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The Role of Career Optimism and Perceived Barriers in College Students' Academic Persistence: A Social Cognitive Career Theory Approach

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The Role of Career Optimism and Perceived Barriers in College Students' Academic Persistence: A Social Cognitive Career Theory Approach

by

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ABSTRACT

Social Cognitive Career Theory (SCCT) suggests that one's self-efficacy beliefs, one's outcome expectations, and salient contextual influences impact the development of interests, goals, and goal-oriented behaviors. Additionally, initial support has been found in the SCCT literature to indicate that outcome expectations may mediate the relationship between self-efficacy and goals while contextual influences may moderate the relationship between self-efficacy and goals. By examining conditional indirect effects between academic self-efficacy, career optimism (an outcome expectation), perceived carrier barriers (a contextual influence), and intention to persist toward graduation (a goal) in a college student sample, this project aimed to further understand how these relationships operate. Furthermore, previous research utilizing SCCT has not examined career optimism as an outcome expectation. Data was collected from 349 undergraduates. Contrary to expectations, the proposed conditional indirect effects model was not supported. While academic self-efficacy significantly predicted persistence intentions, career optimism and perceived career barriers did not also predict persistence intentions. Results suggest that academic self-efficacy and proximal processes related to degree persistence were more salient than distal processes related to degree persistence for students in this sample.

Keywords: Social Cognitive Career Theory, Academic Self-Efficacy, Career Optimism, Career Barriers, College Persistence

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Nothing would be possible without the boundless sacrifices of my mother. You have always been my champion, and your love, courage and perseverance have and will always continue to inspire me.

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LIST OF ABBREVIATIONS

CSEI	College Student Self-Efficacy Inventory
WCU	Grade Point Average
SCCT	Social Cognitive Career Theory
SEM	Structural Equation Modeling

CHAPTER I – INTRODUCTION

For students who are able to attend college, this developmental period can significantly influence one's transition into adulthood, especially as it relates to future career prospects. In a comprehensive review of college outcome data, Pascarella and Terenzini (2005) determined that bachelor's degree holders have a number of career-related advantages, such as holding more accurate perspectives about labor markets and higher readiness for employment, than those with associate degrees and high school diplomas. Analyzing 2010 U.S. Census data, Zaback, Carlson, and Crellin (2012) determined that individuals who hold a bachelor's degree reported an annual median income of $50,360 while individuals with only a high school diploma reported a median income of $29,423. Over the course of a lifetime, Carnevale, Rose, and Cheah (2011) determined that, the average earnings of a worker with a bachelor's degree is approximately $2.3 million while the average earnings of a worker with a high school diploma is only $1.3 million.

Social Cognitive Career Theory

One theoretical model that has been utilized to examine the relationship between outcomes and career development processes is Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994). Developed from Bandura's social cognitive theory, Social Cognitive Career Theory (SCCT) includes four interconnected outcome models (Interest Development, Choice, Performance, and Work Satisfaction models) that address processes such as how individuals develop vocational interests, make career choices, and attempt to achieve their goals (Lent & Brown, 2006). SCCT posits that interests develop from exposure to learning experiences. However, the role of positive reinforcement, in

the form of increased self-efficacy and positive outcome expectations, is crucial in nurturing goals and ultimately, career development actions. Furthermore, goal attainment processes, such as career choice and level of attainment, are influenced by distal influences (such as culture and gender-role socialization processes) and proximal influences (such as support for pursuing one's goals and perceived barriers). Thus, according to the SCCT framework, factors such as self-efficacy expectations, outcome expectations, and contextual influences impact career goal-oriented behaviors.

Social Cognitive Career Theory draws its roots from Bandura's social cognitive theory, which emphasizes the importance of examining the ways in which self-referential thinking, cognitive patterns, and various social processes interact to guide and influence human behavior (Bandura, 1986; Lent et al., 1994). The initial theorists of SCCT, Lent et al. (1994), adapted the elements of Bandura's social cognitive theory that were most relevant to career development processes in order to examine the influence and interaction between experiential learning processes and cognitive processes on career decisions. Regarding specific career development processes, SCCT also draws from Krumboltz, Mitchell, and Jones' (1976) social learning theory of career decision-making and Hackett and Betz's (1981) examination of self-efficacy beliefs in women's career development (Lent et al., 1994). In particular, SCCT focuses on identifying relationships between learning experiences and career choices and how this process also is influenced by interests, abilities, and values. Three central constructs have been identified by SCCT due to their relevance within career development processes: self-efficacy, outcome expectations, and goals (Lent, Brown, & Hackett, 2002). Each variable is examined from the perspective of internal personal attributes, external environmental factors, and overt

behaviors, because these mechanisms are interconnected and influence every other mechanism in a reciprocal fashion (Lent et al., 2002).

Self-Efficacy

Self-efficacy refers to one's beliefs of his or her ability and capacity to "organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). According to Lent at al. (2002), self-efficacy is a core component of SCCT theory, because people are theorized as more likely to develop an interest in activity, choose to pursue that activity, and ultimately perform better at the activity if they possess robust self-efficacy beliefs (assuming the individual also possesses requisite abilities and receives support from their environment).

SCCT does not conceptualize self-efficacy as a static construct, because self-efficacy beliefs are formed and modified through dynamic processes. For example, Lent et al. (2002) articulated that self-efficacy can be developed from a number of sources such as personal performance accomplishments, vicarious learning, individual attributes, internalized cognitive processes, overt behaviors, and environmental factors. Successes, accomplishments, vicarious learning opportunities, and cognitive interpretations of these behaviors and actions are expected to raise self-efficacy, both globally and within specific domains, while repeated failures should lower self-efficacy beliefs (Lent et al., 2002). Additionally, non-behavioral elements such as individual attributes (e.g., talents) and environmental factors (e.g., barriers and supports) will influence the types of learning opportunities that eventually shape one's self-efficacy. Within the SCCT interest development, choice, and performance models, self-efficacy beliefs are theorized to then

affect the development of other constructs such as outcome expectations, vocational interests, goals, activity selection, and performance outcomes (Lent et al., 2002).

Outcome Expectations

Outcome expectations are defined as personal beliefs regarding imagined consequences and outcomes from performing specific actions (Lent et al., 2002). Based on one's previous learning experiences (e.g., extrinsic reinforcement), outcome expectations measure an individual's ability to anticipate potential results for engaging in a behavior. For example, as individuals contemplate whether to attend college, their outcome expectations for this option is based on weighing the costs and benefits of higher education (e.g., one's future career earnings with a college degree, price of tuition/fees, unearned income while attending school, whether individuals from my background can succeed in higher education). Ultimately, the strength, certainty, and positivity of one's outcome expectations regarding the target activity will thus impact any goal-oriented behavior.

SCCT has identified several ways in which outcome expectations are acquired and modified, including through cognitive appraisals of outcomes and rewards for performing certain behaviors, vicarious observations of outcomes in others, self-generated outcome processes such as self-approval, and the reactions of others. Within SCCT, outcome expectations and self-efficacy beliefs are both theorized to directly influence interest development, goal formation, and activity selection. Additionally, SCCT theorizes that outcome expectations are influenced by self-efficacy beliefs, but these links warrant further exploration (Lent et al., 2002). In sum, outcome expectations (e.g., What comes from doing this activity?) are shaped by self-efficacy beliefs and one's

previous experiences, and coupled with self-efficacy beliefs, predict interest development and subsequent behaviors.

Goals

Setting personal goals helps individuals to engage in specific activities that can positively impact future outcomes (Bandura, 1986). Goal setting helps to organize, guide, and sustain behaviors and is one mechanism through which individuals can exercise their agency (Lent et al., 2002). While one's career choices and career development actions are heavily influenced by factors outside of one's control (e.g., genetic makeup, labor market conditions, socioeconomic status), self-directed goals nevertheless play an important role in virtually all aspects of career choice and career decision making (Lent et al., 1994).

One of the primary aims of SCCT is to examine the relationship between self-efficacy, outcome expectations, and goals in order to better understand the dynamic relationships between these intrinsic cognitions and environmental factors (Lent et al., 2002). Of particular importance are the experiential and cognitive factors (and the resulting interplay) that promote career-related interests, motivate choice behaviors, encourage skill acquisition, and influence perseverance. For example, one's self-efficacy beliefs and outcome expectations will naturally influence goal-oriented behaviors and the amount of effort one will anticipate spending in pursuit of a goal, such that the combination of high self-efficacy along with positive or favorable outcome expectations will lead to setting and pursing relevant goals. Subsequently, goal attainment (or lack thereof) will impact the continued development of one's self-efficacy beliefs and outcome expectations in a positive or negative direction.

More specifically, SCCT theorizes that outcome expectations should mediate the relationship between self-efficacy beliefs and how one develops goals and/or pursues their interests (Lent et al., 2002). Byars-Winston, Estrada, Howard, Davis, and Zalapa (2010) found support for this mediation effect when examining the academic goals of non-White students' pursuit of science and engineering degrees. A dissertation by Dong (2011) examining how individuals with disabilities request job accommodations also concluded that outcome expectations mediated the relationship between self-efficacy beliefs and intentions to request accommodations.

Contextual Influences

Social cognitive career theory also attempts to address the ways in which contextual factors influence career development processes. As articulated by Lent, Brown, and Hackett (2000), SCCT frameworks aim to clarify the impact of objective environmental factors (e.g., quality of one's education as measured by standardized metrics) and subjective environment factors (e.g., how an individual comes to interpret the quality of their education) on career development processes. Specifically, SCCT posits that contextual factors and individuals' perceptions of their environments can influence beliefs, intentions, and actions (Lent et al., 1994). Environmental factors include perceived barriers, such as discrimination or lack of support from significant others and can potentially dilute self-efficacy beliefs and prompt individuals to foreclose on pursing specific goals aligned with their interests. Conversely, self-efficacy beliefs can also empower individuals to overcome perceived barriers and persist in accomplishing their goals (Lent et al., 1994). Thus, the relationship between contextual factors and

actions is dynamic, because different individuals encountering the same barrier will likely be impacted by the barrier in unique ways (Lent et al., 2000).

Perceived Career Barriers. According to SCCT, the perception of barriers can impact career development processes (Brown & Lent, 1996). Swanson and Woitke (1997) defined career barriers as events or conditions that impede career progress and indicated the importance of examining relationships between perceived career barriers and other variables that influence career development to better understand how perceived barriers impact career-related behavior. Greater perceptions of barriers have been shown to directly relate to educational and career goals, including decreased educational commitment and lowered educational aspirations (Kenny, Blustein, Chaves, Grossman, & Gallagher, 2003; Ojeda & Flores, 2008). With respect to college persistence decisions, those who perceived their university environments as having fewer barriers also anticipated withdrawing from college at lower rates (Gloria, Castellanos, & Orozco, 2005). Additionally, perceived barriers have been shown to impact the relationship between interests and occupational choices, because individuals with well-defined interests will be less likely to pursue that career if they perceive substantial barriers to entry or advancement (Lent et al., 2001).

Moreover, while SCCT theorizes that self-efficacy primarily predicts one's pursuit of goals and other outcome constructs, environmental supports and barriers may also moderate this relationship. Lent et al., (2001) determined that perceived barriers partially moderated the relationship strength between self-efficacy beliefs and interest/choice relations for students considering college level math and science educational pursuits. Furthermore, Lent et al., (2005) found that barriers moderated self-

efficacy beliefs and interest development with respect to pursuing an engineering degree in college.

The literature also has identified differences in the ways that males and females perceive career barriers. Overall, research supports the assertion that women tend to perceive more career-related barriers than men (Creed, Patton, & Bartrum, 2004; Luzzo, 1995; Raque-Bogdan, Klingaman, Martin, & Lucas, 2013; Rivera, Chen, Flores, Blumberg, & Ponterotto, 2007). Women were also more likely to perceive family-related barriers (e.g., sacrificing one's career for family considerations, child-care concerns) and role-conflict barriers than men (Swanson & Tokar, 1991). Additionally, Lindley (2005) determined that the perception of barriers impacts outcome expectations with regard to career choices in certain fields for women.

In sum, given the connections between self-efficacy beliefs, outcome expectations, and goals, SCCT (see Figure 1) identifies specific theoretical models that attempt to explain how individuals make vocational choices and identify factors that influence work-related performance (Lent et al., 2002).

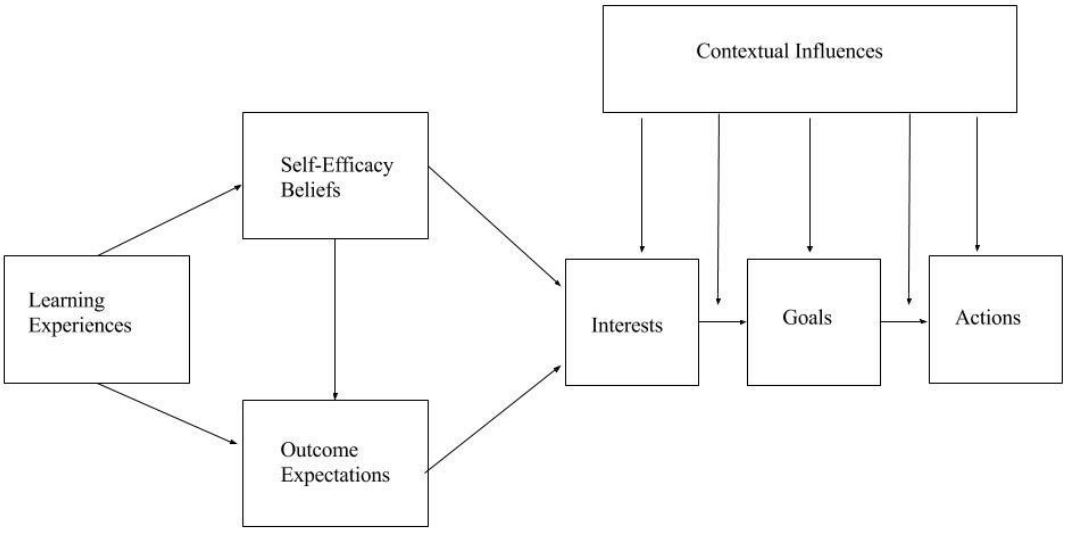

Figure 1. Lent, Brown, & Hackett's (1994) Model of Theorized Social Cognitive Career Theory Pathways.

Adapted from "Toward a Unifying Social Cognitive Theory of Career and Academic Interest, Choice, and Performance," by R. W. Lent, S. D. Brown, and G. Hackett, 1994, *Journal of Vocational Behavior, 45*, p. 88. Copyright 1993 by R. W. Lent, S. D. Brown, and G. Hackett.

Research on Social Cognitive Career Theory

Research on SCCT with college students has focused primarily on the following constructs: self-efficacy, outcome expectations, and goal setting. Of these lines of SCCT-informed research, Lent et al. (2002) identified self-efficacy as having received the most attention in the career development literature, because perceived self-efficacy was identified by Bandura (1984) as impacting cognitive patterns, human actions, and emotional arousal and thus can widely impact disparate areas such as coping, stress,

achievement, interest development, and career pursuits. Bandura (1984) defined self-efficacy as an individual's belief in their capacity to successfully complete a given task or goal, and individuals with greater self-efficacy beliefs will have more confidence in their ability to meet identified goals. As such, self-efficacy has been widely studied in relation to outcome processes such as college degree attainment. A meta-analysis by Multon, Brown, and Lent (1991) concluded that self-efficacy beliefs were positively associated with degree persistence, as well as other college outcomes.

Since self-efficacy is multidimensional in nature, Zimmerman (2000) recommended that it should be assessed at domain-specific levels rather than as a general construct. Furthermore, general measures of self-efficacy have been shown to be poor predictors of college-related outcomes such as academic performance and grades (Ferrari & Parker, 1992; Lindley & Borgen, 2002). A more recent meta-analysis conducted by Robbins et al. (2004) found that academic self-efficacy was a better predictor college persistence than other psychological factors such as academic motivation, academic goals, institutional commitment, social support, social involvement, academic-related skills, and self-concept. More specifically, Zajacova, Lynch, and Espenshade (2005) determined that academic self-efficacy was a more robust predictor of grade point average (GPA), number of credits completed, and first-year to second-year retention than the experience of stressors. Additionally, Wright, Jenkins-Guarnieri, and Murdock (2012) utilized a SCCT theoretical framework and found significant relationships between college self-efficacy (which incorporates academic self-efficacy), college persistence decisions, and academic performance. Lastly, Vuong, Brown-Welty, and Tracz (2010) determined that academic self-efficacy beliefs predicted GPA and persistence rates in

college students. These studies provide support for the inclusion of academic self-efficacy in operationalizing SCCT when examining college student outcomes.

Given the importance of self-efficacy beliefs and the widely established research base on its relationship to other constructs, other elements that are measured in SCCT frameworks such as outcome expectations and contextual influences (Rottinghaus, 2004) have been relatively understudied. Bandura (1986) defined outcome expectations as personal beliefs regarding consequences or outcomes for engaging or not engaging a specific action. Outcome expectations are thus related to perceived gains or losses for engaging in a behavior while self-efficacy beliefs influence self-assessed capability for accomplishment.

As noted previously, SCCT theorizes that outcome expectations are directly impacted by learning experiences and self-efficacy beliefs. Gushue and Whitson (2006) examined career-related outcome expectations of high school students and determined that learning experiences (e.g., support from teachers) significantly predicted career-related outcome expectations. Lent, Lopez, Lopez, and Sheu (2008) tracked the relationship between self-efficacy beliefs and outcome expectations across two semesters in a sample of college students interested in pursuing engineering and found support for self-efficacy as a precursor to the development of outcome expectations, interests, and goals. Navarro, Flores, and Worthington (2007) also identified a significant relationship between math/science self-efficacy beliefs and math/science achievement outcome expectancies in adolescents.

Researchers also have investigated the ways in which outcome expectations impact other developmental processes. Betz and Voyten (1997) examined the relationship

between self-efficacy beliefs and outcome expectations on college student career development and determined that career decision-related outcome expectations was a better predictor of career exploration intentions than self-efficacy beliefs. Additional empirical support for the predictive relationship between outcome expectations and goal-oriented intentions and/or behaviors has been found (Diegelman & Subich, 2001; Ochs & Roessler, 2004). Diegelman and Subich (2001) examined the relationship between outcome expectations, interest development, and goal pursuit for college students and determined that increased outcome expectations predicted one's intentions of pursing goals, but outcome expectations did not predict interest development, providing partial support for the role of outcome expectations in SCCT. Furthermore, empirical research has begun to support the SCCT proposition that outcome expectations mediate the relationship between self-efficacy and goal performance (Byars-Winston et al., 2010; Dong, 2011).

Byars-Winston et al. (2010) examined social cognitive and ethnic variables on academic goals for under-represented students in STEM fields. They determined that the direct and indirect pathways between academic self-efficacy and goals as partially mediated by outcome expectations was significant for biological sciences majors. For engineering students, only the indirect pathway between academic self-efficacy and goals as mediated by outcome expectations was significant. This discrepancy suggests that specific SCCT-informed pathways may vary depending on group differences so additional research is necessary. An unpublished dissertation by Dong (2011) examined the impact of self-efficacy, outcome expectations, and affect on whether individuals with disabilities intend to request job accommodations and hypothesized that higher levels of

self-efficacy and outcomes expectations would both correlate positively with accommodation request intention and that outcome expectations would partially mediate the relationship between self-efficacy and accommodation requests. Dong (2011) found support for this mediation effect as the direct path from self-efficacy to accommodation request intention, while significant, was substantially lower in the unmediated model. Overall, the literature supports the proposed mediation of the path between self-efficacy and goals through outcome expectations.

While many college undergraduates also maintain employment, these jobs are often not career-track positions and may not accurately reflect the intended careers of these students. Therefore, studies examining the career development of college students can alternatively focus on college persistence as an outcome variable. Desire to pursue higher education and persistence toward degree completion can be viewed through the lens of the SCCT choice and performance models. Thus, one's decision to pursue and then persist in higher education also is influenced by one's self-efficacy beliefs, outcome expectations, and goals. Empirical research utilizing a SCCT framework has continued to identify links between socio-cognitive variables and college persistence (Brown et al., 2008; Wright et al., 2012; Vuong et al., 2010). Kahn and Nauta (2001) hypothesized that SCCT can be used to better understand college persistence, because SCCT-driven investigations of college student persistence allows for more emphasis on intrapersonal factors and individual perceptions in determining persistence decisions, as opposed to studies that primarily examine student and institutional fit. Accordingly, this project attempted to identify SCCT variables that may further predict college persistence processes.

Overall, college persistence as an outcome variable has been increasingly the focus of studies that utilize SCCT frameworks. Several recent studies have found significant links between socio-cognitive variables and persistence intentions in college students (Kahn & Nauta, 2001; Wright et al., 2012; Vuong et al., 2010). Research has also examined the relationship between college persistence and outcome expectations. Kahn and Nauta (2001) determined that outcome expectations during one's second semester of college (as opposed to pre-college outcome expectations) was a stronger predictor of first-year to second-year retention rates than ability and past performance.

Additionally, several career counseling interventions that address self-efficacy and perceived barriers have been examined in the career counseling literature. A meta-analysis by Liu, Huang, and Wang (2014) determined that boosting self-efficacy through modeling and mastery of job search behaviors such as interviewing and positive reframing of negative self-statements was a prominent component of successful career counseling interventions. Brown and Krane (2000)'s review determined that interventions which included components such as written exercises designed to facilitate reflection and goal-setting, individualized career counseling, knowledge about the world of work, modeling of adaptive career development processes, and developing and utilizing support networks, have resulted in positive outcomes. While these interventions were theorized to reduce career-related barriers, a meta-analysis conducted by Ryan (1999) determined that interventions to decrease perceived career barriers were not found to produce significant changes in outcomes overall. Brown and Krane (2000) speculated that previous research on barriers may have suffered from low inclusions of individuals who perceived significant barriers and that future studies should further inclusion of diverse samples.

However, significantly more studies have examined the relationship between self-efficacy and persistence, rather than outcome expectations and persistence, so additional research is necessary to further establish the link between outcome expectations and college persistence (Brown et al., 2008; Gore, 2006; Lent, Brown, & Larkin, 1984; Multon et al., 1991). In sum, evidence supports SCCT's assertion that self-efficacy beliefs and outcome expectations both influence goal-oriented behaviors such as academic persistence.

Modifications to Social Cognitive Career Theory

As Lent et al. (2002) acknowledged that theoretical pathways within SCCT do not necessarily follow from Bandura's social cognitive theory, a significant amount of research addresses the validity of various SCCT propositions. Meta-analytic studies of SCCT have identified broad empirical support for proposed SCCT pathways (Lent et al., 1994; Sheu et al., 2010). In particular, path analysis of aggregated meta-analytic data provided support for pathways between previous performance, academic self-efficacy, academic goals, and college persistence (Brown et al., 2008). Given that the full SCCT framework includes a multitude of constructs, and models, research has focused primarily on examining specific components of this framework (e.g., the interest model), rather than examining SCCT components as a whole.

Multiple studies have examined the statistical fit of the interest and choice SCCT models for college students in a variety of disciplines and found support for predicted relationships between self-efficacy, outcome expectations, interests, goals, and social supports and barriers (Lent et al., 2005; Lopez, Lent, Brown, & Gore, 1997). Other research has proposed modifications for existing SCCT theoretical models (e.g., indirect

versus direct paths, identifying new paths). For example, Brown et al., (2011) examined the SCCT performance model and determined that ability, self-efficacy, and goals predicted performance. Therefore, based on study data, they proposed an additional direct path between ability and goals should be considered for future research that extends current SCCT frameworks.

Modifications regarding the role of contextual factors also have been examined. Lent et al. (2003) found support for associations between contextual supports, perceived barriers, self-efficacy and goals/actions. Whereas SCCT theorizes a direct relationship between perceived barriers and one's pursuit of goals, results from Lent et al. (2003) suggest that self-efficacy beliefs, perceived barriers, and goals may be more interconnected than previously theorized and thus, alternative models should be considered in future studies. Lent et al., (2001) found similar results when examining the SCCT choice model. They determined that perceived barriers and career supports were indirectly related to one's choices, because that relationship was also influenced by one's self-efficacy beliefs. This project attempts to add to this body of literature by examining whether perceived career barriers will moderate the relationship between academic self-efficacy beliefs and persistence intentions.

Career Optimism

One newly identified construct that has garnered recent attention in the career development literature is career optimism. Career optimism research follows work in the fields of dispositional optimism, positive psychology, and Super's life-span, life-space theory of career development (Rottinghaus, Day, & Borgen, 2005). Dispositional optimism refers to generalized expectations regarding positive future occurrences

(Scheier & Carver, 1985). Optimistic individuals are better able to maintain positive expectations about succeeding in the present and in the future (Chemers, Hu, & Garcia, 2001). Optimists are also less likely to dwell on negativity, more likely to persist when facing adversity, and more likely to utilize positive coping behaviors (Peterson & Seligman, 1984; Strack, Carver, & Blaney, 1987). Accordingly, dispositional optimism has been established as contributing positively to establishing career plans (Creed, Patton, & Bartrum, 2002; Lucas & Wanberg, 1995; Marko & Savickas, 1998). Dispositional optimism also is related to interest in one's career and engagement in career-related activities by providing motivation and positive expectancies (McIlveen, Beccaria, & Burton, 2013). Within the context of career development processes of college students, dispositional optimism has been established as positively related to engagement in career planning actions such as career exploration and the development of one's vocational identity (Creed et al., 2002; Patton et al., 2004). Higher levels of optimism have also been linked to increased task persistence (Armor & Taylor, 1998), decreased attrition from college (Solberg Nes, Evans, & Segerstrom, 2009), better adjustment from high school to college (Aspinwall & Taylor, 1992), and better academic performance and achievement (Nonis & Wright, 2003, Hoy, Tarter, & Hoy, 2006).

Within dispositional optimism, more specific contexts in which one can be optimistic exist, such as career optimism. Career optimism is defined as one's disposition to expect the best possible outcomes regarding one's career planning, one's ability to recognize and emphasize the most positive elements of one's future career development, and one's comfort in performing career planning tasks (Rottinghaus et al., 2005). Research has shown that greater career optimism positively impacts outcomes such as

career aspirations, career choice, career exploration, academic satisfaction, job satisfaction, organizational commitment, and work performance (Kluemper, Little, & DeGroot, 2009; Rottinghaus et al., 2005; Rottinghaus, Buelow, Matyja, & Schneider, 2012; Youssef & Luthans, 2007). Additionally, Chatterjee, Afshan, and Chhetri (2014) identified career optimism as an under-researched area in relation to other career planning constructs such as career adaptability, career exploration, and career decisiveness.

While career optimism has not been directly investigated within the SCCT framework, the current study operationalized career optimism as an outcome expectation and proposed to examine how career optimism is explained by academic self-efficacy and career optimism's relationship to goals such as college persistence. As previously mentioned, outcome expectations constitute one's rationale for performing a behavior based on imagined and anticipated benefits for performing that behavior. One intermediate theory that may help further support the identification of career optimism as an outcome expectation is attribution theory (Weiner, 1986). Attribution theory attempts to understand the ways in which individuals perceive and explain significant life events given attributions made about the situation, with attributional styles being defined as primarily optimistic or pessimistic (Weiner, 1986). With regard to career development, optimistic individuals are more likely to believe that career actions are the outcome of internal factors within one's control and can be impacted by effort levels (Maples & Luzzo, 2005). SCCT identifies career-related expectations as providing a framework for understanding outcomes for career decisions and career-related behaviors (Ali, McWhirter, & Chronister, 2005). Therefore, an optimistic attributional style is more likely to relate to positive outcomes or positive outcome expectations.

Additionally, empirical investigations of career optimism suggest that career optimism may serve as a surrogate for outcome expectations within a SCCT framework due to similar relationships to self-efficacy and outcome variables. For example, Garcia, Restubog, Bordia, Bordia, and Roxas (2015) determined that career decision-making self-efficacy predicts career optimism, which parallels SCCT predicted pathway between self-efficacy and outcome expectations. Furthermore, as mentioned, within SCCT, outcome expectations are expected to influence interest development, career choices, and goal performance by mediating the relationship between self-efficacy beliefs and the outcome variables. Similarly, research on optimistic attributional styles has identified links between optimistic attitudes and a variety of career outcomes such as career motivation, career exploratory behavior, career commitment, work satisfaction, and job tenure (Colarelli & Bishop, 1990; Fuqua, Blum, & Hartman, 1988; Spector, 1982; Trice, Haire, & Elliott, 1989). Thus, this study proposed career optimism as a global outcome expectation related to the pursuit of one's goals. However, empirical research on career optimism within a SCCT framework is needed to support this assertion.

Including Optimism in Social Cognitive Career Theory

Some career development research has explored whether college is adequately preparing students to be successful in their future career prospects. One study of employment outcomes for college students determined that underemployment (defined by working in fields that do not require a bachelor's degree) for college graduates since 2001 is at an all-time high (Abel, Deitz, & Su, 2014). Fogg and Harrington (2011) also examined the impact of underemployment in college graduates since the Great Recession of the late 2000s and determined that while a college degree still maintains significant

benefits, more college graduates are being forced into jobs outside of the "college labor market" such as semi-skilled blue collar jobs, low-end service and sales, and transportation and warehousing and such prospects may not warrant the economic and personals costs of pursuing higher education. Therefore, purposeful pursuit of a bachelor's degree that is congruent with one's anticipated career prospects may have a significant impact on future outcomes. Moreover, it suggests some fluidity in the expected outcomes of obtaining a college degree.

Given that career optimism attitudes will likely influence one's expectations for engaging future actions, it appears appropriate to include this construct within a SCCT framework. Moreover, Armor and Taylor (1998)'s review of optimism literature determined that specifically defined forms of optimism were found to be more robust predictors of outcomes than overall measures of dispositional optimism. This supports the need to examine career optimism specifically, rather than dispositional optimism, when applying a SCCT framework. As self-efficacy beliefs are theorized to directly impact outcome expectations (which in turn impacts outcome variables such as goals) per SCCT, it is expected that one's academic self-efficacy beliefs will also significantly influence one's level of career optimism and that career optimism will mediate the relationship between academic self-efficacy and persistence intentions.

The current study utilized the SCCT framework to examine the relationships between self-efficacy beliefs, outcome expectations, and perceived career barriers on college students' intentions to complete their degree. SCCT theorizes that self-efficacy beliefs play a large role in determining the development of one's interests and how one pursues or chooses to not pursue their goals (Lent et al., 2002). However, this process

does not occur in a vacuum. Instead, SCCT theorizes that outcome expectations mediate the relationship between self-efficacy beliefs and the pursuit of goals, and that contextual influences moderate the relationship between self-efficacy and goals (Lent et al., 2002).

Thus, this project attempted to fill in gaps in the literature that have been articulated by SCCT researchers. While self-efficacy and academic self-efficacy have been widely studied constructs, researchers have identified a need to further investigate specific ways in which efficacy beliefs impact outcomes, especially through the measurement of specific goals (Chemers et al., 2001; Schunk & Pajares, 2001). This study aimed to add to this goal by examining the effect of academic self-efficacy beliefs on college students' persistence intentions, as well as other factors that influence this process.

With respect to barriers, numerous paths for future research on how barriers impact career development processes have been identified. Lent et al. (2008) indicated that additional study of how person and environment variables such as gender, educational level, and cultural context is needed to enhance the generalizability of SCCT. Albert and Luzzo (1999), as well as Luzzo and McWhirter (2001), echoed this call for expanding SCCT research to include more diverse populations in other to better determine the career development needs of different groups. Additionally, Lent et al. (2000) also suggested that barriers should be assessed in relation to specific developmental tasks and choice options. Through recruitment of a diverse sample, this study aimed to examine the impact of perceived barriers on the career development through the lens of academic persistence processes to further explore the generalizability of SCCT.

The current study (see Figure 2) hypothesized that academic self-efficacy, career optimism, and perceived career barriers would all be associated with college persistence intentions. In particular, higher academic self-efficacy and career optimism beliefs were expected to predict increased persistence intentions, while higher perceptions of career barriers would predict lower persistence intentions. Additionally, this model proposed that career optimism would mediate the relationship between academic self-efficacy and persistence intentions and that perception of career barriers would moderate the relationship between academic self-efficacy and persistence intentions. While some support for these mediated moderation effects have been identified in the SCCT literature, this study further examined the following hypotheses through the lens of career optimism and perceived career barriers. In evaluating this model, the following hypotheses were made:

Hypothesis 1. Academic self-efficacy, career optimism, and perceived career barriers will all be associated with persistence intentions.

Hypothesis 1a. Higher perceived academic self-efficacy will predict increased persistence intentions.

Hypothesis 1b. Greater perceived career optimism will predict increased persistence intentions.

Hypothesis 1c. Higher perceptions of career barriers will predict lower persistence intentions.

Hypothesis 2. Career optimism will positively mediate the relationship between academic self-efficacy and persistence intentions.

Hypothesis 3. Perceived career barriers will moderate the relationship between academic self-efficacy and persistence intentions, which will be mediated by career optimism.

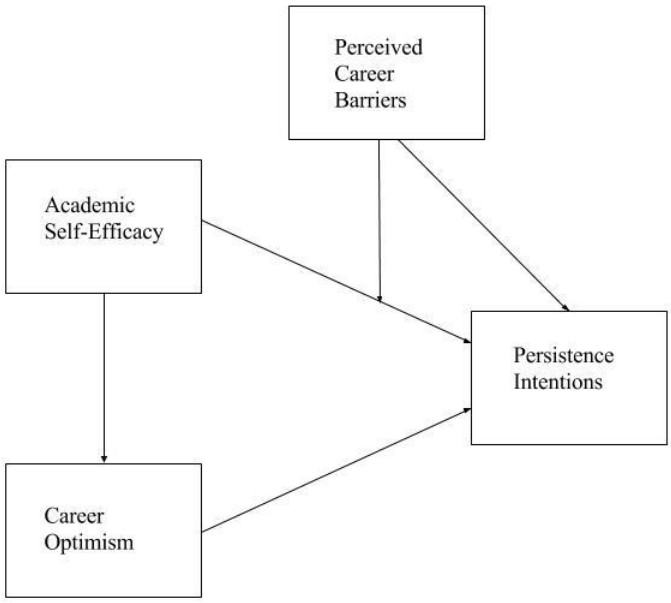

Figure 2. Proposed path analysis model

CHAPTER II - METHOD

Students currently enrolled at a mid-sized, public university in the Southeastern United States were recruited to participate. In exchange, students were compensated with partial research participation credit for an undergraduate psychology course. The final sample included 349 students, composed of 197 women (56.4%) and 152 men (43.6%) with an average age of 20.58 years (SD = 4.27). The sample consisted of 65.9% White/European American participants (*n* = 230), 24.6% Black/African American participants (*n* = 86), and 9.5% participants identified as part of another race or as biracial (*n* = 33). Seventy-nine students (22.6%) identified as having transferred to the university where the study was conducted while 270 (77.4%) reported having only attended this university. Three hundred and twenty-nine participants reported having already declared a major (94.3%) while 20 participants had yet to declare a major (5.7%). A wide range of declared majors were reported, and the top five declared majors were as follows: psychology (*n* = 60, 17.2%), nursing (*n* = 54, 15.5%), athletic training/kinesiology (*n* = 29, 8.3%), business-related majors (*n* = 28, 8%), and education (*n* = 17, 4.9%). Class standing was as follows: 144 (41.3%) freshmen, 72 (20.6%) sophomores, 59 (16.9%) juniors, 69 (19.8%) seniors, and 5 (1.5%) reported "other" as their class standing.

Measures

Demographic Form. A demographic form developed by the author included items collecting biographical information (e.g., age, gender, and ethnicity) and life experiences (e.g., years of college attendance, current employment status, and college major). All measures are listed in Appendix A.

Academic Self-Efficacy. The Self-Efficacy for Broad Academic Milestones Scale (SE-Broad; Lent, Brown, & Gore, 1997) measures perceived academic self-efficacy. This 12-item instrument uses Likert-style scoring (e.g., 0 = *no confidence* to 6 = *full confidence*). Total scores are summed with a possible range of 0-72, with higher scores indicating higher levels of academic self-efficacy and perceived ability to successfully complete academic-related tasks. Lent et al. (1997) and Elias and Loomis (2000) reported coefficient alphas of .88 and .94, respectively, for the SE-Broad when used in college student samples. Lent et al. (1997) provided evidence of discriminant validity by identifying significant differences between domain-specific self-efficacy beliefs (e.g., Mathematics Course Self-Efficacy, Mathematics Problem Self-Efficacy, Academic Self-Efficacy) and two measures of general self-concept (e.g., Academic Self-Concept Scale, Academic Adjustment Scale). Furthermore, Lent et al. (1997) reported supportive evidence of concurrent and predictive validity as scores on the SE-Broad were found to align with previous research findings which highlight the relationship between self-efficacy beliefs, career choice, and performance. Additional researchers have also used the SE-Broad to identify positive relationships between academic self-efficacy and college grades (Bong, 2001; Hsieh, Sullivan, & Guerra, 2007). Internal consistency was calculated for the current study and found a Cronbach alpha of .94.

Career Optimism. The Negative Career Outlook subscale from the revised Career Futures Inventory (CFI-R; Rottinghaus, Buelow, Matyja & Schneider, 2012) was used to measure career optimism. The Career Futures Inventory was originally developed by Rottinghaus et al. (2005) and included a Career Optimism subscale. However, subsequent research has brought into question the factor structure of the original Career Optimism

scale. In particular, Brown (2016) suggested that the Career Optimism scale measured both optimism regarding one's future career-related development but also confidence, or self-efficacy, in the form of work volition and work hope beliefs. Given these criticisms, the revision process of the Career Future Inventory aimed to better capture dispositional optimism, career concern, and future orientation with the new 4-item Negative Career Outlook (NCO) subscale. Following multiple rounds of factor analyses, the original Career Optimism subscale was removed in favor of creating a Career Agency subscale that incorporated optimism, control, confidence, and self-awareness items and the Negative Career Outlook subscale that reflected negative thoughts and beliefs related to one's career decisions and whether one will be able to achieve positive career outcomes.

Rottinghaus et al. (2012) reported that the NCO subscale was significantly correlated to the Life Orientation Test–Revised, a measure of dispositional optimism, and moderately correlated to the three subscales (Decidedness, Comfort, Reasons) of the Career Decision Profile, a measure of career decision status. The NCO subscale also demonstrated acceptable internal consistency in both the developmental (Cronbach's alpha = .89) and validation (Cronbach's alpha = .77) samples (Rottinghaus et al., 2012). Given that the NCO subscale addresses one's optimism or pessimism regarding future career outcomes while providing less overlap with confidence and self-efficacy beliefs, this measure was chosen to assess career optimism. This 4-item subscale uses Likert-style scoring, and respondents are asked to indicate whether they agree or disagree with each statement, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores are then summed with a possible range of 4-20, and higher scores indicate more negative thoughts regarding one's future career trajectory. Since items are negatively coded and other study

measures are positive coded, items were reverse coded to simplify the analysis process. A Cronbach alpha of .87 was calculated for the NCO subscale based on study data.

Perceived Career Barriers. The 11-item Career-Related Barriers subscale from the Perception of Barriers scale (POB; Luzzo & McWhirter, 2001) was used to measure participants' perceptions of barriers that they may encounter regarding their career development. Each item in this subscale begins with the stem "In my future career, I will probably experience…". Individual items address perceived barriers related to one's gender, one's race/ethnicity, and family obligations. The POB uses Likert-style scoring, and respondents are given a range of responses from *strongly disagree* (1) to str*ongly agree* (5) for each item. Items are summed to create a subscale score ranging from 0-55, with higher scores indicating the perception of more barriers. The original POB scale (McWhirter, 1997) had strong internal consistency (Cronbach's alpha = .87) but was developed to assess perceived barriers in high school students. Luzzo and McWhirter (2001) substantially revised the measure, tested it with a college student sample, and reported a Cronbach's alpha of .90 for the total scale and an alpha coefficient of .86 for the Career-Related subscale. Test-retest reliability over a 2-month time span for a randomly selected subsample produced a stability coefficient of .78 for the total scale and .72 for the Career-Related subscale. Indicators of validity were not provided by the authors. However, the POB has been used in several empirical studies assessing SCCT models that also reported acceptable Cronbach's alpha statistics of .86 and .87 (Lindley, 2005; Lopez & Ann-Yi, 2006) and initial evidence of discriminate validity. A Cronbach alpha of .92 for the POB scale was found for the current sample.

Persistence Intentions. The Degree Commitment subscale from the College Persistence Questionnaire (CPQ; Davidson, Beck, & Milligan, 2009), which includes five additional subscales, was used to assess persistence intentions. This 5-item subscale assesses one's degree of certainty regarding completing a degree, one's commitment toward earning a degree, and one's level of external support for pursuing a degree. The CPQ uses Likert-style scoring, and respondents are asked to indicate the likelihood of each response outcome, ranging from one (*very unlikely*) to five (*very likely*). Summed scores range from 0-20, and higher scores reflect greater intentions to complete one's degree. Davidson et al. (2009) used principal components analysis to determine that each of the CPQ's six subscales consisted of homogenous, theory-derived items and that each subscale assessed distinctly different constructs. Davidson et al. (2009) reported coefficient alphas ranging from .63 to .82 for the CPQ subscales and reported an acceptable Cronbach's alpha of .70 for the Degree Commitment subscale. Test-retest reliability over a 5-week interval was established during the initial instrument development process (Davidson et al., 2009). Davidson et al. (2009) also found evidence of statistically significant construct validity after analyzing freshman to sophomore year enrollment status for study participants. Based on study data, a Cronbach alpha of .83 was calculated for the Degree Commitment subscale of the CPQ.

Procedures

After obtaining IRB approval, participants who were at least 18 years old and currently enrolled at a postsecondary institution were recruited from a mid-sized public university in the southeastern United States. In exchange for participation in this study, students were awarded .5 points of research participation credit that could be applied to a

qualifying undergraduate course offered by the psychology department at the university. Through SONA, an online data management system, students enrolled in the study. Individuals were directed to complete the online survey through Qualtrics, a research-based survey service. Prior to completing the research instruments, each participant viewed information regarding informed consent for this study, including its purpose, the voluntary nature of participating, and potential benefits and risks of participation. After providing consent, individuals were presented with the study measures, in random order.

Additionally, validity check items were embedded throughout the survey to identify careless response patterns. Meade and Craig (2012) recommended that including instructed response items (e.g., *Please select Strongly Disagree for this item*) can help detect careless responding. Meade and Craig (2012) also recommended placing one validity check item for every 50-100 items with a maximum of three validity check items per study. Therefore, two validity check items were included, and inclusion of these items was defined in the informed consent process. Participants who incorrectly responded to either validity item were exited from the survey, did not receive research participant credit, and their data was not used in analyses.

Data Analysis

Data Management

Data cleaning occurred prior to data analysis. First, cases with missing or potentially corrupted data were identified. If the participant did not complete the study or failed to respond to at least 80% of all study items, the corresponding case was omitted from analysis. If a participant responded in a potentially non-cooperative fashion (i.e., responding with 1's to all items), the corresponding case also was omitted from analysis.

As a result, 8 total cases were omitted. Data from an additional 9 participants were removed due to incomplete data (e.g., not attempting one or more full measures). Lastly, 16 cases (3 females, 13 males) were omitted due to failure to comply with validity checks. In all, 33 cases were removed prior to data analysis.

Statistical Analysis

To prepare the dataset for analysis, SPSS was first used to reverse code appropriate study items, including the entire NCO measure. Statistical outliers were examined, and none were found. An analysis of missing data determined that the dataset was highly intact. Data was missing from one participant on the 11th item of the POB measure, from two participants on the 2nd item of the CPQ, and from one participant on the 3rd, 4th, and 5th items of the CPQ. Linear trend at point imputation via SPSS was utilized to address these cases of missing data, given evidence by Cokluk and Kayri (2011) that this method, compared to four others, most closely resembled values in the original intact dataset, because missing data was replaced with values that reflected observed trends in the dataset. Following imputation, total scale scores were then calculated. After data cleaning and integrity checks, the final sample used for analyses contained 349 individuals.

Each total scale score was then tested for normality in SPSS via the Shapiro-Wilk and Kolmogorov-Smirnov tests. Data for each scale was found to follow non-normal patterns of distribution. Skewness and kurtosis was also examined for all total scale scores. The SEB, NCO, and POB scales showed acceptable levels of skewness and kurtosis ($< \pm 2$). However, the CPQ scale exhibited moderate levels of negative skewness (-2.97) and high levels of positive kurtosis (12.35), indicating that study participants

overwhelmingly reported high likelihood that they would complete their college degree. Hayes (2013) suggested that analyses utilizing structural equation modeling can accommodate non-normally distributed data and that non-normally distributed data is common within social sciences research; thus, scale scores were not transformed.

Correlations between study variables can be found in Table 1. The academic self-efficacy and college persistence measures were moderately correlated (.48, $p < .01$) while other variables were minimally correlated or not significantly correlated. An attempt was also made to identify potential covariates. Based on information provided on the demographic form, dummy variables were subsequently coded to identify gender (males = 0, females = 1) and transfer status (0 = transfer student, 1 = not a transfer student). With respect to race, 230 participants self-identified as White/Caucasian, 86 identified as Black/African-American, 12 identified as Asian-American, 9 identified as Hispanic/Latino, 9 identified as Multiracial, 1 identified as American Indian, 1 identified as Alaskan Native, and 1 identified as Pacific Islander. Given the relatively small percentage of non-White/Caucasian or Black/African-American individuals ($n = 33$), a non-White/Caucasian group ($n = 119$) was created by merging Black/African-American, Asian-American, Hispanic/Latino, multiracial, American Indian, Alaskan Native, and Pacific Islander participants into a single category. Matriculation status was as identified as a possible covariate due to potential differences in academic and extracurricular experiences. Seventy-nine individuals indicated that they transferred to the university while 270 did not. Based on information provided regarding parental educational attainment, participants were placed into the first-generation category if they reported neither parent as having postsecondary education experience ($n = 87$) or into the

continuing-generation category if they reported either parent had attempted postsecondary education (n = 259). Three participants did not report parental education so any analyses utilizing this variable excluded these participants. Thus, new dummy coded variables for race (White/Caucasian = 0, non-White/Caucasian = 1) and generational status (first-generation = 0, continuing generation = 1) were created for analysis.

To identify relevant covariates that may influence overall results, independent samples t-tests were used to compare whether study variable means differed with respect to gender, race, matriculation status, and generational status. Results can be seen in Table 2. Transfer status and parent educational attainment did not contribute to statistically different means for any of the four study variables. Female participants reported both greater perceived barriers and higher persistence intentions than male participants in the sample. White participants reported greater levels of academic self-efficacy and lower levels of perceived barriers than non-white participants. Given these statistically significant group differences, gender and race were included as covariates to account for these effects in subsequent analyses.

CHAPTER III - Results

To address Hypothesis 1, a multiple hierarchal regression model with persistence intentions identified as the dependent variable, gender and race identified as covariates in the first step, and academic self-efficacy, career optimism, and perceived career barriers identified as independent variables in the second step, was conducted in SPSS. The first step was significant [F (2, 346) = 4.30, p = .01, R = .16] and explained 2.4% variance of persistence intentions in the final model. With the independent variables added to the model, the overall model was also significant [ΔF (5, 343) = 33.47, p <.01, R^2 = .25] and explained 24.5% variance of persistence intentions explained by the final model. However, the only significant predictor in the model was academic self-efficacy (β = .47, sr^2 = .21, p < .01), with increased academic self-efficacy predictive of fewer thoughts of withdrawal from college (Hypothesis 1a). Contrary to expectations, support was not found for Hypothesis 1B or Hypothesis 1C as neither career optimism nor perceived barriers were significantly related to persistence intentions.

To test the other proposed hypotheses, moderated mediation effects analyses, also known as conditional indirect effect analysis, was performed in SPSS utilizing the PROCESS v2.16 macro (Hayes, 2013) and using methods outlined by Preacher, Rucker, and Hayes (2007) and Hayes (2016). Given that this project tested a modification of SCCT, path analysis was deemed appropriate for its ability to estimate effects among variables that have been specified a priori based on theory and empirical research (Schumaker & Lomax, 1996). Additionally, moderated mediation allows for all analyses to be run in a single model, which more aptly accounts for shared variance (Schumaker & Lomax, 1996).

To assess for the statistical significance of these pathways, bootstrapping, an estimation and hypothesis strategy, was applied. Bootstrapping has been recommended for structured equation modeling analyses, because the study sample is resampled at random points in order to represent the general population more accurately (Preacher, Rucker, & Hayes, 2007). Hayes (2015) recommended that conditional indirect effects be resampled at least 10,000 times when bootstrapping is utilized for testing mediation. Once bootstrapping is completed in SPSS via the PROCESS macro, the mediation model is considered statistically significant if the 95% confidence interval obtained from the bootstrapping estimate of this study's sample does not contain zero (Hayes, 2015; Preacher et al., 2007). If the mediated pathway is statistically significant, conditional indirect effect analysis will then be performed in SPSS via the PROCESS macro to determine the level at which perceived career barriers moderated the relationship between academic self-efficacy and persistence intentions.

Model 4 in PROCESS, with persistence intentions set as the dependent variable, academic self-efficacy as the independent variable, career optimism with the mediator variable, and race and gender as covariates, was selected to begin this analysis. When controlling for gender and race, academic self-efficacy and career optimism together significantly predicted persistence intentions [$F(4,344) = 27.40$, $p < .01$, $R^2 = .24$], with a significant direct effect of academic self-efficacy on persistence intentions ($b = .47$, $t(344) = 9.58$, $p < .01$]. However, career optimism was not found to significantly predict persistence intentions [$b = .03$, $t(344) = .61$, $p = .55$]. While the direct effect of academic self-efficacy on career optimism was also significant [$F(3,345) = 6.11$, $p < .01$, $R^2 = .05$, $b = .21$, $p < .01$], the hypothesis that career optimism will mediate the relationship between

academic self-efficacy and persistence intentions was not supported given insignificant indirect effects of academic self-efficacy to predict persistence intentions through career optimism (b = .001, 95% CI = -.00, .01).

PROCESS was also used to determine whether perceived career barriers moderated the relationship between academic self-efficacy and persistence intentions (Hypothesis 3). Model 1 in PROCESS, with persistence intentions set as the dependent variable, academic self-efficacy as the independent variable, and perceived career barriers as the moderator variable, was selected for this analysis. Gender and race were again included as covariates. The overall model was significant [$F(5, 343) = 10.82$, $p < .01$, $R^2 = .25$]. While the main effect of academic self-efficacy on persistence intensions was significant [$b = .48$, $t(343) = 6.95$, $p < .01$], there was not a significant main effect for perceived barriers predicting persistence intentions [$b = .06$, $t(343) = .98$, $p = .33$]. The interaction between academic self-efficacy and perceived barriers also did not significantly predict persistence intensions [$b = -.10$, $t(343) = 1.29$, $p = .20$]. Therefore, Hypothesis 2 was not met.

Given that the mediation between academic self-efficacy, career optimism, and persistence intentions was not significant, a conditional indirect effect where perceived career barriers will moderate the mediation of career optimism on the relationship between academic self-efficacy and persistence intentions was rejected (Hypothesis 3).

CHAPTER IV – DISCUSSION

The current study examined factors that contribute to college students' intentions to persist until they earn a bachelor's degree. Social Cognitive Career Theory suggests that one's outcome expectations will mediate the relationship between self-efficacy beliefs and goals while contextual influences will moderate the relationship between self-efficacy beliefs and goals (Lent et al., 1994; Lent et al., 2002). Thus, a model in which the conditional indirect effects between academic self-efficacy, career optimism, perceived career barriers, and intention to persist toward degree completion was proposed. While previous SCCT-informed research has examined the impact of self-efficacy and barriers on academic outcomes such as degree persistence (Eitel & Martin, 2009; Gore 2006; Peltier, Laden, & Matranga, 2000; Vuong et al., 2010), this study postulated an examination of career optimism as an outcome expectation. Thus, this study represented the first known investigation of this proposed SCCT-informed pathway and aimed to establish preliminary support for this relationship.

Contrary to expectations, the proposed model was not supported. While academic self-efficacy significantly predicted persistence intentions, career optimism did not significantly mediate this relationship, because career optimism was not found to predict persistence intentions in this study. Nor did perceived career barriers moderate the relationship between academic self-efficacy beliefs and persistence intentions, because perceived career barriers were not found to predict persistence intentions for students in this sample. Despite support from previous literature, these relationships could not be established in this study. Rather, only academic self-efficacy was found to explain a

significant amount of variance in college persistence, a relationship that has been well-established through other research (Chemers et al., 2001; Gore, 2006; Schunk & DiBenedetto, 2014). Results from this study suggest that this relationship was even more salient for students in this sample as participants widely reported high academic self-efficacy beliefs along with high persistence intentions. Similarly, previous studies have found support for a relationship between greater perceived career barriers and the diminished ability to pursue goals (Luzzo & McWhirter, 2001). Non-White participants reported significantly greater perceived barriers than White students and women reported significantly greater perceived barriers than men, which aligns with results from previous studies (Luzzo, 1995; Luzzo & McWhirter, 2001; McWhirter, 1997; Swanson & Woitke, 1997). However, perceived barriers were not significantly related to persistence intentions for either group, despite research which suggests that women and students of color experience more barriers in higher education.

This finding suggests that while students in this sample are aware of and anticipated career-related barriers, these barriers did not disrupt their level of commitment toward attaining a bachelor's degree. Given that students are constantly faced with academic challenges that require immediate attention (e.g., tests, papers, projects), these academic-related barriers may be perceived as more salient than long-term career barriers that result from sociocultural forces. In other words, it may be that low self-efficacy for academic success account for a greater variance in predicting withdrawal intentions due to the saliency of needing to maintain passing grades, completing prerequisite courses, and advancing in one's major, than more distal barriers such as anticipated discrimination in the workforce due to one's gender. Thus, research

examining other proximal barriers should be explored in the future. For example, links between receiving financial aid (Fike & Fike, 2008), sense of belonging (Hausmann, Schofield, & Woods, 2007; Morrow & Ackermann, 2012), social connectedness (Allen, Robbins, Casillas, & Oh, 2008), parental support of ethnic minority students' choice to pursue higher education (Dennis, Phinney, & Chuateco, 2005; Ojeda, Navarro, & Morales, 2010), perceived social support (Nicpon et al., 2006) and experience of depressive symptomology (Eisenberg, Golberstein, & Hunt, 2009) have already been identified as impacting both persistence intentions and persistence behaviors. Thus, these aforementioned barriers are likely more proximal in affecting college persistence rather than the career-related barriers examined in the current study.

Additionally, sample characteristics such as spiritual beliefs may also have influenced the null findings regarding perceived career barriers and its impact on proximal academic processes. A qualitative study of African-American male students in a community college setting explored the relationship of spirituality and academic success and determined that spirituality contributed positively to academic success by enhancing one's ability to overcome barriers (Wood & Hilton, 2012). The 2014 Pew Research Center Religious Landscape Study determined that 85% of surveyed adult Mississippians identified as religious, 74% identified religion as "very important" in their life, and 75% reported daily prayer (Pew Research Center, 2015). According to institutional data, in-state students account for roughly 75% of the student body. While participants were not asked to identify their religious affiliation, if their religious beliefs reflect overall state and regional norms, faith may have influenced the perception of barriers and/or one's outlook regarding coping with barriers.

Lastly, this study measured participants' intentions to continue pursuing, and ultimately obtain, a bachelor's degree, rather than actual persistence behaviors such as maintaining enrollment status from semester to semester or degree attainment. Research has found support for a relationship between higher self-efficacy beliefs and academic persistence. Larson et al. (2015) collected high school GPA, first semester college GPA, ACT math scores, and math/science self-efficacy beliefs in STEM and pre-med first year undergraduates and longitudinally tracked whether these students graduated. They determined that math/science self-efficacy had greater predictive validity than high school GPA and ACT math scores in predicting graduation, although this difference was nullified when first-semester GPA was included.

Researchers have also explored the relationship between self-efficacy beliefs and semester-by-semester enrollment decisions and determined that self-efficacy may have some predictive validity with respect to persistence decisions. Utilizing the College Student Self-Efficacy Inventory (CSEI), which measures course, social and roommate-related efficacy beliefs, Gore (2006) determined that CSEI scores were significantly higher for students who remained enrolled for three consecutive semesters than students who withdrew from the university. Similarly, Wright et al. (2012) determined that higher levels of college self-efficacy predicted fall to spring semester persistence in first-year students, and Vuong et al. (2010) also found this same effect for the fall to spring re-enrollment of sophomore students.

The literature also suggests that a wide variety of factors including socioeconomic status, unmet financial need, inadequate high school academic preparation, poor social support systems, feeling unwelcomed and unsupported on campus, and lower social

involvement on campus may impact the graduation rates of undergraduate students (Lotkowski, Robbins, & Noeth, 2004; Tinto, 2004; Wohlgemuth et al., 2007). While students in this sample overwhelmingly reported high persistence intentions, institutional data suggests that for first-time, full-time enrollees, the 6-year graduation rate falls between 46.7% and 49.8%, which suggests a mismatch between persistence intentions and actual persistence behaviors. Had this study measured long-term academic outcomes rather than intentions, study results may have differed.

Overall, these finding have significant implications for the educational attainment of college students. Of interest are students who enter college but do not feel prepared to manage university-level coursework, either overall or within specific academic domains. This research suggests that the strength of a student's academic self-efficacy beliefs may significantly impact that student's educational outcomes (Gore, 2006; Larsen et al., 2015). Thus, efforts to improve graduation and retention rates should consider ways in which academic self-efficacy can be enhanced. For example, MacPhee, Farro, and Canetto (2013) collected academic self-efficacy beliefs of STEM students when they enrolled in a McNair Scholars mentoring program and when they completed the program. They determined that women reported significantly lower academic self-efficacy beliefs than men at the beginning of the program, despite their high levels of academic achievement. However, when the program concluded, women and men reported comparable levels of academic self-efficacy, which suggests that a mentoring approach may be useful in addressing incongruence between beliefs and performance (MacPhee et al., 2013).

In addition, some individuals may hold inaccurate self-efficacy beliefs and thus discount objective evidence of their abilities and competence. Pajares and Miller (1994) had students first rate their math self-efficacy and then complete a series of math problems. Pajares and Miller (1994) determined that while a majority of students over-estimated their math performance abilities, roughly 20% underestimated their math performance and correctly answered more problems than they had anticipated, suggesting that mismatches in efficacy and ability may occur in some contexts. If mismatches between students' academic self-efficacy beliefs and objective data can be identified, targeted academic advising, or counseling interventions may assist these students to re-examine and ultimately shift their efficacy beliefs, which in turn may better support degree persistence behaviors. Efforts such as these may help avoid departures from college that are influenced by misattribution of abilities and skills.

Limitations

Limitations related to the participant demographics may impact generalizability of study results. Given that data was collected from a single university setting, individual characteristics of study participants such as goals for higher education, previous academic successes, and failures while in pursuit of educational goals, and career plans may not generalize to other settings. Additionally, by drawing from a single university setting, institutional characteristics (e.g., admissions selectivity) may further limit generalizability. The study also could not control for pre-college academic preparation or academic aptitude. Additionally, this study focused on intentions to persist and graduate, rather than actual persistence data (e.g., graduation rate, continued enrollment from one

semester to the next) so it is unknown whether results would have differed if actual persistence data was examined.

Overall, the null findings from this study should not discourage researchers from future examining how academic self-efficacy, career optimism and perceived career barriers may impact college persistence processes. Academic self-efficacy was identified as a significant predictor of persistence intentions but given that graduation and retention data from this university suggests that roughly half of all first-time, full-time enrollees will not ultimately graduate, research into additional factors that contribute to persistence intentions and persistence decisions should continue.

Future studies that inform intervention efforts can examine the intersection of academic and non-academic factors and identify ways in which retention efforts can incorporate both elements. Research suggests that academic and social integration combined may have the greatest effects on persistence (Asera, 1998; O'Brien & Shedd, 2001). Given the significant transitions that many students face as they transition to college (e.g., moving away from home for the first time, living independently for the first time, adjusting to a new cultural environment), these adjustment processes have also been examined in the college retention literature. A longitudinal study by Gerdes and Mallinckrodt (1994) examined the role of emotional, social, and academic adjustment to college and determined that one's emotional and social adjustment to college predicted retention and academic adjustment to college. Other studies have determined that greater adjustment to campus life predicted higher goal commitment intentions such as receiving one's bachelor's degree (Grant-Vallone, Reid, Umali, & Pohlert, 2003), and overall, a meta-analysis conducted by Crede and Niehorster (2012) concluded that college

adjustment is a reliable predictor of persistence. While perceived career barriers were identified as a contextual factor in this study, the absence of adjustment processes as another potentially important contextual factor may have influenced study results. Perhaps the interaction between academic self-efficacy beliefs and one's adjustment to college would have influenced one's intentions to persist and thus could be examined in future research.

Conclusion

This project examined conditional indirect effects between academic self-efficacy, career optimism, perceived career barriers, and intentions to persist toward a bachelor's degree. Contrary to expectations, career optimism did not mediate the relationship between academic self-efficacy and persistence intentions, and perceived career barriers did not moderate the relationship between academic self-efficacy and persistence intentions. Rather, only the direct pathway between academic self-efficacy and persistence intentions significantly explained variance for students in this sample, suggesting that for students in this sample, career-related outcome expectations (i.e., career optimism) and contextual factors (i.e., perceived career barriers) did not significantly impact their intentions to continue to pursue their bachelor's degree.

APPENDIX A - Tables

Table 1 Correlations between SE-B, NCO, POB, and CPQ scales

Variable	SE-B	NCO	POB	CPQ
SE-B	.94			
NCO	.21**	.87		
POB	-.10	-.20**	.92	
CPQ	.48**	.14*	.02	.83

Note: SE-B = Self-Efficacy for Broad Academic Milestones measure, NCO = Negative Career Outlook subscale from the Career Futures Inventory–Revised measure, POB = Career-Related Barriers subscale from the Perception of Barriers measure, CPQ = Degree Commitment subscale from the College Persistence Questionnaire measure. For all correlations, $n = 349$. Pearson correlation coefficients were used. * $p < .05$; ** $p < .01$; Cronbach's alpha coefficients are listed on the diagonal.

Table 2 Results of t-tests and descriptive statistics of SE-B, NCO, POB, and CPQ by demographic factors

Outcome	Group						95% CI for Mean Difference		
	Male			Female					
	M	SD	n	M	SD	n		t	df
SE-B	81.68	16.60	152	84.53	14.52	197	-6.13, 0.43	-1.71	347
NCO	15.07	3.68		15.82	3.85		-1.55, 0.06	-1.83	347
POB	23.98	8.43		26.61	9.63		-0.97, 0.07	-2.72*	341.44**
CPQ	22.62	3.28		23.45	2.44		-1.45, -0.20	-2.60*	269.42**
	White			Non-White					
SE-B	84.91	13.96	230	80.16	17.75	119	1.07, 8.44	2.54*	195.28**
NCO	15.44	3.66		15.59	4.05		-0.99, 0.70	-.34	347
POB	23.51	8.67		29.26	9.07		-7.71, -3.80	-5.79*	347
CPQ	23.20	2.82		22.87	2.95		-0.31, 0.96	1.0	347
	First Generation			Continuing Generation					
SE-B	82.16	16.14	87	83.70	15.35	259	-5.31, 2.27	-0.79	344
NCO	15.52	4.00		15.48	3.75		-0.89, 0.96	0.07	344
POB	25.71	9.72		25.37	9.07		-1.09, 2.60	0.30	344
CPQ	23.40	2.39		23.00	3.00		-0.32, 1.07	1.06	344
	Transfer			Non-Transfer					
SE-B	83.82	16.61	79	83.14	15.18	270	-3.22, 4.59	0.34	347
NCO	15.43	3.89		15.51	3.77		-1.04, 9.87	-0.17	347
POB	24.23	8.14		25.83	9.48		-3.92, 0.71	-1.36	347
CPQ	22.92	2.60		23.13	2.94		-0.93, 0.51	-0.57	347

Note: SE-B = Self-Efficacy for Broad Academic Milestones measure, NCO = Negative Career Outlook subscale from the Career Futures Inventory–Revised measure, POB = Career-Related Barriers subscale from the Perception of Barriers measure, CPQ = Degree Commitment subscale from the College Persistence Questionnaire measure. * $p < .05$; ** Unequal variances not assumed according to Levene's Test for Equality of Variances.

APPENDIX B Survey

Demographic Questionnaire

Please provide the following demographic information:

Age: ____

Gender: *
___ Male (0)
___ Female (1)

Sexual Orientation:
___ Bisexual (1)
___ Gay or Lesbian (2)
___ Heterosexual (3)
___ Other (4)

Race/Ethnicity:
___ Alaskan Native (1)
___ American Indian (2)
___ Asian American (3)
___ Black/African American (4)
___ Hispanic/Latino (5)
___ Multiracial (6)
___ Pacific Islander (7)
___ White/Caucasian (8)

Were you a transfer student?
___ Yes
___ No

Current Class Standing:
___ Freshman
___ Sophomore
___ Junior
___ Senior
___ Other

Estimated Family Income
___ $0-$9,999
___ $10,000-$19,999
___ $20,000-$24,999
___ $25,000-$29,999
___ $30,000-$34,999

___ $35,000-$39,999
___ $40,000-$49,999
___ $50,000 or greater
___ Unknown
___ I choose to not disclose this information

Highest Level of Education Completed by Your Mother:
___ Less than high school
___ High school degree or GED
___ Vocational degree/certificate
___ Attempted college but did not graduate
___ Associate's degree
___ Bachelor's degree
___ Graduate degree
___ Not applicable

Highest Level of Education Completed by Your Father:
___ Less than high school
___ High school degree or GED
___ Vocational degree/certificate
___ Attempted college but did not graduate
___ Associate's degree
___ Bachelor's degree
___ Graduate degree
___ Not applicable

Have you declared a major?
___ Yes (if yes, what is your declared major? _____)
___ No (if no, what major(s) are you considering? _____)

* One survey was created exclusively for male participants, and one survey was created exclusively for female participants. Participants were automatically re-directed to the proper survey (e.g., somebody who selected "male" in the female survey will be re-directed to the informed consent for the male survey).

Self-Efficacy for Broad Academic Milestones Scale

Directions: Please indicate how much confidence you have that you could do each of the following at USM based on the following rating scale: *

No Confidence At All		Very Little Confidence		Some Confidence		Much Confidence		Complete Confidence	
0	1	2	3	4	5	6	7	8	9

Complete the General Education Written Communication requirements (e.g., ENG 101 & ENG 102) with grades of at least 3.0.

Complete the General Education Humanities requirements (e.g., ENG 203, HIS 101, HIS 102, etc) with grades of at least 3.0.

Complete the General Education Natural Science & Mathematics requirements (e.g., MAT 101, BSC 110, GHY 104, GLY 101, etc) with grades of at least 3.0.

Earn a cumulative grade point average of at least 2.0 after two years of study.

Earn a cumulative grade point average of at least 2.0 after three years of study.

Gain admission to your first-choice college major.

Complete the requirements of your academic major with a grade point average of at least 3.0.

Excel at USM over the next semester.

Excel at USM over the next two semesters.

Excel at USM over the next three semesters.

Graduate from USM.

** Permission was granted to use this measure from Dr. Robert Lent. Original items were modified to fit USM institutional requirements for undergraduate students.*

Negative Career Outlook subscale from the Career Futures Inventory - Revised

Directions: Below are statements that you may agree or disagree with. Please use the listed 1-5 rating scale to record your response to each item.
1 = Strongly Disagree
2 = Disagree
3 = Neither Agree Nor Disagree
4 = Agree
5 = Strongly Agree

___ I doubt my career will turn out well in the future.
___ It is unlikely that good things will happen in my career.
___ I lack the energy to pursue my career goals.
___ Thinking about my career frustrates me.

** All items were reverse scored*

Career-Related Barriers subscale from the Perception of Barriers

Directions: Below are statements regarding your perceptions of your anticipated career. Please use the listed 1-5 rating scale to record your response to each item.
1 = Strongly Disagree
2 = Disagree
3 = Neither Agree Nor Disagree
4 = Agree
5 = Strongly Agree

_____ In my future career, I will probably be treated differently because of my sex.
_____ In my future career, I will probably be treated differently because of my racial/ethnic background.
_____ In my future career, I will probably experience negative comments about my sex (such as insults or rude jokes).
_____ In my future career, I will probably experience negative comments about my racial/ethnic background (such as insults or rude jokes).
_____ In my future career, I will probably have a harder time getting hired than people of the opposite sex.
_____ In my future career, I will probably have a harder time getting hired than people of other racial/ethnic backgrounds.
_____ In my future career, I will probably experience discrimination because of my sex.
_____ In my future career, I will probably experience discrimination because of my racial/ethnic background.
_____ In my future career, I will probably have difficulty finding quality daycare for my children.
_____ In my future career, I will probably have difficulty getting time off when my children are sick.
_____ In my future career, I will probably have difficulty finding work that allows me to spend time with my family.

Degree Commitment subscale from the College Persistence Questionnaire

Directions: Below are statements related to your postsecondary education intentions.

Please use the following 1-5 rating scale to record your response to these two items.
1 = Very Unlikely
2 = Unlikely
3 = Neither Likely Nor Unlikely
4 = Likely
5 = Very Likely

_____ At this moment in time, how certain are you that you will earn a college degree?

_____ At this moment in time, how strong would you say your commitment is to earning a college degree, here or elsewhere?

Please use the following 1-5 rating scale to record your response to this item.
1 = Very Weak
2 = Weak
3 = Neither Strong Nor Weak
4 = Strong
5 = Very Strong

_____ How strong is your intention to persist in your pursuit of the degree, here or elsewhere?

Please use the following 1-5 rating scale to record your response to this item.
1 = Very Unsupportive
2 = Unsupportive
3 = Neither Supportive Nor Unsupportive
4 = Supportive
5 = Very Supportive

_____ How supportive is your family of your pursuit of a college degree, in terms of their encouragement and expectations?

Please use the following 1-5 rating scale to record your response to this item.
1 = Not Disappointed At All
2 = Not Disappointed
3 = No Opinion
4 = Somewhat Disappointed
5 = Very Disappointed

_____ When you think of the people who mean the most to you (friends and family), how disappointed do you think they would be if you quit school?

APPENDIX C – IRB Approval Letter

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 16110402
PROJECT TITLE: Role of Career Outlook and Perceived Career Barriers on College Students' Academic Persistence
PROJECT TYPE: New Project
RESEARCHER(S): Ben Hao Wu
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Psychology (Counseling Psychology)
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 11/07/2016 to 11/06/2017
Lawrence A. Hosman, Ph.D.
Institutional Review Board

REFERENCES

Abel, J. R., Deitz, R. & Su, Y. Are recent college graduates finding good jobs? *Current Issues in Economics and Finance*, *20*(1), 1-8.

Albert, K. A., & Luzzo, D. A. (1999). The role of perceived barriers in career development: A social cognitive perspective. *Journal of Counseling & Development*, *77*(4), 431-436.

Allen, J., Robbins, S. B., Casillas, A., & Oh, I. S. (2008). Third-year college retention and transfer: Effects of academic performance, motivation, and social connectedness. *Research in Higher Education*, *49*(7), 647-664.

Ali, S. R., McWhirter, E. H., & Chronister, K. M. (2005). Self-efficacy and vocational outcome expectations for adolescents of lower socioeconomic status: A pilot study. *Journal of Career Assessment, 13*(1), 40-58.

Armor, D. A., & Taylor, S. E. (1998). Situated optimism: Specific outcome expectancies and self-regulation. *Advances in Experimental Social Psychology*, *30*, 309-379.

Asera, R. (1998). Supporting student persistence. *Black Issues in Higher Education*, *15*(10), 104-109.

Aspinwall, L. G., & Taylor, S. E. (1992). Modeling cognitive adaptation: a longitudinal investigation of the impact of individual differences and coping on college adjustment and performance. *Journal of Personality and Social Psychology*, *63*(6), 989-1003.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, *37*(2), 122-147.

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

Betz, N. E., & Voyten, K. K. (1997). Efficacy and outcome expectations influence career exploration and decidedness. *Career Development Quarterly, 46*(2), 179-189.

Bong, M. (2001). Between-and within-domain relations of academic motivation among middle and high school students: Self-efficacy, task value, and achievement goals. *Journal of Educational Psychology, 93*(1), 23-34.

Braxton, J. M., Vesper, N., & Hossler, D. (1995). Expectations for college and student persistence. *Research in Higher Education, 36*(5), 595-611.

Brown, S. D. (2016). Meta-Analysis and Evidence-Based Career Practice: Current Status and Future Directions. In J. P. Sampson, E. Bullock-Yowell, V. C. Dozier, D. S. Osborn, and J. G. Lenz (Eds.), *Integrating theory, research, and practice in vocational psychology: Current status and future directions*. Retrieved from https://journals.fcla.edu/svp2016/

Brown, S. D., & Krane, R. N. E. (2000). Four (or five) sessions and a cloud of dust: Old assumptions and new observations about career counseling. *Handbook of counseling psychology* (3rd ed., pp. 740--766). Hillsdale, NJ: Erlbaum.

Brown, S. D., Lent, R. W., Telander, K., & Tramayne, S. (2011). Social cognitive career theory, conscientiousness, and work performance: A meta-analytic path analysis. *Journal of Vocational Behavior, 79*(1), 81-90.

Brown, S. D., Tramayne, S., Hoxha, D., Telander, K., Fan, X., & Lent, R. W. (2008). Social cognitive predictors of college students' academic performance and

persistence: A meta-analytic path analysis. *Journal of Vocational Behavior, 72*(3), 298-308.

Byars-Winston, A., Estrada, Y., Howard, C., Davis, D., & Zalapa, J. (2010). Influence of social cognitive and ethnic variables on academic goals of underrepresented students in science and engineering: A multiple-groups analysis. *Journal of Counseling Psychology, 57*(2), 205-218.

Carnevale, A. P., Rose, S. J., & Cheah, B. (2011). The college payoff: Education, occupations, lifetime earnings. Washington, DC: The Georgetown University Center on Education and the Workforce.

Chatterjee, S., Afshan, N., & Chhetri, P. (2014). Exploring the linkage between the components of motivational systems theory and career decisiveness: The mediating role of career optimism. *Journal of Career Assessment, 23*(4), 597-614.

Chemers, M. M., Hu, L. T., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology, 93*(1), 55-64.

Cokluk, O., & Kayri, M. (2011). The effects of methods of imputation for missing values on the validity and reliability of scales. *Educational Sciences, 11*(1), 303-309.

Colarelli, S. M., & Bishop, R. C. (1990). Career commitment functions, correlates, and management. *Group & Organization Management, 15*(2), 158-176.

Credé, M., & Niehorster, S. (2012). Adjustment to college as measured by the student adaptation to college questionnaire: A quantitative review of its structure and relationships with correlates and consequences. *Educational Psychology Review, 24*(1), 133-165.

Creed, P. A., Patton, W., & Bartrum, D. (2002). Multidimensional properties of the LOT-R: Effects of optimism and pessimism on career and well-being related variables in adolescents. *Journal of Career Assessment, 10*(1), 42-61.

Creed, P. A., Patton, W., & Bartrum, D. (2004). Internal and external barriers, cognitive style, and the career development variables of focus and indecision. *Journal of Career Development, 30*(4), 277-294.

Crosby, O., & Moncarz, R. (2006). The 2004-14 job outlook for college graduates. *Occupational Outlook Quarterly, 50*(3), 42-57.

Davidson, W. B., Beck, H. P., & Milligan, M. (2009). The college persistence questionnaire: Development and validation of an instrument that predicts student attrition. *Journal of College Student Development, 50*(4), 373-390.

Dennis, J. M., Phinney, J. S., & Chuateco, L. I. (2005). The role of motivation, parental support, and peer support in the academic success of ethnic minority first-generation college students. *Journal of College Student Development, 46*(3), 223-236.

Diegelman, N. M., & Subich, L. M. (2001). Academic and vocational interests as a function of outcome expectancies in social cognitive career theory. *Journal of Vocational Behavior, 59*(3), 394-405.

Dong, S. (2011). *Impact of self-efficacy, outcome expectations and affect on requesting job accommodations among individuals with disabilities*. Retrieved from ProQuest Digital Dissertations. (UMI 3495374).

Eisenberg, D., Golberstein, E., & Hunt, J. B. (2009). Mental health and academic success in college. *The B.E. Journal of Economic Analysis & Policy, 9*, 1-35.

Eitel, S. J., & Martin, J. (2009). First-generation female college students' financial literacy: Real and perceived barriers to degree completion. *College Student Journal, 43*(2), 616-630.

Elias, S. M., & Loomis, R. J. (2000). Using an academic self-efficacy scale to address university major persistence. *Journal of College Student Development, 41*(4), 450-454.

Ferrari, J. R., & Parker, J. T. (1992). High school achievement, self-efficacy, and locus of control as predictors of freshman academic performance. *Psychological Reports, 71*(2), 515-518.

Fike, D. S., & Fike, R. (2008). Predictors of first-year student retention in the community college. *Community College Review, 36*(2), 68-88.

Fogg, N. P., & Harrington, P. E. (2011). Rising mal-employment and the great recession: The growing disconnection between recent college graduates and the college labor market. *Continuing Higher Education Review, 75*, 51-65.

Fuqua, D. R., Blum, C. R., & Hartman, B. W. (1988). Empirical support for the differential diagnosis of career indecision. *Career Development Quarterly, 36*(4), 364-373.

Garcia, P. R. J. M., Restubog, S. L. D., Bordia, P., Bordia, S., & Roxas, R. E. O. (2015). Career optimism: The roles of contextual support and career decision-making self-efficacy. *Journal of Vocational Behavior, 88,* 10-18.

Gerdes, H., & Mallinckrodt, B. (1994). Emotional, social, and academic adjustment of college students: A longitudinal study of retention. *Journal of Counseling & Development, 72*(3), 281-288.

Gloria, A. M., Castellanos, J., & Orozco, V. (2005). Perceived educational barriers, cultural fit, coping responses, and psychological well-being of Latina undergraduates. *Hispanic Journal of Behavioral Sciences, 27*(2), 161-183.

Gore, P. A. (2006). Academic self-efficacy as a predictor of college outcomes: Two incremental validity studies. *Journal of Career Assessment, 14*(1), 92-115.

Grant-Vallone, E., Reid, K., Umali, C., & Pohlert, E. (2003). An analysis of the effects of self-esteem, social support, and participation in student support services on students' adjustment and commitment to college. *Journal of College Student Retention, 5*(3), 255-274.

Gushue, G. V., & Whitson, M. L. (2006). The relationship among support, ethnic identity, career decision self-efficacy, and outcome expectations in African American high school students applying social cognitive career theory. *Journal of Career Development, 33*(2), 112-124.

Hackett, G., & Betz, N. E. (1981). A self-efficacy approach to the career development of women. *Journal of Vocational Behavior, 18*(3), 326-339.

Hausmann, L. R., Schofield, J. W., & Woods, R. L. (2007). Sense of belonging as a predictor of intentions to persist among African American and White first-year college students. *Research in Higher Education, 48*(7), 803-839.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research, 50*, 1-22.

Hsieh, P. H., Sullivan, J. R., & Guerra, N. S. (2007). A closer look at college students: Self-efficacy and goal orientation. *Journal of Advanced Academics, 18*(3), 454-476.

Hoy, W. K., Tarter, C. J., & Hoy, A. W. (2006). Academic optimism of schools: A force for student achievement. *American Educational Research Journal, 43*(3), 425-446.

Kahn, J. H., & Nauta, M. M. (2001). Social-cognitive predictors of first-year college persistence: The importance of proximal assessment. *Research in Higher Education, 42*(6), 633-652.

Kenny, M. E., Blustein, D. L., Chaves, A., Grossman, J. M., & Gallagher, L. A. (2003). The role of perceived barriers and relational support in the educational and vocational lives of urban high school students. *Journal of Counseling Psychology, 50*(2), 142-155.

Kluemper, D. H., Little, L. M., & Degroot, T. (2009). State or trait: effects of state optimism on job-related outcomes. *Journal of Organizational Behavior, 30*(2), 209-231.

Krumboltz, J. D., Mitchell, A. M., & Jones, G. B. (1976). A social learning theory of career selection. *The Counseling Psychologist, 6*(1), 71-81.

Larson, L. M., Pesch, K. M., Surapaneni, S., Bonitz, V. S., Wu, T. F., & Werbel, J. D. (2015). Predicting graduation: The role of mathematics/science self-efficacy. *Journal of Career Assessment, 23*(3), 399-409.

Lent, R. W., & Brown, S. D. (2006). Integrating person and situation perspectives on work satisfaction: A social-cognitive view. *Journal of Vocational Behavior, 69*(2), 236-247.

Lent, R. W., Brown, S. D., Brenner, B., Chopra, S. B., Davis, T., Talleyrand, R., & Suthakaran, V. (2001). The role of contextual supports and barriers in the choice of math/science educational options: A test of social cognitive hypotheses. *Journal of Counseling Psychology, 48*(4), 474-483.

Lent, R. W., Brown, S. D., & Gore, P. A. (1997). Discriminant and predictive validity of academic self-concept, academic self-efficacy, and mathematics-specific self-efficacy. *Journal of Counseling Psychology, 44*(3), 307-315.

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 45*(1), 79-122.

Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology, 47*(1), 36-49.

Lent, R. W., Brown, S. D., & Hackett, G. (2002). Social cognitive career theory. In D. Brown (Ed.), *Career choice and development* (pp. 245-311). San Francisco: John Wiley & Sons.

Lent, R. W., Brown, S. D., & Larkin, K. C. (1984). Relation of self-efficacy expectations to academic achievement and persistence. *Journal of Counseling Psychology, 31*(3), 356-362.

Lent, R. W., Brown, S. D., Schmidt, J., Brenner, B., Lyons, H., & Treistman, D. (2003). Relation of contextual supports and barriers to choice behavior in engineering majors: Test of alternative social cognitive models. *Journal of Counseling Psychology, 50*(4), 458-465.

Lent, R. W., Brown, S. D., Sheu, H. B., Schmidt, J., Brenner, B. R., Gloster, C. S., ... & Treistman, D. (2005). Social cognitive predictors of academic interests and goals in engineering: Utility for women and students at historically black universities. *Journal of Counseling Psychology, 52*(1), 84-92.

Lent, R. W., Lopez Jr, A. M., Lopez, F. G., & Sheu, H. B. (2008). Social cognitive career theory and the prediction of interests and choice goals in the computing disciplines. *Journal of Vocational Behavior, 73*(1), 52-62.

Lent, R. W., Sheu, H. B., Singley, D., Schmidt, J. A., Schmidt, L. C., & Gloster, C. S. (2008). Longitudinal relations of self-efficacy to outcome expectations, interests, and major choice goals in engineering students. *Journal of Vocational Behavior, 73*(2), 328-335.

Lindley, L. D., & Borgen, F. H. (2002). Generalized self-efficacy, Holland theme self-efficacy, and academic performance. *Journal of Career Assessment, 10*(3), 301-314.

Lindley, L. D. (2005). Perceived barriers to career development in the context of social cognitive career theory. *Journal of Career Assessment, 13*(3), 271-287.

Liu, S., Huang, J. L., & Wang, M. (2014). Effectiveness of job search interventions: A meta-analytic review. *Psychological Bulletin, 140*(4), 1009-1041.

Lopez, F. G., & Ann-Yi, S. (2006). Predictors of career indecision in three racial/ethnic groups of college women. *Journal of Career Development, 33*(1), 29-46.

Lopez, F. G., Lent, R. W., Brown, S. D., & Gore, P. A. (1997). Role of social–cognitive expectations in high school students' mathematics-related interest and performance. *Journal of Counseling Psychology, 44*(1), 44-52.

Lotkowski, V. A., Robbins, S. B.,& Noeth, R. J. (2004). *The role of academic and non-academic factors in improving college retention: ACT policy report*. Retrieved from https://files.eric.ed.gov/fulltext/ED485476

Lucas, J. L., & Wanberg, C. R. (1995). Personality correlates of Jones' three-dimensional model of career indecision. *Journal of Career Assessment, 3*(4), 315-329.

Luzzo, D. A. (1995). Gender differences in college students' career maturity and perceived barriers in career development. *Journal of Counseling & Development, 73*(3), 319-322.

Luzzo, D. A. (1996). Exploring the relationship between the perception of occupational barriers and career development. *Journal of Career Development, 22*(4), 239-248.

Luzzo, D. A., & McWhirter, E. H. (2001). Sex and ethnic differences in the perception of educational and career-related barriers and levels of coping efficacy. *Journal of Counseling & Development, 79*(1), 61-67.

Maples, M. R., & Luzzo, D. A. (2005). Evaluating DISCOVER's effectiveness in enhancing college students' social cognitive career development. *Career Development Quarterly, 53*(3), 274-285.

Marko, K. W., & Savickas, M. L. (1998). Effectiveness of a career time perspective intervention. *Journal of Vocational Behavior, 52*(1), 106-119.

McIlveen, P., Beccaria, G., & Burton, L. J. (2013). Beyond conscientiousness: Career optimism and satisfaction with academic major. *Journal of Vocational Behavior, 83*(3), 229-236.

MacPhee, D., Farro, S., & Canetto, S. S. (2013). Academic self-efficacy and performance of underrepresented STEM majors: Gender, ethnic, and social class patterns. *Analyses of Social Issues and Public Policy, 13*(1), 347-369.

McWhirter, E. H. (1997). Perceived barriers to education and career: Ethnic and gender differences. *Journal of Vocational Behavior, 50*(1), 124-140.

Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods, 17*(3), 437-455.

Morrow, J., & Ackermann, M. (2012). Intention to persist and retention of first-year students: The importance of motivation and sense of belonging. *College Student Journal, 46*(3), 483-491.

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology, 38*(1), 30-38.

Navarro, R. L., Flores, L. Y., & Worthington, R. L. (2007). Mexican American middle school students' goal intentions in mathematics and science: A test of social cognitive career theory. *Journal of Counseling Psychology, 54*(3), 320-335.

Nicpon, M. F., Huser, L., Blanks, E. H., Sollenberger, S., Befort, C., & Kurpius, S. E. R. (2006). The relationship of loneliness and social support with college freshmen's academic performance and persistence. *Journal of College Student Retention, 8*(3), 345-358.

Nonis, S. A., & Wright, D. (2003). Moderating effects of achievement striving and situational optimism on the relationship between ability and performance outcomes of college students. *Research in Higher Education, 44*(3), 327-346.

O'Brien, C., & Shedd, J. (2001). Getting through college: Voices of low-Income and minority students in New England. Retrieved from https://files.eric.ed.gov/fulltext/ED451770.pdf

Ochs, L. A., & Roessler, R. T. (2004). Predictors of career exploration intentions: A social cognitive career theory perspective. *Rehabilitation Counseling Bulletin, 47*(4), 224-233.

Ojeda, L., & Flores, L. Y. (2008). The influence of gender, generation level, parents' education level, and perceived barriers on the educational aspirations of Mexican American high school students. *Career Development Quarterly, 57*(1), 84-95.

Ojeda, L., Navarro, R. L., & Morales, A. (2011). The role of la familia on Mexican American men's college persistence intentions. *Psychology of Men & Masculinity*, *12*(3), 216-229.

Pajares, F., & Miller, M. D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis. *Journal of Educational Psychology*, *86*(2), 193-203.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research* (Vol. 2). San Francisco, CA: Jossey-Bass.

Peltier, G. L., Laden, R., & Matranga, M. (2000). Student persistence in college: A review of research. *Journal of College Student Retention,* 1(4), 357-375.

Peterson, C., & Seligman, M. E. (1984). Causal explanations as a risk factor for depression: theory and evidence. *Psychological Review, 91*(3), 347-374.

Pew Research Center (2015). *Religious landscape study – Adults in Mississippi*. Retrieved from http://www.pewforum.org/religious-landscape-study/state/mississippi/

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, *42*(1), 185-227.

Raque-Bogdan, T. L., Klingaman, E. A., Martin, H. M., & Lucas, M. S. (2013). Career-related parent support and career barriers: An investigation of contextual variables. *Career Development Quarterly, 61*(4), 339-353.

Reskin, B. F., & Bielby, D. D. (2005). A sociological perspective on gender and career outcomes. *Journal of Economic Perspectives, 19*(1), 71-86.

Rivera, L. M., Chen, E. C., Flores, L. Y., Blumberg, F., & Ponterotto, J. G. (2007). The effects of perceived barriers, role models, and acculturation on the career self-efficacy and career consideration of Hispanic women. *Career Development Quarterly, 56*(1), 47-61.

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin*, *130*(2), 261-288.

Rottinghaus, P. J. (2004). *Assessing career optimism and adaptability: Toward the construct validation of the Career Futures Inventory.* Retrieved from ProQuest Digital Dissertations. (UMI 3145680).

Rottinghaus, P. J., Buelow, K. L., Matyja, A., & Schneider, M. R. (2012). The career futures inventory–revised measuring dimensions of career adaptability. *Journal of Career Assessment, 20*(2), 123-139.

Rottinghaus, P. J., Day, S. X., & Borgen, F. H. (2005). The Career Futures Inventory: A measure of career-related adaptability and optimism. *Journal of Career Assessment, 13*(1), 3-24.

Ryan, N. E. (1999). *Career counseling and career choice goal attainment: A meta-analytically derived model for career counseling practice*. Retrieved from ProQuest Digital Dissertations. (UMI 9930585).

Ryan, C. L., & Siebens, J. (2012). Educational attainment in the United States: 2009. Washington, DC: U.S. Census Bureau.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychology, 4*(3), 219-247.

Schlomer, G. L., Bauman, S., & Card, N. A. (2010). Best practices for missing data management in counseling psychology. *Journal of Counseling Psychology, 57*(1), 1-10.

Schumacker, R. E., & Lomax, R. G. (1996). *A beginner's guide to structural equations modeling.* Mahwah, NJ: Lawrence Erlbaum Associates.

Schunk, D. H., & DiBenedetto, M. K. (2014). Academic self-efficacy. In M. J. Furlong, R. Gilman, & E. S. Huebner (Eds.), *Educational psychology handbook series. Handbook of positive psychology in schools* (pp. 115-130). New York, NY, US: Routledge/Taylor & Francis Group.

Schunk, D. H., & Parajes, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 15-31). San Diego: Academic Press.

Sheu, H. B., Lent, R. W., Brown, S. D., Miller, M. J., Hennessy, K. D., & Duffy, R. D. (2010). Testing the choice model of social cognitive career theory across Holland themes: A meta-analytic path analysis. *Journal of Vocational Behavior, 76*(2), 252-264.

Solberg Nes, L., Evans, D. R., & Segerstrom, S. C. (2009). Optimism and college retention: mediation by motivation, performance, and adjustment. *Journal of Applied Social Psychology, 39*(8), 1887-1912.

Spector, P. E. (1982). Behavior in organizations as a function of employee's locus of control. *Psychological Bulletin, 91*(3), 482-497.

Strack, S., Carver, C. S., & Blaney, P. H. (1987). Predicting successful completion of an aftercare program following treatment for alcoholism: The role of dispositional optimism. *Journal of Personality and Social Psychology, 53*(3), 579-584.

Swanson, J. L., & Woitke, M. B. (1997). Theory into practice in career assessment for women: Assessment and interventions regarding perceived career barriers. *Journal of Career Assessment, 5*(4), 443-462.

Swanson, J. L., & Tokar, D. M. (1991). Development and initial validation of the career barriers inventory. *Journal of Vocational Behavior, 39*(3), 344-361.

Tinto, V. (2004). *Student retention and graduation: Facing the truth, living with the consequences*. Retrieved from https://eric.ed.gov/?id=ED519709

Trice, A. D., Haire, J. R., & Elliott, K. A. (1989). A career locus of control scale for undergraduate students. *Perceptual and Motor Skills, 69*(2), 555-561.

Vuong, M., Brown-Welty, S., & Tracz, S. (2010). The effects of self-efficacy on academic success of first-generation college sophomore students. *Journal of College Student Development, 51*(1), 50-64.

Weiner, B. (1986). An attributional theory of achievement motivation and emotion. In SSSP Springer Series in Social Psychology (pp. 159-190). New York: Springer US.

Wohlgemuth, D., Whalen, D., Sullivan, J., Nading, C., Shelley, M., & Wang, Y. (2007). Financial, academic, and environmental influences on the retention and graduation of students. *Journal of College Student Retention: Research, Theory & Practice*, *8*(4), 457-475.

Wood, J. L., & Hilton, A. A. (2012). Spirituality and academic success: Perceptions of African American males in the community college. *Religion & Education*, *39*(1), 28-47.

Wright, S. L., Jenkins-Guarnieri, M. A., & Murdock, J. L. (2012). Career development among first-year college students: College self-efficacy, student persistence, and academic success. *Journal of Career Development, 40*(4), 292-310.

Youssef, C. M., & Luthans, F. (2007). Positive organizational behavior in the workplace the impact of hope, optimism, and resilience. *Journal of Management, 33*(5), 774-800.

Zaback, K., Carlson, A., & Crellin, M. (2012). The economic benefit of postsecondary degrees: A state and national level analysis. Boulder, CO: State Higher Educations Executive Officers.

Zajacova, A., Lynch, S. M., & Espenshade, T. J. (2005). Self-efficacy, stress, and academic success in college. *Research in Higher Education, 46*(6), 677-706.

Zeidenberg, M., Scott, M., & Belfield, C. (2015). What about the non-completers? The labor market returns to progress in community college. *Economics of Education Review*, *49*, 142-156.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25*(1), 82-91.