioeconomic status and ethnic groups in the United States reflect large social justice challenges in higher education and disruption to strong economic futures for the United States (Carnevale et al., 2016; Ross et al., 2012). To achieve a stable economy and socially just society, economic, occupational, and social benefits must be available to all people.

**Economic stability.** A strong economic future depends on the alleviation of class and race stratification in degree attainment (Mudge & Higgins, 2011; Tate et al., 2015). Postsecondary degree completion for citizens from all backgrounds is necessary in order to fill the current globalizing workforce that demands a large population of college-educated workers (Belfield & Bailey, 2017; Kelly & Prescott, 2007; Tate et al., 2015). Statistical analyses by the U.S. Census Bureau explained the shift in United States demographics over time. Overtime, there has been a decline in the number of Whites, an increase in African Americans and Asian Americans, and an even more dramatic increase in Hispanics (United States Census Bureau, 2013). Today, a much larger portion of the workforce are members of racial and ethnic minority groups, emphasizing more than ever before the importance of postsecondary degree completion for racial and ethnic minorities.

**Equitability.** Further, the significant advantages for Whites over their African American, Hispanic, and low-income peers as a result of postsecondary education attainment is a major social justice issue (Ma et al., 2016; Owens et al., 2010). The social and economic statuses that are afforded to individuals who are college graduates are disproportionately accessible to Whites. Higher incomes, potential of career

advancements, civic involvement and better health are only a few of the discrepancies between African Americans, Hispanics, and their White counterparts as a result of inequitable postsecondary attendance and completion (Ma et al., 2016; Mudge & Higgins, 2011; Wobmann & Schütz, 2006). African Americans and Hispanics are more at-risk of unemployment and being rooted in occupations that are more service-oriented, manual, routine, and less financially rewarding (Belfield & Bailey, 2017). Further, they are at risk of a silenced population given that their voice is not as prominent in the government. In a society that values equal opportunity and equitability, educational stakeholders argue that the U.S. needs to continue to pursue opportunities that may alleviate some of the degree attainment disparity for minorities and students of lower socio-economic status backgrounds (Kelly & Prescott, 2007). A focus on what works to support attendance and persistence in higher education for all students is inevitable in order to fulfill the promise of equal opportunity for all in the United States.

### **Purpose**

The importance of access to higher education related to occupational and economic benefits to individuals and society points to a need to consider interventions that may promote attendance and persistence in higher education for underrepresented groups (e.g., ethnic, low-SES, PFGCS). While many stakeholders debate the causes and speak to the disparities between ethnic and socioeconomic status groups, fewer have identified interventions that may work as solutions. Thus, one main purpose of this study was to add to current literature on college and career intervention studies for students from lower-income, prospective-first generation, and ethnically disadvantaged backgrounds. Progressive educators acknowledge that if the goal is for all people to have

the opportunity to be prepared to attend and successfully complete postsecondary degrees and certificates, then it is imperative that effective college-going and career interventions are implemented for students from disadvantaged, non-privileged backgrounds (e.g., Blacks, Hispanics, prospective first-generation college students) (Kelly & Prescott, 2007; Pike et al., 2014; Stephens, Hamedani, & Destin, 2014). Further, stakeholders have suggested that “business as usual” models are likely to be unsuccessful and instead improved persistence and graduation rates in higher education will require innovative and research-based programs that cater towards the needs of disadvantaged students (Pike et al., 2014).

Social cognitive theory (SCT) and social cognitive career theory (SCCT) provide a framework for effective college-going interventions that have the potential to affect attendance and persistence in higher education (Bandura, 1986; Lent et al., 1994). Although a model of various interacting mechanisms, SCT posits that self-efficacy has a large role in a person’s actions, choices, motivations, resilience, expected outcomes, and accomplishments (Bandura, 1997). Self-efficacy is a person’s belief in their ability to accomplish a task (Bandura, 1997). Bandura (1997) postulated that interest, choice, and action can be influenced through the change and adaptation of one’s self-efficacy. Thus, self-efficacy should be strengthened if behavior is to be initiated and continued. Further, Bandura (1997) explained four sources of information that influence self-efficacy: (a) personal performance accomplishments; (b) vicarious learning; (c) social persuasion; and (d) physiological and affective states. Personal performance accomplishments are enactive experiences in which successes give a person authentic evidence that they can do whatever it takes to succeed. Vicarious learning, especially the modeling of

competencies, attitudes, and motivations, also influence self-efficacy. Social persuasion, or positive and encouraging verbal expression, strengthens a person's belief that they are capable. In addition, one's emotional state or somatic responses can largely influence self-efficacy. SCT theorizes that an intervention that includes these four sources of information will be most effective in increasing self-efficacy and therefore interest, choice, and action.

SCCT applied these same principles to college and career development, specifically career-decision making (Lent et al., 1994). This particular model explains the mechanism of how career and educational interest develops, how choices are made, and how outcomes are achieved. Like SCT, self-efficacy is central to the development of college and career interest, choice, and action. SCCT theorizes that enhancing college and career self-efficacy would thus increase one's interest, choice, and actions to attend and persist in college. Thus, based on these theories, an effective college-going intervention is an intervention designed and implemented with the purpose of enhancing college-going self-efficacy. As a result, another main purpose of this study was to investigate whether a college-going intervention utilizing Bandura's self-efficacy influencers would significantly affect college-going self-efficacy and therefore have implications for student access and persistence in college.

Overall, SCT and SCCT theorize a positive relationship between career self-efficacy and career interest, choice, and action (Bandura, 1986; Lent et al., 1994). Lent et al. (1994) argued that effective self-efficacy enhancing interventions would produce subsequent changes in career interests. Following from SCT and SCCT, numerous investigations have provided consistent evidence to support the notion that self-efficacy



related to college and career is significantly related to the selection and persistence in college and careers for a diverse range of people (Baier, Markman, & Pernice-Duca, 2016; Betz & Hackett, 1983; Hackett & Betz, 1989; Lent et al., 2016; Lent, Paixao, da Silva, & Leitao, 2010; Mann, Smith, & Kristjansson, 2015; Multon, Brown, & Lent, 1991; Nauta, Epperson, & Kahn, 1998; Pajares & Miller, 1995; Rogers & Creed, 2011). This research suggests that effective self-efficacy enhancing strategies aimed at increasing student interest have the potential to promote positive choices in career aspirations, college majors, and persistence in college.

Career development theorists and researchers have recommended that career development and exploration of postsecondary options in schools begin as early as middle school (ACT, 2005; ACT, 2008b; Bandura, 1986; Lent et al., 1994; O'Brien, Dukstein, Jackson, Tomlinson, & Kamatika, 1999; Oliver & Spokane, 1988; Osterreich, 2000; Trusty, 2004; Whiston, Sexton, & Lasoff, 1998). College and career development initiated at the high school level is dilatory, recognizing that the development of educational and career interest and choice begins at a much earlier age (Bandura, 1986; Ginzberg, 1952; Gottfredson, 1981; Lent et al., 1994; Super, 1980). Theory, research, and the American School Counselor Association National Model (ASCA, 2003), a national framework for a comprehensive and data-driven school counseling program, suggested that college and career development is not solely a high school issue but is a challenge for all K-12 schooling. Thus, pertinent to this dissertation, early adolescence, particularly middle school, is a crucial time for interventions designed to promote career and college-going beliefs in order for all students to have the option to attend and persist in college.

Many career development theories acknowledge the role of adolescence in the development of educational and career aspirations. Ginzberg's (1952) general theory of occupational choice emphasizes a phase of fantasy choice (before age 11) and tentative choice (ages 11-14), in which career interests are formulated during the tentative choice phase. Super (1980) theorized that career development is a life-span approach, proposing that career development occurs in sequential stages that parallel age: growth, exploration, establishment, maintenance, and disengagement. The first life stage of growth involves a period in which children and adolescents (ages 4-12) develop their capacities, attitudes, interests, socialize their needs, and gain an understanding of the world of work. Gottfredson (1981) postulated that the career decision-making process is a four-stage process in which children and adolescents increasingly restrict potential occupational choices as they increase understanding of their identity. Elimination of occupations is based on age-specific themes including size and power (age 3-5), sex roles (ages 6-8), social valuation (ages 9-13), and unique personal characteristics (ages 14 plus). Additionally, social cognitive theory (Bandura, 1982, 1986) and social cognitive career theory (Lent et al., 1994), the two theories that lay the foundation for this study, both assert that adolescence is the period of one's life in which preparation for the world of work takes place. Within the context of SCT and SCCT, adolescence is the period when humans seriously consider what they want to do in life, making the stages of adolescence crucial to the formative part of college and career development.

Specifically, Bandura (1986) and Lent et al. (1994) theorized the role of self-efficacy among children in establishing positive career and college interests, choices, and performances. Emphasizing the idea of human agency, these theorists suggested that

from a young age human beings are not merely reactive but instead make intentional choices in their lives. They are purposeful in choosing a course of action. Further, SCT and SCCT explain numerous interacting variables that are involved in a student's choice to attend and their ability persist in college including person inputs (e.g., race, gender, ability, and health), contextual variables (e.g., SES, PFGCS), learning experiences (e.g., academic courses offered, extra-curricular, career interventions), self-efficacy expectations, and outcome expectations (Bandura, 1997; Lent et al., 1994). At the core of human agency is self-efficacy, or one's beliefs about his/her ability to produce a course of action. Self-efficacy creates an incentive for adolescents to act on a goal, which in turn motivates behavior. Overall, these mechanisms interact with one another through a didactic and reciprocal feedback loop to develop college and career interest and eventually choice and decisions at an early age (Lent et al., 1994). While the interaction between variables such as self-efficacy and interests and choice is believed to be a process that repeats itself continuously throughout the lifespan, Lent and Brown (1996) suggested that it is most fluid up until late adolescence at the point where interests tend to stabilize. Given these theories, developmental and preventative career and college interventions must begin in early adolescence.

Also of interest is that both SCT and SCCT have recognized the importance of the school system in cultivating college and career development. Bandura (1997) stated that "during the crucial formative period of children's lives, the school functions as the primary setting for the cultivation and social validation of cognitive capabilities" (p. 174). Lent and Brown (1996), two theorists and researchers in career development, have suggested "designing developmental, preventative, and remedial career interventions" (p.

319) for middle school students within the middle school context. Thus, according to SCT and SCCT, effective college-going interventions should begin at the middle school level or earlier where interests and choice related to college and career can be more readily influenced.

Research has also identified middle school as a time when students can benefit most from career and college development (O'Brien et al., 1999; Oliver & Spokane, 1988; Osterreich, 2000; Whiston et al., 1998). Studies of adolescents have revealed a number of reasons to provide college-going interventions at the middle school level and not wait until high school. Researchers have found that choices about career and postsecondary options are made well before high school, often in middle school (O'Brien et al., 1999). Further, choices made in middle school have been found to have long-term effects on their educational and career development for years to come (Adelman, 1999; Trusty, 2004; Trusty, Niles, & Carney, 2005). Given that choices are being made in early adolescence and the lasting impact of their choices, it is imperative that middle school students are guided in career and college development.

Two meta-analyses have been repeatedly mentioned and cited in literature in support of implementing career and college interventions at the middle school level (Oliver & Spokane, 1988; Whiston et al., 1998). Oliver and Spokane (1988) reviewed career and college guidance interventions between 1950 and 1982. They found that in general career related interventions had positive effects on career decision-making for students as well as knowledge about careers. Further, they found that outcomes from career and college interventions that took place in junior high (comparative to middle school) had the largest effect size, suggesting that career and college related efforts are

most effective with early adolescents. A decade later, in a meta-analysis of college and career interventions, Whiston, Sexton, and Lasoff (1998) also found career and college interventions to have a positive effect on student outcomes. In alignment with Oliver and Spokane (1988), they discovered that the effect sizes for interventions were largest when targeting middle school students compared to high school students. Although outdated, the comprehensive and thorough review in these meta-analyses provide support for more college-going interventions at the middle school level in order to produce the greatest effects possible. Osterreich (2000) also found that college development programs for low-income and minority youth are most valuable if beginning no later than seventh grade as well as continuing throughout high school. This research suggests that important career development processes occur well before high school. Waiting until high school decreases the potential power of the intervention.

The inclusion of career and college development at the middle school level is also important when considering how stereotypes about occupations reflective of minority membership or gender is often developed at an early age. Researchers have found that at-risk students, girls, and minority groups begin to limit their career and college choices at an early age (O'Brien et al., 1999). This research suggests that college and career interventions at the middle school level have the potential to intervene early and eliminate barriers to career and college choice for populations who come from disadvantaged backgrounds.

Additionally, the American School Counselor Association (ASCA, 2017), the national professional foundation for school counselors, also recommends career and college interventions at the middle school level to help students set appropriate career

goals and realize their full academic potential. ASCA recognizes the developmental needs of middle school students, characterizing adolescence as a time for exploration of interests, application of learning to life and the world of work, and a time to search their own identity. Given theory and research that supports the crystallization of choice and interests in career and college at an early age, ASCA calls for developmentally appropriate career and college guidance activities and interventions at the middle school level.

Research also provides support for a college-going self-efficacy intervention study. Previous intervention studies that have aligned with Bandura's self-efficacy influencers (e.g., mastery experience, vicarious learning, social persuasion, and physiological states) have helped to promote students' sense of self-efficacy. These school-based career and college intervention studies have found positive results for all types of self-efficacy domains including academic self-efficacy (Dawes, Horan, & Hackett, 2000; Hiller & Kitsantas, 2014), career decision-making self-efficacy (Chiesa, Massei, & Guglielmi, 2016; Fouad, Cotter, & Katamneni, 2009; McWhirter, Crothers, & Rasheed, 2000; Reese & Miller, 2006; Scott & Ciani, 2008), and college-going self-efficacy (Hamel, 2015; Jensen, 2013).

Dawes, Horan, and Hackett (2000) studied the effects of a science technology education program, reflective of Bandura's self-efficacy influencers, on the career decision-making of a group of 169 diverse seventh and eighth graders. Researchers found increased self-efficacy pertaining to scientific and technical careers for participants in the intervention when compared to non-participants, suggesting that an intervention study based on Bandura's self-efficacy influencers may have the potential to enhance self-

efficacy. Hiller and Kitsantas (2014) also studied the impact of a science program on a number of career related outcomes including science self-efficacy on a group of 86 eighth grade students. The science program was designed to include Bandura's self-efficacy influencers in an effort to enhance students' belief in their ability to engage in scientific observation skills. Following the science program, the intervention group outperformed the comparison group, adding to previous research that an intervention embedded with self-efficacy influencers can enhance self-efficacy.

McWhirter, Crothers, and Rasheed (2000) examined the effects of a nine-week career education class on the career decision-making self-efficacy of 166 high school sophomores. Researchers found a difference post-intervention on the measure between the intervention and control group, suggesting that the career education class did have an effect. Reese and Miller (2006) studied the effects of a career development course on the career decision-making self-efficacy of 96 undergraduate students. The intervention included 15 weeks of 50 minute classes involving group activities, role models, and structured assignment related to career, all of which exposed participants to Bandura's four sources of self-efficacy (Bandura, 1997). When compared to the control group, the intervention group showed larger gains on the Career Decision Self-Efficacy Scale. In another intervention study, Scott and Ciani (2008) measured the effects of a career exploration course on the career decision-making self-efficacy of 115 undergraduate college students. The career exploration course supported the exploration of occupation choice and decision-making through Bandura's four sources of self-efficacy. In alignment with Reese and Miller (2006), researchers found significant gains in participants' career-decision making self-efficacy. Further, Fouad, Cotter, and Katamneni

(2009) measured the effects of college career course on the career decision-making self-efficacy of 73 undergraduate students and found that career decision-making self-efficacy increased. More recently, Chiesa, Massei, and Guglielmi (2016) explored the effects of a career intervention involving career exploration on the career decision-making self-efficacy of 280 Italian high school students. Congruent with previous research, results indicated an increase in career self-efficacy beliefs for those who received the intervention. Overall, this research supports the notion that career interventions grounded in Bandura's self-efficacy influencers in general are useful and can bring about effective change in the college and career development process. A more thorough analysis is found in Chapter Two.

Given that self-efficacy influencers have the potential to drive attendance and persistence in postsecondary education, mentorship in college and career development may be a worthwhile intervention. First, mentorship is a process of vicarious learning in which one learns due to the behavior being modeled for them (Bandura, 1986). Second, Bandura (1986, 1997) posited that self-belief, motivation, and achievement develop when a caring and goal directed relationship emerges. In a longitudinal study on mentorship and college-going culture for at-risk students, Radcliffe and Bos (2011) studied whether a long-term mentorship program had an impact on students' education including aspirations to attend college and be accepted in a postsecondary institution. Mentors were pre-service teachers enrolled in a teacher preparation class. Each semester a different group of mentors would participate in the study. In alignment with SCT, researchers hypothesized that as weekly conversations and activities about college occurred, the relationship between the mentor and mentee would become more supportive and caring,



and thus influential on the postsecondary education of the mentees. Participants in the study involved a group of students from a rural school that were identified as “at-risk” and randomly placed in the treatment (n = 33) or control group (n = 29). “At-risk” in this study was defined as a student who met 13 statutory economic or academic concerns such as low grades in two core subjects. Participants in the treatment group began mentorship in the sixth grade and concluded in high school. Students were engaged in tutoring, college tours, goal setting, dialogue about college, and relationship building among other things. Data were collected throughout the seven-year study to determine the influence of the mentorship on college-going beliefs. Although there are many variables that influenced the results of this study, overall students left the program with more positive perceptions about college. Researchers found that the perceptions and aspirations of students related to college improved over time. Further, at the end of the eighth grade, results showed that perceptions of college were more positive than students in the control group. This research suggests that mentorship may be a significant contributor to the enhancement of college-going self-efficacy.

Overall, there are complex issues that pertain to the attendance and persistence of students in postsecondary education, especially for students who come from low-income families, and/or are of African or Latino decent, and/or are prospective first-generation college students. The gaps are problematic given the described relationship between postsecondary degree attainment and positive economic as well as social gains. It could be argued that not all students are destined for college institutions. However, in a society that values equitability, all students should have the option to attend and persist in college if they choose to. In equitable K-12 and postsecondary systems, SES status, racial and

ethnic membership, or PFGCS status should not be associated with college-going outcomes. In the end, college-going interventions must be designed, implemented, and researched to make determinations of potential interventions that can be effective in driving postsecondary attainment and persistence.

### **Contributions of the Study**

While it is clear that vulnerable populations need assistance in attending and persisting in college to close the large gap in higher education, how policymakers and researchers achieve this task needs more research. In hopes of understanding more about the effects of potential college-going interventions, the purpose of this research study was to investigate whether one specific college-going intervention, referred to as North Star, could significantly affect college-going self-efficacy for a group of diverse, low-income middle school students. North Star is a college-going mentorship intervention between university students and middle school students. As a part of their school curriculum, middle school students met with a college mentor for one hour during a series of eight weeks to discuss and engage in activities about college. University students acted as role models, with the intentions of providing middle school students with vicarious learning experiences about college as well as encouragement that they are capable of overcoming barriers to college. In alignment with SCT and SCCT, North Star was based on many of the self-efficacy influencers including (a) personal performance accomplishments; (b) vicarious learning; (c) social persuasion; and (d) physiological and affective states (Bandura, 1997). Theoretically North Star works to enhance college-going self-efficacy of middle school students and therefore support future college interest, choice, and action

or college attainment and persistence given the presumed influence of self-efficacy on long-term education and career outcomes (Lent et al., 1994).

This study contributes to the current gaps in scholarly literature. While self-efficacy is a well-researched area and theoretical sound construct in career interest, choice, and performance (Betz & Borgen, 2009; Betz & Schifano, 2000; Reese & Miller, 2006; Scott & Ciani, 2008; Speight & Rosenthal, 1995), not as much research has been done on college-going self-efficacy. Further, while some researchers have focused on college-going attendance and persistence disparities between low-income and non-low income families as well as between membership of ethnic groups (Gibbons, 2005; Gibbons & Borders, 2010b), fewer have identified specific interventions that may offer solutions for these populations. In addition, there is very little research done on career interventions in middle school, despite research suggesting that career and college preparatory programs are most effective when they begin no later than seventh grade (Osterreich, 2000; Whiston et al., 1998).

In this study, the effect of North Star on college-going self-efficacy was examined through a quasi-experimental non-equivalent group design. Study participants were middle school students from a diverse, low-income urban community in the Pacific Northwest, specifically in Washington State. Participants were measured on college-going self-efficacy prior to the onset of the eight-week intervention and following the intervention. Data were analyzed to determine if a difference existed on college-going self-efficacy between the intervention and the control group. The results of this study informed both research and practice by providing much needed information about the effect of a college-going intervention grounded in self-efficacy theory on middle school

students from disadvantaged backgrounds. In the end, the results of this study can inform school counselors and other practitioners on a specific intervention that may be worthwhile implementing in schools.

### **Research Question**

**Question.** Is there a statistically significant difference on college-going self-efficacy between students who participated in a college-going intervention (intervention group) and students who did not (control group)?

**Null hypothesis.** There is no statistically significant difference in college-going self-efficacy between intervention and control groups.

### **Definition of Terms**

In order to ensure common understanding of terminology in this study, the following definitions are utilized.

**Postsecondary education.** Postsecondary education is any formal education beyond high school that may include training programs, military, certificate or licensure programs, as well as two- or four-year degrees earned at colleges and universities (Conley, 2012). Postsecondary education is also referred to as higher education, especially when referencing college or university.

**College-Going intervention.** College-going interventions are specific programs or curriculums that are based on one or more aspect of social cognitive career theory, specifically with the goal of enhancing college-going self-efficacy (Lent et al., 1994). In this study, the college-going intervention that was measured and analyzed is referred to as North Star. North Star is an eight-week university student to middle school student college-going mentorship program.

**College-going self-efficacy (CGSE).** *CGSE is a belief in one's ability to be successful in college as a predictor of college attendance and persistence (Gibbons, 2005; 2010b).* College-going self-efficacy was measured in this study utilizing the College Going Self Efficacy Scale (CGSES), with higher scores indicating a higher degree of CGSE (Gibbons, 2005).

**Non-prospective first-generation college student (non-PFGCS).** A non-PFGCS is a middle school or high school student in which at least one parent completed a four-year college degree (Pike et al., 2014; Stephens et al., 2014).

**Prospective first-generation college student (PFGCS).** Common in the literature, a first-generation college student is defined as a student whom neither parent obtained a four-year college degree (Pike et al., 2014; Stephens et al., 2014). A prospective first-generation college student for the purposes of this study is a K-12 student whom neither parent obtained a four-year college degree. It is important to note that this is a more lenient definition of a PFGCS. Gibbons and Borders (2010b) defined a PFGCS as middle school or high school student in which neither parent went to school beyond high school and who have not graduated from high school themselves.

**Self-efficacy.** Self-efficacy is a belief in one's capacity to achieve what one believes they can achieve (Bandura, 1997).

### **Structure of the Dissertation**

This study has been organized in four subsequent chapters. The four chapters include the literature review, research methods, results and analysis, and discussion of results. Presented below is a brief summary of each chapter.

Chapter Two consists of an examination of literature relevant to college-going interventions that have the potential to affect college-going self-efficacy. A review of the related theories are investigated and presented including social cognitive theory and social cognitive career theory. This chapter concludes with a summary of how the most salient findings led to the formation of the research question and hypothesis examined in the present study.

Chapter Three comprises a description of the methodological approach employed in this study. Included are details pertaining to the research hypotheses and specific research design. In addition, this section presents characteristics of the sample of participants, method of participant selection and assignment, and features of the data analysis conducted. Included is a discussion of validity and reliability and procedures.

Chapter Four includes a summary of the results of this study. Descriptive and inferential statistics related to the research question are summarized in narrative and table format. The assumptions underlying the statistical procedure used in this study is reviewed. Further, the rationale for the choice of the procedures is discussed. A review of the assumptions underlying the statistical procedures utilized in this study is provided, followed by a discussion of the rationale for choice of procedures with respect to the obtained data.

Chapter Five discusses the practical significance of the research findings. Included is a discussion of the results, implications of the findings, and limitations of the study. Finally, Chapter Five closes with a discussion of future research.

## **CHAPTER II: Review of Literature**

This chapter provides a review of literature relevant to the study of an eight-week college-going intervention referred to as North Star and potential effects on the college-going self-efficacy of a diverse group of middle school students. Two theories that provided underpinnings for the study are described in this chapter: social cognitive theory (SCT) (Bandura, 1986, 1997) and social cognitive career theory (SCCT) (Lent & Brown, 1996; Lent et al., 1994). SCT and SCCT provide a framework for understanding and explaining how college-going belief systems of middle school students, specifically college-going self-efficacy, influence student choice, interest, and performance in college. After a description of the theoretical framework, a review of literature related to career self-efficacy will be presented. Finally, current research about the college-going self-efficacy of middle school students will be described. Research that investigates the impact of a variety of college-going interventions on college-going self-efficacy will also be critically discussed.

### **Theoretical Framework**

SCT and SCCT support college-going interventions that work to enhance the college-going beliefs (e.g., college-going self-efficacy) of students at the crucial age of adolescence. SCT provides a broad overview of self-efficacy while SCCT reflects a more specific explanation for the use of college-going interventions to enhance college-going beliefs among middle school students. Further, SCT and SCCT address variables related to the target population or students who come from diverse backgrounds (e.g., ethnicity, race), low-income families (e.g., SES), and who are prospective first-generation college students (PFGCS).

**Social Cognitive Theory (SCT).** Social cognitive theory (SCT) describes human functioning as the product of a dynamic interaction of personal aspirations or beliefs, environment, and behaviors (Bandura, 1986, 1997). Referred to as *triadic reciprocal determinism*, SCT posits that the three broad factors all operate as interacting determinants that influence one another bi-directionally (Bandura, 1986). For example, what people think, believe, and feel affects how they behave. In turn, the extrinsic effects of their actions determine their thought patterns and emotions (Bandura, 1986). The same bidirectional effect occurs between behavioral factors and environmental factors as well as between personal factors and environmental factors. The multitude of events and factors interacting with one another determines how humans behave.

Largely, Bandura's theory focuses on human agency, which is the ability of a human to exercise some control or influence over what they do (Bandura, 1997). When people exert influence over their beliefs, environment, or outcomes they are enacting agency (Bandura, 1997). Bandura supports the belief that a human has the capability to choose or generate a course of action and shape their destiny despite that it is also shaped by other environmental or socio-cultural factors.

The most central mechanism of personal agency for human action is self-efficacy, which is largely the focus of this study. Self-efficacy is a human's belief in their capability "to produce desired effects by their actions" (Bandura, 1997, p. vii). It is the belief that one can achieve what they expect to achieve (Bandura, 1997). According to SCT, self-efficacy influences: (a) actions pursued/choice of activity; (b) effort/motivation; (c) perseverance in overcoming obstacles; (d) resilience to adversity; (e) negative or positive thought patterns about expected outcomes; (f) stress or depression

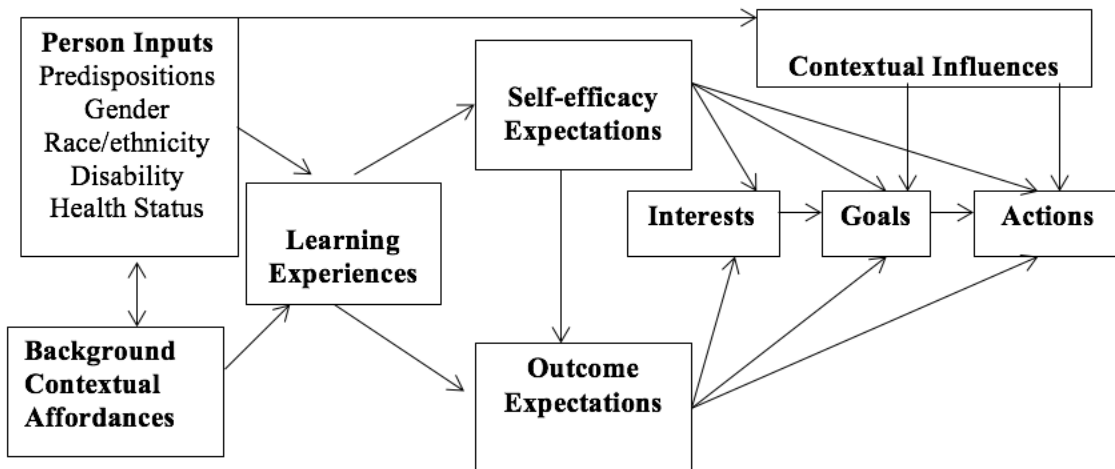


related to environment demands; and (g) perceptions of accomplishments (Bandura, 1982, 1997). The more a person believes they have the power to accomplish something, the more motivated they will be and the more likely they will take action. Within the framework of SCT, a person's belief in their ability to attend and persist in college will directly relate to the actual act of attending and persisting in postsecondary education. As a result, if the goal is for students to access and persist in higher education, then supporting college-going self-efficacy beliefs, or student beliefs in their ability to attend and persist through college, would promote degree attainment.

Bandura posits that there are four main sources of information that influence self-efficacy including: (a) personal performance accomplishments; (b) vicarious learning; (c) social persuasion and (d) physiological and affective states (Bandura, 1997). First, how a person interprets the results of his or her previous performances on the task affects self-efficacy. Second, the vicarious experience of observing someone model a desired behavior shapes an individual's belief in perceived efficacy. Third, verbal judgments referred to as social persuasions whether positive or negative can weaken or strengthen self-efficacy. Finally, self-efficacy is impacted when a person assesses his or her own emotional or physical state when contemplating a particular action. SCT explains that these sources of self-efficacy are used to increase self-efficacy, which in turn influences actions or behaviors related to interest, choice, and performance. Individuals learn about their potential success in college or a career through these four sources. Substantiated in research, these four sources of information can be beneficial to guide the development of interventions that work to influence self-efficacy, such as the college-going intervention North Star (Betz, 2007; Joet, Usher, & Bressoux, 2011; Usher, 2009). Given that self-

efficacy is constructed from performance accomplishments, vicarious learning, social persuasion, and physiological and affective states, a college-going intervention focused on these sources of information theoretically should affect self-efficacy (Bandura, 1997).

**Social-cognitive career theory (SCCT).** Bandura's view of human capabilities and beliefs about the interplay of personal, behavioral, and environmental influences on human functioning laid the foundation for social cognitive career theory (SCCT). SCCT reflects the same beliefs as Bandura where human functioning is a product of triadic-reciprocal, fully bidirectional, model of causality in which people are both products of and producers of their environment (Lent et al., 1994). However, in SCCT, these concepts are directly applied to career development, by explaining and outlining the dynamic mechanisms and processes of how career and educational interests develop, how choices are made, and how goals and outcomes are achieved (Lent et al., 1994).



*Figure 1.* Social Cognitive Career Model. This figure depicts the social cognitive career model proposed by Lent, Brown, and Hackett (1994).

Figure 1 depicts the social cognitive career model as proposed by Lent, Brown, and Hackett (1994). The model shows the causal, bi-directional, interrelated, and

reciprocal relationships between the SCCT variables. Within this model, Lent et al. (1994) described personal, contextual (environmental), and behavioral (experiential) factors that affect career related choice behavior. In addition, the three central socio-cognitive mechanisms that mediate choice behavior (e.g., self-efficacy, outcome expectations, and goals) are included. Contextual influences and learning influences are also a part of this model. The arrows represent the causal sequence between the variables and mechanisms in the model (Lent et al., 1994).

Similarly to SCT, self-efficacy is central to SCCT (Lent & Brown, 1996). First defined by Bandura, self-efficacy is the self-precept of one's ability to complete a task or set of tasks (Bandura, 1986). In the case of career development, it is one's judgments of his/her own capabilities to perform academic and work tasks (Lent & Brown, 1996). The SCCT model displays how self-efficacy interrelates with other aspects of the personal, behavioral, and contextual factors to enable personal agency and thus affect behavior in SCCT (Lent & Brown, 1996; Lent et al., 1994).

In SCCT, person inputs and background contextual factors influence learning experiences, which then have a direct causal relationship with self-efficacy and outcome expectations. An outcome expectation is "...a judgment of the likely consequences such performances will produce" (Bandura, 1997, p. 21). It is the judgment of one's ability to perform the task not the performance itself. In other words, the expected consequences for a particular behavior are one's outcome expectations (Lent & Brown, 1996). This is closely related to self-efficacy because the outcomes that a person anticipates will largely depend on his/her judgments of his/her ability to perform the task at hand (Bandura,

1997). Self-efficacy and outcome expectation in turn directly affects career interests, goals, and performance.

Individual characteristics, or person inputs, include variables such as age, gender, or ethnicity while background influences involve variables such as socioeconomic status, role model influences, or parent education level. Human learning experiences, made up of a combination of the four sources of efficacy information, include performance accomplishments, vicarious learning, social persuasion, and physiological affective states (Bandura, 1997). Thus individual characteristics (e.g., gender and ethnicity) or background variables (e.g., parent education level) influence career interest, choice, and action largely through differential learning experiences that give rise to self-efficacy beliefs and outcome expectations. This theory suggests that learning experiences are large drivers of enhancing self-efficacy in human beings, supporting the need to create learning experiences for people who come from disadvantaged backgrounds. North Star is one example of a learning experience that has the potential to influence self-efficacy.

Further, Lent and Brown (2000) introduced a third level of analysis to SCCT, theorizing that contextual factors also play a role in moderating choice and interest development. In SCCT, contextual influences are described as objective or perceived environmental factors within the realm of social, cultural, or economic variables. Objective environmental factors, such as quality of educational experience or family financial stability, have the potential to affect the career development and interests of students. However, the opportunities, resources, and barriers that are imparted by these objective environmental factors are open to the interpretation of the individual who can process the particular environmental barrier as positive or negative. In SCCT, it is both

the objective contextual variable and whether the person perceives the variable as a support or a barrier that strengthens or weakens one's self-efficacy beliefs about career and educational options. Swanson and Woitke (1997) defined career barriers as "events or conditions, either within the person or in his or her environment, that make career progress difficult" (p. 434). The self-efficacy beliefs, driven from perceived supports and barriers, then directly moderate career and educational choice and behavior.

Overall, the variables described explain and outline the dynamic mechanisms and processes of how career and educational interests develop, the choice process, and achievement of outcomes (Lent et al., 1994). Through these interacting mechanisms (e.g., self-efficacy), vocational and thus college interests are developed which lead to intentional choices and decisions in time (Lent et al., 1994).

### **History of Self-Efficacy and Career Development**

In the 1980's and 1990's, self-efficacy beliefs were widely tested in various disciplines and settings (Pajares, 1997). Within the educational field, research largely focused on the link between self-efficacy beliefs and college major or career choices, particularly in science and mathematics (see Lent & Hackett, 1987 for a review). Betz and Hackett (1981) and Hackett and Betz (1981) were the first researchers to apply SCT to career development. Based on SCT, they researched the relationship between self-efficacy and the process of career decision-making to speculate the impact of self-efficacy related to female underrepresentation in many professional and upper management positions. Researchers also observed that differential access to learning experiences, mediated through self-efficacy, influenced the career interest and choice for people from disadvantaged groups (e.g., low socioeconomic status, minority). In

alignment with SCT, learning experiences offered to more advantaged groups promoted self-efficacy, which affected career interest and choice. Since then self-efficacy has had widespread attention in the vocational field. Gore (2006) has noted that between 2001 and 2006, research on self-efficacy beliefs was so popular that 11% of all the articles in the *Journal of Career Assessment*, *Journal of Counseling Psychology*, and *Journal of Vocational Behaviors* referenced the term self-efficacy. Using EBSCOhost Academic Search Complete, the author of this dissertation yielded 295 scholarly peer reviewed journal articles when searching for “self-efficacy” and “career development,” suggesting that self-efficacy in career development is still an important topic in literature.

### **Social Cognitive Career Theory: Self-Efficacy Research**

Results from various empirical studies provided general support that the SCCT model is useful in explaining career development. These studies have focused on the theory’s basic predictions related to career interest, choice, and performance, including the mechanisms by which people exercise human agency, such as self-efficacy beliefs and outcome expectations. In addition, they have focused on the role of personal, contextual, and learning experiences (e.g., gender, race, ethnicity, ability, social support, external barriers). Overall, these mechanisms of human agency point to self-efficacy as the mediator between all other factors and human behavior.

**Self-efficacy.** Researchers have largely investigated the role of self-efficacy in career and educational decision-making. Researchers have found that self-efficacy predicts career related and academic interests (Gainor & Lent, 1998; Lent et al., 1994; Lent et al., 2010; Lopez, Lent, Brown, & Gore, 1997; Rodríguez, Inda, & Fernández, 2016), academic achievement (Feldman & Kubota, 2015; Hackett, Betz, Casas, & Rocha-

Singh, 1992; Multon et al., 1991), persistence (Baier et al., 2016; Lent et al., 2016; Mann et al., 2015; Multon et al., 1991), career goals (Nauta et al., 1998; Rogers & Creed, 2011), as well as educational and career choices (Hackett & Betz, 1989; Betz & Hackett, 1983; Lent et al., 2010; Pajares & Miller, 1995; Rogers & Creed, 2011). Additionally, results indicated that self-efficacy beliefs are stronger predictors of educational decisions and goals than ability, although they both help to explain performance attainments (Lent et al., 1994).

**Outcome expectations.** The role of outcome expectations in career and educational decision-making has been less researched. In a meta-analysis that tested relationships posited by SCCT, Lent et al. (1994) found that both self-efficacy and outcome expectations strongly correlated with vocational interests. Other researchers have confirmed these results and found that career interests (Gainor & Lent, 1998; Gore & Leuwerke, 2000; Kahn, 2001; Lent et al., 2001; Lent, Brown, Nota, & Soresi, 2003; Lopez et al., 1997) and career exploration (Betz & Vuyten, 1997; Diegelman & Subich, 2001) are directly affected by outcome expectations. Consistent with SCCT, a direct relationship exists between outcome expectations and self-efficacy. Outcome expectations are predicted by self-efficacy and career interests are predicted by both self-efficacy and outcome expectations (Lent, Brown, Schmidt et al., 2003; Lent et al., 2016).

**Background influences.** While research on self-efficacy and outcome expectations has been consistent, research on personal characteristics, contextual, and experiential factors on interest, choice, and performance have been mixed. Ferry, Fouad, and Smith (2000) researched the influence of parental involvement, parenting style, socio-economic status, familial relationships, and parental learning experiences related to

math and science related career decisions. The researchers found that parental encouragement affected learning experiences. The learning experiences directly affected self-efficacy and outcome expectations, largely supporting the role of contextual influences in SCCT. In another study, Tang, Fouad, and Smith (1999) investigated level of acculturation, family socioeconomic status (SES), family involvement, occupational interest, and career self-efficacy. Researchers found that level of acculturation, family SES, and self-efficacy in choosing occupations influenced career choice for Asian Americans. More recently, Metheny and McWhirter (2013) studied the effects of social status and family support on career decision-making self-efficacy and found that both are associated with social cognitive career development outcomes. Additionally, Ojeda et al. (2012) studied the role of culture (e.g., acculturation, enculturation, ethnic identity, and conscientiousness) and personality on career decision-making self-efficacy for 338 seventh grade Latino middle school students. Researchers found that for Latino boys and girls respectively, 34% and 25% of the variance in career decision-making self-efficacy was accounted for by the predictors. Novakovic and Fouad (2013) found an effect of age, ethnicity, mother's work status, and socioeconomic status on the career planning of 217 adolescent females. Further, Ochs and Roessler (2001) compared the self-efficacy beliefs, outcome expectations, exploration intentions, and vocational identity between special education and general education students. Researchers found that while both groups had optimistic career outlooks, the students with disabilities had significantly lower scores than their non-disabled counterparts, supporting SCCT that person factors influence career development. While it is clear that background influences do have a large role in



the self-efficacy and outcome beliefs of students, it is unclear which factors are stronger predictors for specific populations of people.

While the original SCCT model suggested that perceived barriers and supports had a direct effect on interests and choice intentions, Lent et al. (2001) and Lent, Brown, Schmidt et al., (2003) found in their research that contextual factors (e.g., supports and barriers) influence choice and interest development through self-efficacy. These researchers also found that while both supports and barriers affected self-efficacy, barriers only slightly affected self-efficacy whereas supports were a much stronger influence. Other researchers also found a weak relationship to exist between perceived barriers and self-efficacy (Flores & O'Brien, 2002; Kenny, Blustein, Chaves Grossman, & Gallagher, 2003). There is still much that is unclear about the effect of contextual barriers. Future research is needed to further understand the effects of contextual influences on career and educational interest, choice, and performance. However, what is clear is that self-efficacy is a central mechanism to supporting student educational interests, decisions, and actions.

### **Social Cognitive Career Theory: Adolescence and Diversity**

Several researchers have applied SCCT to middle school and high school students as well as students of diverse backgrounds, supporting the stance that the theory can be applied to adolescents of various backgrounds (Lent et al., 1994). Within this body of research, some researchers focused on a general test of the theory, confirming whether the SCCT factors explain the career and academic development of middle and high school students (Fouad & Smith, 1996; Lent, Brown, Schmidt et al., 2003; Lopez et al., 1997; Nauta & Epperson, 2003; Nugent, Barker, Welch, Grandgenett, Wu & Nelson,

2015; Shoffner, Newsome, & Barrio, 2005). Other researchers focused on the application of the SCCT model to a specific group of adolescents, speculating on the influence of self-efficacy on the career and educational development for specific populations such as prospective first-generation college students (Gibbons & Borders, 2010b). College and career research with Hispanics, African Americans, and Native Americans confirmed that SCCT is applicable to research with minority and non-minority adolescent students (Bounds, 2013; Fouad & Smith, 1996; O'Brien et al., 2000; Shoffner et al., 2005; Turner & Lapan, 2003). Additionally, SCCT is directly applicable to students who come from low and high income backgrounds (Fouad & Smith, 1996).

For example, Fouad and Smith (1996) tested SCCT with ethnically diverse middle school students and found that for a diverse group of middle school students, vocational interests were reflective of student self-efficacy beliefs. O'Brien, Dukstein, Jackson, Tomlinson, and Kamatika (1999) examined self-efficacy theory with a group of adolescents, predominately African Americans, and found that a career intervention rooted in self-efficacy influencers impacted career decision-making self-efficacy. Another set of researchers applied SCCT to prospective first-generation college students (PFGCS), defined as a young person whose parents do not have formal education beyond high school. Gibbons and Borders (2010a) researched the college-going expectations of 272 PFGCSs in comparison to their non-prospective first-generation college peers. Middle school participants (N = 272) reported their college-going self-efficacy, perception of educational barriers, social support, and college-going outcome expectations, in which 109 participants were PFGCSs. Significant differences were found between PFGCSs and non-PFGCSs on college-going self-efficacy, perceived barriers,

and outcome expectations. PFGCSs had lower self-efficacy, more perceived college-going barriers, and had fewer positive outcome expectations than their non-PFGCS peers. Barriers included concerns with finances, lack of college-educated role models, lack of information about the college-planning process, and issues related to family. Further, differences were found between Hispanic/Latino students and African American students and White counterparts. Hispanic/Latino students perceived the highest level of barriers as well as the lowest college-going outcome expectations. These studies suggest the importance of career intervention programs in supporting minorities and PFGCSs' access to and persistence in college.

### **Social Cognitive Career Theory Over Time**

Research has also found that SCCT explains career development over an extensive time period. In a four-year longitudinal study, Nauta and Epperson (2003) investigated the long-term impact of SCCT variables on math and science career choice for 204 students. Students completed a pre-college survey in high school and a post-college survey in college. On the pre-test researchers measured self-efficacy and demographics. On the post-test, taken four years later, students were measured based on their declared college majors, aspirations to be a leader in their field, self-efficacy, outcome expectations, and math-science ability. In alignment with SCCT, math-science ability related to self-efficacy beliefs was found to impact interests and outcome expectations. Additionally, higher self-efficacy and outcome expectations were related to selection of a science or math college major. This study is vital to research on SCCT as it provides support for the use of SCCT to explain how self-efficacy affects career development overtime. Self-efficacy may first impact career decision-making in high

school and may continue to impact the actual implementation of goals and interests throughout college. However, long-term research also requires caution in making strong claims without additional research confirmation.

### **History: Self-Efficacy, Career Self-Efficacy, and College-Going Self-Efficacy**

The plethora of research that supports the use of SCT and SCCT in predicting interest, choice, and performance, has led to the common proximal goal in career development of boosting self-efficacy (Betz, 2007; Gainor, 2006). Over the years researchers have focused on interventions that draw from SCCT with the purpose of intervening in career self-efficacy and thus career interest, choice, and performance (Gainor, 2006). *Self-efficacy* and *career self-efficacy* are researched and well accepted constructs, however, *college-going self-efficacy*, the construct used in this study, is not as established (Gainor, 2006).

Bandura's theory of social cognitive learning first gave rise to the concept of self-efficacy followed by Betz and Hackett (1981) who applied self-efficacy to career behaviors. Betz and Hackett's (1981) study investigated Bandura's self-efficacy theory to the career decision-making process, comparing views held by college students about educational and occupational abilities to the number of career options they were considering. Researchers found a significant relationship between the two, suggesting a relationship between career self-efficacy beliefs and career decisions. The Career Decision-Making Self-Efficacy Scale (CDMSES) was later developed by Taylor and Betz (1983) to measure a person's belief in his/her ability to successfully complete tasks related to career decisions. Modeled after this scale, Fouad and Smith (1997) developed the Middle School Self-Efficacy Scale (MSSES) due to interest in measuring

interventions that worked to enhance career-related self-efficacy among adolescents. In their first study, Fouad and Smith (1996) studied the effects of a career intervention with Hispanic/Latino students on the enrollment in math and science classes through raising their self-efficacy in math and science career decision-making.

Meanwhile, given the importance of degree attainment as previously explained, educators and other professionals have demonstrated a significant interest in the role of self-efficacy in college interest, choice, and performance. While first it was assumed that college self-efficacy and career self-efficacy were the same, the results from some studies have suggested that they are distinct but related constructs (Solberg, O'Brien, Villareal, Kennel, & Davis, 1993). Given that self-efficacy is a domain specific construct (Bandura, 1997), researchers found that they could develop scales that could measure the effects of self-efficacy on college specific domains (Gibbons & Borders, 2010a; Solberg et al., 1993).

Solberg et al. (1993) designed and studied a 20-item measure of college self-efficacy called the College Self-Efficacy Inventory (CSEI) that assessed the degree to which a person believed that he/she could complete a given college task or pro-academic college behavior such as note taking or asking questions. Solberg et al. (1993) suggested that the combination of academic self-efficacy, social self-efficacy, and roommate self-efficacy are all belief systems that support college self-efficacy. This idea was further developed in a study on retention and persistence at college. Gore, Leuwerke, and Turley (2006) explored the predicative validity of the CSEI on academic and career related outcomes in first-year college students ( $n = 257$ ). Researchers found predicative validity for all three subscales, suggesting that the higher the self-efficacy score the more likely

the students were to do activities such as finding research for a paper, using the library, course learning, interacting with faculty, participating in class discussions, and developing good relationships with roommates. Researchers also found a relationship between college self-efficacy and career or occupational self-efficacy as measured by both CSEI and the CDMSES, suggesting that the constructs of college self-efficacy and career decision-making self-efficacy are distinct but related (Betz, Klein, & Taylor, 1996).

Finally, Gibbons and Borders (2010b) proposed that college-going self-efficacy exists in younger students just like the college self-efficacy construct for college-aged students. College-going self-efficacy is the belief that one can get into college and once there find success by persisting in college. In order to measure college-going self-efficacy, Gibbons and Borders (2010b) developed the College-Going Self-Efficacy Scale (CGSES) that used language and items geared toward middle school students. Researchers believed that items for this type of measurement needed to more accurately reflect the college-development stages of middle school students. The scale was found to be both valid and reliable after piloted with 272 seventh-grade students, in which approximately half of the students were prospective first-generation college students, or students who came from families whose parents had not completed college (Pike et al., 2014).

### **Self-Efficacy Intervention Research**

Overall, the development of scales provided support for the design, implementation, and evaluation of interventions that work to enhance career and college self-efficacy (Betz, 2007; Gainor, 2006). A comprehensive review of the literature on

college and career development interventions on the measurement of self-efficacy suggests that the majority of self-efficacy intervention studies have focused on career self-efficacy and career decision-making self-efficacy (Chiesa, Massei, & Guglielmi, 2016; Dawes et al., 2000; Kraus & Hughey, 1999; McWhirter et al., 2000; Mitcham, Greenidge, Bradham-Cousar, Figliozzi, & Thompson, 2012; O'Brien et al., 2000; Turner & Lapan, 2005; Vervecken & Hannover, 2015) with minimal published research on college self-efficacy and college-going self-efficacy (Hamel, 2015; Jensen, 2013). Further, research on interventions that work to enhance career and college-going self-efficacy of adolescents is even more limited. The following section provides more detail about this area of research, specifically addressing the large body of research on career self-efficacy interventions and the smaller body of research on college-going self-efficacy interventions.

### **Career Self-Efficacy Intervention Research**

Research is available analyzing the effects of interventions on career self-efficacy with college students (Betz & Borgen, 2009; Betz & Schifano, 2000; Fouad et al., 2009; Reese & Miller, 2006; Scott & Ciani, 2008; Solberg et al., 1993; Speight & Rosenthal, 1995) and to a lesser degree high school students (Chiesa et al., 2016; Kraus & Hughey, 1999; McWhirter et al., 2000; O'Brien et al., 1999) and middle school students (Mitcham et al., 2012; Turner & Lapan, 2005; Vervecken & Hannover, 2015). Given that career interventions are most effective when they expose participants to Bandura's four sources of self-efficacy and that the intervention measured in this dissertation is based on social cognitive theory, this literature review focuses on interventions designed to enhance career self-efficacy through the inclusion of Bandura's (1997) self-efficacy influencers

(e.g., personal performance, social persuasion, vicarious learning, physiological affective states) (Chiesa et al., 2016; Fouad et al., 2009; McWhirter et al., 2000; O'Brien et al., 1999; Reese & Miller, 2006; Scott & Ciani, 2008).

**Undergraduate Interventions.** Reese and Miller (2006) studied the effects of a career development course on the career decision-making self-efficacy of 96 undergraduate students from the Southwestern United States. In a nonrandom sample of convenience, participants in the intervention group were enrolled in the career development course called “Discovery: Career and Life Planning” ( $n = 30$ ) and participants in the control group were enrolled in an introductory psychology course ( $n = 66$ ), which both met for 50 minutes during a 15-week quarter. Discovery: Career and Life Planning involved group activities, role models, and structured assignments related to career, all of which exposed participants to Bandura’s four influencers of self-efficacy (Bandura, 1997). Using the Career Decision Making Self-Efficacy Scale- Short Form (CDMSES-SF) (Betz et al., 1996), researchers measured all participants at pre-test and post-test. A mixed-model repeated measure ANOVA (Group x Time) was used to analyze the difference between the intervention and control group. A statistically significant interaction was found,  $F(1, 94) = 6.41, p = .013, \eta^2 = .07$ , with larger gains from participants in the career course than participants in the control group. Researchers concluded that a course-based career intervention is a worthwhile tool in improving career decision-making self-efficacy of university students. Researchers attributed this to the development of a career course that directly aligned with career development theory.

While the results are promising, a few limitations must be considered. First, participants self-selected into the career course. Self-selection could have resulted in a



self-selecting bias where students may grow and develop in self-efficacy due to their interest in the course. The career course sample size was also small ( $n = 30$ ), although feasible for a powerful study. Another major limitation was the lack of diversity, which greatly limits the generalizability of the results.

Scott and Ciani (2008) also studied the effect of a semester long career class on the career decision-making self-efficacy of 115 undergraduates from a large Midwestern University. Participants enrolled in a career exploration course offered by the career center at the university were recruited to participate in the study. The career course, or intervention, supported the exploration of occupational choice and decision-making through activities that encompassed all four of Bandura's sources of self-efficacy. Mastery experiences included campus career resources and participation in an informal interview. The career panel was an example of a vicarious experience in the study. Participants took the Career Decision-Making Self-Efficacy Scale- Short Form (CDMSES-SF) (Betz et al., 1996) at pre-test and post-test to self-report their career decision-making self-efficacy. A 2 x 2 repeated measure multivariate analysis of variance (MANOVA) was conducted to measure both pre-test and post-test and also potential differences on effects by gender. Results indicated a significant multivariate effect of time, Wilk's Lamda = .45,  $F(5, 82) = 20.22$ ,  $p < .001$ . After the intervention course, participants had significantly higher scores on career decision-making self-efficacy. These results suggest that the career course was effective in influencing career related self-efficacy.

Unlike Reese and Miller (2006), one caveat in this study was that it did not include a control group. Lack of a control group makes the researchers less confident that

the results of the study were due to the intervention (Gall, Gall, & Borg, 2007). Potential threats to internal validity caution interpretations about the significant findings. Another caveat was the lack of diversity with 91% of the sample made up of Caucasians. Scott and Ciani (2008) also reported instructor effects as a potential limitation. The data, which was pulled from 10 separate sections, were co-taught by different instructors. As a result, the effects could be based on instructor differences not the intervention itself. Further, due to the topic of the career decision-making self-efficacy course, it is inevitable that students who are undecided about college and career would be more likely to take the course, potentially skewing the results. Finally, the extent to which the four sources of self-efficacy affected CDMSES was unknown. This lack of information makes it difficult to interpret which activities were more powerful contributors to the overall effect of the intervention on career decision-making self-efficacy.

In another study, like Reese and Miller (2006) as well as Scott and Ciani (2008), Fouad et al. (2009) measured the effectiveness of a college career course on the career decision-making self-efficacy of 73 undergraduate students from a Midwestern University. Researchers hypothesized that participants completing the course would have increased levels of career decision-making self-efficacy. The course titled “Foundations of Academic Success: Planning Your Major and/or Career” included sixteen 50-minute sessions that took place during the academic semester. The course included a series of in-class activities and discussions related to the course objectives which evolved around understanding the career planning process, identifying interests, values, and skills, learning skills about how to research occupations, and determining a tentative major/career choice. In alignment with Bandura’s (1997) SCT, activities reflected the

four sources of self-efficacy influencers. Participants were recruited to take part in the study from students who were enrolled in the course and completed a series of surveys at pre-test and post-test. Pertinent to this study was the pre-test and post-test of career decision-making self-efficacy measured by Career Decision Making Self-Efficacy- Short Version (CDMSES-SF) (Betz, Hammond, & Multon, 2005). A repeated measure analysis was conducted to assess the changes in perceptions of participants on the pre-test and post-test of the CDMSES-SF. Following the intervention, CDMSES-SF significantly increased for participants in the career course,  $F(1, 54) = 17.47, p < .001, \eta^2 = .24$ , supporting the stance that career interventions are effective in enhancing career decision-making self-efficacy.

While this finding is promising in the field of career development, this study also had limitations that are worth noting. A major caveat in this study was the lack of a control group. Without a control group, the researchers can be less confident that the intervention was solely responsible for the change in career decision-making self-efficacy. Another limitation was that out of the original sample size of 139 participants, only 73 students were eligible to be included in the study due to participant failure to complete both the pre-test and post-test. This is problematic in statistical analysis as it affects the power of the analysis (Field, 2009). Further, the diversity in the sample size was lacking, making the results of the study less generalizable. However, overall this study and its findings provide additional support to career and college intervention research.

**Adolescent interventions.** O'Brien et al. (1999) examined the effects of a career exploration program on career decision-making self-efficacy for a group of

predominately African American adolescents ( $N = 48$ ) who were a part of Upward Bound, a national program for students in at-risk environments. In alignment with Bandura's (1997) four sources of self-efficacy, the career exploration program was designed with hands-on, interactive experiences that focused on self-reflection and the world of work. Role models, guest speakers, and feedback related to vocational interest and choice were also included. The intervention group consisted of  $n = 22$  students from a Midwestern university involved in Upward Bound and the control group consisted of  $n = 26$  students from a neighboring Midwestern university who were also involved in Upward Bound. The career exploration program involved daily fifty-minute sessions for five weeks facilitated by graduate students in counseling psychology. Pre-test and post-test data were collected on career decision-making self-efficacy utilizing the Career Confidence Scale (CCS), a short version of the Career Decision-Making Self-Efficacy Scale (Taylor & Betz, 1983). Utilizing an Analysis of Covariance (ANCOVA), researchers found that there was a statistically significant difference between groups on career decision-making self-efficacy with the intervention group having higher scores at post-test,  $F(1, 48) = 7.64, p = .01$ .

While results indicated a positive effect of the career intervention on the career-decision making self-efficacy of adolescents, it is imperative to consider the limitations of the study. One major limitation was the small sample ( $N = 48$ ). Participants in the control group and the intervention group were also from two separate Upward Bound programs which could have been a variable influencing the results of the study. This limits the confidence that the changes in career decision-making self-efficacy for students in the intervention group are a result of the intervention itself. Researchers also

recommend that future research include a more comprehensive incorporation of Bandura's (1997) sources of self-efficacy.

McWhirter et al. (2000) measured the effects of a nine-week career education class on the career decision-making self-efficacy and vocational skills self-efficacy using a group of 166 high school sophomores from an urban high school in a midsized Midwestern city. The career education course had a strong emphasis of Bandura's (1997) self-efficacy influencers including a series of performance attainments and hands on learning. Participants of the required career education course met daily for 50 minutes to engage in hands-on activities, lectures, small-group work, and guest speakers on topics related to career and postsecondary education. In this nonrandomized, within-subject crossover design, participants enrolled in either the career education class or a health education class for the first quarter in their sophomore year and then took the alternate class for the second quarter. Pertinent to the focus of this study, subjects were measured pre-test (Time 1) and post-test (Time 2) on the Career Decision-Making Self-Efficacy Scale (CDMSES) and the Vocational Skills Self-Efficacy Scale (VSSE). A third measurement (Time 3) measured the effects of the intervention at a nine-week follow up for those who took the career course first quarter. A multivariate analysis of variance (MANOVA) with a repeated measure factor was used to measure the effect of the intervention on both career decision-making self-efficacy and vocational skills self-efficacy. Results for CDMSE found effects for time,  $F(2, 322) = 21.53, p < .001, \eta^2 = .21$ , and for treatment X time,  $F(2, 322) = 9.89, p < .001, \eta^2 = .14$ , indicating that the intervention had an overall effect on the career decision-making self-efficacy of participants. Follow up t-tests revealed a statistically significant difference between Time

1 and Time 2 for those in the career-health condition,  $t(84) = -6.72, p < .001$ , but not for those in the health-career condition. Also of interest is that CDMSE decreased among career-health participants during the measurement of Time 3. However, it was still significantly higher than Time 1. The same pattern of outcomes occurred for VSSE. There was an effect for time,  $F(2, 316) = 24.03, p < .001, \eta^2 = .22$ , and treatment X time,  $F(2, 316) = 11.93, p < .001, \eta^2 = .14$ . A statistically significant difference also existed between Time 1 and Time 2 for the career-health participations,  $t(84) = -6.644, p < .001$ , but not for participants in the other condition. As a result of these small to medium increases, McWhirter et al. (2000) suggested that there is value in career educational interventions for adolescents that are built on the foundation of self-efficacy influencers.

Overall, this study has significant strengths: the use of an active control group, nine-week follow up, accurate use of statistical procedures and analysis, and standardization of the curriculum. Limitations include that random assignment to the career and health education course was not possible, which limits the internal validity of the study (Gall et al., 2007). In addition, the group measured was ethnically homogeneous, made up of predominately European Americans, which limits the generalizability of these results to other more diverse populations.

Chiesa et al. (2016) explored a career intervention, involving career exploration, on the career decision-making self-efficacy of 280 Italian high school students. Based on previous research, researchers hypothesized that a structured career group intervention would improve participants' career exploration behaviors through the enhancement of career decision-making self-efficacy. Participants were recruited from 15 different

schools in Northern Italy. The six session, 17 hour career intervention included thematic discussions and career activities: analyzing strengths and skills, reflection on personal work values, identification of potential career interests, career search, connection between careers and skills, and formation of career goals and plans. Written exercises, individual interpretations and feedback, as well as exploration and modeling all served as Bandura's (1997) self-efficacy influencers. Researchers measured the effects of the intervention on career decision-making self-efficacy at pre-test and post-test using the Career Decision-Making Self-Efficacy Scale (CDMSES-SF) (Betz et al., 1996). Results indicated a slight increase in mean score on the CDMSES-SF between pre-test ( $M = 3.12$ ) and post-test ( $M = 3.18$ ), suggesting that the intervention had a small effect on career decision-making self-efficacy.

Further, in alignment with previous research (Betz & Vuyten, 1997; Dawes et al., 2000), Chiesa et al. (2016) found that the change in career decision-making self-efficacy that occurred between the pre-test and post-test was also associated positively with career exploration behavior. Students who reported higher levels of career decision-making self-efficacy reported higher levels of career exploration behaviors,  $\gamma = .39, p < .001$ , in the beginning and over time,  $\gamma = .31, p < .001$ . These results demonstrate that career exploration behaviors can be increased when career decision-making self-efficacy is enhanced, which aligns with social cognitive theory (Bandura, 1986) and social cognitive career theory (Lent et al., 1994) and provides more support for career interventions that are based on self-efficacy influencers.

This study increases the knowledge of career interventions on the career decision-making self-efficacy of high school students and the influence career decision-making

self-efficacy has on career exploration. A major strength of this study was the analysis of the change process from pre-test and post-test using a within-subject design and the group comparisons using a between-subject design. However, this study is limited by the lack of a control group. Researchers are thus less confident that the observed changes are due to the intervention rather than other external validity issues such as maturation (Campbell & Stanley, 1963). This study is further limited by the use of scales with potentially weak psychometric properties, specifically the Career Exploration Scale, the subscale of the Career Development Inventory (Super, Thompson, Lindeman, Jordaan, & Myers, 1981), which had minimally acceptable Cronbach's alpha of .53 (pre-test) and .64 (post-test).

Overall, the outcome studies described provide empirical support for the effectiveness of career interventions at both the collegiate and high school level (Chiesa et al., 2016; Fouad et al., 2009; McWhirter et al., 2000; Reese & Miller, 2006; Scott & Ciani, 2008). They provide promising support for career development interventions that integrate Bandura's (1997) four sources of self-efficacy. However, it is important for future researchers to strengthen studies by researching career decision-making self-efficacy and other career related self-efficacy outcomes by utilizing designs that include control groups (e.g., Fouad et al., 2009). A control group, such as the one used in the Fouad et al. (2009) study, provides the researcher with more confidence that the results of the study are due to the intervention rather than other potential confounding variables (Field, 2009). Additionally, more research is warranted that includes a diverse sample. The samples used in these studies are made up of predominately Caucasian students with



the exception of Scott and Ciani (2008 who studied a group of high school Italians. A more diverse sample population would allow for greater generalizability.

### **College-Going Self-Efficacy Intervention Research**

A literature search of ERIC, Education Source, PsychINFO, and Dissertation Abstract using the keywords “self-efficacy, intervention, and middle school student” yielded a large amount of research on self-efficacy interventions as described above and only two on college-going self-efficacy itself. Only two dissertations (Hamel, 2015; Jensen, 2013) have focused on the specific and separate construct of college-going self-efficacy and the effect of a college-going intervention on middle school students.

Hamel (2015) researched the effects of a week-long career development summer program called Career Horizons Summer Program for sixth and seventh grade students on educational aspirations-expectations, college-going self-efficacy, and career self-efficacy. Participants in this study were predominately minorities who came from a low-income urban setting and were mostly prospective first-generation college students (N = 52). Hamel (2015) researched the relationship between college-going self-efficacy and career self-efficacy before and after the intervention and whether college-going self-efficacy and career self-efficacy increased more in participants than non-participants following the intervention. Participants were selected out of convenience after being referred by their school counselor and submitting an application. Data were collected on educational aspirations and expectations as well as student career and college-going self-efficacy pre-intervention and post-intervention as measured by two aspiration-expectation questions (e.g., what is the highest level of education that you would like to achieve and what is the highest level of education you think you will achieve), using the Middle

School Self Efficacy Scale (MSSES) (Fouad & Smith, 1997), and the College-Going Self-Efficacy Scale (Gibbons, 2005) respectively. Thus, a quasi-experimental nonequivalent comparison group design as well as a modified time series design was used. Bivariate correlations revealed strong correlation between the MSSES and CGSES in all but one comparison group. MSSES and CGSES were significantly correlated in the pre-test intervention group ( $r = .64, p < .05$ ), pre-test comparison group ( $r = .77, p < .05$ ), post-test intervention group ( $r = .58, p < .05$ ), but not in the post-test comparison group ( $r = .52, p > .05$ ). Due to the high effect sizes, the hypothesis that there was no relationship between MSSES and CGSES was rejected. Researchers speculated that the small size of the comparison group ( $n = 8$ ) may have impacted the non-significant result of the comparison group's MSSES and CGSES post-test. Hamel concluded that an intervention designed to enhance career exploration and efficacy for learning about careers would also increase college-going self-efficacy as the two constructs highly correlate. These results suggest that college-going self-efficacy is a construct that both is parallel to career self-efficacy but also distinct. Two  $2 \times 2$  ANOVAS with one repeated measure and one between-group measure revealed that there was a statistically significant difference between participants and non-participants on college-going self-efficacy ( $F(1, 47) = 9.00, p < .05$ ) and career-self-efficacy ( $F(1, 47) = 12.01, p < .05$ ) on the pre-test and the post-test. Hamel suggested that similar activities to the career camp program be implemented even if on a small scale and even if focused on career self-efficacy in order to enhance students' college going self-efficacy.

However, this research also presents some limitations. Generalizability may be problematic. First, the sample size was small ( $N = 52$ ). Second, the sample size lacked

diversity as participants were made up of entirely prospective first-generation college students. A sample that lacks in diversity makes it less generalizable to other populations (Fowler, 2014). Additionally, the sample was a sample of convenience as participants were recruited as volunteers. A specific “type” of person may be more drawn to a summer program that addressed career development and therefore selection bias and selection-maturation interaction may have threatened the internal validity of the study (Campbell & Stanley, 1963). In this study, participant demographics may not be representative of the general population of middle school students or even prospective first-generation college students. Furthermore, the small comparison group ( $n = 10$ ) limits the ability of the researcher to make strong comparisons between groups and limits the power of the analysis.

Other challenges were related to the methodology of the study. Due to the timing of data collection in this study, threats to internal validity, including history and maturation, were potential problems (Campbell & Stanley, 1963). Participants in the control group could have been exposed to career development during the time of treatment threatening internal validity. Students could have matured as an exponential rate. In addition, the interaction of testing and treatment were potentially problematic, as participants were measured a total of four times on the scale, which could affect the familiarity they have with the surveys.

Hamel (2015) also did not include an alternative treatment in the research study. An alternative type of career development intervention could help to determine if the Career Horizons Summer Program was more effective than alternate self-efficacy interventions. While the research indicates improvement across a battery of scores, it is

unclear if these improvements were better than other interventions that could potentially be more effective in increasing career self-efficacy and college-going self-efficacy.

The most considerable caveat in this study is the researcher's choice of statistical analysis- two 2 x 2 ANOVAs. The study involved more than one independent variable (e.g., group and time) and more than one dependent variable (e.g., career self-efficacy and college-going self-efficacy). ANOVA is typically used when there only is one dependent variable (Field, 2009). It is possible that the use of a series of ANOVAs instead of a MANOVA could have increased Type I error. Using a MANOVA may have reduced Type I error and may have detected for group differences among a combination of variables that ANOVAs are unable to do (Field, 2009). However, on the other hand, MANOVAs are difficult to interpret and recommended by some researchers to be avoided (Tabachnick & Fidell, 2013).

In another study, Jensen (2013) researched the impact of a college-going curriculum titled *I'm Going to College* on the college going self-efficacy of a group of rural fifth grade students (N = 34) in an attempt to address the gap in research on how to increase college-going self-efficacy among pre-adolescents. The treatment group participated in the five-day curriculum consisting of a series of lessons and activities on college as an institution, personal interests, cost and benefits of college, career exploration, and identification of a college they would like to attend given by a licensed professional school counselor. Participants were selected out of sixty fifth-grade students in a public elementary school out of rural Oregon, a sample of convenience. Data were collected at pre-test and post-test using six of the 31 items on the College-Going Self-Efficacy Scale (CGSES) (Gibbons, 2005), which the author found to be both valid and

reliable. In the quasi-experimental time-series design, Jensen (2013) used hierarchical linear modeling and found significant increases in college-going self-efficacy between pre and post interventions on three out of the six items on the scale. Jensen (2013) concluded that curriculums such as *I'm Going to College* might have the potential to increase the college-going self-efficacy of rural fifth grade students.

This study however has many weaknesses and presents considerable limitations. First of all, the method described in the study was not the method utilized. Jensen (2013) described the method of the study to be a case-based time-series design with baseline measurement, chosen in order to measure the change process of student college-going self-efficacy across time (Borckardt et al., 2008). In this study, a case-based time series design would require the measurement of each student's college-going self-efficacy across baseline, treatment, and follow up phases. However, only two data points were analyzed (e.g., baseline, post-test). While it was reported that "observation were collected each day of the intervention" (Jensen, 2013, p. 58) none of these data were reported nor was this measurement tool described. There was also no measurement of long-term effects. The design used was a one-group pre-test post-test design, a design that includes many more uncontrolled rival hypotheses or plausible explanations other than the effect of the intervention itself on college-going self-efficacy (e.g., history, maturation, testing) (Campbell & Stanley, 1963). Two time points is inadequate for studying change as Jensen planned (Bryk & Raudenbush, 1987).

Given the pre-test post-test one-group method used in this study, a considerable caveat in this study was the researcher's choice of statistical analysis- a hierarchical linear modeling (HLM). This method is appropriate for research on individual change as

it investigates correlate of status and change as well as the effects of experimental interventions on individual growth (Bryk & Raudenbush, 1987). However, HLM is not appropriate for the actual pre-test post-test one-group method used in this study (Bryk & Raudenbush, 1987). The addition of a control group to the used design or implementation of the original design would be more appropriate. This would allow the researcher to have more confidence that the results of the study are due to the intervention and not a result of other extraneous variables that threaten the validity of the study (Campbell & Stanley, 1963).

Additionally, the author's use of only six items of the 31-item College-Going Self-Efficacy Scale (CGSES) limits the generalizability of this study (Gibbons & Borders, 2010a). The CGSES is both valid and reliable with 31 items (Gibbons & Borders, 2010a). Given that the 6-item instrument was not piloted, although tested for reliability by the researcher, the researcher is less confident that the results of the study are measuring college-going self-efficacy. The validity and reliability measures of the original instrument by Gibbons (2005) are not necessarily transferable to the six-item scale.

These methodological challenges combined with the relatively small sample size ( $N = 34$ ), in which all participants in the study came from one rural public elementary school out of Oregon, largely limits generalizability of the results. A narrow and homogeneous group of participants greatly limits the generalizability of the results to other populations. Results gained by this study should be interpreted cautiously. More research is needed to understand and make generalizations about the effect of school-based interventions on college-going self-efficacy among middle school students.

Finally, a further limitation is that neither dissertation described Bandura's (1997) self-efficacy influencers (e.g., personal performance accomplishments, vicarious learning, social persuasion, physiological and affective states). While both studies were embedded in SCT and SCCT, the mechanisms derived from these theories and included in the intervention were not explained. This limits understanding of how the four sources of self-efficacy were integrated into the intervention.

### **Mentorship and Self-Efficacy**

Studies on career interventions and self-efficacy have typically looked at the effects of a career course or career camp on the career self-efficacy of a group of students (e.g., college or high school) not college or career mentorship. Few studies could be found that examined the effects of a mentorship-based program on self-efficacy for adolescents (Denson & Hill, 2010; Holt, Bry, & Johnson, 2008). Further, the research available did not support mentorship as a self-efficacy influencer. Given these outcomes, more research is needed to determine if mentorship-based programs, as a self-efficacy influencer, could be a driving force for self-efficacy in general and more specifically for college-going beliefs of middle school students.

Among other variables, Holt, Bry, and Johnson (2008) examined the effects of a weekly mentorship program on the academic self-efficacy of a diverse group of "at-risk" ninth grade students, as measured by seven-items from the 11-item subscale of the Children's Multidimensional Self-Efficacy Scales (Zimmerman, Bandura, & Martinez-Pons, 1992). The study was a randomized, controlled trial design in which students identified as at-risk were randomly assigned to the control group ( $n = 20$ ) or the intervention group ( $n = 20$ ). Those assigned to the intervention group participated in the

Achievement Mentoring Program, a mentorship program based on social cognitive theory (Bandura, 1986) in which a mentor intervenes in a student's environment in order to help produce cognitive and behavioral changes within the study (Holt et al., 2008). All participants were measured at pre-test, post-test, and at the end of the first semester of the participants' second year of high school (six-month follow-up). Mentors were teachers or staff members that were recruited at a faculty meeting. The role of a mentor was to meet with their mentees for at least eight weeks and engage in positive affirmation, problem-solve maintenance of positive behavior, practice positive behaviors, and check in on attendance. While there were positive effects on other behavioral variables, at pre-test there was no difference between intervention and control groups on academic self-efficacy. An Analysis of Variance (ANOVA) also found no statistically significant difference between groups, although there was a slight increase in mean scores on academic self-efficacy for mentees on the post-test ( $M = 2.55$ ) from the pre-test ( $M = 2.40$ ). Further, there was no significant interaction effect for academic self-efficacy at the six-month follow up.

The strengths of this study are evident. The study utilized a randomized, controlled design that controlled for many potential confounding variables. However, this study was challenged by a small sample size, attrition, absences, and mobility that impacted the power of the study. It could be that these challenges impacted the results of the study. Researchers concluded that more research is essential to learn more about the potential impact of mentorship on self-efficacy.

Denson and Hill (2010) studied the impact of engineering mentorship on the perceptions of engineering as a career choice for male African-American high school



students who attended an alternative high school. Participants were randomly selected from students attending an alternative high school in North Carolina and randomly assigned to the intervention group or the control group. Participants in the intervention group ( $n = 10$ ) received mentorship and those assigned to the control group ( $n = 10$ ) participated in a computer software program. In alignment with SCT, researchers identified mentorship as a result of SCT that emphasizes how social context and environment can reinforce behavior. Mentorship in this program consisted of observational learning, imitation, and modeling of various career behaviors and opportunities in the engineering field by mentors from the National Society for Black Engineers (NSBE). Measurements included students' perception of engineering, math self-efficacy, and science self-efficacy measured by a valid and reliable instrument created for the purpose of the study. Using an independent t-test to determine statistical significance, researchers measured post-test between groups and found no statistically significant difference on the perceptions or math and science self-efficacy between those who participated in the mentorship program compared to those who did not.

Overall, while this study did not produce significant results, this study provides a model for comparing the self-efficacy of students participating and not participating in a formal mentorship program. Researchers suggested that the study was limited by the logistics such as the program not being sustained over a long enough time, some poor staff involvement, and no set curriculum. Denson and Hill (2010) recommended that future research allow more time than three months for the mentorship of the program to develop.

## **Present Study**

The present study was designed to respond to the significant limitations described in the two dissertations on college-going self-efficacy interventions for adolescents. First, the present study is made up of a large sample size ( $N = 146$ ), which is significantly larger than either study involving the construct college-going self-efficacy ( $N = 34$  and  $N = 52$ ). The sample, although a convenience sample, are also not recruited volunteers but instead are participants based on their membership to a specific school and specific classrooms. All general education classrooms in the seventh grade were included, which were originally organized through random selection, a computer system that randomly schedules students. As a result, the sample more accurately reflects a general middle school population.

In addition, unlike the two dissertations, this study also included a large control group ( $n = 71$ ). Jensen's (2013) study did not include a control group, utilizing a one-group pre-test post-test design. On the other hand, while Hamel (2015) strengthened the study by using a comparison group, it was small ( $n = 10$ ) limiting generalizability. The present study is strengthened or more powerful by the addition of a larger control group ( $n = 71$ ).

The intervention used in this present study also significantly adds to current literature. The present study differentiates significantly from the two dissertations described because the intervention is mentorship focused. Bandura's (1997) social cognitive theory describes personal performance accomplishments, vicarious learning, social persuasion, and physiological and affective states as the main sources influencing self-efficacy. Mentorship embodies at least some if not all of these components. Thus,

while this study adds to the literature on interventions that have the potential to influence interest development, choice, and performance on attending and persisting through college, this study is the first of its kind, measuring the effects specifically of a mentorship program on college-going self-efficacy. No research has been done that investigates the effect of mentorship specifically on college-going self-efficacy for middle school students. However, this study will be challenged by research with results that are not favorable to the inclusion of college-going mentorship as an effective college-going intervention (Denson & Hill, 2010; Holt et al., 2008).

### **Summary of Literature**

Ample research and sound theory (e.g., SCT, SCCT) has demonstrated the role of self-efficacy in career interest, choice, and performance for middle school students. Research has found that self-efficacy has a large influence on the career development of students from all different diverse backgrounds. However, while self-efficacy and career self-efficacy are widely studied constructs, less attention has been paid to college-going self-efficacy or the role of self-efficacy in students' college interest, choice, and actual performance. While there are two dissertations that have studied college-going interventions on the college-going self-efficacy of middle school students (Hamel, 2015; Jensen, 2013), very little other work has been done. The present study attends to the limitations described and begins to address the large gaps in previous research.

### CHAPTER III: Method

Relevant literature supports the need for further study of college-going interventions that promote perceived college-going self-efficacy among diverse groups of middle school students (Hamel, 2015; Jensen, 2013). Research and theory have supported the idea that improving college-going self-efficacy among middle school students through college development interventions may subsequently lead to enhanced college attendance and persistence (Chiesa et al., 2016; Fouad et al., 2009; McWhirter et al., 2000; Reese & Miller, 2006; Scott & Ciani, 2008). Although numerous studies have focused on boosting self-efficacy beliefs in career development, very few studies have measured the effect of interventions on the college-going beliefs of middle school students (Betz, 2007; Gainor, 2006). Thus, the purpose of this study was to examine the effects of one potential college-going intervention, referred to as North Star, specifically on the college-going self-efficacy beliefs of middle school students.

North Star is an eight-week psycho-educational college-going mentorship intervention between university students and middle school students. Throughout this intervention, middle school students met in small groups with university mentors to discuss and engage in activities related to college for one hour. Activities centered on supporting student growth in their beliefs of their ability to go to college, increasing knowledge about college, eliminating potential perceived barriers, and helping students set college-going goals. This specific college-going intervention targeted Bandura's (1986, 1997) self-efficacy influencers: performance accomplishments, vicarious learning, social persuasion, and physiological and affective states. The mentors modeled college-

going success and attitudes while encouraging middle school students to attend and persist through college.

This study is a quasi-experimental non-equivalent group design. A quasi-experimental non-equivalent group design is an appropriate design given that there is one independent variable with two levels, one dependent variable, a pre-test and post-test, and random assignment of the participants was not possible (Gall et al., 2007). In this chapter, the methodology used in this study is explained, including the research question and corresponding hypothesis, participants, instrumentation, procedures, and data analysis.

### **Research Design**

In this study, the researcher explored whether the college-going intervention referred to as North Star had an effect on the college-going self-efficacy beliefs of a group of diverse seventh grade middle school students. Specifically, the researcher was interested in whether a difference existed on college-going self-efficacy at post-test between students who experienced the college-going intervention and students who did not. The manipulated variable, or the independent variable, was group. The intervention included participants who experienced North Star. The control group included all other participants. Students were measured on college-going self-efficacy prior to the onset of the study (pre-test) and following the eight-week intervention (post-test). Table 1 presents the quasi-experimental design employed.

Table 1

*Quasi-Experimental Non-Equivalent Group Design*

Seventh Grade Sample			
Group	Pre-test	Intervention	Post-test
R <sub>1</sub>	O	X	O
R <sub>2</sub>	O		O

*Note.* R<sub>1</sub> = Intervention group; R<sub>2</sub> = Control group; O = College-Going Self-Efficacy Scale; X = College-going intervention (North Star).

**Research Question**

**Question.** Is there a statistically significant difference on college-going self-efficacy between intervention and control groups?

**Null hypothesis.** There is no statistically significant difference on college-going self-efficacy between intervention and control groups.

**Sample**

**Setting.** Seven intact, seventh-grade classrooms from one school in a large urban district in the Pacific Northwest were included in this investigation. Each class consisted of approximately 25-30 students. The total sample size was 146 students. The researcher chose this specific school due to the development and implementation of the college-going intervention North Star by a teacher and an established partnership with a local university. The local university provided North Star with university mentors through community-based learning courses at the university. The district serves 15,342 students and consists of four regular middle schools, two regular high schools, and one alternative high school. The district claims the following demographic information for the 2016-

2017 school year: 47.7% of students qualify for free or reduced priced lunch; student ethnographic data includes 39.2% Caucasian, 28.6% Hispanic, 14.7% Asian, 6.6% Black; and 20.6% of students are transitional bilingual.

The district reports the following demographic data for this particular middle school for the 2016-2017 school year: 59.4% of students qualify for free or reduced priced lunch; student ethnographic data includes 27.2% Caucasian, 37.4% Hispanic, 14.8% Asian, 9.6% Black; 19.8% of students are transitional bilingual and over 30 first languages are spoken in the school. The school's performance on the Smarter Balance Assessment (SBA) in sixth grade for the 2016-2017 school year, which represents the cohort for the participants in this study, are as follows: 48.6% met or exceeded standard in reading and 27.8% met or exceeded standard in math.

**Participants.** Participants in both the intervention and control group consisted of seventh grade middle school students from one urban, diverse, and predominately low-income Washington State school. All students in the seventh grade who were in general education classes were participants in this study. A general education class is defined as a class that teaches students who do not have special education, emergent English Language Learning, or honors status. Seventh graders were participants because they were the grade level of the students taught by the teacher who designed and implemented North Star in partnership with the university. For purposes of this study, the use of seventh grade participants aligned with research and theory that middle school is a development stage in which plans for higher education begin to take shape. Theory suggests that adolescence is a crucial time in a person's life for the development of career and college interest (Bandura, 1986; Lent et al., 1994). Past research has also found that

college-going interventions are most effective when beginning no later than seventh grade (Osterreich, 2000; Whiston et al., 1998). An ethnically and socioeconomically diverse group of participants were utilized in this study due to the population that makes up the school. An ethnically or socioeconomically diverse group of participants aligns with the researcher's interest in examining the effects of college-going interventions on students who come from disadvantaged backgrounds (e.g., minority, PFGCS, low-SES). Further, many participants were prospective first-generation college students. A parent survey developed by the researcher asked parents their highest level of education achieved. Based on the parent survey, 82.19% of the participants in the study meet this study's definition of a prospective first-generation college student.

Specifically, participants in the intervention group were seventh grade students (non-special education, non-emergent ELL, non-honors) of the teacher who designed and implemented North Star (n = 71). Participants in the control group were seventh grade students from the three other general education (non-special education, non-emergent ELL, non-honors) classrooms (n = 75).

Students who transferred out of the middle school during the time of the data collection or did not complete both the pre-test and post-test were excluded from the analysis. Eight participants in the intervention group and eight participants in the control group failed to meet these criteria and were omitted from the data analysis. Out of the 154 original participants, 146 participants had completed both surveys. Tables 2-5 show the differences in groups by ethnicity, gender, socioeconomic status as indicated by free and reduced lunch, and prospective first-generation status.



Table 2

*Percent of Sample and Number of Participants by Race/Ethnicity*

	Frequency	Percent	Frequency	Percent
	R <sub>1</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>2</sub>
Black/African American	13	18.3%	15	20.0%
Asian American/Pacific Islander	9	12.7%	15	20.0%
Hispanic/Latino	24	33.8%	25	35.2%
White/Caucasian	24	33.8%	19	25.3%
Other	1	1.4%	1	1.3%
Total	71	100%	75	100%

*Note.* R<sub>1</sub> = Intervention group; R<sub>2</sub> = Control group.

Table 3

*Percent of Sample and Number of Participants by Gender*

	Frequency	Percent	Frequency	Percent
	R <sub>1</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>2</sub>
Male	36	50.7%	39	52.0%
Female	35	49.3%	36	48.0%
Total	71	100%	75	100%

*Note.* R<sub>1</sub> = Intervention group; R<sub>2</sub> = Control group.

Table 4

*Percent of Sample and Number of Participants by Free and Reduced Priced Lunch*

	Frequency	Percent	Frequency	Percent
	R <sub>1</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>2</sub>
Free and Reduced Lunch	44	61.9%	45	60.0%
Not Free and Reduced Lunch	27	38.0%	30	40.0%
Total	71	100%	75	100%

*Note.* R<sub>1</sub> = Intervention group; R<sub>2</sub> = Control group.

Table 5

*Percent of Sample by Prospective First-Generation College Student Status*

	Frequency	Percent	Frequency	Percent
	R <sub>1</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>2</sub>
PFGCS	59	83.1%	61	81.3%
Non-PFGCS	12	16.9%	14	18.7%
Total	71	100%	75	100%

*Note.* R<sub>1</sub> = Intervention group; R<sub>2</sub> = Control group; Prospective first-generation college student (PFGCS).

**Variables**

**Independent variable.** There was one independent variable with two levels in this study. The independent variable was group: intervention and control. For purposes of this study, the intervention group is defined as participants who participated in North Star. The control group is defined as participants who did participate in North Star.

**Dependent variable.** The dependent variable was college-going self-efficacy. College-going self-efficacy scores were measured by the College-Going Self-Efficacy Scale (CGSES) (Gibbons, 2005). The CGSES has both a total score and a score for each subscale: attendance and persistence.

Relevant theory and literature support the use of college-going self-efficacy as the sole dependent variable in this study. In social cognitive theory (SCT), Bandura (1997) posited that self-efficacy is the most central mechanism of personal agency. In other words, self-efficacy, the belief a human has the capability to accomplish a task, is the most important variable in actually carrying out the task or the action. Specific to college and career, social cognitive career theory (SCCT) posits that self-efficacy mediates college and career related interests, goals, and actions (Lent et al., 1994). Thus, a person's actual attendance and persistence in college is theorized to largely relate to college-going self-efficacy beliefs.

Within the context of SCT and SCCT, there are also other interrelated and reciprocal variables that also explain the dynamic mechanisms of how college interest develops, choices are made, and how the actual outcomes are achieved. These include but are not limited to person inputs, background variables, learning experiences, outcome expectations, and contextual influences (Lent et al., 1994). Including these variables in the study may provide a better understanding of the effects of the college-going intervention on college-going beliefs. However, given that SCT and SCCT posit that self-efficacy is the dominant mediator between all factors and can directly influence outcome expectations as well as interests, goals, and actions, the researcher chose not to include them in this study (see Figure 1 in Chapter 2 on Review of Literature above).

Further, research has found that self-efficacy is not that drastically different from outcome expectations. Gibbons and Borders (2010b) examined the relationships among college-going outcome expectations, using the College-Going Outcome Expectation Scale (Gibbons & Borders, 2005), and college-going self-efficacy, using the College-Going Self-Efficacy Scale, for prospective first-generation college students who were in middle school. In alignment with theory, researchers found that self-efficacy scores were positive and significantly related to positive outcome expectations ( $r = .56$ ). This moderate to strong relationship suggests that they have many overlapping concepts. As a result, only measuring self-efficacy in this study was substantial.

### **Instrumentation**

The instrument used in this study was the College-Going Self-Efficacy Scale (CGSES) (Gibbons, 2005) (see Appendix A). Participants were measured at two time points: pre-intervention (pre-test) and post-intervention (post-test). The College-Going Self-Efficacy Scale provided a valid and reliable measure of college-going self-efficacy. The researcher found the CGSES to be the only valid and reliable instrument in the literature that measures the construct of college-going self-efficacy for middle school students after a thorough literature search on self-efficacy scales.

The college-going self-efficacy scale for middle school students assesses students' belief in their ability to attend and persist in college (Gibbons & Borders, 2010a). Items on the scale reflect finances, academic ability, family, and life skills related to college. There are 15 items that relate to college attendance, the ability to arrive at college, and 15 items that relate to college persistence, the ability to stay in college. This measure is applicable to the experiences of middle school students as it aligns with

literature on self-efficacy regarding the ability to attend and persist in college yet also is appropriate for middle school students (Gibbons & Borders, 2010a). Based on the survey responses of each individual, a mean score for college-going self-efficacy was calculated on the 30 items (between 1-4) with a higher score on the two scales reflecting higher college-going self-efficacy perceptions (Gibbons & Borders, 2010a). An overall group mean score was calculated for both the intervention and the control group for comparisons. A mean score was also calculated for each participant on both the pre-test and the post-test.

The two subscales, college attendance and college persistence, were both reliable ( $\alpha = .89$  and  $\alpha = .90$  respectively) as well as the total scale ( $\alpha = .94$ ), which indicates excellent internal consistency (Gibbons & Borders, 2010a). The scale also has high level of reliability over time ( $\alpha = .88$ ), indicating that the assessment will produce similar scores at two or more points in time given that there is no intervention (Field, 2009). These psychometric properties exist for diverse populations, which adequately reflect the sample in the present study (Gibbons & Borders, 2010a). Further, the scale readability reflects a sixth grade reading level, as measured by the Flesh-Kincaid Grade Level measure found on Microsoft Word (Gibbons & Borders, 2010a).

**Demographic data.** Age, gender, grade, race, and socioeconomic status, which was determined by status in the federal free and reduced lunch program, was pulled from the district-wide student information system, as agreed upon by the district and the researcher (see Appendix B and Appendix C).

**Parent demographic survey.** To determine the percent of prospective first-generation college students who were participants in this study, parents indicated their

highest level of education on a form: less than a high school diploma, a high school diploma/GED, some college, two-year college, four-year university. Prospective first-generation college students are defined in this study as “middle and high school students whose parents lack education beyond high school and who have not yet graduated themselves” (Gibbons & Borders, 2010b, p. 194). The researcher created the form utilized in this study and collected data (see Appendix D).

### **Methods and Procedures**

The College-Going Self-Efficacy Scale (CGSES) (Gibbons, 2005) was administered before the intervention (pre-test) and after the intervention (post-test) to both the control and the intervention group. Using the same instrument two times poses a threat to internal validity because of potential gains in scores attributable to “test-wise” (Gall et al., 2007). However, both groups were equally exposed to the instrument and differential effects should therefore be minimal.

Prior to the start of the study, participants were told that the purpose of the study was to learn more about college-going beliefs of middle school students. They were informed that the study was a part of the researcher’s dissertation and given the opportunity to ask questions. The school district did not require parental consent given that the researcher was also an employee at the participating school and the research was relevant to her work as a professional school counselor. The Institutional Review Board of Seattle Pacific University also approved the study given that the study involved no foreseeable harm (see Appendix E).

The pre-test was given to all participants the week prior to that start of the college-going intervention. The survey was administered to all participants in their intact

classrooms by the researcher. The directions were clearly read out loud by the researcher (see Appendix F) followed by a clear reading of each statement on the scale.

Misunderstandings were clarified including clarification of the vocabulary. Students took the survey using paper surveys and pencils.

The post-test was given the week after the conclusion of the eight-week college-going intervention. Students took the post-test through Google Forms using school chrome books. Although vocabulary was reviewed and questions were encouraged, survey items were not read out loud during the second administration of the survey. Students who were absent were invited to take the survey at another time in the same week. Eight students in the intervention group and eight students in the control group either withdrew from the school or did not complete the surveys due to vacation or other uncontrollable matters. All other students completed both surveys.

**Intervention.** The intervention, North Star, is a psycho-educational college-going mentorship program between university students and an urban middle school. As a part of their school curriculum, middle school students met with a college mentor for one hour during a series of eight weeks to discuss and engage in activities about college. The goal of the program was to promote college-going self-efficacy among middle school students who are potentially prospective first-generation college students. Thus, the program was designed to influence self-efficacy by involving the four sources of self-efficacy: personal performance accomplishments, vicarious learning, social persuasion, and physiological and affective states (Bandura, 1997). The mentors modeled attitudes, motivations, and competencies about college as well as provided affirmations and encouragement of the strengths and capabilities of middle school students. Bandura

(1986, 1997) believed that when a caring, goal directed relationship emerges then self-belief (e.g., college-going self-efficacy) develops. As an intervention embedded in Bandura's sources of self-efficacy, theoretically North Star influences college-going self-efficacy and thus predicts interest, choice, and action related to postsecondary education. The mentors of North Star were committed to providing supportive and caring weekly college dialogue with their mentees.

North Star university mentors were assigned to students based on the facilitator's attempt to match personalities and cultural backgrounds. The facilitator was a teacher at the middle school. Mentors averaged three to four mentees per group. The purpose of matching cultural backgrounds was to give students role models who potentially could be perceived as more relatable. The mentors received a brief orientation, which involved explanation of expectations, role of the mentor, and direction on the types of conversations and activities. Mentors received a curriculum to guide their conversations and activities with their mentees. Mentors had flexibility in the delivery of activities.

### **Data Analysis**

The researcher hypothesized that participating in the college-going intervention would have an effect on college-going self-efficacy. The research question asked whether there were significant differences between the intervention and the control group on college-going self-efficacy. The Statistical Package for Social Sciences (SPSS) was used for data analysis and a significance level of .05 was used for reporting the results.

### **Statistical Model**

Given that this study involved a pre-test and post-test with two comparison groups and one dependent variable, an Analysis of Covariance (ANCOVA) was used. An



ANCOVA is an appropriate statistical analysis when the researcher is interested in comparing the means of at least two groups or categorical predictors on one continuous outcome variable, while also accounting for at least one continuous variable that also has the potential to predict the outcome (Field, 2009). In this study, one independent variable (group) was manipulated in two ways (e.g., intervention and control) and one outcome variable was measured (e.g., college-going self-efficacy), while accounting for the covariate. The pre-test scores on college-going self-efficacy were treated as the covariate and the post-test scores on college-going self-efficacy were treated as the outcome variable.

Arguably a t-test or a mixed factorial Analysis of Variance (ANOVA) could also be used to analyze the data. A t-test is an appropriate statistical analysis when the researcher is interested in comparing two means or looking at the differences between two groups of people on one outcome variable (Field, 2009). In this case, pre-test scores are subtracted from post-test scores and the difference scores are then compared between the two groups (Field, 2009). A statistically significant difference between groups implies that the researcher can reject the null hypothesis because no difference exists between groups, suggesting that the college-going intervention had an effect on college-going self-efficacy. In the case that the results are statistically significant, the statistical analysis is generally followed up with the calculation of an effect size in order to determine whether the effect is substantive. Noteworthy is that the t-test is equivalent to the mixed factorial ANOVA.

The ANCOVA was chosen for this study because it generally is more powerful than the t-test (Field, 2009). Given that participants in this study were not randomized

into the intervention and control group, the ANCOVA is the preferred method to maximize statistical power and provide statistical control. An ANCOVA works to reduce within-group error variance and eliminate potential confounds in the pre-test data. The ANCOVA can resolve problems such as homogeneity of regression or nonlinearity of relationship between pre-test and post-test.

Prior to the statistical analysis, using SPSS, the researcher checked the appropriate assumptions for running a linear model including the assumption that (a) there were no outliers, (b) the differences between scores are normally distributed, and (c) that homogeneity of variance exists (Field, 2009). Existing outliers or normality problems were corrected. Further, the researcher checked the additional considerations when running an ANCOVA including (d) independence of covariate and treatment effect and (e) homogeneity of regression slopes.

### **Summary**

This study sought to determine the effect of a college-going intervention on college-going self-efficacy for a diverse group of middle school students. A quasi-experimental non-equivalent group design was used. The results of the data analysis for the proposed research question and hypothesis posed in this study are reported in Chapter Four. Interpretations of the data results are also included in Chapter Four.

## CHAPTER IV: Results

The purpose of this study was to examine the effect of a college-going intervention on the college-going self-efficacy beliefs of a group of diverse middle school students. In a quasi-experimental non-equivalent group design, seventh grade students either participated in the college-going intervention North Star or the control group. All participants were measured on the dependent variable college-going self-efficacy, which was measured through the use of a survey, the College-Going Self-Efficacy Scale (CGSES) (Gibbons, 2005). This measure was administered prior to the intervention (pre-test) and immediately following the intervention (post-test). Reliability tests indicated that the College-Going Self-Efficacy Scale had a total reliability of .94 across all 30 items. Groups were compared on the dependent variable at post-test to determine if there was a statistically significant difference.

In this chapter, demographic data of the sample is provided. Further, descriptive and inferential statistics were computed to answer the research question: Is there a statistically significant difference on college-going self-efficacy between students who participated in a college-going intervention and students who did not? After the data were analyzed to confirm whether assumptions of an Analysis of Covariance (ANCOVA) were met, an ANCOVA was run and the results were reported. The ANCOVA produced an *F* ratio of between and within-group differences after controlling for the covariate (pre-test). Tests of statistical significance were analyzed at the .05 level.

### Demographic Data

Seventh grade students (non-special education, non-emergent ELL, non-honors) from one diverse middle school located in a large urban school district in the Pacific

Northwest were the sample in this study. A total of 146 students completed the necessary requirements and therefore were included in the analysis of this study. Sixteen participants were excluded from the analysis due to incomplete data: eight students from the intervention group and eight students from the control group. There were no other missing data.

The school district's student information system supplied the following demographic data: gender, race/ethnicity, and low-income status of the family. Prospective first-generation status was acquired through a parental survey. As shown in Table 6, 75 participants were male (51.4%) and 71 were female (48.6%). Of this sample, 33.3% identified as Hispanic/Latino (n = 49), 29.5% identified as White (n = 43), 19.1% Black/African American (n = 28), 16.4% Asian American/Pacific Islander (n = 24), and 1.4% identified as Other (n = 2). A majority of the students' families qualified as low-income (60.9%). Further, a total of 82.19% of the participants were prospective first-generation college students, or students who would be first in their family to attend and complete a four-year bachelor's degree (Pike et al., 2014; Stephens et al., 2014). In seven cases the parent survey was incomplete, making specific educational status not available for all participants. Overall, demographic information is relatively similar between the control and intervention group.

Table 6

*Number and Percentages of All Participants Including Intervention and Control Groups by Gender, Race, Low-Income Status, and First-Generation Status*

Characteristics	All Participants N = 146	Intervention Group n = 71	Control Group n = 75
<b>Gender</b>			
Male	75 (51.4)	36 (50.7)	39 (52.0)
Female	71 (48.6)	35 (49.3)	36 (48.0)
<b>Race</b>			
Hispanic/Latino	49 (33.3)	24 (33.8)	25 (33.3)
White	43 (29.5)	24 (33.8)	19 (25.3)
Black/African American	28 (19.1)	13 (18.3)	15 (20.0)
Asian American/Pacific Islander	24 (16.4)	9 (12.7)	15 (20.0)
Other	2 (1.4)	1 (1.4)	1 (1.3)
Low-income	89 (60.9)	44 (70.0)	45 (60.0)
First-generation (PFGCS)	120 (82.2)	59 (83.1)	61 (81.3)

*Note.* Percentages are shown in parentheses; percentages are rounded and do not always add to 100; PFGCS counts do not include the seven students who had incomplete data.

### **Raw Data Analysis**

**Descriptive statistics.** Overall measures of the College-Going Self-Efficacy Scale (CGSES) (mean, median, minimum, maximum, range, std. deviation, kurtosis, skewness) were calculated for all participants, the intervention group, and the control group (see

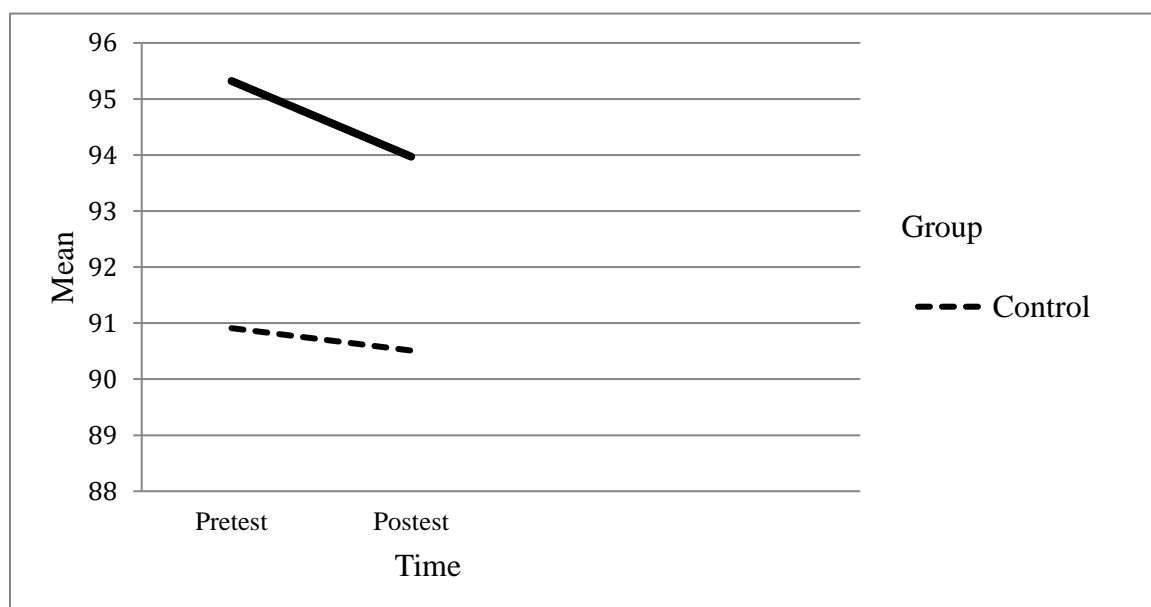
Table 7). The CGSES had a possible range of 30-120. For all participants, the mean score for the pre-test was 93.05 ( $SD = 14.22$ ) and the mean score for the post-test was 92.19 ( $SD = 16.60$ ). The mean score for the control group on the pre-test was 90.91 ( $SD = 14.95$ ) and was 90.51 ( $SD = 17.87$ ) on the post-test. For the intervention group, the mean score on the pre-test was 95.32 ( $SD = 13.14$ ) and 93.97 on the post-test ( $SD = 15.06$ ). However, these means must be interpreted with caution. They do not inform whether an effect exists. The finding that is most important in this study is whether there is a statistically significant difference between groups on the post-test after controlling for pre-existing differences (pre-test).

Table 7

*Descriptive Statistics by Group*

	All Participants		Intervention Group		Control Group	
	N = 146		n = 71		n = 75	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Mean	93.05	92.19	95.32	93.97	90.91	90.51
Median	95.00	93.00	97.00	93.00	92.00	92.00
Minimum	53.00	44.00	66.00	63.00	53.00	44.00
Maximum	120.00	120.00	117.00	120.00	120.00	120.00
Range	67.00	76.00	51.00	57.00	67.00	76.00
Std. Deviation	14.22	16.60	13.14	15.06	14.95	17.87
Kurtosis	-.20	-.32	-.61	-.76	-.06	-.28
Skewness	-.43	-.33	-.42	-.19	-.36	-.33

The difference in mean scores across the pre-test and post-test are presented in Figure 2. The mean scores of the control group remained relatively the same between pre-test and post-test,  $M = 90.91$  and  $M = 90.51$  respectively. However, the mean scores of the intervention group decreased between the pre-test and post-test,  $M = 95.32$  and  $M = 93.97$  respectively. Again, these means are preliminary as they have not yet been adjusted for the covariate and therefore must be interpreted with caution.



*Figure 2.* Line graph displaying raw data group means across levels of testing. This figure depicts the difference in mean scores on college-going self-efficacy across pre-test and post-test for the intervention and the control groups.

A closer look at the descriptive statistics revealed an elevated error of variance apparent in the intervention group (see Table 7). The range and minimum scores between the intervention and control groups significantly differ across both levels of testing. However, the maximum statistic between groups across each level appeared comparable.

**Data snooping.** Prior to computing descriptive and inferential statistics, the data set was scanned for missing scores and potential outliers. To run a linear model, it is assumed that there are no existing outliers and that missing scores are accounted for (Field, 2009). Due to the elimination of participants who did not accurately complete both the pre-test and post-test, only three cases of missing data were found. The missing scores were replaced with the mean score of the item, or the average score for all participants on that question. Eight participants were excluded from the intervention group ( $n = 71$ ) and eight participants were excluded from the control group ( $n = 75$ ) due to incomplete surveys. No outliers were noteworthy.

**Parametric assumptions and suitability.** The data set was analyzed to determine if parametric assumptions were met for the analysis of an ANCOVA. An ANCOVA assumes that the differences between scores are normally distributed, there are no outliers, linearity, homogeneity of variance, independence of covariate and treatment effects, and homogeneity of regression slopes (Field, 2009).

The data in Tables 7-8 show that total scores for the pre-test (covariate) met the assumptions of normality. Total pre-test scores ( $M = 93.05$ ,  $SD = 14.22$ ) revealed normally distributed data. Both skewness (-0.43) and kurtosis (-0.20) fall between plus and minus one. The Kolomogorov-Smirnov test of normality also revealed that the control group data,  $D(75) = .08$ ,  $p = .20$ , and intervention group data,  $D(71) = .09$ ,  $p = .20$ , maintained acceptable normality on the pre-test ( $p > .05$ ).



Table 8

*Tests of Normality*

		Kolmogorov-Smirnov			Shapiro-Wilk		
	Group	Statistics	df	Sig.	Statistic	df	Sig.
Pretest	Control	.08	75	.20 <sup>a</sup>	.98	75	.27
	Intervention	.09	71	.20 <sup>a</sup>	.96	71	.04
Posttest	Control	.07	75	.20 <sup>a</sup>	.98	75	.15
	Intervention	.08	71	.20 <sup>a</sup>	.97	71	.06

<sup>a</sup>This is a lower bound of the true significance.

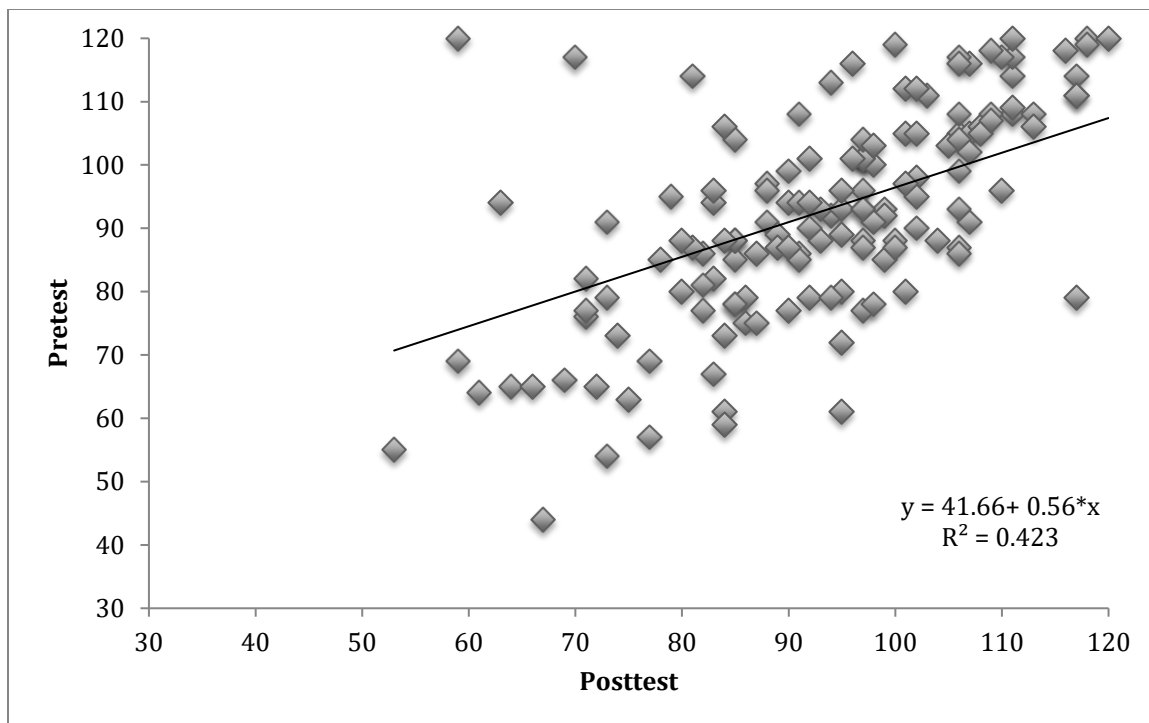
The data in Table 8 show that the total scores from the post-test met the assumption of normality. The total post-test scores ( $M = 92.20$ ,  $SD = 16.60$ ) revealed normally distributed data. Skewness (-0.318) and kurtosis (-0.317) fell between plus and minus one. The Kolmogorov-Smirnov test of normality revealed that both the control group,  $D(75) = .065$ ,  $p = .20$ , and intervention group,  $D(71) = .08$ ,  $p = .20$ , data maintained acceptable normality on the post-test ( $p > .05$ ).

According to the Shapiro-Wilk Test of Normality (see Table 8), data for the intervention group on the pre-test was not normally distributed ( $p < .05$ ). Given that the data for the intervention group was not normally distributed, researchers recommend that parameter estimates such as the mean be interpreted cautiously (Field, 2009). A violation of normality may considerably reduce the power of an ANCOVA (Field, 2009). However, due to an adequate sample size ( $N = 146$ ) it is assumed that the sampling distributions of the pre-test intervention mean are normally distributed. The central limit

theorem posits that parameter estimates of a population will have normal distribution if the sample is large enough and thus test-statistics inferred from significance testing are assumed to be accurate (Field, 2009). Gall, Gall, and Borg (2007) suggested that in comparative research there should be at least 15 participants in each group, well below the sample size in this study.

Additionally, results from priori analysis of statistical power for an ANCOVA indicated that a sample size of  $N = 146$  is adequate. In social science research, a common convention is to get enough data to have 80% power (Gall et al., 2007). To determine how many participants were needed to detect a medium effect size (.25) with 80% power and an alpha set at .05, a G\*Power statistical analysis for an ANCOVA was run and the results found that a sample size of  $N = 128$  is necessary to meet those requirements, which is below the sample size used in this study.

Further, inspection of a bivariate scatterplot between the covariate (pre-test) and post-test scores (dependent variable) (see Figure 3) revealed that the covariate and the post-test scores have a linear relationship. A straight line is observed in Figure 3 indicating a linear relationship between the dependent variable (post-test) and the covariate (pre-test).



*Figure 3.* Pre-test and post-test scatterplot. This figure depicts a linear relationship between pre-test and post-test scores on college-going self-efficacy.

A regression analysis (see Table 9) between the covariate and post-test scores also revealed a moderate positive correlation between the covariate and post-test scores ( $r = .65$ ) (Gall et al., 2007). Linear relationships were also observed when group membership was included as a predictor in the regression analysis ( $r = .65$ ).

Table 9

*A Model Summary of Regression Analysis of Pre-test and Post-test Scores*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.65 <sup>a</sup>	.42	.42	12.65
2	.65 <sup>b</sup>	.42	.42	12.70

<sup>a</sup>Predictors: (Constant), pre-test.

<sup>b</sup>Predictors: (Constant), pre-test, group.

To test the assumption of homogeneity of variance, a Levene's Test of Equality Error Variance was performed. For both pre-test scores,  $F(1, 144) = .49, p = .47$ , and post-test scores,  $F(1, 144) = 1.4, p = .24$ , a statistically significant finding was not obtained. As a result, homogeneity of variance could be assumed (see Table 10).

Table 10

*Test of Homogeneity of Variance: Levene's Test of Equality Error Variance Based on Mean*

	Levene Statistic	Df1	Df2	Sig.
Pre-test	.49	1	144	.47
Post-test	1.4	1	144	.24

*Note.* Homogeneity of Variance is assumed when there is no statistical significance.

In order to determine independence of the covariate and treatment effect, or whether the two groups differ on the covariate, an ANOVA was run (see Table 11). Specifically, the covariates (pre-test scores) were tested to determine if they were equal across the control and intervention groups. There was no statistically significant

difference between groups on pre-test scores,  $F(1, 144) = 3.58, p = .06$ , suggesting that the groups do not differ on the covariate and therefore independence of the covariate and treatment effect can be assumed.

Table 11

*ANOVA Output of Pre-test Scores to Determine Independence of the Covariate and Treatment Effect*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	711.67	1	711.67	3.58	.06
Within Groups	28615.90	144	198.72		
Total	29327.56	145			

*Note.* Independence of the covariate and treatment effect is assumed when there is no statistical difference.

Finally, the assumption of homogeneity of regression slopes was tested (see Table 12). Using a univariate general linear model, the researcher found that there was a statistically significant difference between the slopes of the regression lines for the two groups,  $F(2, 143) = 52.48, p = .00$ . The slopes were non-equivalent, violating the assumption of an ANCOVA. This suggests that potential intervention effects may not be the same across various levels of the covariate. This is problematic because researchers could conclude that there are no differences on the dependent variable when in reality differences exist.

Table 12

*Tests of Between-Subjects Effects to Determine Homogeneity of Regression Slopes and ANCOVA*

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	16904.39 <sup>a</sup>	2	8452.20	52.48	.00
Intercept	1506.42	1	1506.42	9.35	.00
Group	.47	1	.47	.00	.96
Pretest	16466.45	1	16466.45	102.24	.00
Error	23032.24	143	161.07		
Total	1280838.00	146			
Corrected Total	39936.63	145			

*Note.* Dependent Variable: Post-test.

<sup>a</sup>R Squared = .423 (Adjusted R Squared = .415).

### **Inferential Statistics**

The research question asks if there is a difference between students who participated in the college-going self-efficacy intervention and those who did not participate on college-going self-efficacy following the intervention. An ANCOVA was used to compare the means of the two groups on college-going self-efficacy after controlling for the covariate (see Table 12).

Results suggested that the covariate, college-going self-efficacy pre-test scores, were significantly related to college-going self-efficacy post-test scores,  $F(1, 145) =$

102.24,  $p = .00$ ,  $r = .65$ . As college-going self-efficacy pre-test scores increase so does college-going self-efficacy post-test scores. Further, results indicated that there was no significant effect of the group on the post-test scores after controlling for potential effects of the pre-test scores,  $F(1, 143) = .00$ ,  $p = .96$ ,  $\eta^2 = .00$ .

### **Follow Up Analysis**

While there was no statistically significant difference between the intervention and control group on the college-going self-efficacy post-test after controlling for the covariate, the researcher posed a follow up question of whether there would be a difference between groups on the attendance and persistence subscales of the College-Going Self-Efficacy Scale (Gibbons, 2005). An ANCOVA was run to compare the post-test means of the two groups while controlling for the covariate on both the attendance scale and the persistence scale (see Tables 13-14).

The researcher found that the covariate, attendance pre-test scores, were significantly related to attendance post-test scores,  $F(1, 145) = 45.05$ ,  $p = .00$ ,  $r = .41$ . There was a non-significant effect of the group on attendance self-efficacy post-test after controlling for the effect of the covariate,  $F(1, 143) = .61$ ,  $p = .44$ . Further, the covariate, persistence pre-test scores, were significantly related to persistence post-test scores,  $F(1, 145) = 39.78$ ,  $p = .00$ ,  $r = .47$ . There was also a non-significant effect of the group on persistence self-efficacy post-test after controlling for the effect of the covariate,  $F(1, 143) = .22$ ,  $p = .64$ . These results suggest that there is no statistically significant difference between groups on the subscales of the College-Going Self-Efficacy Scale.

Table 13

*ANCOVA: Tests of Between-Subjects Effects by Group on Attendance Subscale*

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	1569.15 <sup>a</sup>	2	184.57	14.66	.00
Intercept	2934.67	1	2934.67	54.84	.00
AttendPre-test	1463.427	1	32.52	45.05	.436
Group	32.64	1	32.64	.61	.44
Error	76.53.02	143	53.52		
Total	312116.00	146			
Corrected Total	9222.16	145			

<sup>a</sup>R Squared = .17 (Adjusted R Squared = .16)



Table 14

*ANCOVA: Tests of Between-Subjects Effects by Group on Persistence Subscale*

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	2124.35 <sup>a</sup>	2	1062.17	20.62	.00
Intercept	1989.93	1	1989.93	38.62	.00
PersistPre-test	2049.86	1	2049.86	39.78	.00
Group	11.33	1	11.33	.22	.64
Error	7367.60	143	51.52		
Total	382738.00	146			
Corrected Total	9491.95	145			

<sup>a</sup> R Squared = .22 (Adjusted R Squared = .21)

Given that there was no effect of the intervention on college-going self-efficacy in this sample, the researcher also asked whether there was an effect of ethnicity on college-going self-efficacy for the participants in the intervention group. In order to compare the college-going self-efficacy post-test means of the four different ethnic groups, while accounting for the pre-test scores as the covariate, the researcher ran an ANCOVA (see Table 15). Prior to the analysis, all assumptions were met for an ANCOVA except for the assumption of homogeneity of regression slopes. A regression analysis determined that the covariate, college-going self-efficacy pre-test scores, were significantly related to college-going self-efficacy post-test scores,  $F(1, 71) = 45.05$ ,  $r = .65$ . However, the

ANCOVA analysis revealed a non-significant effect of levels of ethnicity on the college-going self-efficacy post-test after controlling for the covariate,  $F(3, 71) = .05, p = .98$ .

Table 15

*ANCOVA: Tests of Between-Subjects Effects by Ethnicity of the Intervention Group*

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	6512.30 <sup>a</sup>	4	1628.08	11.48	.00
Intercept	673.42	1	729.05	5.14	.03
Pretest	10065.30	1	6386.91	45.05	.00
Ethnicity	160.77	3	7.30	.05	.98
Error	13478.07	66	141.78		
Total	637988.00	71			
Corrected Total	23628.75	70			

<sup>a</sup> R Squared = .410 (Adjusted R Squared = .375)

Further, in order to determine if the College-Going Self-Efficacy Scale was a reliable scale in this study, the researcher calculated Cronbach's Alpha, a reliability measurement (Field, 2009). Given that participants filled in the multi-item scale more than one time the researcher calculated Cronbach Alpha scores for the pre-test and the post-test of each subscale as well as the total scale. Reliability measurements are reported in Table 16 for the Total College-Going Self-Efficacy Scales as well as the attendance and persistence subscales. Cronbach Alpha values around .8 are considered good and .9 are excellent (Field, 2009). These results suggest that the scale and subscales used in this study are

consistent. It also suggests that the College-Going Self-Efficacy Scale is appropriately used with the sample in this study.

Table 16

*Cronbach's Alpha for Total College-Going Self-Efficacy Scale, Attendance Subscale, and Persistence Subscale by Pre-test and Post-test*

	Pre-test (N = 146)	Post-test (N = 146)
Attendance (n = 15)	$\alpha = .85$	$\alpha = .93$
Persistence (n = 15)	$\alpha = .89$	$\alpha = .91$
Total (N = 30)	$\alpha = .87$	$\alpha = .91$

### **Summary**

A one-way ANCOVA was computed in order to test the research hypothesis. The hypothesis that there was no statistically significant difference between the intervention and the control group was not rejected. A significant effect of the intervention on college-going self-efficacy was not found.

Data were analyzed prior to the statistical analysis in order to ensure that parametric assumptions have been met for an ANCOVA. Descriptive statistics were reported in Tables 6-7 and Figure 1. Kolmogorov-Smirnov test of normality as well as descriptive statistics revealed normally distributed data (see Table 8). A bivariate scatterplot and regression analysis revealed a moderate to strong relationship between pre-test and post-test indicating linearity (see Figure 2). Linearity was also assessed through a regression analysis (see Table 9). Levene's Test of Equality of Error Variance was performed to assess the assumption of homogeneity of variance (Table 10). An ANOVA was also ran to determine independence of the covariate and treatment effect

(see Table 11). Further, the assumption of homogeneity of regression slopes was tested (see Table 12). All assumptions were met with the exception of equal slopes of the regression lines across groups. This poses a problem because the presence of an interaction effect implies that the treatment effects may not be the same between groups on the pre-test. The researcher may erroneously conclude that there is no difference between groups on the pre-test when in reality there is.

The obtained data did not support the hypothesis and therefore the null was not rejected. Overall, students in the intervention group did not have different scores on the post-test compared to the students in the control group after controlling for the covariate. Further analyses revealed that there was also no effect of group on college-going self-efficacy by subscale for the total sample or effect of ethnic group on college-going self-efficacy for the intervention group. In addition, the total scale and subscales of College-Going Self-Efficacy were found to be reliable measurements.

A discussion of the limitations of this study and the practical significance of the results are provided in the following chapter. The purpose and methodology is summarized and suggestions for future research are presented.

## **Chapter V: Discussion and Recommendations for Research and Practice**

The following chapter focuses on a discussion of the results, implications of the findings, limitations of the study, and a discussion for future directions of research.

Chapter Five is divided into the following sections: summary of research, methods and procedures, summary of findings, discussion of results, implications for practice, implications for research, and conclusion.

### **Summary of Research**

The main purpose of this study was to investigate the effect of a college-going intervention on the college-going self-efficacy of a group of adolescents. Specifically, the research question focused on whether there was an effect on college-going self-efficacy following participation in North Star, an eight week college-going mentorship between university students and middle school students. The practical aim of this study was to determine whether the intervention could potentially support attendance and persistence in postsecondary education for middle school students.

Two theories, social cognitive theory (SCT) (Bandura, 1987) and social cognitive career theory (SCCT) (Lent et al., 1994), largely provided support for the design, implementation, and research of college-going interventions. In alignment with SCT and SCCT, an increase in college-going self-efficacy can effectively increase college-going interest, choice, and behavior. A person can achieve what they expect to achieve. Lent et al. (1994) and Lent and Brown (1996) suggested that people who feel competent in an activity and anticipate positive results when pursuing an activity can develop a sustained interest in the activity that eventually leads to goal-setting behavior. This competency is developed through repetition, modeling, and positive feedback when given by someone

the person values. It is this dynamic reciprocal mechanism that develops career and college interest. Thus, interventions that promote college-going self-efficacy, or a person's belief in his/her ability to attend and persist through college, should theoretically support student attendance and persistence in postsecondary education.

A review of self-efficacy literature also provides support for further research that examines the influence of college-going interventions on college-going self-efficacy. Researchers have found self-efficacy beliefs to consistently affect career and educational choice (Fouad & Smith, 1996) as well as interests and goals (Lent et al., 2003a; Nauta & Epperson, 2003). Promising results have derived from career interventions and the positive effects they have on career self-efficacy and career decision-making self-efficacy for high school students (Chiesa et al., 2016; Kraus & Hughey, 1999; McWhirter et al., 2000; O'Brien et al., 2000) and middle school students (Mitcham et al., 2012; Turner & Lapan, 2005; Vervecken & Hannover, 2015). Two studies have specifically studied the effects of college-going interventions on college-going self-efficacy (Hamel, 2015; Jensen, 2013). However, additional research is needed on self-efficacy interventions, specifically research on college-going mentorship as a college-going intervention.

The college-going intervention North Star was designed and implemented within the context of Bandura's (1997) four sources of self-efficacy influencers (e.g., vicarious learning, social persuasion, personal performance accomplishments, and physiological affective states). Throughout the eight weeks students met with university mentors to discuss and engage in activities related to college. Activities centered on supporting student growth in their beliefs of their ability to go to college, increasing knowledge about college, eliminating potential perceived barriers, and helping students set college-

going goals. Previous research suggested that interventions constructed within the context of these self-efficacy influencers have positive effects on self-efficacy (Fouad et al., 2009; Reese & Miller, 2006; Scott & Ciani, 2008). Thus, this study hypothesized that North Star would affect the college-going self-efficacy of the participants in the study.

However, this study is also a stand-alone study given that the college-going intervention involved in the study involves college-going self-efficacy and does not focus on career decision-making self-efficacy, a different yet correlated construct. Further, North Star involved a mentorship component in which university students that guide the eight-week college-going intervention are volunteers. Thus, the present study is unique and greatly needed in order to fill some of the gaps in literature.

### **Methods and Procedures**

This investigation was driven by the research question of whether a college-going intervention had an effect on the college-going self-efficacy of a diverse group of adolescents. Specifically, the researcher tested whether there was a statistically significant difference on college-going self-efficacy at post-test between students who participated in a college-going intervention and students who did not.

In quasi-experimental non-equivalent group design, the independent variable was group with two levels: participation in North Star versus no participation in North Star. The dependent variable was college-going self-efficacy measured by the College-Going Self-Efficacy Scale (Gibbons, 2005). This measure was administered prior to the intervention (pre-test) and immediately following the intervention (post-test). Inferential statistics were derived from a one-way Analysis of Covariance (ANCOVA). Tests of statistical significance were analyzed at the .05 level.

### **Summary of Findings**

Overall, the results of the study found that there was no statistically significant difference on college-going self-efficacy between participants who participated in the intervention and participants who did not following the conclusion of the eight-week college-going mentorship intervention. A one-way ANCOVA revealed no significant effect of group on the post-test scores after controlling for the effects of the pre-test scores  $F(1, 143) = .00, p = .96$ . Thus, the hypothesis that there would be no difference between groups was not rejected. The hope that the North Star college-going mentorship intervention would have an effect on the college-going self-efficacy of middle school students warrants further investigation. The results from this study suggest that the college-going intervention may not be effective in influencing future attendance and persistence in postsecondary options through the mechanism of self-efficacy.

### **Discussion of Results**

The results of this present study did not support the findings and hypotheses of recent studies that interventions derived from self-efficacy influencers have the potential to enhance self-efficacy (Fouad et al., 2009; Reese & Miller, 2006; Scott & Ciani, 2008). In researching the effect of a career development course on career decision-making self-efficacy of 96 undergraduate students, Reese and Miller (2006) found a statistically significant difference between the intervention and control groups on college-going self-efficacy at post-test,  $F(1, 94) = 6.41, p = .013$ . Scott and Ciani (2008) also found a significant effect of a career exploration course on the career decision-making self-efficacy of another group of undergraduate students,  $F(5, 82) = 20.22, p < .001$ . Career decision-making self-efficacy also significantly increased for a group of undergraduate



participants in a career course following the study by Fouad et al. (2009),  $F(1, 54) = 17.47, p < .001$ .

The results of the present study also did not align with the findings and hypotheses of self-efficacy intervention studies with adolescents. O'Brien et al. (2000) found that there was a statistically significant difference between intervention and control groups on the career decision-making self-efficacy for a sample of 48 African American adolescents after participating in an Upward Bound career exploration program,  $F(1, 48) = 7.64, p = .01$ . Effects on career-decision making self-efficacy were also found as a result of a nine-week career education class for a group of 166 high school sophomores (McWhirter et al., 2000). A multivariate analysis of variance (MANOVA) with a repeated measure factor found effects for time,  $F(2, 322) = 21.53, p < .001, \eta^2 = .21$ , and for treatment X time,  $F(2, 322) = 9.89, p < .001, \eta^2 = .14$ , indicating that the intervention had an overall effect on career decision-making self-efficacy of participants. Further, in their research exploring the effects of a career intervention on the career decision-making self-efficacy of 280 Italian high school students, Chiesa et al. (2016) found a slight increase in mean score on college-going self-efficacy between pre-test ( $M = 3.12$ ) and post-test ( $M = 3.18$ ), suggesting that the intervention had a small effect on career decision-making self-efficacy.

Additionally, the results of the current study did not support findings from Hamel's (2015) dissertation study that measured the effect of a college-going intervention on college-going self-efficacy for a group of adolescents. The college-going intervention program, Career Horizon Summer Program (CHSP), aimed at expanding postsecondary opportunities for low-socioeconomic status, prospective first-generation

college students and students of color who recently completed the sixth grade. Hamel (2015) found a statistically significant difference between pre-test and post-test means on college-going self-efficacy,  $F(1, 20) = 38.06, p < .05$ , for participants in CHSP. Hamel concluded that college-going interventions have the potential to influence postsecondary attendance and persistence.

The findings of this study did however align with the mixed results from Jensen's (2013) dissertation that looked at the effects of a college-going intervention on the college-going self-efficacy of rural fifth grade students. The researcher measured the effects of the *I'm Going to College Curriculum* (Jensen, 2013) on six items of the College-Going Self-Efficacy Scale (Gibbons, 2005). Of the six items, three of the items increased significantly in mean values of college-going self-efficacy. There was no significant difference between means on the pre-test and post-test for the other three items.

Given that the findings of the present study contrast with existing theories and previous research, more research is needed to reconcile the differences. Potential limitations and alternative explanations of the outcomes are explained below.

### **Limitations**

Based on previous research and current theories, the findings in this present study overall countered the results of previous research and theory. Thus, it is speculated that the non-significant effect of North Star on the college-going self-efficacy of the diverse group of middle school students could have alternative explanations. The non-significant results of college-going self-efficacy may be explained by the limitations in (a) the design and sampling of the study; (b) data analysis; and (c) the procedures of the study.

Sampling challenges, measurement challenges, procedural issues, confounding variables, and alternative variables are discussed below.

**Design and sampling.** The present study was a quasi-experimental non-equivalent group research design. A quasi-experimental design is appropriately used when better designs such as the experimental design are not feasible (Gall et al., 2007). Quasi-experimental designs are used when randomization of participants into the control and intervention groups are not possible yet a comparison or control group is possible (Campbell & Stanley, 1963). However, due to non-randomized comparison groups, the quasi-experimental design can present challenges to internal and external validity, some of which may be applicable to this study. Further, while utilizing a pre-test post-test design does strengthen the amount of experimenter control in the study, it also poses some internal validity challenges.

A significant potential threat to internal validity was selection bias. As a quasi-experimental design study, participants were not randomly selected into the intervention and the control groups. Participants were involved in the study due to their membership in seventh grade general education classrooms in one urban diverse and predominately low-income school where North Star was implemented. Given that classrooms constitute natural assembled groups and there was no random assignment, it may be possible that the two comparison groups are different on variables that have the potential to confound the results (Campbell & Stanley, 1963). In this study, differences on the mean between the pre-test scores for the control group ( $M = 90.91$ ) and the intervention group ( $M = 95.31$ ) suggest that the two groups may be dissimilar prior to the onset of the study. Treating the pre-test as a covariate in the statistical analysis does reduce the effects of

potential confounds in the pretest data. However, this analysis does not reduce error for other potential differences between the intervention and the control group at the onset of the study, which could have an effect on the results.

Maturation of subjects was another potential threat to internal validity. Maturation is the process of natural changes in the subjects that occur due to the passage of time (Campbell & Stanley, 1963). Examples of maturation in the short term include mood, inattention, boredom, or tiredness. In the long term, changes such as getting older or becoming more educated could have an effect. The lack of gains on the mean of college-going self-efficacy by the intervention group might be part of some sophisticated maturation that negatively countered the potential effects of the college-going intervention. It could be that the intervention group matured more in negative moods, inattentiveness, tiredness, or boredom than the control group and that this maturation impacted the post-test results of the intervention group.

A significant potential threat to the study's internal validity was history. The pre-test was administered to both the control and the intervention groups at the same time. Post-test data were collected at the end of the intervention eight weeks later. Given the long intervening time between pre-test and post-test, it is possible that a specific event that impacted the subjects occurred during this time (Campbell & Stanley, 1963). The lack of differences in the pre-test and post-test scores between groups could be due to an event or events that took place between the pre-test and post-test that affected one or both of the groups. It may be impossible to know what events may have influenced the ideas or beliefs of the students. The researcher was not aware of any broad school or local community events that had a potential impact on participants. However, on a national

level, the presidential election of 2017 may be worth noting as a historical event that may have had the potential to influence the results of this study. On Tuesday November 8<sup>th</sup>, Donald Trump was elected as the nation's 45<sup>th</sup> president. During this time fear ensued in immigrant communities about their status as citizens and rights to stay in this country as Trump declared action to end programs such as Dreamers, which allowed DACA status to persons who came to the country illegally as a child. Related to education, university students feared that they would no longer be allowed to attend college. In secondary education, students lost hope about future access to postsecondary education. The lack of difference between pre-test and post-test on college-going self-efficacy could have largely been impacted by this prospect.

Another potential threat to internal validity was testing. The results of a test may be impacted by the mere participation in the same test before such as when the pre-test and the post-test are the same (Campbell & Stanley, 1963). Given that the measure College-Going Self-Efficacy Scale (Gibbons, 2010a) was given to participants twice, they may have become fatigued by the test or bored by the content, which would impact the results. Fatigue and boredom may have been further exacerbated due to the simultaneous administration of two additional surveys at pre-test and post-test that were not utilized in this present study.

Mortality was also a possible threat to internal validity. Studies that involve school children are often challenged by attrition rates due to a large amount of students who leave school, especially in low-income communities (Gall et al., 2007). While retention in the program did not appear to be a problem and mortality was minimal, there were eight students in the control group and eight students in the intervention group who

did not complete both the pre-test and the post-test and were eliminated from analysis. Students moved away and changed schools, potentially impacting the overall results of the study.

Finally, diffusion of treatment was also a potential threat to internal validity. Diffusion of treatment can occur when participants in the intervention group are in close proximity to participants in the control group thereby increasing the chance that the effects of the intervention were diffused to the control group (Gall et al., 2007). In this study, the control group could have been contaminated simply by students in the intervention group talking about North Star outside the intervention time such as in the lunch room or in the community where the two groups would have contact. This is highly possible considering that the study took place in a school where the seventh graders have time to interact with one another outside of their general education classrooms.

One potential threat to external validity in this study was interaction effect of testing and treatment. Given that this study is a pre-test and post-test design, it could be that the pre-test decreased the sensitivity of the participants to the intervention, which would make the results unrepresentative of the true non-tested population (Campbell & Stanley, 1963). This may make generalizability to a larger population difficult.

Further, generalizability may be challenged due to use of a non-randomized sample. Many researchers assert that inferential statistics do not have meaningful interpretation in non-randomly selected samples (Gall et al., 2007). However, inferential statistics may maintain value when used with convenience samples if the sample is conceptualized cautiously and the results are generalized only to populations similarly described in the study (Gall et al., 2007).

The use of the College-Going Self-Efficacy (CGSES) scale also added some additional challenges to this study. Scaling questions are measurements of attitudes, beliefs, and opinions that measure degree of agreement (Gall et al., 2007). While Gibbons and Borders (2010a) found that the CGSES is reliable ( $\alpha = .94$ ) and consistent ( $\alpha = .88$ ) for adolescents, the researcher questions whether individuals in the sample have sufficient knowledge to both understand as well as express an opinion about the topic, an important component in scale reliability and validity (Gall et al., 2007).

First, one limitation is based on the premise that the CGSES may be too difficult for some middle school students to read. Gibbons and Borders (2010a) found that the scale is reliable ( $\alpha = .94$ ) and consistent ( $\alpha = .88$ ) for students from diverse backgrounds reading at a sixth grade level, a sample comparable to the sample in this study. Results from an analysis in this study also found the scale to be reliable at pre-test ( $\alpha = .87$ ) and post-test ( $\alpha = .91$ ). However, given that this study was done with seventh grade students, it is possible that a large percent of them do not read at the sixth grade level. At the time of the study, about 48.6% of the students met the standard in reading on the Smarter Balance Assessment, the Washington State standardized assessment. This suggests that a large percent of the students may not comprehend sixth grade reading even in the seventh grade, which could potentially confound the results.

Second of all, another limitation could be that middle school students are not yet ready to comprehend the topic of college and therefore cannot form a valid opinion about it. The mean scores of the control group ( $M = 90.91$ ) and the intervention group ( $M = 95.31$ ) in this study on the pre-test suggest that students had high self-efficacy beliefs at the onset of the study. In general, participants in both groups had strong beliefs in their

ability to attend and persist in college. If students understood more about college, including potential barriers and challenges, would they have the same perceptions? Could it be that middle school is too early to measure self-efficacy as a predictor of postsecondary attendance and persistence? Given that the items on the scale were related to potential barriers that could get in the way of college access (e.g., college tuition, acceptance, support, academic ability, etc...) and persistence (e.g., get good grades, pay each year, set own schedule, etc...), participants in the study may not have had enough background knowledge about college and postsecondary options to formulate an opinion about their own abilities. It could be that adolescence is too early to measure self-efficacy. It is possible that other variables, such as outcome expectations, may be a better variable to measure as a predictor of postsecondary attendance and persistence at the stage of adolescence.

Further, the CGSES may also limit the results of the study because it may not capture “self-efficacy.” College-going self-efficacy is a person’s belief in his/her ability to go to college and persist in college once there (Gibbons, 2005). The items on the attendance scale are stated in the “I can” format while the items on the persistence scale are stated in the “I could” format. Instead of asking how sure students are that they would be capable to do the items on the scale, a modified survey that states “I know how” may better capture self-efficacy.

The administration procedures of the CGSES were also a limitation. While the pre-test was read out loud to all participants and the researcher clarified with the participants any misunderstandings, the post-test was not done in the same way. It was assumed that students understood the questions and the facilitator did not read the



questions out loud. Students were given the instructions, the more challenging and difficult vocabulary was reviewed, and students were allowed to take the post-test at their own pace. Administering the survey utilizing two different procedures challenges the uniformity of the procedures in this study (Gall et al., 2007). It could be that the results of the study are confounded by this difference in survey administration.

The scarcity of research done on the construct college-going self-efficacy is also a limitation in this study. Career decision-making self-efficacy and other career related constructs are far more researched and prominent in literature. Much of the literature that supports the design and implementation of the present study was also done with the construct career decision-making self-efficacy. However, this major limitation also adds value to the design and implementation of the current study, especially considering the importance of postsecondary attendance and persistence among minorities, low socioeconomic statuses, and prospective first-generation college students.

Further, this study is limited by lack of follow up to determine if college-going self-efficacy developed over time following the conclusion of the intervention. Measuring and analyzing college-going self-efficacy at a later time such as eight weeks following the intervention may have elicited an effect on college-going self-efficacy. While research on mentorship and self-efficacy has not supported effects on self-efficacy at a later follow up time (Radcliffe & Bos, 2011), research with other curriculum-based interventions on career development has supported the effect of self-efficacy across time (Nauta & Epperson, 2003). Further, it could be that the effects of North Star could become visible with more time. It may be that the post-test means on college-going self-efficacy first go down and then go up. Not measuring college-going self-efficacy at a

later follow up time greatly limits the researcher's ability to infer changes in self-efficacy across time.

Additionally, a major limitation of the study is the lack of longevity. The study took place over eight weeks, greatly limiting potential benefits offered by longer-term mentorship (Deutsch & Spencer, 2009; Rhodes, Schwartz, Willis, & Wu, 2017). The research finding that there is no difference between the intervention and the control groups makes it evident that more time may be needed to significantly impact student perceptions on college-going self-efficacy. Given the short-term nature of the intervention, significant increases in self-efficacy may be difficult to achieve. Radcliffe and Bos (2011) and Denson and Hill (2010), researchers who studied mentorship and self-efficacy, concluded that more than eight weeks for a mentorship intervention is needed to derive the benefits of mentorship on behavior and perceptions of the participants. Further, Bandura (1986, 1997) suggested that positive outcomes are greater from mentorship when a caring and goal directed relationship emerges between the participant and the mentor, which requires time. The researcher chose to analyze North Star as an eight-week intervention in order to avoid additional variables that could confound the results and to measure a program that may be easily implemented in other buildings. Unfortunately, after the eight-week time period students in both the control and the intervention groups were exposed to additional college-going activities within the school context. Exposure to these events would confound the results of the study and needed to be avoided. Additionally, North Star was designed as an eight-week intervention in order to be a practical intervention for a school setting. However, not analyzing the college-going intervention beyond eight weeks may have impacted the

researcher's ability to detect effects on college-going self-efficacy. North Star is a unique college-going intervention because it involves mentorship, in which the benefits are largely dependent on quality and length of relationship (Deutsch & Spencer, 2009; Rhodes et al., 2017).

Finally, another potential confounding variable involved the possible influence of the participants' teachers. Participants in the control group and the intervention group had different sets of teachers due to the teaming model used in the school to facilitate learning. Students were assigned to a team of two to three core teachers who were responsible for teaching math, science, social studies, and language arts. All students in the intervention group were on one team with three teachers. All of the students in the control group were split on two teams each with two teachers. This confounding variable is potentially a significant one because the results of the study could be due to differential teaching during the eight weeks of the intervention. However, it is unlikely that this was problematic. The mean scores on college-going self-efficacy for the control group between pre-test ( $M = 90.91$ ) and post-test ( $M = 90.51$ ) suggested nearly no change and the mean scores for the intervention group between the pre-test ( $M = 95.32$ ) and post-test ( $M = 93.97$ ) suggested a very slight decrease in college-going self-efficacy.

**Data.** Concerns regarding analyzed data represent another limitation in this study. Descriptive statistics were generated to analyze the suitability of the data for parametric analysis (Field, 2009). However, the raw data collected violated one major assumption of running an ANCOVA referred to as the assumption of homogeneity of regression slope. A violation of the assumption of homogeneity of regression slopes suggests that the treatment effects are not the same across the varying levels of the covariate (Field, 2009).

This is problematic because it could force the researcher to conclude that there are no differences between groups when in reality there are. Given that the outcome of this study is not significant, this is a major limitation.

**Procedural challenges.** Uniform treatment posed a challenge to the procedures in this study. Uniform treatment is when the experimenter can control the intervention versus no intervention experience for participants as well as control the equitable treatment of each participant in the intervention group. Given that the college-going intervention North Star relied on volunteer mentors to implement the intervention, it could be that each participant in the treatment group were not administered the same treatment. While a curriculum was developed to guide the mentor and a mandatory training took place, there was much freedom in how the mentors utilized their time with their mentees. The curriculum was not standardized, which limits generalizability.

Uniform treatment was also challenged through attendance. Although the university mentors received hours toward their community volunteer requirements required for course credit, the onsite program facilitator expressed concern regarding the attendance of both the mentors and the mentees. Unfortunately attendance data was not accurately recorded, greatly limiting the ability to generalize the results. However, the anecdotal information from the onsite program facilitator offers some insight on some plausible alternative explanations as to why the results of the study were non-significant.

In addition, as a result of flexibility and freedom in implementation of the college-going mentorship curriculum, another limitation was differential implementation of Bandura's (1982) sources of self-efficacy within the context of the mentorship. While the program incorporates many elements of self-efficacy theory, North Star may not be a

fully adequate operational representation. One might speculate that the intervention was insufficient in one or more area of personal performance, social persuasion, vicarious learning, and physiological affective states. The flexibility of the curriculum may have resulted in implementation through “common sense” and not well-reasoned, consensually produced, and empirically tested methods. While the college-going intervention North Star was grounded in theory, the intervention may not have been executed with fidelity. The intervention may have not been implemented the way it was designed to be implemented, greatly limiting the results of the intervention.

Volunteer mentors also made it challenging for the onsite program facilitator to recruit mentors that reflect the racial, gender, socio-economic, and prospective first-generation status of the middle school participants. Same-sex and same-race mentoring is often seen as a powerful method to enhance the benefits of a mentorship experience (Gordon, Iwamoto, Ward, Potts, & Boyd, 2009; Hernandez, Estrada, Woodcock, & Schultz, 2017). Hernandez, Estrada, Woodcock, and Schultz (2017) found that perceived similarity plays an even larger role than demographics in the effects of a mentorship. The non-significant results of the study may have been impacted by the perceptions of similarity between the mentors and the mentees. It could be that the mentees could not relate to the mentors. Data were not collected on this potential limitation.

The quality of relationship between the mentors and the mentees could have also greatly impacted the results of the study. Given that the college-going intervention was delivered and executed by university mentors, the relationship between the mentors and the mentees is considerable. The benefits of a mentorship are largely dependent on the quality of relationship between the mentor and the mentee (Deutsch & Spencer, 2009;

Rhodes et al., 2017). Frequency and consistency of contact, feelings of connection, and the approach that the mentors take with the mentees largely impacts the experience of the mentees. The lack of data on this variable leaves the researcher questioning this potential limitation.

Gaining the cooperation of the test takers posed a few challenges in the procedures of this study. While the researcher attempted to make the testing experience a positive one, the researcher observed some students in the intervention group who did not appear to cooperate with the expectations of taking the survey during administration. While they desired to participate in the study, they did not appear to complete the survey in an honest and serious manner as evident by observed goofy behavior. After consultation with the classroom teacher where the survey took place, the researcher learned that these students have negative attitudes in general toward learning. The teacher was concerned with the climate of the classroom, which could potentially have had an effect on the results of the survey for the intervention group.

### **Implications for Practice**

Overall, this study found that North Star mentorship program was not effective in improving the college-going self-efficacy of a group of diverse middle school students. Based on these results, the researcher cannot conclude that North Star should be multiplied and implemented into other schools. However, given that this program and the construct college-going self-efficacy are still in their infancy, it is recommended for educators to continue to improve upon the intervention. It is important to note that the absence of a significant finding does not mean there is absolutely no difference between groups. Improvement of the college-going intervention is a worthwhile endeavor given

that North Star is grounded in well-developed theories and research that supports college-going interventions as an effective tool to influence self-efficacy.

One major recommendation for improvement of North Star is to include a more comprehensive and intensive incorporation of Bandura's theory (1982) regarding sources of self-efficacy. Research on interventions grounded in self-efficacy influencers continues to provide a foundation for self-efficacy intervention research (Chiesa et al., 2016; Fouad et al., 2009; McWhirter et al., 2000; O'Brien et al., 1999; Reese & Miller, 2006; Scott & Ciani, 2008). A stronger focus on the four sources of self-efficacy may be key to observing changes in college-going self-efficacy within intervention studies.

Another recommendation is to improve treatment uniformity. Practitioners should focus on developing a more standardized curriculum that can be copied and multiplied across mentors for a more uniform implementation of the eight-week college-going mentorship program. While the current curriculum embedded in self-efficacy influencers does exist, it is unclear exactly what the mentors are doing to enhance self-efficacy. To determine the effectiveness of North Star, more control over the curriculum should be exerted. Also, to make determinations about the influence of attendance, weekly attendance for both mentors and mentees should be tracked.

A greater effort should be made to recruit volunteers from the university who students would perceive as similar to them in order to enhance the quality of the relationship between mentor and mentee. While this task is challenging, it may be imperative to the success of college-going intervention mentorship programs like North Star.

Further, another recommendation to improving North Star as a college-going mentorship intervention is to consider implementing the intervention with one-on-one mentorship as opposed to small group mentorship. North Star is designed to be a small group mentorship program in which there is one university volunteer assigned to two-three middle school students. While this is a more practical format due to recruitment of volunteers it may be that it is not as effective as mentorship that is one-on-one.

### **Implications for Future Research**

In addition to implications for practice, the current study supports implications for future research as well. First, it would be helpful to repeat this study with a similar population of students. Given that the current study contrasts with previous research and theory, it is imperative that similar research is done to reconcile the differences.

A logical next step in this research is also to examine college-going interventions on college-going self-efficacy over a longer period of time. In alignment with past research (Denson & Hill, 2010; Radcliffe & Bos, 2011), the present research also suggests that eight weeks is not long enough for the intervention to have an effect on the college-going self-efficacy of seventh graders. While eight weeks is ideal for school-based interventions due to practicality, future research is needed on interventions that work to enhance college-going self-efficacy and extend beyond eight weeks. Further, research that measures college-going self-efficacy at a follow up time is also needed. Measuring college-going self-efficacy across time provides additional evidence of the processes and mechanisms of change and whether the effects of the intervention are retained. Future studies should consider measuring college-going self-efficacy at pre-test, post-test, and at a follow up time.



Further, the construct of college-going self-efficacy merits additional investigation. Other than two dissertation studies, all relative college and career intervention studies that aim to enhance self-efficacy have focused on the constructs of career self-efficacy or career decision-making self-efficacy. However, even though college-going self-efficacy and career self-efficacy are highly correlated, college-going self-efficacy is a distinct construct meriting its own research (Hamel, 2015; Solberg et al., 1993). If the goal is for minority and prospective first-generation college-students from low-income families to attend and persist through college, then the construct college-going self-efficacy needs more attention in literature. Research is also needed to provide additional evidence of validity for the College-Going Self-Efficacy Scale (Gibbons, 2005). The scale appears useful in the measurement of college-going self-efficacy and additional studies could determine the range of the scale's utility.

It is recommended that researchers design and carry out college-going intervention studies that are strong in design. The present study utilized a strong design: adequate sample size, control group, pre-test and post-test and used a statistical analysis that controls for the covariate. While this design is not the "gold standard" as with random assignment in an experimental study, the present research was able to control for many potential confounding variables and it is considered one of the best designs in the social sciences (Gall et al., 2007). Although random assignment is often not possible researchers can still design strong studies that produce strong results.

However, studies in the future should consider additional research methods. The current study was a quasi-experimental non-equivalent group design. An experimental study with random assignment of participants would be stronger. Additionally, program

evaluation, a method of collecting and analyzing data to answer questions about program effectiveness and efficiency, may be able to provide practitioners with a better understanding of what components of the North Star program are effective or not (Gall et al., 2007). Program evaluation is helpful in providing potential alternative explanations. On top of quantitative data, qualitative data may add rich and thick detailed information to answer the research question (Gall et al., 2007). Individual and group interviews of students and mentors would allow the researcher to make inferences about their self-efficacy experiences following participation in the college-going intervention. Much more research could also be collected on mentorship and other logistics of the intervention such as fidelity of implementation and participant attendance. While the focus of this study was the effects of general college-going interventions on the college-going beliefs of middle school students, mentorship is an important component that warrants more research. Researchers should consider collecting data on mentorship relationships in order to make inferences about the potential effect it has on the outcome of the college-going intervention. This type of research may allow college-going interventions to continually improve to become more effective interventions in college attendance and persistence.

Further, while there was no statistically significant effect of the college-going intervention on college-going self-efficacy there may be other dependent variables that should be explored. According to social cognitive career theory, interest and choice in college are also directly affected by person inputs, background variables, learning experiences, outcome expectations, and contextual influences (Lent et al., 1994). In this study, self-efficacy was considered the central mechanism of personal agency and thus

was the only dependent variable included in the study. Further research should consider the inclusion of other variables that have reciprocal relationships with self-efficacy and may be more developmentally appropriate.

Overall, while the results of the research do not suggest that North Star is an effective college-going intervention, it is recommended that researchers improve upon the intervention in order to enhance the potential impact of such interventions on college-going self-efficacy. Once again the absence of a significant finding does not mean there is absolutely no difference between groups. More research is needed to maximize the impact of college-going mentorship interventions on the college-going self-efficacy of middle school students. Suggestions included studying interventions that are designed for more than eight weeks and to measure college-going self-efficacy at a follow up time. Additionally, other research methods should be utilized. The current status of college-going self-efficacy as a construct warrants further investigation.

### **Conclusion**

Given that students from low-income families, who are potentially of prospective first-generation college student status and/or are minority, continually enter postsecondary institutions and complete postsecondary degrees at much lower rates than their more advantaged peers, it is imperative that practitioners and researchers alike design and implement effective interventions that work to increase attendance and persistence in postsecondary education for all (Ross et al., 2012; Tate et al., 2015). The purpose of the current study was to add to the literature on college and career intervention studies that work to enhance college-going self-efficacy for middle school students who come from low-income, prospective first-generation, and ethnically disadvantaged

backgrounds. Despite previous research and theory that suggests college-going interventions as a worthy intervention to enhancing college-going self-efficacy, the results of the study found that North Star did not enhance students college-going self-efficacy. There were no statistically significant differences between the control and intervention groups following the intervention on the post-test for college-going self-efficacy despite controlling for pre-test differences. However, despite the lack of effect, the value of self-efficacy in postsecondary interest, choice, and attendance is so great that researchers and practitioners should continue to design and implement studies like the present one.

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### Appendix A- College-Going Self-Efficacy Scale

Directions: Please read each of the following statements and answer them as honestly as possible. Circle the response that best describes how sure you are. There are no right or wrong answers. Be sure to answer every statement.

<i>Attendance Scale</i>				
<b>How sure are you about being able to do the following?</b>	<b>Not sure at all</b>	<b>Somewhat sure</b>	<b>Sure</b>	<b>Very sure</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
I can find a way to pay for college	1	2	3	4
I can get accepted into college	1	2	3	4
I can have family support for going to college	1	2	3	4
I can choose a good college	1	2	3	4
I can get a scholarship or grant for college	1	2	3	4
I can make an education plan that will prepare me for college	1	2	3	4
I can make my family proud with my choices after high school	1	2	3	4
I can choose college courses that best fit my interest	1	2	3	4
I can pay for college even if my family	1	2	3	4

cannot help me				
I can get good grades in my high school math classes	1	2	3	4
I can get good grades in my high school science classes	1	2	3	4
I can choose high school classes needed to get into a good college	1	2	3	4
I can know enough about computers to get into college	1	2	3	4
I can go to college after high school	1	2	3	4
<b><i>Persistence Scale</i></b>				
<b>If you do go to college, how sure are you about being able to do the following?</b>	<b>Not sure at all</b>	<b>Somewhat sure</b>	<b>Sure</b>	<b>Very sure</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
I could pay for each year of college	1	2	3	4
I could get A's and B's in college	1	2	3	4
I could get my family to support my wish of finishing college	1	2	3	4
I could take care of myself in college	1	2	3	4
I could fit in at college		2	3	4
I could get good enough grades to get or keep a scholarship	1	2		4

I could finish college and receive a college degree	1	2	3	4
I could care for my family responsibilities while in college	1	2	3	4
I could set my own schedule while in college	1	2	3	4
I could make friends at college	1	2	3	4
I could get the education I need for my choice of career	1	2	3	4
I could get a job after I graduate from college	1	2	3	4
I would like being in college	1	2	3	4
I could be smart enough to finish college	1	2	3	4
I could pick the right things to study at college	1	2	3	4
I could do the classwork and homework assignments in college classes	1	2	3	4

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**Appendix B- Approval from Mukilteo School District**

**From:** Rankine Kaley D.

**Sent:** Friday, May 05, 2016 3:03 PM

**To:** Bylsma Peter J. <BylsmaPJ@mukilteo.wednet.edu>

**Cc:** Bailey J. Wesley <BaileyJW@mukilteo.wednet.edu>

**Subject:** K. Rankine, Data Collection at Voyager Middle School

Pete Bylsma,

Per our discussion early in the 2016-2017 school year, I would like to formally collect the data per our conversation at Voyager Middle School on the college-going beliefs of our 7<sup>th</sup> grade students using the College-Going Self-Efficacy Scale (Gibbons, 2005). All of the data will be collected in partnership with UW Bothell and within the context of the work I do. I would like to be able to use this data for publishing purposes of a dissertation. In the beginning of the school year UW Bothell had permission to collect this data. As our assessment and research coordinator I would like your approval.

Again thank you for this support.

**Kaley Mitchell**

Voyager Middle School

School Counselor, 7<sup>th</sup> Grade

(425) 366-5333

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**From:** Bylsma Peter J.

**Sent:** Friday, May 5, 2016 3:39 PM

**To:** Rankine Kaley D.

**Cc:** Bailey J. Wesley

**Subject:** RE: K. Rankine, Data Collection at Voyager Middle School

Kaley,

Since you are doing this work only within the context of your job and school and have the principal's approval to do so, you don't need to go through the district process to get approval to do the research. Good luck on your work.

Pete

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Pete Bylsma, EdD/MPA

Director, Assessment & Program Evaluation

Mukilteo School District

9401 Sharon Dr

Everett, WA 98204

425-356-1354

bylsmaj@mukilteo.wednet.edu

### Appendix C- Approval to Use Data from Mukilteo School District

**From:** Mitchell Kaley D. **Sent:** Wednesday, August 30, 2017 6:22 PM **To:** Bylsma

Peter J. <BylsmaPJ@mukilteo.wednet.edu> **Subject:** Demographic Data

Pete,

I hope that you had a great summer! While I did receive approval to collect the data I am hoping that I can use some demographic information from the district. I need to report the demographic information for = 146 students. I am going to report overall percents: free/reduced lunch, race/ethnicity, gender, and parental level of education. I was able to get parental level of education off of another student survey. I am able to access all this data on my own but would like permission to publish it in group format for the 146 students. It would look like the table below.

<i>Characteristics</i>	All Participants	Intervention Group	Control Group
	N = 146	n = 71	n = 75
<b>Gender</b>			
Male	75 (51.4)	36 (50.7)	39 (52.0)

Female	71 (48.6)	35 (49.3)	36 (48.0)
Race			
Hispanic/Latino	49 (33.3)	24 (33.8)	25 (33.3)
White	43 (29.5)	24 (33.8)	19 (25.3)
Black/African American	28 (19.1)	13 (18.3)	15 (20.0)
Asian American/Pacific Islander	24 (16.4)	9 (12.7)	15 (20.0)
Other	2 (1.4)	1 (1.4)	1 (1.3)
Low-income	89 (60.9)	44 (70.0)	45 (60.0)
First-generation (PFGCS)	120 (82.19)	59 (83.10)	61 (81.33%)

Table 1

*Number and Percent's of All Participants including intervention and control groups by Gender, Race, Low-income, and First-generation Status*

*Note.* percentages are shown in parentheses; percentages are rounded and do not always add to 100; PFGCS counts do not include the seven students who had incomplete data

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**From:** Bylsma Peter J. **Sent:** Thursday, August 31, 2017 8:25 AM **To:** Mitchell Kaley

D. <MitchellKD@mukilteo.wednet.edu> **Subject:** RE: Demographic Data

It's fine if you report your data in this way.

Pete

### Appendix D- Parent Survey

The purpose of this survey is to determine what percent of students are “prospective first generation college students” in the seventh grade at Voyager Middle School. A prospective first generation college student is a student whom neither parent earned a 4-year bachelor’s degree. Our hope to is to understand how to help support prospective first generation college students.

**Direction:** Please circle the answer that is the highest level of education of the adults who are the main providers for your seventh grade student at Voyager Middle School.

**Student Number:** \_\_\_\_\_

1. Less than a high school diploma
2. Earned a high school diploma (or GED)
3. Went to some college
4. Completed a 2-year degree (community college)
3. Earned a 4-year college Degree (bachelors)

If you have any questions or concerns please contact Kaley Mitchell, (425) 366-5300 or Mitchellkd@mukilteo.wednet.edu .



## Appendix E- IRB Exemption



School of Education

3307 Third Avenue West, Suite 202  
Seattle, Washington 98119-1950

206 281 2214 office  
206 281 2756 fax

SOEInfo@spu.edu  
spu.edu

July 5, 2017

To: Kaley Mitchell

Subject: IRB Approval – IRB # 161706017

Your research project "*The Effect of a College-going Intervention on the College-going Self-efficacy Beliefs of Middle School Students*" has been approved. This study was approved under exempt review as it meets the requirement of "no more than minimal risk" as stated in the *SPU IRB User Guidelines* (2012, p. 5).

Your approval is in effect until what time any methods of the study change substantively. When that occurs, you will need to renew your IRB application. Your study has been assigned IRB number: **161706017**.

The IRB # should be included on all of your recruitment and informed consent materials.

Please let me know if you have any questions. Best wishes in the completion of your research.

Sincerely,

A handwritten signature in black ink that reads "John B. Bond".

John B. Bond, Ed.D.  
SOE IRB Coordinator  
Professor of Educational Leadership

Cc: Dr. Cher Edwards



## **Appendix F- Participant Survey Instructions (Posttest)**

### **Facilitator reads:**

First, thank you so much for participating in this study. As you know, you are not required to participate and you may stop filling out the survey at any time. The goal of this study is to look at the college-going beliefs of middle school students. The survey will ask about your beliefs about attending and making it through college. It is very important to remember that the word “college” means any type of school after high school. This might mean a community college like Everett Community College, a 4-year university like University of Washington, or other certificate programs like cosmetology school. It is also very important that you fill out each question. There are no right and wrong answers as this survey is all about your opinion. If you do however get stuck on a question or want to understand it more please raise your hand and I will come help you or will be able to restate the question. The answers will be confidential which means that no one will know that the answers belong to you. Are there any questions now? To begin please put your student number on your survey. I will now read each statement out loud and ask that you fill in the answer of your choice.

## **Appendix G- Student Consent to Participate**

Dear Voyager Middle School 7<sup>th</sup> Graders,

Voyager Middle School is conducting research on your beliefs about college. The purpose of this study is to learn more about how students feel about going to college after high school. You were selected to participate in this study because you are in the 7<sup>th</sup> grade at Voyager Middle School. The purpose of this research is to use the data to develop more effective programs that can help students attend and make it through college. The word “college” means any type of school after high school. This might mean a community college, a 4-year university, or other certificate programs.

Your participation in this study is completely voluntary. If you agree to participate in this study you will complete a short survey that asks you your belief in your ability to go to college and persist through college. It is very important to remember that the word “college” means any type of school after high school. This might mean a community college like Everett Community College, a 4-year university like University of Washington, or other certificate programs like cosmetology school. It is also very important that you fill out each question. The survey will take about 10 minutes to complete. Your participation in this survey is very valuable. Please remember:

1. Your participation is voluntary
2. Your identity will remain anonymous and will only be tracked by student number. No one will know your answers belong to you.
3. There are no right or wrong answers. It is based on your perceptions.
4. If you get stuck on a question or want to understand it more please raise your hand and I will come help you or will be able to restate the question.

5. The benefits of taking the survey are to help improve education.

If you have any questions about participating in this study please contact the school.

After you read this letter, you may leave the classroom if you choose not to participate. If you remain seated, you will be given a copy of the survey. Your completion of the survey constitutes your informed consent to use your results. If after receiving the survey, you choose not to complete it, please return it unanswered. When you are finished, return the survey by placing it face down in the designated return area. You may keep this letter for your records.

Thank you very much for your time and effort in completing these surveys. Your participation is sincerely appreciated and will ultimately help future educators develop better programs for our youth.

Sincerely,

UW Bothell and Voyager Middle School

## Appendix H- North Star University of Washington, Bothell Recruitment Brochure

### Our Program

Michelle Obama made a speech regarding "The North Star." She indicated to kids that everyone should have something that they dream about, a life goal; the BIG DREAM. She also said that when you have a North Star dream, it requires goal setting, planning, and hard work. While kids need to set goals, plan, work hard, and have big dreams, they also need to feel good about who they are and to know that failure is not a permanent state. In an effort to help students build confidence and learn that failure is a part of success, we created a North Star College Mentorship Program. UW Bothell college students will be matched with Voyager 7th graders, work in small groups together, and create meaningful relationships that will help students stay on their path to college and to their North Star.

### The "What?"

Most mentoring for middle and high school students focus on developing the knowledge, competencies, and confidence needed to successfully undertake their responsibilities (Catalano, Hawkins, Berglund, Follard, and Arthur 2002). Mentors also help students cope with challenges such as absentee parents, an unstable home situation, or lack of familiarity with the world outside their immediate community (Rauner 2000; Freedman 1993).



**W**  
BOTHELL

## North Star: A College Peer Mentoring Program

*A Partnership Between  
UW Bothell and Voyager  
Middle School*

## The Impact

School-based mentoring increases grade promotion and decreases unexcused absences, tardiness, and bullying or fighting in school, while community-based mentoring improves relationships with parents and decreases skipping school (Rhodes, Grossman, and Resch, 2000; Thompson and Kelly Vance, 2001).

Mentoring focuses and motivates students toward achieving learning goals (Gandara, Larsen, Mehan, and Rumberger 1998).

Youth who perceive high-quality relationships with their mentors experience the best results (Funk and Elk

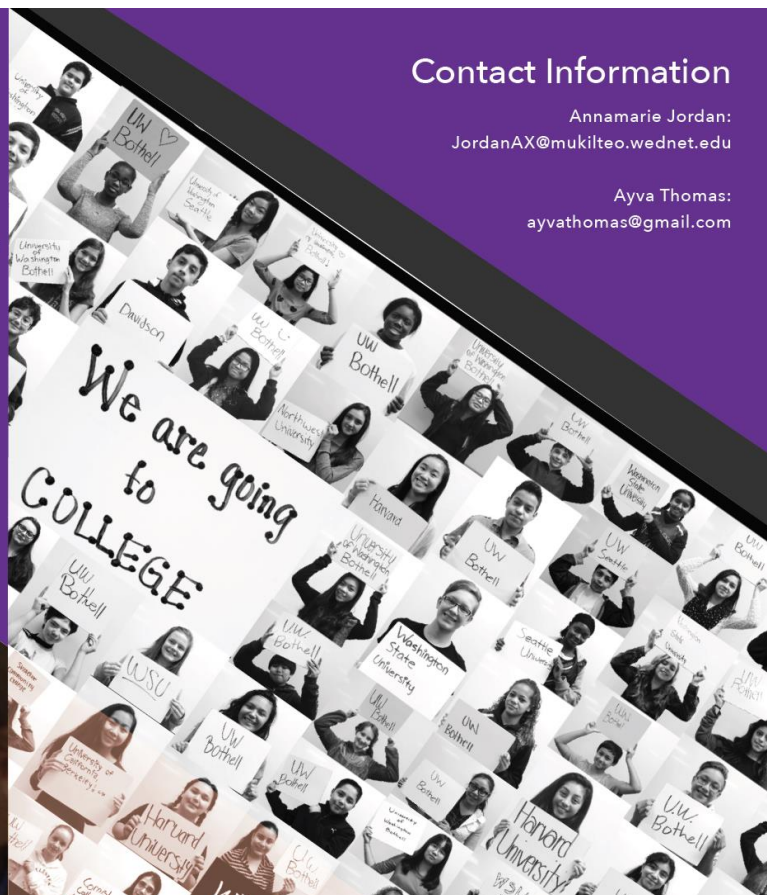
Discussing college with mentors, especially those who have attended themselves, can generate interest in going to college among students whose parents have not gone to college (DuBois, Holloway, Valentine, and Mentors provide students with important information about college preparatory courses, financial aid and the college admissions process (Gandara and Mejorado 2005; Stanton Salazar, 2001).



## Contact Information

Annamarie Jordan:  
JordanAX@mukilteo.wednet.edu

Ayva Thomas:  
ayvathomas@gmail.com



### Appendix I- North Star Curriculum Outline

<b>Session</b>	<b>Topic</b>	
<b>1</b>	<b>Strengths and Barriers</b>	Students will explore barriers to success and their strengths to overcome them.
<b>2</b>	<b>College Exploration</b>	Students will explore what postsecondary education is and types of postsecondary education.
<b>3</b>	<b>College Classes and Majors</b>	Students will learn about the types of classes and degrees that can be earned. Mentors will share with student's college artifacts and course syllabuses. Students will reflect on their own beliefs of their academic abilities and choose some college courses that fit their interest.
<b>4</b>	<b>College Life</b>	Students will learn about college life and the impact of family, friends, work, school, hobbies and community on their success in postsecondary education.
<b>5</b>	<b>College Funding</b>	Students will learn funding options for postsecondary education.
<b>6</b>	<b>Pathway to College</b>	Students will create an education plan. Students and mentors will connect long-term college-going goals and short-term middle school goals. Students will discuss resources to help them along the way.
<b>7</b>	<b>Life After College</b>	Students will connect their interests to possible career options and determine course of action needed to achieve career.
<b>8</b>	<b>Reflection</b>	Students will write a letter about what they learned about college and mentor will write a letter of advice to the student. The mentor and student will exchange letters.