

MEASURING OUTCOME EXPECTATIONS IN ACADEMIC PERSISTENCE

by

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A Dissertation Submitted in  
Partial Fulfillment of the  
Requirements for the Degree of

Doctor of Philosophy  
in Educational Psychology

at

The University of Wisconsin—Milwaukee

August 2020

## ABSTRACT

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The University of Wisconsin—Milwaukee, 2020  
Under the Supervision of Professor Nadya A. Fouad

Academic persistence, or a student's decision to leave an institution of higher education, has remained an inveterate puzzle to researchers, theoreticians, institutions, and counselors. Despite a large body of theoretical and empirical literature, the rate at which students leave institutions of higher education has remained stable over the past 50 years. The discipline of counseling psychology has a long tradition of investigating academic persistence from a psychological perspective. Earlier investigations in counseling psychology focused on identifying psychopathological traits, cognitive abilities, and contextual factors associated with a student's decision to leave. These investigations were met with a sociological reaction that has dominated the question of persistence for the past forty years. Though useful in describing the institution's role in persistence, these models lack substantial empirical support and are fraught with conceptual problems. Meta-analytic studies investigating non-cognitive factors in academic persistence have revealed that social cognitive constructs namely academic self-efficacy and goals are predictive of student retention when traditional predictors are accounted for (Robbins et al., 2004). However, outcome expectations, an integral theoretical component of social cognitive theory, remain almost completely unexamined in the domain of academic persistence. This study sought to develop a theoretically derived scale to measure outcome expectations in the domain of academic persistence. An initial item pool was developed and sent to a sample of college

students (N = 216). A second, confirmatory sample of undergraduate students was collected via an online crowdsourcing format known as Prolific Academic (N = 301). Results suggested the presence of a two-factor structure was the most parsimonious solution that fit the data rather than the hypothesized three-factor structure. The two factors retained across both samples anticipated rewards and punishments that students perceived about remaining in college for the year. This was contrary to Bandura's (1977, 1997) hypothesis that outcome expectations conformed to three classes. Limitations and implications are discussed.

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To Stacy and Benjamin Kozlowski

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## ACKNOWLEDGEMENTS

I want to begin by acknowledging my wife, Stacy, who supported this dream from the very beginning and has been the foundation in my life for many years. Thank you for trusting me and believing in me this entire time. Thank you for your tireless devotion to our son and keeping up with the household business when I was busy with all of my responsibilities. Thank you also for taking the time to proofread this manuscript. This accomplishment is just as much yours as it is mine.

I want to acknowledge my previous academic advisors, Drs. Elizabeth Soliday and Norman Theisen for putting it into my mind that graduate school was even an attainable goal for me and Drs. Corbett Haas and Aaron Miller, who made a similar journey in their own lives and, by doing so, provided ad hoc mentoring experiences for me. I also want to acknowledge the psychologist Dr. William Miller, who made a comment in a presentation that I attended that: “the P in Ph.D. stood for persistence.” I am also grateful to an article in the *Journal of Clinical Psychology* written by Drs. James Graham and Yang-Hyang Kim (2011) which convinced me to try for a counseling psychology doctoral program housed in a school of education. These experiences made an impact on my belief that a Ph.D. was something I could achieve for myself.

I can say with confidence that the process would have been so much more difficult if I didn't have such great supports in my life while undertaking this degree. I am fortunate to have had such an amazing doctoral cohort in Samantha Everhart, Jennifer Watjen, Haley Pierson, Jamie Zalasin, Katelyn Epsy, Lauren Floore-Guetschow, Matthew Kessler, and Tanya Cass. From the very first day of the program, we made the decision to support each other through this process. I am proud of us for creating that culture of cooperation over the past few years. Thank

you for putting up with me as I went through my own developmental process during the program. I will always look back on this time in Milwaukee with fondness and I have each of you to thank for that. Know that I am rooting for you wherever your journey takes you next. I also want to acknowledge my good friend and writing colleague, Esther Estey, for keeping me on task and giving me the occasion to make sure I knew something well enough to explain it. I also want to thank you to taking the time to proofread this manuscript. I also want to acknowledge David and Melissa Shaffer who provided a sense of home for Stacy and I while living far from familiar territory. Thank you all for your love and support over these last few years. Finally, I am grateful to the instructors who worked with me in collecting data for this project.

I want to acknowledge my dissertation committee, Drs. Chris Lawson, Bo Zhang, and Stephen Wester for their support, guidance, and mentorship over the past few years. To Dr. Lawson, I want to say thank you for keeping me grounded in the cognition literature and having your door open for random questions about the philosophy of education, research ethics, and cognitive science. Thank you also for lending some of your undergraduate students for help on some of our more difficult research projects. To Dr. Zhang, I would like to say thank you for igniting an interest in the field of psychometrics and patiently answering my questions when I didn't understand something. I feel so much more comfortable with proofs and equations after your classes. To Dr. Wester, thank you very much for your mentorship and support over the past four years. Thank you for giving me the occasion to study differential item functioning in greater detail and for our fireside chats about identity, scholarship, and the field of counseling psychology. Thank you also for being available to answer questions at random throughout the day, especially given your workload.

I want to especially acknowledge my major advisor and committee chair, Dr. Nadya Fouad, with whom I have had the pleasure of working with closely over the past four years. I came to Milwaukee from Washington State specifically to work with you and look back on it as one of the best decisions I ever made. I remember reading your profile and feeling intimidated at the prospect of working with you, which convinced me to try for it. Thank you for your kindness, authenticity, and empathy while also challenging me to do better. You convey an infectious passion for the study of work in people's lives. You have modeled what I consider to be the highest standards of vocational and counseling psychology. In your mentorship you demonstrate what I think is great about the field of counseling psychology: a demand for the intellectual rigor needed to solve human problems fueled by the compassion necessary to see them. Thank you for your investment in me over the past four years. I hope to honor it in the remainder of my career.

## CHAPTER ONE

### INTRODUCTION

For every ten students that begin college in the United States, seven will return for a second year and five will complete a bachelor's degree in five years (ACT, 2017; NCS, 2017). For students who begin college and do not complete it, money spent on education that did not lead to any kind of meaningful credential as well as lost wages associated with limited participation in the workforce represent a real economic cost (Johnson, 2012). Though some students gain the skills necessary for competitive employment without completing a credential, many students leave institutions worse off financially than when they started. Those who complete a bachelor's degree stand to earn a substantially higher income than those who do not (Autor, 2014; Scheider & Yin, 2011) and though good paying jobs without a bachelor's degree exist, often some kind of formal post-secondary training (i.e., an associate's degree) is necessary to access these jobs (Carnevale, Strohl, & Ridley, 2017).

For institutions and society, the cost of student withdrawal from college is also significant. Approximately 2.7% of GDP is spent on higher education yielding an overall graduation rate of 46% for all higher education institutions in the United States. Schneider (2010) found that taxpayers in the U.S. spent \$9 billion over a five-year period on students who did not return for a second year of college. Schneider and Yin (2011) examined a single cohort of students who did not return for a second year of college and estimated that state and local governments lost \$730 million in potential tax earnings. Additionally, Raisman (2013) found that over 1600 institutions in 2010 lost a collective \$16.5 billion in tuition, fees, and other potential expenses with the average amount lost around \$9.9 million.

It is important to note that the aforementioned figures are representative of an overall trend that has puzzled scholars in education and social sciences for more than half a century. What has been remarkable is how relatively stable the numbers of departing students has remained over time (see Habley, Bloom, & Robbins, 2012; Pantages & Creedon, 1978; Summerskill, 1962 for examples). Given the costs to the student and society associated with going to college and failing to obtain a degree and the inveterate nature of the problem, it is easy to see why this has been a source of lively scholarship within the social sciences and higher education. The theoretical literature has generated numerous models, but has focused on Vincent Tinto's (1975, 1993) model of student departure despite some empirical limitations (Melguizo, 2011).

## **Demographics**

A natural question at this point would be to ask whether students vary demographically in terms of race, gender, and social class. Habley, Bloom, and Robbins (2012) point out that this level of analysis is fraught with confounding variables and measurement issues. Much of the data is cross-sectional in design and measures demographics at different stages of the education pipeline. These analyses provide an interesting snapshot at different stages of the educational pipeline, but do little to provide information about the process of persistence through the pipeline. As a result, outcomes from this line of inquiry are not conclusive.

In a recent study (NCS, 2017), findings suggest that students of either Asian or Caucasian descent enrolled full time at a private university had the greatest rate of persistence nationally. Results also indicate that Black and Hispanic students had the lowest overall persistence rate, in support of prior literature (Braxton, Duster, & Pascarella, 1988; Hagedorn, Maxwell, & Hampton, 2001). However, other studies have suggested that Black Americans tend to persist at

a greater rate than White Americans when factors other than race (i.e., academic major, career aspirations) are also considered (Stewart, Kim, & Lim, 2015). In a sample of mixed race (Latino/a and White) engineering students, Lee et al (2014) found no differences in the persistence between races using a path analytic model examining social cognitive variables. They did find a significant difference in academic goals between men and women. NCES (2017) reported that women tended to persist to a greater rate than men, after controlling for institution type and degree of selectivity. This echoes findings from previous literature (e.g. Corbett, Hill, & Rose, 2008; Hagedorn, 2005). However, these findings do not control for major. Previous research has shown that women are under-represented in STEM fields such as engineering (NAE, 2017). The research is far less mixed when it comes to social class. Meta-analytic findings (Robbins et al., 2004) found that social class did not appear to predict retention across universities. Wright et al. (2013) found self-efficacy to be a strong predictor of retention after controlling for social class. Data available from the U.S. Department of Education (2012) suggests that Pell Grant recipients persist at a greater rate than Black and Latino students. Data on sexual minorities is very limited. For example, in 2009, approximately 10% of college students identified as members of the LBGT community (Habley, Bloom, & Robbins, 2012).

### **Early Psychological and Sociological Investigations**

Early scholarship from educational psychology sought to predict dropping out of college from performance on a persistence task (Ryans, 1938; Thorton, 1941) after observations that psychological characteristics, other than intelligence, seemed to influence academic performance (Stone, 1928). There were several methodological flaws with these early designs, however, including how dropping out was classified and the nature of the persistence task itself. However, these studies sparked scholarship on whether academic achievement or intelligence was related

to college persistence (e.g.: Iffert, 1957; Munger, 1954). By the 1960s and 1970s, it was common to think about student persistence as a problem with the students themselves. Much of the early psychological literature focused on psychopathology associated with dropouts as a class of people. In the early counseling psychology literature, for example, a robust program of research was aimed at identifying psychopathological factors associated with “dropout behavior” (Brown, 1960; Hansen & Taylor, 1970; Rose & Elton, 1966; Watley, 1965). Additionally, a psychoanalytic treatment of the college dropout is available in Previn, Reik, and Darlymple’s (1966) *The College Dropout and Utilization of Talent*. Though these authors focused on identifying psychological neuroses associated with dropout behavior, they were among the first to acknowledge that institutional variables may be associated with the “dropout problem.”

Spady (1970) criticized the aforementioned literature for lacking a theoretical basis and methodological rigor. He went on to propose a theoretical model focused on the interaction between the student and their institution. Spady (1970) predicted that student retention was a matter of assessing the level of integration in the interaction between student and their institution as measured by two systems: a social system made up of friendship and normative congruence, and an academic system made up of grades and intellectual development. After accounting for family background, Spady (1970) assumed that a student would leave college if his/her level of integration in either system was weak. He also outlined two additional variables, satisfaction and institutional commitment, which he viewed as outcomes of the level of integration into each system but occurring prior to a decision to leave or stay in the university. He tested his model with a large sample of undergraduates at the University of Chicago using stepwise regression procedures. Although, he found key gender differences in the model, he believed his model to be a more comprehensive model for describing student persistence (Spady, 1971).

## **Tinto's Model of Student Departure**

Tinto (1975, 1993) expanded upon Spady's (1970, 1971) work by developing his model of student departure. Tinto (1975) pointed out the lack of theoretical direction that accounted for institutional variables and longitudinal designs in the higher education field. Tinto also critiqued earlier studies for failing to account for preexisting individual differences in student characteristics (i.e., traditional versus nontraditional students) and institutional variables. Similar to Spady, Tinto (1975) used Emile Durkheim's (1951) work as an organizing framework by fundamentally viewing student attrition in universities as a function of the low level of integration into either social or academic systems after accounting for person variables. A key difference between Tinto's (1975) model and Spady's (1970, 1971) work is the assessment of institutional commitment longitudinally. Tinto (1975) argued that the level of goal commitment and institutional commitment prior to entering an institution is important, but what ultimately matters is a student's commitment to their goals and institution after they experience college. Tinto (1988, 1993) revised this model to incorporate Arnold van Gennep's (1960) rites of passage. Starting with the observation that society is comprised of groups and subgroups, van Gennep (1960) argued that rites of passage occur in three stages or subtypes: separation, transition, and incorporation. Separation refers to an individual's decision to leave a group as evidenced by behaviors such as declining social contact while transition is marked by seeking social connections with new groups and incorporation is establishing competency in a new group.

It is important to note that van Gennep (1960) originally wrote his work in French. This becomes difficult when the issue is raised as to whether to interpret van Gennep's three stages occurring in time or as three distinct subtypes. Both the author and the translator point that

certain subtypes or stages did not develop equally for all people everywhere and are likely to dominate certain rites of passages opposite to others (e.g. separation would be prominent in marriage and funerals). However, the translation notes do make clear that a dynamic reading is also possible. Taking a developmental approach, Tinto (1988) argued for this interpretation of van Gennep's work, suggesting a decision to leave college is affected by all three processes. In the separation stage, students have to separate themselves with past affiliations such as high school or hometown relationships. In the transition stage, students develop norms and behaviors associated with the college environment. Finally, in the integration phase, students begin to incorporate new norms and rituals into their lives associated with the institution. In this phase, students can choose to either integrate or abandon the institution (Tinto, 1988).

In Tinto's (1993) final articulation of the model, students who are able to integrate themselves successfully into both the academic and social communities of the institution are academic persisters. A lack of integration, measured as a function of goals and commitments of the student and/or the failure of the institution to provide a supportive community, results in institutional attrition. By emphasizing that student departure is a phenomenon that is a function of both institutional and individual factors, Tinto (1993) essentially rejects the notion that non-academic withdrawals from college stem from a profile marked by deficits. Instead, it is argued that the appropriate model of student departure is an institutional level model with the burden of responsibility placed on the institution to create environments into which students are able to integrate. Thus, intervention occurs vis-à-vis institutional policy and programming. Students bear responsibility in terms of their commitments and individual goals.

Though conceptually clear, Tinto's (1993) model lacks sufficient empirical evidence to support many of its claims (Braxton, Sullivan, & Johnson, 1997; Braxton, 2000). A central

critique is that there is not a standard set of measurements used to test the model resulting in disparate findings across institutions. A further and perhaps more critical finding is there appears to be no evidence that academic and social integration exist separately and have any impact on student departure (Bean & Eaton, 2001; Melguizo, 2011). Tinto (2000) criticized his own model for treating the institution as the primary socializing agent in a student's life at the expense of other environments in which the student may exist. This difficulty results in a reduction of the model's power to explain the experiences of nontraditional students, somewhat ironic given Tinto's (1975) original complaints. Additionally, Tinto's model may rest on faulty assumptions. Robinson (1950) pointed out that Durkheim (1951) arrived at his conclusions by viewing aggregate statistics of suicide rates per country rather than through population sampling, thus failing to control for confounding variables. Tinto's (1988) reading of van Genneep rests on the assumption that van Genneep's subtypes occur as stages rather than three distinct subtypes when it is possible that van Genneep was referring to distinct subtypes (van Genneep, 1960). Tierney (1992) criticized Tinto's conceptualization, pointing out that rites of passage, as conceptualized by van Genneep, are often not choices (e.g. puberty, work) and given that rituals often taken place within a given context.

### **Social Cognitive Theory**

In addition to these criticisms leveled at Tinto's work, Bean and Eaton (2001) questioned how a model that does not describe the psychological processes associated with integration into the social and academic realms could adequately explain academic persistence. Though Tinto (1993) does acknowledge goals in the final model, goals are not understood to be an isolated psychological construct (Bandura & Locke, 2003; Locke & Latham, 2002). Bean and Eaton (2001) went on to propose a model that borrows heavily from social cognitive theory (Bandura,

1986). I will review Bean and Eaton's (2001) model in detail in Chapter 2. For the purposes of this chapter, it is important to mention that though Bean and Eaton's (2001) criticism is a valid one, their application of social cognitive theory departs substantially from the theory itself. In contrast, a derivative of social cognitive theory as applied to education and counseling known as social cognitive career theory (Lent, Brown, & Hackett, 1994) may contain not only a more parsimonious explanation of persistence, but also one that is more consistent with theory. However, this model has never been fully tested in relation to academic persistence. Social cognitive theory and social cognitive career theory and their applications to academic persistence will be reviewed in detail in Chapter 2. This chapter will focus on the development of social cognitive career theory to explain academic persistence in counseling psychology scholarship.

Social cognitive theory stands opposed to a number of theories of personality including the trait theory approach. In contrast to trait theory, social cognitive theory posits that human behavior is not the product of internal determinants, but exists through the triadic and reciprocal interaction of the person, the environment, and the person's behavior. Bandura (1986) conceptualizes there are five capacities that are unique to human thought and action: forethought, symbolizing, vicarious learning, self-reflection, and self-evaluation. For social cognitive theorists, human beings have a unique ability to exercise control over their lives. This is done through skills that are acquired in the environment. These skills are mediated by the ability to exercise control over one's destiny (Bandura, 1997). This ability, defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments (Bandura, 1997, p. 3)," is referred to as self-efficacy. Self-efficacy is foundational to the social cognitive theory. It is representative of human agency and proposed to be a causal determinant to human agency, action, achievement and wellbeing (Bandura, 1997, 2001). Self-efficacy is not a

global trait, but rather a future oriented belief that individuals hold about their capacity in a given situation. Self-efficacy beliefs vary in terms of their level, strength, and generality (Bandura, 1977).

In addition to self-efficacy, outcome expectations are a co-determinant of behavior (Bandura, 1977, 1997). Outcome expectations are future oriented judgments about the consequences of engaging in a given behavior or set of behaviors (Bandura, 1986). There are three distinct types of outcome expectations: physical, social, and self-evaluative. These are conceptualized as anticipated rewards or punishments of continuing to engage in a behavior (Bandura, 1986, 1997). Physical outcome expectations refer to sensory experiences one believes that a certain action is likely to cause. Social outcome expectations refer to social effects that a certain behavior may evoke. Self-evaluative outcome expectations refer to how an individual will evaluate and feel about their own performance (Bandura, 1986).

Social cognitive theory has had tremendous influence in counseling psychology, especially in the realm of vocational and education development research. Nancy Betz and Gail Hackett published two seminal articles (Betz & Hackett, 1981, Hackett & Betz, 1981) arguing that self-efficacy may influence the vocational choices of men and women. Their research demonstrated that men and women had disparate perceptions of self-efficacy that also varied by interests in future occupations. Finding that women tended to express disinterest and low self-efficacy in nontraditional career options, Betz and Hackett (1981) also argued the socialization of women influences their perception of self-efficacy. Shortly after this work, Lent, Brown, and Larkin (1984) extended self-efficacy to academic persistence. In a small pilot study of undergraduates in a major course for math and science majors, these researchers found that students with higher self-efficacy seemed to persist with a higher GPA than students with lower

self-efficacy. In two follow up studies with larger samples using cross sectional designs, self-efficacy seemed to be predictive of technical GPA and academic persistence in a group of science and math majors (Lent, Brown, & Larkin, 1986, 1987). By 1990, a small but sufficient amount of evidence across psychological science had accumulated to test a link between self-efficacy and persistence (Multon, Lent, & Brown, 1991). There were eighteen studies included in this meta-analysis, with only three studies examining persistence alone. Persistence was either measured through task persistence (i.e.: how many items/tasks completed or time to complete tasks) or number of semesters in completed in college. Given the measurement issues in academic persistence in this study, these researchers were not able to confirm Bandura's (1977, 1986) hypotheses regarding the mediating role of self-efficacy to academic persistence.

### **The Performance Model**

These studies laid the groundwork for what became the performance model in social cognitive career theory: an extension of Bandura's work to career and educational development (Lent, Brown, & Hackett, 1994, 2000). Social cognitive career theory (also known as SCCT) is a theory of vocational and educational development within the counseling psychology scholarship. Since 1994, SCCT has received much scholarly attention (Fouad, 2007; Lent & Brown, 2016). SCCT has a number of theoretical prepositions and extensions, however, for the purposes of this study, the following review will focus on academic persistence as conceptualized within the performance model. A more thorough review of the theory will be covered in Chapter 2.

The performance model conceptualizes academic persistence broadly as a performance itself. Theoretically, the tenants of the performance model equally apply to academic persistence and academic performance. There are two propositions for this model (propositions #8 and #9 within the entire SCCT framework). The first proposes that self-efficacy beliefs both directly and

indirectly, through performance goals, influence performance. Outcome expectations influence performance only indirectly through goals. The second states that previous ability or aptitude has a direct effect on performance and indirect effect through self-efficacy beliefs. It is important to note that prior to the articulation of this model, outcome expectations as a construct were not a part of investigations (Lent, Brown, & Hackett, 1994). Fourteen years after this proposal, Brown et al. (2008) in their meta-analysis noted that the entire performance model had rarely been tested (see Kahn & Nauta, 2001 for a full test of the model). Rather, subsets of the model and the interest in performance model from industrial and organizational psychology focused primarily on work outcomes rather than academic outcomes. In their work, they demonstrated that measurements of prior performance accomplishments such as GPA, SAT/ACT scores predict student retention through the self-efficacy and goals.

### **Outcome Expectations, Academic Persistence, and the Performance Model**

Missing from this work is the role of outcome expectations. Although Brown et al. (2008) acknowledge that outcome expectations play a role in academic persistence, there is no empirical evidence to test this claim. In fact, very few studies have incorporated outcome expectations as part of their analysis. Kahn and Nauta (2001), for instance, remain one of the only recent studies that included outcome expectations in their investigation of social cognitive predictors of academic persistence. They included a three-item measure of outcome expectations adapted from Bean's (1985) work. These items assessed the expectations of obtaining a college degree on a three-item scale. They found that prior academic performance was the most reliable predictor of college persistence. A more recent investigation of persistence in engineering students (Lee, Flores, Navarro, & Kanagui-Muño, 2014) omitted outcome expectations from their investigation. They cited equivocal patterns of results regarding outcome expectations in SCCT engineering

studies investigating the interest, choice, and satisfaction models as the primary reason for excluding the variable (Flores et al., 2014; Lent et al., 2003, 2007, 2008), suggesting that there may be measurement issues associated with the variable.

To date, only one published study tests the SCCT performance model in academic persistence using the entire proposed model (Kahn & Nauta, 2001). This study used a potentially invalid measurement of outcome expectations, which is particularly troubling in light of the research that suggests that both outcome expectations and self-efficacy judgments can influence behavior (e.g.: Kirsch, 1982), a point that Albert Bandura has elaborated on more than one occasion (e.g., Bandura, 1983). For example, Bandura (1997) writes that when outcome expectations are loosely tied to performance, they add to the prediction of behavior. Even though evidence exists to suggest that self-efficacy plays a mediating role in persistence (Brown et al., 2008), it is unclear what role outcome expectations may play. This study seeks to develop a theoretically derived measurement of outcome expectations in the domains related to academic persistence. Understanding the role that outcome expectations play can help guide appropriate intervention for students at risk for leaving a university setting. Testing the performance model formally has the advantage of providing a social cognitive model of academic persistence that is more parsimonious and theoretically consistent than previous social cognitive models that have been tested (Bean & Eaton, 2001; Brown et al., 2008). An adequate model has tremendous implications for intervention. For example, while Bean and Eaton (2001) recommend institutions create program to increase student's sense of self-efficacy, Melguizo (2011) points out that this assumption rests on a faulty view of self-efficacy given that Bandura (1977) demonstrated that self-efficacy can vary by treatment, so that a student's response to a theoretical program might differ based on what the programming entailed. If this is true, then intervention programming

either at individual or institutional level will be hamstrung by a reliance on incomplete information. As discussed briefly here, outcome expectations can also influence self-efficacy judgements but have not been well assessed within the context of academic persistence to date.

## **Research Questions**

The performance model in Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994) shows great promise as a theory of intervention in a student's decision to remain in college. If a counselor or institution is to design interventions based on the social cognitive model to affect persistence, it follows that the social cognitive model as articulated needs to be tested empirically and should include all of the requisite constructs for full theory articulation. However, measurement issues with outcome expectations have kept the model from being tested consistently. To illustrate, while Lent, Brown, & Hackett (1994) included model testing as a direction for their theory in their initial articulation 25 years ago, only portions of the performance model of academic persistence have ever been tested and missing from most performance models in academic persistence is the assessment of outcome expectations. This is likely due to difficulties with measuring the construct (Flores et al., 2015; Fouad & Guillen, 2006). Difficulties notwithstanding, failing to study outcome expectations can undercut findings on self-efficacy (Fouad & Guillen, 2006; Williams, 2010), providing only partial information and potentially undercutting any proposed intervention programming. Accordingly, the purpose of this study is to develop a theoretically consistent measure of outcome expectations that can inform future research on the performance model and intervention programming.

In this chapter, I have outlined two major lines of research in academic persistence from higher education and counseling psychology respectively and identified the area of research that this proposal seeks to address. The next chapter will be an expansive review of the psychological

literature on academic persistence and will conclude with specific hypotheses related to this investigation. Chapter 3 will outline the proposed methodology for accomplishing hypotheses proposed in Chapter 2.

## **Definitions**

*Persistence or “persisters.”* This refers to a student’s decision to remain in at the same academic institution they began at over the course of the academic year. This is usually considered a psychological variable as it has to do with individual decisions.

*First Year Retention.* Defined here as continuous matriculation at an institution over the first year of college.

*Withdrawal.* This refers to student’s decision to leave college for non-academic reasons.

*Cognitive Factors.* This refers to factors such as intelligence or ability that play a role in persistence.

*Non-Cognitive Factors.* This refers to psychological factors other than cognition that play a role in persistence.

*Self-Efficacy Beliefs.* This refers to “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments (Bandura, 1997, p. 3).”

*Outcome expectations.* These are future oriented judgments about the consequences of engaging in a given behavior or set of behaviors. These can also be thought of anticipated rewards or punishments within the environment (Bandura, 1995).

*Goals.* These are mechanisms to aid individuals in self-regulation. They enable individuals to sustain their behaviors over a period regardless of external reinforcements thus allowing individuals to obtain their desired outcomes.

*Social cognitive career theory (SCCT).* An application of social cognitive theory to education and counseling (Lent, Brown, & Hackett, 1994).

## CHAPTER TWO

### LITERATURE REVIEW

The purpose of this chapter is to review previous literature and studies that are relevant to the development of a measure of academic persistence outcome expectations. Because the research questions are inherently psychological, this review will focus on psychological variables that are related to academic persistence. Melguizo (2011) writes that the field of psychology has not yet developed a theory of academic persistence. This is likely due to the nature of psychology versus the other social sciences. The purpose of psychological science is to apply scientific principles to the understanding of mental processes and human behavior. Ideally, this work has applications to human welfare. Because psychologists study mental processes and individual behavior rather than environmental influences on human beings, it may be more accurate to say that psychologists are interested in the mental processes that are associated with academic persistence, which could be generalizable to other social phenomena.

Theoretically, much of psychological science would apply to the phenomenon of persistence because persistence likely involves several mental systems that are of interest to psychologists. Questions of the role of academic or cognitive ability, personality, influence of stress, and psychological maladjustment, and a host of other psychological variables could play some role in academic persistence. While the literature of this line of inquiry is extensive, for the purposes of this study, the goal is to review research that is relevant to the outcome expectations construct and its measurement as well as proposed psychological mechanisms that have been studied with the explicit questions related to academic persistence. With this in mind, I begin by reviewing the counseling psychology literature on academic persistence. I then cover self-efficacy theory and the construct of outcome expectations as well as some of the theoretical debate related to outcome expectations. Next, I outline Bean and Eaton's (2001) model of

academic persistence and discuss the development and constructs in social cognitive theory. I return to the counseling psychology literature to discuss Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994), the performance model in SCCT, and the role of outcome expectations. I conclude with a discussion on the issues with measuring outcome expectations and provide examples of studies that have measured outcome expectations according to the theoretical articulation of outcome expectations. Greater emphasis will be placed on empirical work rather than theoretical claims with the greatest emphasis being placed on theoretical claims that have empirical backing. I will offer critiques of the literature throughout my review.

### **Counseling Psychology**

For counseling psychology, the scholarship in academic persistence is nearly as old as the discipline itself. What follows is a review of the scholarship in counseling psychology on academic persistence with a primary focus on the *Journal of Counseling Psychology*. The logic here is that scholarship in the *Journal of Counseling Psychology* reflects the profession's voice, making publications in this journal intertwined with the discipline's developing research program (Wrenn, 1980). The intention is to provide for the reader an overview of the discourse in counseling psychology on this subject and identify gaps in the literature that this proposal seeks to address.

**Initial Investigations.** In only the third issue of the *Journal of Counseling Psychology*, Munger (1954) published an article demonstrating that tests measuring psychological adjustment and academic ability bear no relationship to persistence behavior of college students who had graduated in the lower third of their high school class. A year later, Munger and Goeckerman (1955) repeated the study with the added twist of comparing the highest third of a freshman cohort to the lowest third. They demonstrated that the same measurements were not predictive of

a student's ability to persist suggesting that aspirations played a role instead. Soon after this finding, other scholars began to make similar suggestions regarding the role of non-cognitive variables in academic persistence, such as social class and family support (Iffert, 1957; Slocum, 1957). Gelso and Rowell (1967) also found that academic adjustment, as measured by a six-factor measure, predicted academic persistence through the first year of college in a small group of students admitted to a two-year college on academic probation. Two major weaknesses of this early work were the reliance on univariate significance testing and the measurement inconsistency of non-cognitive factors. Ikenberry (1961) challenged univariate findings by using discriminant analysis on a large sample of college students at the University of Michigan. He found high achievement corresponded primarily with intelligence. He also found that women were more likely to remain enrolled than men and lower SES corresponded with college withdrawal on a "socio-cultural-sex" function that accounted for gender and social class. Prediger (1965) also using discriminant analysis as well as ANCOVA with a large male sample of University of Missouri Columbia found that ability and academic achievement was a more salient predictor of academic persistence than so called "biographical data" as measured by a scale that Prediger created for the study. Faunce (1968) demonstrated through discriminant analysis that this relationship does not hold up in a sample of academically gifted women, finding that vocational interests and personality traits differentiated better between graduates and non-graduates. Faunce (1968) did not use Prediger's (1965) scale and they appeared to define persistence differently. Prediger (1965) looked at enrollment until the senior year of college where Faunce (1968) examined graduation rates.

**Influence of Trait Theory and Personality Testing.** There was also increased interest in the 1960s and 1970s to examine academic variables in terms of personality traits likely reflecting the

general interest in trait theory in the greater field of psychology. Briefly, trait theory posits that human actions are guided by internal determinants of behavior called traits (Allport, 1961; Cattell, 1966; Eysnck, 1970). Generally, trait theory assumes there is a strong correspondence between an individual's attitude and behavior and a particular trait that is consistent across situational variables (Bem & Allen, 1974). A collection of a particular number or amounts of certain traits is what forms the basis of one's personality. This theory has been highly influential in counseling psychology. For instance, the eminent counseling psychologist John Holland worked to predict academic achievement from numerous personality inventories (Holland, 1969, 1970). Holland's (1959) initial work was a trait approach to vocational choice as he conceptualized the utility of interest inventories in his theory: "as personality inventories which reveal information such as the person's values, attitudes, needs, self-concept, preferred activities, and sources of threat and dissatisfaction (Holland, 1959, p. 36). More recently, efforts to explain factors that influence career development outcomes have incorporated personality traits (Lent & Brown, 2013).

The Minnesota Counseling Inventory (MCI) was a variable in several studies in academic persistence for its purported utility in uniquely identifying the structure of the personality of young people (Berdie & Layton, 1960; Seigel, 1958). The intent of this scale was to identify high school students in need of counseling or evaluate certain educational experiences (Seigel, 1958). The MCI consisted of 355 items of a Guttman-type response format: a binary (e.g., true/false) format consisting of items that are hierarchically organized to measure the amount of a given trait. In the case of the MCI, multiple scales were used to assess personality. The items were derived from the original Minnesota Multiphasic Inventory (MMPI; Hathaway & McKinley, 1943), the lesser-known Minnesota Personality Scale (Barley & McNamara, 1940),

and selected in terms of their perceived relevance to younger people (Sage, 1958). There were nine subscales all together, three from the MPI, and six from the MMPI (including two validity scales).

Brown (1960a, 1960b) was the first to validate the MCI with a large sample of college students (N = 3250) and use it to assess academic persisters versus withdrawals. Discussing his findings in terms of gender differences, Brown (1960b) obtained elevated profiles for both men and women withdrawals (who left college for non-academic reasons). He noted that men who left tended to be irresponsible and non-conforming, whereas women who left tended to be withdrawn, isolated, introverted, and depressed. Watley (1965) used the MCI with a smaller sample (N = 608) consisting of both academic withdrawals and non-academic withdrawals in an engineering department. Whatley (1965) criticized Brown's (1960a, 1960b) initial studies for failing to differentiate between non-academic withdrawals and academic withdrawals. Finding significant differences between persisters and withdrawals, Whatley (1965) described the typical non-persister as "moody, irritable, depressed, withdrawn and nonconforming (p. 97)." After Brown's (1960a, 1960b) initial validation studies on the MCI applied to college settings, efforts shifted within the field to add persistence scales to MCI. Larson (1964) developed a persistence scale for high school boys and girls. Persistence scales, containing items assessing persistence intentions, for male and female college students were proposed soon after (Egermeier, 1963; Johnson, 1970). Hansen and Taylor (1970) identified two independent dimensions using discriminant analysis: high school achievement, and personality characteristics as measured on the MCI to classify persisters and withdrawals in a large group of engineering students. They suggest that individuals with lower family conflict and greater ability to integrate themselves into a group may be more able to persist in engineering.

A good deal of research on the psychological profile of the people who withdrew from college was also done with the Omnibus Personality Inventory (Heist & Yonge, 1958), a measure developed to assess student adaptation to new environments (Griffin & Hobson, 1978). Like the MCI, the OPI derived nearly all of its items from the MMPI (Sheonfeldt, 1972). Findings from early research suggested those who left college in good academic standing were more maladjusted and less interested in scholarly activities than those who remained (Rose & Elton, 1966). Of concern, this instrument produced disparate patterns of results. Rossman and Kirk (1970) challenged Rose and Elton's (1966) argument that students who left college were psychologically disturbed, proposing that students who withdraw voluntarily and people who fail out of school should not be placed in the same withdrawal category. Using the same instrument, they concluded the somewhat opposite finding: students who withdrew voluntarily (N = 214) from UC Berkeley were more likely to be abstract thinkers, artistic, more tolerant of ambiguity, more intellectually oriented, and less interested in practical approaches to life. Griffin and Hobson (1978) conducted a study of recruits in a U.S. naval academy (N = 1,108) reported that the OPI failed to predict attrition rates on five dichotomous outcome variables that measured military attrition and flight competency. Johansson and Rossman (1973) also found no consistent personality differences between persisters and withdrawals with the OPI in a five-year longitudinal study on college freshman at Macalester College in 1964 (N = 568) and 1965 (N = 603).

Finally, studies using the MMPI itself in samples of college withdrawals versus academic persisters failed to find a consistent predictive psychological profile of the college persister. For example, Pandey (1972) found no evidence of pathology in a small racially diverse sample of

students at a liberal arts college. In addition, Maudal, Butcher, & Mauger (1974) found that academic variables do just as well or better in predicting persistence as personality variables do.

Given the results of the studies mentioned, a natural question that may arise is what would possibly explain such a disparate pattern of results in investigations related to so-called personality traits. One issue that continually came up in this earlier research is how to define a withdrawal student. Some studies have noted that investigations have failed to differentiate academic failures versus voluntary withdrawals (Rose & Elton, 1968) and from transfers versus those who remain out of college (Johansson & Rossman, 1973; Maudal, Butcher, & Mauger, 1974). The manner in which groups are classified in discriminant analysis can have a major impact on the results (Betz, 1987). A failure to consistently define a persister vs. withdrawal can affect inferences made about their personality, which may partially explain differences in the pattern of results noted above. For instance, many early studies did not separate academic withdrawals vs. voluntary withdrawals. When this was done in later research, the inferences made on personality characteristics of dropouts changed (see Rose & Elton, 1968; Rossman & Kirk, 1970). Additional issues in this area of research again include method of analysis with a majority of the analysis relying on univariate significance testing.

**Persistence as a Vocational Psychology Question.** Investigations in academic persistence for counseling psychologists have followed along roughly two paths for the past three decades beginning in the early 1980s. As detailed in the first chapter, Nancy Betz and Gail Hackett's work (Betz & Hackett, 1981; Hackett & Betz, 1981) and early work by Robert Lent, Steven Brown, and Kevin Larkin (1984, 1986, 1987) led to the formation of Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994). A good deal of research in counseling psychology on the subject of academic persistence has been discussed in the context of this

theory's performance and satisfaction models (Brown et al., 2008; Lent, 2005). A review of this literature takes place later in this chapter. The second path also uses vocational psychology theory to explain academic persistence—namely John Holland's (1997) theory of congruence, a person-environment fit theory, which will be reviewed in the following section. Outside of those two paths, the scholarship in academic persistence slows down for counseling psychologists in the mid-1970s. It seems that the field now views academic persistence as a phenomenon to be studied only within vocational psychology. Major handbooks in counseling psychology (Almaier & Hansen, 2011; Fouad, 2012, Lent & Brown, 2008) do not include reviews of the research in academic persistence in any chapter perhaps reflecting a diminishing interest in the field. As discussed in Chapter 1, sociological models (e.g. Tinto 1975, 1993) became the dominant paradigm in academic persistence beginning in the 1970s. Tinto's (1975) criticism that psychological perspectives “blame the victim” (Tinto, 1975, 2006) could be partially responsible for diminished psychological research in this area.

### *Person-Environment Fit Theories*

Person-environment fit theories refer to theories where traits held by a person (P) are matched with the factors of a given workplace (E) for optimal success and functioning (Juntunen & Even, 2012). Within vocational psychology, there are several theories that can be classified this way. In the context of academic persistence, John Holland's (1997) theory of congruence is one P-E fit theory that has received some attention. Briefly, this theory argues that most people have interests, abilities, beliefs, values, characteristics, and preferred activities that can be classified as a combination of six work personality types (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional). These types also describe work environments. People's interests can be matched to resembling work environments (Gottfredson & Holland, 1996); the

higher the ‘match’ or congruence between the two, the better the outcomes – including length of time in the environment as well as satisfaction with the work or academic environment. From a practical standpoint, a counselor can generate a Holland code by means of assessment. The assessment contains the first three letters corresponding to the three work personality types that are the closest match to the client (e.g., RIA, SEC). Once a client with a specific personality type is working in an environment with corresponding typology—the client found a work environment that is congruent to their work personality.

Holland’s theory has received extensive scholarly attention with literally hundreds of studies that have tested its claims (Nauta, 2010; Smart, Feldman, & Ethington, 2006). In the context of academic persistence, the research has operated under the assumption that fitting students to a major that is congruent with their interests will increase their persistence and remain in their major (Habley, Bloom, & Robbins, 2012). Tracey and Robbins (2006) examined the relationship between interest-major congruence on academic persistence finding that greater interest-major congruence was predictive of graduation status and persistence after controlling for academic ability. Allen and Robbins (2008) found that first year GPA and interest-major fit were independently predictive of academic persistence and major persistence in a large sample of students across the US. Using a longitudinal design, Allen and Robbins (2010) found that interest-major congruence had a direct effect on timely degree completion and an indirect effect on persistence through first year performance. Taken together, these results provide support for Holland’s theory when applied to academic persistence with two important caveats. Most of the data for these studies comes from information collected by ACT using ACT measurements of the six work personality types hypothesized by Holland. Future research should examine this

relationship using alternative measurements (such as the Self-Directed Search; Holland, Fritzsche, & Powell, 1994) to control for a potential measurement bias.

In this section of the review, I have reviewed the extent literature in counseling psychology on the topic of academic persistence. I now transition into reviewing self-efficacy theory and its applications to academic persistence, which include SCCT's performance model. Self-efficacy theory is covered prior to reviewing the literature on SCCT.

### **Self-Efficacy Theory**

Unlike psychoanalysis (Freud, 1920), behaviorism (Watson, 1924; Skinner, 1953), and trait theory (Allport, 1961; Cattell, 1966; Eysenck, 1970) which each view people's behavior deterministically as the product of either internal or external forces, social cognitive theory is a theory of human agency positing that people exercise control over their lives (Bandura, 1997, 2001). Bandura (2001) refers to the aforementioned models of human behavior as "one-sided determinism". Social Cognitive Theory, by contrast, operates in what is considered a triadic reciprocal relationship between the environment, behavior, and cognitive and other personal factors (Bandura, 1986). This relationship means that people receive information about their environment and are able to act on it, thus acting agentially rather than deterministically. Central to human agency is the construct of self-efficacy (Bandura, 2001), which can be thought of as a cognitive system or a set of beliefs defined as a future oriented judgement about individuals' capabilities that actively influence their motivation, choices, and affect (Bandura, 1997). Bandura (1997) writes that self-efficacy is central to human agency because human beings cannot act as if they believe their actions will not produce results. Self-efficacy is said to be domain-specific. That is, people tend to group their efficacious beliefs by certain tasks idiosyncratically. One might be an excellent swimmer and have expectations that he or she will

be able to swim across great distance without any problem. That same person may struggle to perform at a high level within an academic setting. Within a given domain, people with higher self-efficacy typically attempt difficult tasks and persist at that task. Self-efficacy expectations can also vary in terms of magnitude usually described in terms of the difficulty of a given task. One might view oneself as efficacious at basketball when they are playing against friends or a community league. However, if one were called upon to play against LeBron James or Steph Curry, efficacy expectations could diminish in magnitude. They can also vary by strength dependent on the source of the efficacy belief (Bandura, 1977, 1997).

There are four sources of self-efficacy expectations: performance accomplishments, vicarious experiences, verbal persuasion, and emotional arousal (Bandura, 1977, 1997). Performance accomplishments, which refer to experiences of mastery or failure, are thought to be the most powerful source of self-efficacy beliefs (Bandura, 1977). People also gain self-efficacy beliefs by watching other people and making inferences from social comparisons; this is one source of information that can build self-efficacy beliefs. Verbal persuasion, considered the weakest source of self-efficacy, refers to the influence that others can have on self-efficacy belief. Finally, physiological arousal states (such as anxiety or excitement) can provide fodder for self-efficacy beliefs. The sting of failure or the elation of success can influence judgments by tying physiological experiences to prior performances.

Expectancies that forecast the outcomes of a given action are referred to as outcome expectations (Bandura, 1977). Where self-efficacy is a judgment of one's capability to perform a task, outcome expectations refer to the forecasting of beliefs as the result of one's actions. The precise definition of outcome expectations has been the subject of ongoing debate (Bandura, 1995; Kirsch, 1995; Williams, 2010). The key issues in the theory refer to the subtypes of

outcome expectations and the effect that each of the subtypes might have on behavior in a given domain and level of performance. Some authors (e.g., Fouad & Guillen, 2006) refer to outcome expectations as an attempt to answer the question, “What will happen if I do this?” To use an example, a self-efficacy judgment might be estimating one’s capability to shoot free throws in a high-pressure situation. An outcome expectation refers to a judgment of what will occur as the result of shooting the free throw. Self-efficacy beliefs influence outcome expectations. If the player has high self-efficacy in shooting free throws, this person might expect their teammates to congratulate them as a result of accuracy. By contrast, if a player has poor self-efficacy in shooting free throws, they might be concerned that their coach will yell at them or disappointing their teammates.

There are three classes of outcome expectations in self-efficacy theory: physical, social, and self-evaluative. Physical outcome expectations refer to physical rewards or punishments one might receive as a consequence of performing a given action. One example of physical outcome expectations includes expectations of comfort given an action. One might have high self-efficacy in running races but expect that running a race in the dead of winter will result in an unpleasant experience. Social outcome expectations refer to beliefs about how others will react as a result of performing a given action. Praise received by teammates or a coach for accuracy in shooting free throws would be considered a positive social outcome expectation that might occur as a result of high self-efficacy. By contrast, ridicule or disappointment from peers or loved ones from performing an action that garners disapproval or failing to perform a desired action might also be an example of a negative social outcome expectation. The third class of outcome expectations is self-evaluative outcome expectations. These outcome expectations refer to how

one will evaluate their own performance in a given task. If an individual has high self-efficacy in baking cakes, they might expect to positively evaluate their product when it is complete.

Outcome expectations can be proximal or distal to self-efficacy expectancies. Proximal outcome expectations refer to outcome expectations that closely tied to self-efficacy judgments. The expectation that one will win a 10k race as a result of a high amount of running self-efficacy is an example of a proximal expectancy belief. The expectation that one will win a marathon as a result of winning a 10k race is a distal outcome expectation because it is too loosely tied to the performance.

Finally, it is important to note that outcome expectations can be a predictor of behavior in their own right. Theoretically, when an outcome is tied directly to performance, self-efficacy is a more important predictor of behavior. However, when outcomes are not directly tied to performance, outcome expectations can predict behavior above self-efficacy (Bandura, 1997). Bandura (1997) writes that there is no single relationship between outcome expectations and self-efficacy judgments. Thought to be causally consequent, outcome expectations can add to prediction of behavior. In the example of academic persistence, a person with low self-efficacy in the domain of navigating college bureaucracy might feel despondent or apathetic to affect the outcome. Individuals with high efficacious beliefs might feel that they are able to affect the environment through protest or social change. However, if they perceive the outcome is indifferent to their efforts, they may depart to find another environment better suited to their needs.

**Do Outcome Expectations Influence Self-Efficacy Judgments?** Self-efficacy theory posits that outcome expectations flow from self-efficacy judgments. Bandura (1997) writes that there is conceptual confusion when outcomes are said to precede actions: “Outcomes arise from

actions. How one behave largely determines the outcome they experience. Performance is thus causally prior to outcomes (p. 21).” Additionally, he writes that “[outcome expectations] are not the characteristics of agentic acts; they are the consequences of them (Bandura, 2001, p. 6).” According to Bandura, self-efficacy is a much more powerful predictor of behavior than outcome expectations (Bandura, 1995). However, substantial empirical evidence exists to the contrary (Kirsch, 1995), which has led some authors to conclude that self-efficacy theory is invalid because people are influenced by their expectations of given outcomes rather than their self-efficacy judgments (Eastman & Marzillier, 1984; Kirsch, 1995). Importantly, self-efficacy does posit that outcome expectations influence behavior. For example, high self-efficacy and low outcome expectations might lead an individual to advocate for their needs whereas low self-efficacy and high outcome expectations might lead someone towards despondency (Bandura, 1997). The debate is whether or not outcome expectations influence self-efficacy judgments, not whether they influence behavior. Strictly speaking, most social-cognitive theorists would agree that outcome expectations do influence behavior, but are not as important of a predictor as self-efficacy depending on the tie to performance (Bandura, 1997). There would also be disagreement in terms of what the subtypes of outcome expectations are and the degree to which each subtype of outcome expectation influence behavior. This is central to the point why accurate measurement in outcome expectation scales is critical. These questions cannot be satisfactorily answered without an accurate measure.

In a study conducted by Kirsch (1982), students who were afraid of snakes were asked to rate their self-efficacy to approach and interact with a snake as well as throwing wadded up pieces of paper into a basket from increasing distances (control condition). Participants’ ratings of self-efficacy increased as the promise of monetary incentives (outcome expectations)

increased. Interestingly, self-efficacy increased significantly more in the snake condition than the paper-throwing condition. Scheonberger, Kirsch, and Rosengard (1991) replicated this experiment using actual monetary incentives demonstrating that self-efficacy judgments increased with increasing monetary incentives. Corcoran and Rutledge (1989) also replicated these findings. These researchers offered hypothetical monetary incentives to their participants in a control condition that involved shooting basketballs over increasing intervals of distance. Results demonstrated that hypothetical incentives had an influence on self-efficacy beliefs providing some support for Kirsch's (1982) initial conclusions that self-efficacy judgments can be influenced by outcome expectations on specific tasks. Kirsch (1985, 1995) later concludes that self-efficacy theory is invalid.

In response, Bandura (1983, 1986, 1991, 1995) reviews both experimental and correlational literature that demonstrates self-efficacy to be a much more powerful predictor of behavior than self-efficacy. As pointed out by Williams (2010), however, Bandura does appear to concede that self-efficacy can be influenced by outcome expectations. In defense of self-efficacy theory to Kirsch's claims (1985) that it is invalid, Bandura (1986, 1995, 2007) concedes that social forces can influence self-efficacy judgments and appears to interpret Kirsch's results this way. Williams (2010) takes this to mean that Bandura is contradicting himself. After all, how can someone claim that outcome expectations are casually consequent to self-efficacy judgments, but also claim that they can influence them? Here, Williams expresses a fundamental misunderstanding of Bandura's argument. Bandura (1997) writes that it is a false dichotomy to think of social variables and psychological variables as competing explanatory mechanisms for human behavior. Instead, they likely interact with each other. If this is true, then Bandura might think of monetary incentive as a social force that *influences both* self-efficacy judgments and

outcome expectations by means of persuasion (Bandura, 1983). Bandura (1997) writes that outcome expectations work with self-efficacy beliefs to produce affective states and influence behavior within a given social context:

“Beliefs that outcomes are determined by one’s own behavior can be either empowering or demoralizing, depending on whether or not one believes one can produce the required behavior. People who regard outcomes as personally determined, but who lack requisite skills would experience a low sense of efficacy and view the activities with a sense of futility...Human behavior and affective states would be best predicted by the combined influence of efficacy beliefs and the *outcome expected within a given social system* (p. 20, emphasis mine).”

In the above quote, Bandura is claiming that outcome expectations occur within a social system perhaps via one of the sources of self-efficacy. Of course, college students are motivated by money; it is a form of persuasion (Bandura, 1983). Thus, monetary incentives have the effect of manipulating the contextual social force where these outcome expectations exist. A manipulation check might have helped determine causality more clearly. The results of this study beg the question, had Kirsch and others offered another class of outcome expectations, such as those that did not exploit the poverty of college students (e.g. approval of peers) with monetary reward, would they have achieved the same result?

Williams (2010) also writes that measures of self-efficacy might also include outcome expectations as a proxy causal variable because people tend to imagine their performance in the context of a given outcome. He cites two studies (Council, Ahern, Follick, & Kline, 1988; Rhodes & Blanchard, 2007) in which participants were asked to give the reasons for their efficacy beliefs and they responded with outcome expectations. From this and the other evidenced already reviewed, Williams (2010) arrives at his conclusion that outcome expectations tend to influence self-efficacy judgments. However, this evidence does not suggest that they casually influence each other. Participants here are just imaging an outcome that is already based

in their judgment of their own capability, which is in line with the current articulation of self-efficacy theory (Bandura, 1997, 2006).

The discussion outlined here raises several important points about outcome expectations. Carefully defining and assessing outcome expectations is a necessary and important task because it allows for the context in which self-efficacy judgments occur. Outcome expectations also partially account for the variance in determining human actions (Bandura, 1997). Both constructs are necessary to predict human actions within a given context.

### **Self-Efficacy, Outcome Expectations, and Academic Persistence**

Self-efficacy has been reliably shown to influence persistence and performance in multiple domains (Bandura, 1997; Stajkovic & Luthans, 1998). Because self-efficacy and outcome expectations are domain specific, the task here is to review the extent literature that focuses on the relationship of self-efficacy to academic persistence. This review will focus on theories of persistence that have influenced self-efficacy as a construct and then broaden to review the extant literature that incorporates self-efficacy as a construct in academic persistence in the educational psychology literature. It will conclude by outlining the role of the performance model in social cognitive career theory.

**Bean and Eaton (2000, 2001).** As mentioned in the previous chapter, Tinto's (1975, 1993) Model of Student Departure dominated the higher education scholarship for the last thirty years. Based on Emile Durkheim's (1951) concept of egoist suicide, Tinto's model argued that student retention was primarily a function of social and academic integration into university life. A natural question that might arise upon hearing this claim is how do students integrate academically and socially into university life? Bean and Eaton (2000, 2001) criticized Tinto's

model for its lack of specificity in addressing this point. They go on to propose a model that addresses this problem by means of a number of psychological constructs including self-efficacy found in the two domains outlined by Tinto, namely academic and social self-efficacy. Additional constructs such as locus of control (Rotter, 1966) and coping behavior (French, Rodgers, & Cobb, 1974) are included in this conceptualization as interacting variables with the environment. Bean and Eaton propose that students enter institutions with a variety of established psychological beliefs. Chief among these are self-efficacy beliefs regarding their own capabilities to succeed in college, past behavioral inputs, and normative beliefs. As students integrate themselves into the institution, they engage in several self-assessments: developing self-efficacy judgments about their capabilities to succeed in school academically and socially. Additionally students engage in coping behavior through an assessment of a given environment and adaptation to that environment. Adaptation to the environment means that as students gain more experience in the institution, they develop methods of coping. How they cope will be predictive of how well they integrate into the environment. Finally, Bean and Eaton (2001) view students' level of social and academic integration as a function of their locus of control (Rotter, 1966). This indicates the extent to which students view their past outcomes and experiences to be caused by internal or external forces. Students with an internal locus of control will view their past outcomes as primarily within their control where students with an external locus of control will view their past outcomes as primarily the consequences of a force outside of themselves.

Interestingly, Bean and Eaton (2000, 2001) do not empirically test their model, but instead go on to recommend interventions programs in light of it. Melguizo (2011) argues that this is a key limitation of Bean and Eaton's (2000) work because no evidence exists that the intervention programs recommended by Bean and Eaton (2001) would act on the psychological

variables in the manner that they are hypothesized. Empirical studies that claim to use Bean and Eaton's (2001) model as a guiding framework are generally rare, and like Tinto's model, suffer from a lack of consistent measures to adequately test the model (Altermatt, 2016).

### **Academic Persistence in SCCT**

Meta-analytic reviews of the task persistence literature within counseling and educational psychology have demonstrated that self-efficacy and goals are predictors of persistence when accounting for persistence when study skills and academic ability are controlled for (Brown et al., 2008; Multon, Lent, & Brown, 1991; Robbins et al. 2004). Robbins et al. (2004) was interested in predicting academic persistence across a number of institutional and personal variables. They found that after accounting for so called traditional predictors of academic persistence such as SES, GPA, and SAT/ACT scores that academic skill, academic goals, and academic self-efficacy were the strongest predictors of student retention. Brown et al. (2008) supported this conclusion through another meta-analysis examining the performance model in the situation of academic persistence. It should be noted that Brown et al.'s (2008) work included Robbins et al. (2004) fitting their conclusions to a social cognitive path model of performance when related to academic persistence. Though Brown et al. (2008) supported the conclusion that self-efficacy and goals seemed to mediate the relationship between previous academic ability and academic persistence, they also found that goals did not seem to be predictive of college GPA. These authors suggested that more research is needed to determine the relationship between college GPA and goals.

Goals are an important structure within social cognitive theory reflecting the theory's emphasis of the capacity for human forethought, symbolizing, and self-reflection (Bandura & Locke, 2003; Lent, Brown, & Hackett, 1994). Goals reflect people's ability to envision and

direct behavior, thus allowing them to direct their behavior agentically. Goals are defined as a mental representation to engage in a particular activity or set of activities to achieve a certain outcome (Bandura, 1986; Locke & Latham, 2002). Goals are said to be hierarchical in structure with higher order goals organizing lower order goals. Like expectancy beliefs, goals can either be proximal (a goal that involves an upcoming action) or distal (a goal that involves action in the relatively distant future). A point that will become central to the discussion later is that proximal goals tend to have a greater influence on behavior (Bandura & Schunk, 1981; Stock & Cervone, 1990).

Within counseling psychology, these findings have been taken as evidence for academic persistence within the context of the performance model in social cognitive career theory (Brown et al., 2008; Lent, Brown, & Hackett, 1994, Multon, Lent, & Brown, 1991). The performance model within SCCT states that self-efficacy, outcome expectations, and goals are predictive of an intention to persist after prior performance accomplishments have been taken into account (Lent, Brown, & Hackett, 1994). Self-efficacy works with outcome expectations to predict goals, which predict intention to persist.

This model is advantageous for two reasons. First, unlike previous models of academic persistence reviewed here, it is easily testable since it requires just a few variables. Secondly, the model is very consistent with social cognitive theory, which is a fully formed theory of human functioning that also accounts for the specific contexts of academic persistence through domain specific measurement. Given the advantages to this model from a psychological standpoint, it is surprising that only a few studies have sought to test it completely since its first articulation in 1994 (Brown et al., 2008; Kahn & Nauta, 2001; Lee et al., 2014; Wright et al. 2013). Perhaps

because persistence is naturally a longitudinal question makes it less amenable to study than some of other posits in SCCT.

Kahn and Nauta's (2001) study remains the only empirical investigation to test the full performance model with all of the hypothesized variables within the context of academic persistence. This study administered measures of self-efficacy, outcome expectations, and goals to 400 college freshman at two time points and tracked their freshman to sophomore persistence. Prior performance accomplishments were measured by high school class standing, College GPA, and ACT scores. Using logistic regression on persistence (coded dichotomously), results demonstrated that pre-college evaluations of social cognitive measures did not predict academic persistence. Unexpectedly, outcome expectations and performance goals predicted persistence into the sophomore year above prior performance accomplishments. Self-efficacy was not predictive at all. It should be noted that outcome expectations were measured by a three-item scale taken from Bean's (1985) work. The items read: "How useful do you think your education at [this university] will be for getting future employment?" and "How useful do you think your education at [this university] will be for getting work you would really like?" and "How useful do you think your education at [this university] will be for getting a well-paying job?" Of note, Bean (1985) was not interested in assessing outcome expectation. It appears the authors chose these items because they viewed them to be theoretically related to outcome expectations perhaps using a face validity standard. Though the items appeared to form a reliable scale and correlated as expected with self-efficacy, discriminant and content validity remain open to question, especially given their results.

Lee et al. (2015) and Wright et al. (2013) also test the performance model in SCCT, but both studies omitted outcome expectations from their analyses. Using path analysis, Lee et al.

(2014) found that the performance model fit the data well with a mixed race (White and Latino/a) sample of engineering students. Gender and race did not appear to moderate the relationship between the variables. Prior performance accomplishments (ACT/GPA) appear to predict persistence in engineering indirectly through self-efficacy and goals, which is consistent with theory and previous meta-analytic work (Brown et al., 2008). Wright et al. (2013) found that academic self-efficacy appears to be a good predictor of academic persistence after controlling for prior performance accomplishments, generational status, SES, gender, and race. Additionally, meta-analytic work on the academic self-efficacy, and persistence goals appears to support the notion that these are predictive beyond prior performance accomplishments (Brown et al., 2008; Robbins et al., 2004). Taken together, this pattern of results provides broad support for the model in testing academic persistence for college students.

**Measurement of Outcome Expectations.** Disparate strategies have been employed to measure outcome expectations. The outcomes assessed are highly dependent on the model that is being tested within social cognitive career theory. Since little research has been done on outcome expectations within the context of the performance model, I will briefly examine outcome expectations in testing other SCCT models. One strategy has been to examine outcome expected in light of a given action (e.g.: Fouad, Smith, & Enochs, 1997) following the format: “if I do X, Y will happen.” For example, Betz and Voyten (1997) write career decision making outcome expectations within the following format: “If I learn more about different careers, I will make a better career decision.” Other authors (e.g.: Lent et al., 2003) write outcome expectations items in terms of including a list of outcomes and then asking participants to rate how likely that outcome is to occur at a given level of attainment (such as earning a bachelor’s degree). A third strategy related to the first has been to write an outcome expectation stem and then have the

participant endorse a number of outcomes. Guillen (2007) developed a career decision making self-efficacy scale that employed the stem: “If I make a career decision...” and then had participants rate thirty-six items that corresponded to the three classes of outcome expectations. Unfortunately, her sample size was too small for factor analytic methods. Finally, some authors have modified outcome expectation items to fit the expectations of the cultural group (Flores, Navarro, & DeWitz, 2008).

Fouad and Guillen (2006) write that many outcome expectations are based on Fouad, Smith, and Enochs (1997) test of the interest model with middle school students. These measures do not include every class of outcome expectations and do not account for a valence in outcome expectations measurement (see also Swanson & Gore, 2000). Additionally, though Fouad and Smith (1996) developed social cognitive measures for a wide variety of academic pursuits, a disproportionate amount of outcome expectations research has focused on math and science outcome expectations. And almost none of the literature has focused on academic persistence in general. Brown et al. (2008) notes that outcome expectations were not assessed in a meta-analysis of the performance model due to decreased interests in measuring outcome expectations.

From this review, it appears that evidence exists to support most of the assertions of the performance model in the situation of academic persistence (Brown et al., 2008; Robbins et al., 2004). Because outcome expectations have been frequently omitted from analysis, it is unclear what role this construct plays in academic persistence in the SCCT performance model. As Lee et al. (2014) points out, this is due to issues measuring the construct leading to equivocal patterns of results.

Generally speaking, factor analytic studies in the context of outcome expectations have been fairly rare. Rarer still are factor analytic studies of outcome expectations that conform to the

theoretical articulation of outcome expectations. Scales that have been developed that conform to the hypothesized classes of outcome expectations are often devised ad hoc (e.g.: Byers-Winston et al., 2016) while factor analytic studies focus on multiple domains of outcome expectations within a given scale instead of multiple classes within the same domain (e.g.: Lee et al., 2018). This is an issue because, without good measurement, it is difficult to tell whether a certain class of outcome expectation within a given domain is more predictive than another. Factor analytic studies also provide support that multiple classes of outcome expectations exist within a given domain.

### **Research Questions**

This study sought to develop a theoretically derived measurement of outcome expectations. Specifically, this study seeks to test the hypothesis that an outcome expectations scale measuring academic persistence will fit a three-factor structure that reflect the three classes of outcome expectations hypothesized by Bandura (1997). Additionally, this proposal hypothesizes that outcome expectations account for more of the variance in persistence than self-efficacy and goals though this assumption will not be directly tested in this study. Rather, this study will develop a measure that can be used to test student outcome expectations of academic persistence empirically. This could allow future researchers to explain more of the variance in student persistence potentially allowing for intervention targeted at outcome beliefs as well as self-efficacy expectations. As it is clear from this review, an outcome expectations measure that captures the domain of persistence, the different classes of outcome expectations, and differing degrees of proximity does not exist. A scale that measures academic persistence could shed light on the role of outcome expectations with in the performance model.

## CHAPTER THREE

### METHODOLOGY

The central aim for this study is to develop a theoretically consistent measure of outcome expectations in the domain of academic persistence. It is generally hypothesized that students have outcome expectations that conform to the three classes of outcome expectations theoretically articulated by Social Cognitive Theory (Bandura, 1986, 1997). The research question is: what are the outcome expectations that students have in the domain of academic persistence? This proposal is specifically concerned with measuring outcome expectations, thus it assumes that outcome expectations can actually be measured using measurement theory. By subjecting hypothetical items to tests in measurement theory, one can ascertain whether or not outcome expectations exist within the student population.

#### **Measurement Theory**

Constructing a scale involves establishing empirically that a measure is valid (i.e.: it measures what it purports to measure) and that it is reliable (i.e., that the differences in scores obtained are differences in observed scores with respect to a true score rather than error). The measurement model used in this study is classical test theory or CTT.

In CTT, the observed score is equal to the true score plus error or  $X=T+E$ . The “true score” in CTT is the amount of the latent trait possessed by the examinee, which is the variable of interest that cannot be directly observed. In physical measurement, the unit of measurement can be demonstrated and quantified with reference to an object within the physical world. For instance, the Scottish writer Lord John Swinton (1789) defined the inch as the width of an average man’s thumb. Though this is inherently problematic, it illustrates the point that an agreed upon point of reference can be used for physical measurement. In this case of psychological and

educational testing from the perspective of CTT, it is usually observed behavior reflect the presence of a latent trait that cannot be directly measured (Crocker & Algina, 1986). There is not a single reference point for indirectly observed phenomena such as love. Instead, we assume the trait exists and we can measure it by means of observing a distinct class of behaviors that collectively would be agreed upon to be love. CTT also assumes that the observations measuring outcome expectations are the average score of participants' true outcome expectations if they were to take this test an infinite amount of times. Under this assumption, the observed scores obtained in this investigation are random variables from a theoretical sampling distribution that forms when a participant takes this assessment an infinite amount of times. Additionally, CTT assumes that the sources of error are either random or systematic. In random error, errors in test scores can be attributed to any number of proxy variables that affect a test taker at varying levels. In systematic error, there is an error that affects all test takers in the same manner (e.g.: an environmental factor that affects all test takers equally). CTT assumes that these errors are uncorrelated meaning that the errors between administrations do not affect each other. In this sense, errors are not "carried over." In a similar vein, replications between administrations are independent of each other not just in terms of the error, but also in terms of expressions of the latent trait. In this case, the assumption is that outcome expectations do not differ across administrations across time. This allows us to reliably measure the trait over time.

**Reliability.** Critical to CTT is the concept of reliability. Generally speaking, reliability refers to the concept that a test should be able to measure the same trait in the same population across time. Reliability coefficients are defined as the observed score variance or the sum of the true score variance and the error variance. It is useful to think of reliability in terms of parallel forms, which are defined as two distinct tests that measure the same construct. Theoretically, we

would expect performance on each of the forms to be exactly equal—the error variance and the true score variance would be the same making the sum of them, the observed score variance on both forms. Because we expect the exact same performance on both measures, we would also expect a perfect correlation between both of these forms. Reliability coefficients are also defined as the quotient of the observed score and the true score. If the coefficient is 1, then it was measured perfectly. If less than 1, error is said to be present.

Reliability is assessed via multiple methods. In test-retest reliability, the reliability coefficient is the correlation coefficient between two sets of scores. This is referred to as the coefficient of stability. The measurement error that could be accounted for in this method of establishing reliability is the generally the testing conditions or state of the examinee. By using the same form with the same examinee, it is possible to determine how much the observed score of the examinee fluctuates due to error.

In alternate forms reliability, the reliability coefficient is the correlation between forms called the coefficient of equivalence between the two forms. The measurement error this method accounts for is the content between two the two forms as well as error that could be due to administration, guessing, or scoring error. A similar method, split-half methods, refer to a test developer splitting one form of a test into two subgroups by creating two subtests with similar content. The reliability coefficient is the correlation of equivalence between the two subtests. The measurement error we are concerned with is the similar to that of internal consistency: whether the performance across subtests can be generalized to other items measuring similar content.

Internal consistency asks the question how consistently examinees perform across items measuring a construct. In other words, it is a measure of how consistently examinees perform on

a single test form. To calculate internal consistency, there are split half methods and methods based on item covariance such as Cronbach's alpha or the Kuber Richardson methods. The measurement error that is accounted for by internal consistency approaches is error due to content sampling or if the examinee's performance on this set of items can be generalized to other items measuring similar content. Cronbach's alpha is commonly used in counseling psychology research and is easily derived using most software programs. It is an estimate of reliability that exists on a scale of 0 to 1. It works as a form of alternate forms reliability, but treats each individual item as its own "form." High measures on Cronbach's alpha essentially mean that participants responded similarly to items across all forms designed to measure the underlying construct. This is generally what is meant by internal consistency. A rule of thumb is that  $\alpha < .70$  suggests marginal reliability where  $0.7 \leq \alpha < 0.8$  is acceptable for research purposes. Usually  $\alpha > .90$  is generally recommended for instruments used in clinical practice (Crocker & Algina, 1986; Sattler, 2008).

**Validity.** An equally important concept to classical test theory is the concept of validity. Validity is concerned with how accurately an instrument is measuring a psychological construct such as intelligence. Validity is important because psychological measurements are imperfect in nature. An invalid instrument could lead to erroneous decision-making on the basis of an invalid instrument failing to measure a construct accurately.

It's possible for a measurement to be reliable without being valid. Two people can agree on something and both be incorrect. However, it would be difficult to imagine a scenario in which a measurement is valid without being reliable. Validity is incredibly important practically when one considers how the test may be used. For example, selection is often based on psychological measurement (e.g.: intelligence testing for entry into the armed services, GRE as a

basis for graduate admissions). In order for the instrument to make accurate predictions for selection, there must be a good deal of research supporting its validity. If a measurement lacks validity to measure what it purports to measure, it should be discarded. Traditionally, it has been largely assumed that validity is a property of the measurement rather than how the measurement is used. Further, there are specific types of validity that must be established in order to test to be considered valid.

There have been recent challenges to this traditional view of validity that have collectively been known as the current or modern view of validity (Eignor, 2013). Messick (1995) classically argued that all forms of validity could be understood as construct validity and that construct validity is the most important type of validity to prove. It is also generally understood in the current view that validity is the property how the test is used and should be theoretically driven rather than measurement driven. Finally, tests are no longer considered either valid or invalid, but validity exists on a continuum and current thinking is that one method of validity is sufficient for showing at least partial validity to a measure (Messick, 1995; Zumbo, 1999).

Content validity refers to agreement among experts that the measurement taps the construct of interest. For instance, expert judges in intelligence testing would likely be consulted for an intelligence test to ensure that items measured intelligence. On the other hand, construct validity refers to the classic definition of validity that the test is measuring what it purports to be measuring. There are multiple methods to measuring construct validity. One can correlate a measure to another measure that is deemed to be the “gold standard.” In this method, stronger correlations would mean greater construct validity. Similarly, one can establish construct validity by correlating measurements with other measurements that theoretically purport to measure a

similar or related construct or a construct that is not similar or is completely unrelated to the construct of interest. The former is referred to as convergent validity while the latter is referred to as divergent validity. In the case of outcome expectations, one would expect high convergent validity between outcome expectations, self-efficacy, and goals all within the same domain.

Criterion-related validity is a form of validity that refers to the idea that tests should be able to tell us something about a certain set of criteria. In the case of outcome expectations in academic persistence, the criterion related variable would be academic persistence. We would expect that outcome expectations in the domain of academic persistence to tell us something about the behavior of academic persistence. There are two types of criterion validity: concurrent and predictive. In concurrent validity, we correlate the measure of interest with a benchmark that has been achieved in the past. In predictive validity, we correlate the measure of interest with a future behavior to make inferential statements about a future behavior. In the case of academic persistence, establishing concurrent validity would be inspecting between past persistence behavior and the measure of interest where predictive validity would be concerned with future persistence behavior.

***Factor analysis.*** A final method for construct validity is determining the internal structure of a test. A common factors analysis is the next step in this procedure. Factor analyses are dimension reduction procedures that partition common variance into explanatory entities referred to as “factors.” Factors, or latent traits, that share variance among indicators (or observed variables) are said to cause behavior on the observed variables. The proportion of total variance shared by the factors is referred to as communality or common variance. The remaining variance is known as unique variance, which accounts for variance not explained by the model such as participant characteristics, environmental characteristics, etc. (Kline, 2015). The two

different types of unique variance are specific variance and error variance. Specific variance refers to variance in the model that is accounted for by something other than the items while error variance is variance associated with measurement error. In factor analysis, data from observed indicators (i.e., items) are collected and then regressed onto hypothesized latent variables and have the same interpretation as standardized regression coefficients (Brown, 2006) which are typically referred to as “factor loadings” though the technical term for the value is *pattern coefficient* (Kline, 2015). The predictor is the hypothesized latent variable is the predictor variable that acts on the observed indicator that when controlling for all other variables in the model, a unit change in the latent variable will predict a difference in the observed variable (Keith, 2006; Kline, 2015).

There are two general types of factor analysis methods: exploratory and confirmatory. An exploratory factor analysis is done when hypotheses are not known so an a priori specification of the factors is generally not necessary. Some software packages allow for the researcher to specify the number of factors to extract the number of factors, but the indicators are free to be measured by all of the factors, even when restricted in this fashion (Kline, 2015). This method is generally considered appropriate when the researcher does not know what indicators will measure what factors. A confirmatory factor analysis is used when a researcher has a clear hypothesis about the test’s dimensionality. The researcher restricts items to depend on (or load on) one particular factor (Kline, 2015). When the internal structure is unknown a priori, it is appropriate to use an exploratory factor analysis or an EFA.

*Exploratory factor analysis.* The central question behind an EFA is how many underlying latent factors account for the greatest amount of variance and covariance in a set of measured variables (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Preacher & McCallum, 2003).

Choosing an EFA requires the researcher to make some decisions about the method of factor extraction and factor rotation. Factor extraction refers to a procedure that partitions the variance from an observed variable into its unique variance and error variance and reveals the underlying factor structure by attributing the unique variance to a set of underlying traits or common factors (Costello & Osborne, 2005; Kline, 2015). There are several methods of factor extraction depending on distribution of the data. A best practice is to check the distribution of the observed variables and then select an extraction method based on that analysis (Costello & Osborne, 2005). It has been generally recommended that a maximum likelihood extraction method be used if the data is normally distributed.

After choosing an extraction method, the next step requires a researcher to choose a rotation method. Rotations are developed to allow for minimization of cross-loadings of indicators onto multiple factors. Rotation is necessary to allow the researcher to make a meaningful interpretation of the factors. There are two types of rotation methods--orthogonal and oblique rotations. Oblique rotations allow for correlations between the factors while orthogonal rotations do not. There is some debate as to which rotation is better to use and it is likely dependent on the research question. Some would argue (see Kline, 2015 for a discussion) that orthogonal rotations are truer to the theory of factor analysis and allowing for correlated factors might be representing the same or similar constructs. Orthogonal rotations also are advantageous because they produce more easily interpretable results (Costello & Osborne, 2005). Others (e.g. Preacher & MacCallum, 2003; Fabrigar et al., 1999) have argued that orthogonal rotations do not represent reality in psychological research as observations may have more than a singular determinant. Because of this, it would be expected that correlations between the factors exist. An example is the WAIS-IV (Kline, 2015; Sattler, 2008), which reports four

discrete categories of tasks that measure intelligence, but correlations among the factors are commonly reported. Finally, it is also argued that oblique and orthogonal rotations will provide similar results if the factors are truly uncorrelated (Brown, 2006).

A third issue in exploratory factor analysis is the decision of how many factors it is appropriate for a researcher to retain. Generally, it has been suggested that the scree test is an appropriate method to determine the number of factors to retain. This method involves examining the scree plot and using the greatest distance between two factors as a cut point for factor retention colloquially referred to as “looking at the elbow.” Finally, some have used the judgment of eigenvalues that are less than 1.00 as a cut off for factor retention. This practice is generally not recommended by itself because it can lead to the retention of too many factors (Brown, 2006; Preacher & MacCallum, 2003).

*Confirmatory Factor Analysis.* As previously stated, a confirmatory factor analysis is necessary when the researcher has some understanding of the underlying factor structure. Unlike EFA, where researchers allow the observed indicators to freely be represented by any number of extracted factors, a CFA requires a researcher to specify which observed indicator will be represented by which factor. This requires the researcher to have specific theoretical knowledge about what indicators would be represented by which factors. Returning to the example of the WAIS-IV (Sattler, 2008; Wechsler, 2008), previous experience and theory would indicate that tasks such as block design or matrix reasoning would be indicators of perceptual reasoning while symbol search and coding are indicators of processing speed. Thus, using a CFA model, a researcher would specify that scores on these indicators would be representative of these underlying measures of intelligence. By specifying what indicator should be representative on a given factor, researchers using CFA models to test their hypotheses do not allow for cross-

loadings, thus rotations are not used. While an underlying assumption of an EFA analysis is that the measurement error is random as is assumed in CTT, a CFA analysis allows the researcher to specify relationships of the unique or error variances among the indicators. This is an important feature of CFA because the researcher must make additional hypotheses about the nature of the measurement error. Sometimes, it can be defensible for allowing measurement error variances to correlate depending on the reasons for doing so (i.e., shared method bias; see Kline, 2015).

In order to fit a confirmatory factor analysis model to a set of observed indicators, the model must be an identified model. This means that there must be a theoretically justified solution where the computer is able to generate a set of unique parameters for the observed dataset (Brown, 2006; Byrn, 2012; Kline, 2015). Parameters are derived from the number of observations in a variance-covariance matrix. An observation is the unique value in a variance covariance matrix (Kline, 2015). When a CFA model is under-identified, it means the number of parameters exceeds the number of observations leaving of the degrees of freedom to be  $< 0$ . When a model is just identified, it means there are no degrees of freedom in the model and the model represents a perfect fit to the data. When the model is over-identified, degrees of freedom are  $> 0$  allowing for interpretation of any model-data discrepancy (Brown, 2006; Kline, 2015). Kline (2015) suggests that researchers should aim to evaluate models with positive degrees of freedom due to this feature.

When a measurement model is evaluated, it is judged on how well the model fits the observed dataset on a number of metrics including a test statistic known as the model chi-square (Kline, 2015). This is traditionally true for CFA models only, but some EFA models also produce this statistic and other fit indices discussed below depending on the method of factor extraction and rotation (see Muthén & Muthén, 1998-2017). The null hypothesis for the model

chi-square is that there is no difference between the hypothesized data and the observed data where the alternate hypothesis suggests that there is a statistically significant difference. When researchers retain the null model, they make the case that the model is a good fit to the data. When a researcher rejects the null hypothesis, the model is not a good fit to the data. The goal for researchers who wish to demonstrate that their models do indeed fit the observed datasets would be to retain the null hypothesis. Though fairly straightforward, it is also known that the model chi-square is sensitive to sample size meaning that the chi-square value will likely be statistically significant when the dataset is large. Due to this limitation, several other fit indices have been developed in order to judge a model's fit to the observed data. There are quite a few fit statistics that have been developed (Kline, 2015). For this study, I chose to report the RMSEA, CFI, and SRMR/RMR in addition to the model chi-square as recommended by Kline (2015). These fit indices are typical of what is reported in counseling psychology. Rather than being dichotomous decisions to accept or reject a hypothesis, the following fit indices represent indicators along a continuum of good to bad. Threshold values are presented that are typically considered to represent good fit according to established community standards (e.g. Hu & Bentler, 1999). However, some have warned not to rely too heavily on so called "golden rules" or an overreliance on fit indices (Marsh, Hau, & Wei, 2004; McDonald & Ho, 2002).

Like the chi-square test, the Standardized Root Mean Square Residual (SRMR) is an absolute fit index. An absolute fit index is a measurement of how well an a priori model fits or reproduces the data (McDonald & Ho, 2002). The Standardized Root Mean Square Residual is the square root of the discrepancy between the co-variances for the optimal hypothesized model and the population model. The values range from 0 to 1 with a value  $\leq .08$  being considered a good fitting model (Hu & Bentler, 1999).

Both the *Root Mean Square Error of Approximation* (RMSEA; Steiger & Lind, 1983) and the *Bentler Comparative Fit Index* (CFI; Bentler, 1990) are types of fit indices known in methods literature as non-centrality-based indices. These calculate a restricted non-central chi-square parameter by assuming the degrees of freedom in the population null model is the same as the observed model (rather than the null). The RMSEA is an absolute fit index and functions as such with using the non-centrality parameter (Raykov, 2000). It is known as the “badness of fit index” in the sense that the smaller the value is, the greater the model fit (Kline, 2015). However, what exactly constitutes a “bad” fit remains an open question. MacCallum, Browne and Sugawara (1996) suggested respective cutoff criterion of .08, .05, and .01 to indicate acceptable, good, and excellent fit. However, Chen, Curren, Bollen, & Paxton (2008) found little support for .05 as a universal indicator of good fit. Nevertheless, it is common to use these cutoffs in counseling psychology research (Hoyt & Mallinckrodt, 2012). In the absence of a better standard, these cut offs will be used as part of an overall approach to model fit (Kline, 2015).

The CFI also utilizes the non-centrality parameter, but is known as a relative fit index. This family of indices is more interested in measuring the improvement of fit over the baseline model, which assumes the null hypotheses—that the covariances among the dependent variables are zero. The CFI is scaled between 0 – 1.0 with greater values being indicative of greater model fit. Again, what constitutes a good model fit is somewhat of an open question in the scholarship. For factor analysis, Hu and Bentler (1999) proposed a rigorous combination rule with the CFI  $\geq$  .95 and the SRMR  $\leq$  .08. However, this has not held up in follow up simulation studies (Fan & Sivo, 2005; Yuan, 2005).

*Sample Size.* There does not seem to be any particular agreement in the literature on how to best conduct an a priori power analysis for an exploratory factor analysis or confirmatory

factor analysis (Brown, 2006; Fabrigar et al., 1999; Kline, 2015; McCallum et al., 2001; Osborne, Costello, & Kellow 2014) because the requisite sample size seems to depend on a variety of factors – including the number of indicators and degree of communality. Typical rules of thumb range from 5-10 cases per item (Osborne, Costello, & Kellow, 2014) and some have favored running Monte Carlo simulations (Brown, 2006; Kline, 2015; Muthén & Muthén, 2002) to estimate power for both EFAs and CFAs. Outcome expectation measures that have been validated in the literature in related domains, such as math and science, persistence or engineering persistence, have generally relied on samples ranging from 200-400 participants (e.g., Byers-Winston et al., 2016; Flores et al., 2014; Lent et al., 2016) for brief measures of outcome expectations. Simulation studies (Bandalos, 2014; Forero, Maydeu- Olivares, & Gallardo-Pujol, 2009; Hu & Bentler, 1999; Wolf, Harrington, Clark, and Miller, 2013; Yu & Muthén, 2002) have generally found that 200-300 participants is sufficient for running simple CFA models with large number (i.e.: more than five) indicators per factor. These authors also suggested that smaller sample sizes would be indicated if the theory was particularly robust. In this case, there are distinct classes of outcome expectations hypothesized by Bandura (1977, 1986, 1997), which have been supported by factor analytic studies in other domains of outcome expectations--namely when researching health and sport outcomes (though there are surprisingly few studies that examine the hypothesized class structure; see Wójcicki, White, and McAuley, 2009 for an example). Given this, I collected two samples of undergraduate college students ranging between 200-300 participants per sample.

## **Participants**

Two samples of participants were collected for this study. The first sample of participants (N= 216) consisted of undergraduate students at a large Midwestern University in an urban

setting. Students were enrolled in undergraduate coursework in a department of educational psychology housed in the school of education. The mean age in the sample was 21. With regard to gender identity, 37 identified as cisgendered men, 175 identified as cisgendered women, 1 participant identified as transgender, and 3 participants identified as genderqueer. The majority of the sample was White (N = 128) with the next category being individuals endorsing two or more racial categories (N = 33), followed by Latinx/Hispanic (N = 27), Black American (N = 12), Asian American/Pacific Islander (N = 11), and Native American (N = 5). Generational status in college was measured by a parents' completed education as reported by our participants. If both parents were reported to possess less than a bachelor's degree, then the student was considered to be a first-generation college student. Using this criterion, 72 students were considered first generation college students in the sample. With regard to academic standing, 60 students were freshman, 42 students were sophomore, 57 were juniors, and 55 were seniors. Two students did not disclose their academic standing. A majority of the sample identified as coming from the middle class (N = 132) or the working class (N = 64). The remaining students endorsed either coming from impoverished backgrounds (N=11) or affluent ones (N=9). Students in this sample had the option of receiving either a \$5 Amazon gift card or a \$3 Venmo credit for participation. The probability of a student selecting an Amazon gift card over a Venmo credit was .85.

The second sample was collected from an online crowdsourcing platform known as Prolific Academic (<https://prolific.ac/>). Prolific Academic is an exchange where workers sign up to complete surveys used in research in exchange for payment similar to Amazon's Mechanical Turk or Mturk, which has become routinely used in psychological research (see Chandler & Shapiro, 2014). Prolific Academic offers the option to screen participants based on demographic

information provided to the company rather than relying on information provided to the researchers by the participants themselves. When a survey is released on Prolific, only participants that meet the study's eligibility criteria are able to view it. This provides some assurance that the participant pool matches the demographic of interest (Palan & Schitter, 2018). Research conducted the differences between crowdsourcing formats suggests that Prolific Academic respondents might produce better data quality than Mechanical Turk when judged in terms of honesty, naivety, and rate of failed attention checks (Peer, Brandimarte, Samat, & Acquisti, 2017). The apparent disadvantage of Prolific Academic to researchers is the cost. While Mechanical Turk allows the researcher to specify the amount to pay participants, Prolific Academic insists that a fair wage be paid to all workers. To researchers based in the United States, the rate of pay is set at \$6.50/hour. For this study, participants were reimbursed at \$6.54/hour. The average completion time was 9 minutes.

For this study, data from 301 participants were collected from Prolific. In order to be eligible for this study, participants must have endorsed on their demographic information to Prolific that they were based in the United States, were currently students enrolled in a university, and were between the ages 18-22. The last criterion was necessary because a filter that distinguished whether a participant was a non-traditional undergraduate student or simply a graduate student did not exist on Prolific. This is likely due to the fact that the company recruits participants from around the world and may rely on standardized screens to filter their participants to researchers. Because educational pipelines differ across world government structures, age and student status was chosen as a heuristic to define an undergraduate student in the United States. Participants were also asked to indicate whether they were enrolled in a post-secondary institution, if they planned to continue their studies in the next semester, their current

major, and how they are receiving their instruction. Participants must have been able to endorse being enrolled in a post secondary institution and have planned on attending school next semester or they were not eligible to complete the survey.

Participants who were not planning on enrolling the following semester were ineligible for the survey, but still received payment for participation. The mean age in this sample was 21. Regarding gender identity, 160 identified as cisgendered men, 122 identified as cisgendered women, 10 participants identified as transgender, and 1 participant identified as genderqueer. The majority of the sample was White (N = 157) with the next category being Asian American (N = 68), followed by Latinx/Hispanic (N = 39), individuals of mixed race (N = 38), Black American (N = 28), and Native American (N = 9). With regard to academic standing, 81 were freshman, 89 students were sophomores, 74 were juniors, and 57 were seniors. A majority of this sample also identified as coming from the middle class (N = 154) or the working class (N = 90). The remaining students endorsed either coming from impoverished backgrounds (N = 35) or affluent ones (N = 22).

## **Procedures**

An over-inclusive item pool was developed from two sources (Lovinger, 1959). The first source will be from self-efficacy theory, which states that individuals will feel either despondent or apathetic (if efficacy beliefs are low) or may engage in social change (if efficacy beliefs are high), but will depart if it is clear to the individual that the outcomes are not affected by one's own individual capabilities (Bandura, 1997). The second source of information for the item pool was from two focus groups I conducted in Spring 2018 in two major exploration classes. The groups ranged from 10-15 students. The research question was what expectations students had for choosing a major and remaining in colleges. Students were asked how they would feel if they

remained in college (physical), what others would think if they were to choose a major or remain in college (social), what rewards they expect if they remained in college (social), and what they would think of themselves if they remained in college (self-evaluative). Students were allowed to respond freely. Results were recorded in notes reflecting and were subjected to a thematic analysis where a student suggested a theme and then students either agreed or disagreed with a suggested theme. This process revealed the following themes across the two focus groups: “college will put me “on-track” with my age cohort,” “through college I fulfill societal expectations,” “college is means to an employment outcome,” and tacit social pressure (from peers) to choose a major. The instructions read as follows: “Below are some statements that may reflect your expectations of what will happen to you if you choose to remain in college. Please indicate how strongly you agree/disagree with the following set of statements by using the following five-point scale.” The scale anchors were “Disagree,” “Somewhat Disagree,” “Not Sure” “Somewhat Agree” and “Agree.” The question stem read: “If I decide to stay in college this year...” and then the respondent were presented with a series of items.

I initially generated thirty items, which were reviewed by two content experts and provided item feedback using a survey. After reviewing feedback, I generated twelve more. Inter-rater agreement was calculated using Cohen’s kappa, which was fairly poor,  $\kappa = .23$ ,  $p < .01$  (guidelines are available in Altman, 1999). The entire pool of forty-two items was sent to the first sample of students who completed the item pool and a brief demographic questionnaire in exchange for payment. Qualtrics software was used to administer the survey electronically. The scale items in both administrations of the survey were presented in random order to minimize order effects. The item pool contained negatively worded items to minimize acquiescence bias. I also sent a demographic form to both sets of participants. Analysis on the first sample was

conducted which will be discussed in greater detail in Chapter 4. A second confirmatory sample was collected from Prolific Academic as discussed previously.

## **Measures**

The following measures were sent to the Prolific Academic sample to establish convergent validity.

**College Self-Efficacy.** The College Self-Efficacy Inventory (CESI; Solberg, O'Brien, Villareal, Kennel, & Davis, 1993) consists of 20 items that load on three subscales considered to be central to a student's experience in college. These are course self-efficacy, social self-efficacy, and roommate self-efficacy. The stem asks participants to rate their confidence on certain tasks in social and educational domains. Example items include: "participate in class discussions" and "making new friends in college." Higher scores on the measure reflect greater self-efficacy in the behaviors thought to exist in the general domain of attending college. For this study, only the course and social self-efficacy subscales (15 items) will be used to capture the experiences of non-traditional students who may not be living on campus. Hutchinson, Jenkins-Guarnieri, Murdock, and Wright (2012) provided evidence for a factor structure and measurement invariance support for this instrument. Wright et al. (2013) reported good internal consistencies of .81-.84 on these measures in a longitudinal pre-post design. For this study, internal consistency for the total score was .87.

**College Outcome Expectations.** The College Outcome Expectations Scale (COE) is a measure developed by Flores, Navarro, and DeWitz (2008) to measure the outcome expectations an individual has for a college education. This measure was chosen because it most closely resembles the measure under construction in this study. Though the college outcome

expectations scale is in a similar domain with respect to the interpretation of lower scores reflecting lower outcome expectations for remaining in college, there are a number of key differences between this scale and the scale proposed in this study. Some of the items were written with a specific cultural group in mind. Though it is indeed important for measurement to be culturally relevant, to date, no tests of differential item functioning have been performed on these items making it unknown to what extent they are measuring that particular group membership rather than outcome expectations. Further, the scale does not confirm to the three hypothesized classes of outcome expectations. As discussed in Chapter 2, providing measurements about the classes of outcome expectations can aid researchers in determining which class of outcome expectation is most predictive of behavior. The observed Cronbach's alpha coefficient for this study was .93.

**Academic Goal Progress.** Progress towards academic goals was measured by the Academic Goals Scale (Lent et al., 2005), which was a scale originally developed by Lent et al. (2003) and then refined by Lent et al. (2005). The scale prompt is: "How much progress do you think you are making toward each of the following goals at this point in time?" followed by seven items each listing an academic goal. The response format is a 1-5 Likart scale with higher scores being indicative of progress towards goals. Studies that have employed this scale in model tests have reported good to excellent observations of internal consistency (.84 - .90; Lent et al., 2005, 2007; Ojeda, Flores, & Navarro, 2011). Ojeda, Flores, and Navarro (2011) reported strong correlations between the Academic Goals Scale, College Outcome Expectations Scale, and College Self-Efficacy Scale. For this study, internal consistency was .91 for the total score.

### **Plan for Analysis**

Items were evaluated first by using discrimination statistics. This is determined by examining item-total score correlations. Items that correlate well are understood to be measuring the construct accurately. This would be evidenced by items with item-total score correlations that are under .20 with the overall total score. This was taken to mean that the items are not measuring the underlying construct.

The review of the literature suggests that a measure of outcome expectations would fit a proposed three-factor structure for the three classes of outcome expectations: physical, social, and self-evaluative (Bandura, 1997). However, there was substantial variability between the content experts in what class of outcome expectations is measured by a given item. I generated hypotheses for all items to be represented by certain factors as the item writer. Table 1 presents all of the items with the proposed content representation by factor.

In the hypothesized model, physical, social, and self-evaluative outcome expectations represent factors. The investigative aim was to develop a theoretically derived and valid form of outcome expectations in the domain of academic persistence, the expected results from the first wave of data collection were that the items would yield a three-factor solution after those that discriminate poorly had been eliminated. Additionally, the scale would be internally consistent demonstrating both reliability and validity for the measure and thereby meeting the assumptions of the measurement model. From the Prolific sample, items would be evaluated for their difficulty and discrimination using similar procedures already described. A confirmatory factor analysis would allow me to confirm an existing factor structure I proposed from the first wave of data collection.

## CHAPTER FOUR

### RESULTS OF THE ANALYSIS

The first sample was evaluated for difficulty and discrimination statistics using a CTT paradigm. Negatively worded items were reverse coded in both samples. I began by investigating the item-total correlations between the individual items and the overall total score. This analysis was conducted in SPSS version 25. The results of this investigation revealed that two items “I will feel happy” and “I will be doing what society expects of me” yielded correlations of -0.61 and 0.08 respectively. These items were removed from future analyses. The item pool also contained three items with extremely similar wording on a sense of accomplishment. To avoid forming a testlet, two additional items (items 15 and 27—see Table 1) were also removed. Cronbach’s Alpha was .90 for the all of the remaining items in the pool. Though this appears to be excellent, high internal consistency is also an indicator of many items. In CTT, the longer the test, usually the higher a reliability coefficient will be (Crocker & Algina, 1986). Item difficulty was assessed by examining the proportion of students who agreed with the items over students who did not fully agree with the items (Schmeiser & Welch, 2006). Items with greater proportion indicate items that are easier to answer. Figure 1 displays difficulty and discrimination indices for the remaining items in the first sample in a scatter plot.

The items were then subjected to confirmatory factor analysis using the a priori factor structure I hypothesized in Chapter 3 (see Table 1). This analysis was conducted in Mplus (Muthén & Muthén, 1998-2017). For an estimation method, I used weighted least squares. The result was a fairly poor fit to the data: ( $\chi^2(737) = 1832.32, p < .001, RMSEA = .08$  [90% CI 0.07- 0.08], CFI = .85, SRMR = .13) suggesting that my hypothesized factor structure was not

present in the data. In keeping with the assumptions of CTT, I assumed the source of measurement error was random and did not specify any correlated error terms (Brown, 2006).

As agreement among the content experts was fairly poor for item representativeness by factor and my hypothesized factor structure was found to be a poor fit to the data, an exploratory factor analysis was used to examine the factor structure of the test. In chapter three, I outlined some of the key issues in conducting an EFA. For this study, I retained weighted least squares as an estimator (extraction) method and chose to use a varimax rotation to interpret the data (Kaiser, 1958). Because Bandura hypothesizes three distinct classes of outcome expectations, an orthogonal rotation was employed. In this analysis, I have prior theoretical knowledge of a three-factor structure that should be present. Evaluating the three factor theoretically expected model yielded a good fit to the data ( $\chi^2(663) = 1065.02, p < .001, RMSEA = .04, RMR = .06$ ). However, examining the rotated loadings yielded the finding that the items did not seem to conform to the expected hypothesized factors. The three distinct class structure did not appear to be present in the data. Instead, there appeared to be several items that cross-loaded on multiple factors making the interpretation of the factors difficult. Interpreting the factors, it appeared the factors 1 and 3 appeared to represent valanced factors positive and negative outcome expectations while factor 2 appeared to represent a financial testlet comprised of items that anticipated financial rewards. Table 2 provides the varimax-rotated loadings for the three-factor structure and Figure 2 provides the scree plot on the varimax rotated factor loadings. As this solution is not theoretically expected, the decision was made to evaluate the two factor structure as this appears to be supported as a good fit to the data ( $\chi^2(701) = 766.52, p < .001, RMSEA = .04, RMR = .07$ ) as well as the scree plot. This solution depicts factors that are both positive and negative orientations to outcome expectations, which is theoretically supported. Thus, this

research is providing some evidence that outcome expectations may not conform to distinct class outcome expectations as much as they conform to the direction of the outcome expectations. However, this solution also contained outcome expectation items that cross-loaded between the two factors.

I made the decision to remove items with weak factors loadings. These mainly included positively valenced items on a negative factor and vice versa. The decision rule was to remove items with a factor loading of  $< .30$  on an unintended factor (see Schmitt & Sass, 2011 for a discussion of this). Following this protocol, four items met the specified criteria and were removed. A second EFA using the same extraction method and rotation as described above was performed to investigate the factor structure once the items were removed. The two-factor structure remained a good fit to the data and the most parsimonious solution ( $\chi^2(494) = 766.12$ ,  $p < .001$ , RMSEA = .04, RMR = .07). Table 4 depicts the structure of the two-factor solution and Figure 3 depicts the scree plot from the second EFA. In the second EFA, it was also apparent that positive and negative factor was the best interpretation of the factors. However, two items appeared to cross-load in this solution. A decision was made to remove these items and repeat the analysis. Repeating the analysis using the same extraction method and rotation method yielded a good fit to the data ( $\chi^2(433) = 694.83$ ,  $p < .001$ , RMSEA = .05, RMR = .07) that continued to represent a parsimonious solution. Table 5 and Figure 4 depict the factor loadings and the scree plot respectively. As this solution has the advantage of no cross-loaded items, it was retained as the final model for this sample.

The two-factor structure that was retained in the university sample was then explored in the Prolific Academic sample. The underlying factor structure that was retained in the university sample was explored using EFA with the same extraction and rotation methods as used in the

previous sample. The results of this exploration yielded a reasonably good fit to the data ( $\chi^2(433) = 1235.96, p < .001, RMSEA = .07, RMR = .06$ ) suggesting evidence for internal validity across samples. Table 6 and Figure 5 depict the factor loadings and the scree plot respectively.

Convergent validity was established through the use of corollary measures as outlined in chapter three. Table 8 displays the correlation table. Correlations for the total score and each of the factors was examined against the convergent validity measures. The total score of the measure correlated significantly and positively with a related measure, the college outcome expectations scale. Both the APOE and COE correlated in the same direction with the related measures suggesting that they are tapping similar domains of outcome expectations. This was also true of the positive factor of the APOE or the POE. The negative factor, or NOE, correlated in the opposite direction of POE, APOE, and COE suggesting presence of divergent validity. This direction was expected because there are more positive items than negative items in the final solution. Self-efficacy was positively and significantly correlated to APOE, COE, and POE. The goals measure was uncorrelated with APOE and significantly negatively correlated with self-efficacy and outcome expectations as measured by the COE. The NOE and goals measure were significantly and positively correlated. Taken together, these findings might speak to the need for further psychometric evaluation of the goals scale. For the present study, convergent validity is established through significance with the college outcome expectations scale and self-efficacy scales in the direction that is expected.

## CHAPTER FIVE

### DISCUSSION OF THE RESULTS

#### **Restatement of the Problem and Theoretical Background**

For every ten students that begin college in the United States, seven will return for a second year and five will complete a bachelor's degree in five years (ACT, 2017; NCS, 2016). For students who begin college and do not complete it, money spent on education that did not lead to any kind of meaningful credential as well as lost wages associated with limited participation in the workforce represent a real economic cost (Johnson, 2009). Though some students gain the skills necessary for competitive employment without completing a credential, many students leave institutions worse off financially than when they started. Those who complete a bachelor's degree stand to earn a substantially higher income than those who do not (Scheider & Yin, 2011) and although good paying jobs without a bachelor's degree exist, often some kind of formal post-secondary training such as an associate's degree is necessary to be considered for these jobs (Carnevale, Strohl, & Ridley, 2018).

For institutions and society, the cost of student withdrawal from college is also great. Approximately 2.7% of our nation's GDP is spent on higher education yielding an overall graduation rate of 46% for all higher education institutions in this country (Carnevale, Strohl, & Ridley, 2018). Schneider (2010) found that taxpayers in the U.S. spent \$9 billion over a five-year period on students who did not return for a second year of college. Schneider and Yin (2011) examined a single cohort of students who did not return for a second year of college and estimated that state and local governments lost \$730 million in potential tax earnings. Additionally, Raisman (2013) found that over 1600 institutions in 2010 lost a collective \$16.5

billion in lost tuition, fees, and other potential expenses with the average loss amount of \$9.9 million.

It is important to note that these figures are representative of an overall trend that has puzzled scholars in education and social sciences for more than half a century. What has been remarkable is how relatively stable the numbers of departing students has remained over time (see Habley, Bloom, & Robbins, 2012; Pantages & Creedon, 1978; Summerskill, 1962). Given the costs to the student and society associated with going to college and failing to obtain a degree and the inveterate nature of the problem, it is easy to see why this has been a source of lively scholarship within the social sciences and higher education. The theoretical literature has generated numerous models, but has disproportionately focused on Vincent Tinto's (1975, 1993) model of student departure despite empirical limitations (Melguizo, 2011).

Social cognitive theory posits that human behavior is not the product of internal determinants, but exists through the triadic and reciprocal interaction of the person, the environment, and the person's behavior. Bandura (1986) conceptualizes there are five capacities that are unique to human thought and action: forethought, symbolizing, vicarious learning, self-reflection, and self-evaluation. For social cognitive theorists, human beings have a unique ability to exercise control over their lives. This is done through skills that are acquired in the environment. These skills are mediated by the ability to exercise control over one's destiny (Bandura, 1997). This ability, defined as, "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments (Bandura, 1997, p. 3)," is referred to as self-efficacy. Self-efficacy is foundational to the social cognitive theory and is representative of human agency and proposed to be a causal determinate to human agency, action, achievement and wellbeing (Bandura, 1997, 2001). Self-efficacy is not a global trait, but is rather a future

oriented belief people hold about their capacity in a given situation. Self-efficacy beliefs vary in terms of their level, strength, and generality (Bandura, 1977). In addition to self-efficacy, outcome expectations are a co-determinant of behavior (Bandura, 1977). Outcome expectations are future oriented judgments about the consequences of engaging in a given behavior or set of behaviors (Bandura, 1986). There are three distinct types of outcome expectations: physical, social, and self-evaluative. These are conceptualized as either incentives or disincentives of continuing to engage in the behavior or not (Bandura, 1977). Physical outcome expectations refer to sensory experiences one believes that a certain action is likely to cause. Social outcome expectations refer to social effects that a certain behavior may cause. Self-evaluative outcome expectations refer to how an individual will evaluate and feel about their own performance (Bandura, 1997).

Social cognitive theory has had tremendous influence in counseling psychology, especially in the realm of vocational and education development research. In 1981, Nancy Betz and Gail Hackett published two seminal articles (Betz & Hackett, 1981, Hackett & Betz, 1981) arguing that self-efficacy may influence the vocational choices of men and women. Their research demonstrated that men and women had disparate perceptions of self-efficacy that also varied by interests in future occupations. Finding that women tended to express disinterest and low self-efficacy in nontraditional career options, Betz and Hackett (1981) also argued the socialization of women influences their perception of self-efficacy. Shortly after this work, Lent, Brown, and Larkin (1984) extended this to academic persistence. In a small pilot study of undergraduates in a major course for math and science majors, these researchers found that students with higher self-efficacy seemed to persist with a higher GPA than students with lower self-efficacy. In two follow up studies with larger samples using cross sectional designs, self-

efficacy seemed to be predictive of technical GPA and academic persistence in a group of science and math majors (Lent, Brown, & Larkin, 1986, 1987). By 1990, a small but sufficient amount of evidence across psychological science had accumulated to test a link between self-efficacy and persistence (Multon, Lent, & Brown, 1991). There were eighteen studies total included in this meta-analysis, with only three studies examining persistence alone. Persistence was either measured through task persistence (i.e.: how many items/tasks completed or time to complete tasks) or number of semesters completed in college. Given these measurement issues in academic persistence in this study, these researchers were not able to confirm Bandura's (1977, 1986) hypotheses regarding the mediating role of self-efficacy to academic persistence.

These studies laid the groundwork for what became the performance model in social cognitive career theory: an extension of Bandura's work to career and educational development (Lent, Brown, & Hackett, 1994). Social cognitive career theory (also known as SCCT) is a theory of vocational and educational development within the counseling psychology scholarship receiving much scholarly attention (Fouad, 2007; Lent & Brown, 2016) since its first articulation in 1994.

The performance model conceptualizes academic persistence broadly as a performance itself. Theoretically, the tenants of the performance model equally apply to academic persistence and academic performance. There are two propositions for this model (propositions #8 and #9 within the entire SCCT framework). The first proposes that self-efficacy beliefs both directly and indirectly, through performance goals, influence performance. Outcome expectations influence performance only indirectly through goals. The second states that previous ability or aptitude will have a direct effect on performance and an indirect effect through self-efficacy beliefs. Interestingly fourteen years after this proposal, Brown et al. (2008) in their meta-analysis noted

that the entire performance model had not been tested at that point, but rather subsets of the model and the interest in performance model from industrial and organizational psychology focused primarily on work outcomes rather than academic outcomes. In their work, they demonstrated that measurements of prior performance accomplishments such as GPA, SAT/ACT scores predict student retention through the self-efficacy and goals. It should be noted that Brown et al.'s (2008) work included Robbins et al. (2004) fitting their conclusions to a social cognitive path model of performance when related to academic persistence. Though Brown et al. (2008) supported the conclusion that self-efficacy and goals mediated the relationship between prior academic ability and academic persistence; they also found that goals did not seem to be predictive of college GPA. Brown suggests that more research is needed to determine the relationship between college GPA and goals.

Other meta-analytic reviews of the task persistence literature within counseling and educational psychology have demonstrated that self-efficacy and goals are predictors of persistence when accounting for persistence when study skills and academic ability are controlled for (Brown et al., 2008; Multon, Lent, & Brown, 1991; Robbins et al. 2004). Robbins et al. (2004) was interested in predicting academic persistence across a number of institutional and personal variables. They found that after accounting for so called traditional predictors of academic persistence such as SES, GPA, and SAT/ACT scores, the variables of academic skill, academic goals, and academic self-efficacy were the strongest predictors of student retention.

Goals are an important structure within social cognitive theory, reflecting the theory's emphasis of the capacity for human forethought, symbolizing, and self-reflection (Bandura & Locke, 2003; Lent, Brown, & Hackett, 1994). Goals reflect peoples' ability to envision and direct behavior, thus allowing them to direct their behavior agentically. Goals are defined as a

mental representation to engage in a particular activity or set of activities to achieve a certain outcome (Bandura, 1986; Locke & Latham, 2002). Goals are said to be hierarchical in structure with higher order goals organizing lower order goals. Like expectancy beliefs, goals can either be proximal (a goal that involves an upcoming action) or distal (a goal that involves action in the relatively distant future. A point that will become central to the discussion later is that proximal goals tend to have a greater influence on behavior (Bandura & Schunk, 1981; Stock & Cervone, 1990). Within counseling psychology, these findings have been taken as evidence for academic persistence within the context of social cognitive career theory's performance model (Brown et al., 2008; Lent, Brown, & Hackett, 1994, Multon, Lent, & Brown, 1991). The performance model within SCCT states that self-efficacy, outcome expectations, and goals are predictive of an intention to persist after prior performance accomplishments have been taken into account (Lent, Brown, & Hackett, 1994). Self-efficacy works with outcome expectations to predict goals, which in turn predict intention to persist. The performance model is beneficial because it aligns with social cognitive theory – a fully articulated theory of human functioning that also accounts for the specific contexts of academic persistence through domain specific measurement. Given this advantage, it is surprising that only a few studies have sought to test it completely since its first articulation in 1994 (Brown et al., 2008; Kahn & Nauta, 2001; Lee et al., 2015; Wright et al. 2013).

Kahn and Nauta's (2001) study remain one of the only studies to test the entire performance model with all of the hypothesized variables in the situation of academic persistence. This study administered measures of self-efficacy, outcome expectations, and goals to 400 college freshman at two time points and tracked their freshman to sophomore persistence. High school class standing, college GPA, and ACT scores measured prior performance

accomplishments. Using logistic regression on persistence, results demonstrated that pre-college evaluations of social cognitive measures did not predict academic persistence. Unexpectedly, outcome expectations and performance goals predicted persistence into the sophomore year above prior performance accomplishments. Self-efficacy was not predictive at all. The items read: “How useful do you think your education at [this university] will be for getting future employment?” and “How useful do you think your education at [this university] will be for getting work you would really like?” and “How useful do you think your education at [this university] will be for getting a well-paying job?” It should be pointed out that Bean (1985) was not interested in assessing outcome expectations, and it appears the authors chose these items because they viewed them to be theoretically related to outcome expectations perhaps using a face validity standard. Though the items appeared to form a reliable scale and correlated as expected with self-efficacy, structure and content validity remain open questions especially given their results.

Lee et al. (2015) and Wright et al. (2013) also tested the performance model in SCCT, but both studies omitted outcome expectations from their analyses. Using path analysis, Lee et al. (2015) found that the performance model fit the data well with a mixed race (White and Latino/a) sample of engineering students. Gender and race did not appear to moderate the relationship between the variables. Prior performance accomplishments (ACT/GPA) appear to predict persistence in engineering indirectly through self-efficacy and goals, which is consistent with theory and previous meta-analytic work (Brown et al., 2008). Wright et al. (2013) found that academic self-efficacy appears to be a good predictor of academic persistence after controlling for prior performance accomplishments, generational status, SES, gender, and race. As mentioned, meta-analytic work on the academic self-efficacy, and persistence goals appears

to support the notion that these are predictive beyond prior performance accomplishments (Brown et al., 2008; Robbins et al., 2004). Taken together, this pattern of results provides broad support for the model in testing academic persistence for college students.

Disparate strategies have been employed to measure outcome expectations in SCCT research. The outcomes assessed are highly dependent on the model that is being tested within social cognitive career theory. One strategy has been to examine outcome expected in light of a given action (e.g.: Fouad, Smith, & Enochs, 1997) following the format: “if I do X, Y will happen.” For example, Betz and Voyten (1997) write career decision making outcome expectations within the following format: “If I learn more about different careers, I will make a better career decision.” Other authors (e.g., Lent et al., 2003) write outcome expectations items as a list of outcomes and subsequent prompts that ask participants to rate how likely that outcome is to occur at a given level of attainment (such as earning a bachelor’s degree). A second strategy related to the first has been to write an outcome expectation stem and then have the participant endorse a number of outcomes. Guillen (2007) developed a career decision making self-efficacy scale that employed the stem: “If I make a career decision...” and then had participants rate thirty-six items that corresponded to the three classes of outcome expectations. Unfortunately, the sample size was too small for factor analytic methods. Finally, some authors have developed outcome expectation items that fit the expectations of a studied cultural group such as the college outcome expectations questionnaire (Flores, Navarro, & DeWitz, 2008).

Fouad and Guillen (2006) write that many outcome expectations are based on Fouad, Smith, and Enochs (1997) test of the interest model with middle school students. These measures do not include every class of outcome expectations and do not account for a valence in outcome expectations measurement. Additionally, though Fouad and Smith (1996) developed social

cognitive measures for a wide variety of academic pursuits, a disproportionate amount of research on outcome expectations has focused on math and science outcome expectations. In general, because all college degrees do not result in the same vocational outcome, one can expect variance in the outcome expectations of college students. Brown et al. (2008) notes that outcome expectations were not assessed in a meta-analysis of the performance model due to decreased interests in measuring outcome expectations.

### **Summary and Implications of the Findings**

This study aimed to provide preliminary evidence for an outcome expectations scale to test the performance model in SCCT (Lent, Brown, & Hackett, 1994). The instrument was designed to broadly capture the three factors related to the three classes of outcome expectations. To this end, an overinclusive item pool was developed and rated by two psychologists familiar with the construct. The item pool was sent out to a sample of university college students at a local university. Results of the analysis failed to uncover a three-factor structure in the first sample. What was found was the presence of a two-factor structure for outcome expectations that corresponds to the valence of the item wording that is not corrected by reverse coding. Said another way, it seems that in the domain of academic persistence students hold outcome beliefs that are either anticipated rewards or punishments (or ‘positive outcome expectations’ and ‘negative outcome expectations’) about what will happen if they attend college for a given year. This factor structure was supported in a national-wide sample of college students. Convergent, concurrent, and divergent validity were also established in the second sample.

The strength of the present research is that it creates a useful tool to measure outcome expectations in academic persistence. It also provide a scale that has been validated on a wide variety of college students in a nationwide sample to test outcome expectations in the situation of

academic persistence using the SCCT performance model. This study identified two factors that are worth further psychometric exploration. Consistent with calls for outcome expectations scales (Lent & Brown, 2019) to measure both positive and negative factors, this research provides preliminary evidence for a scale that does just that. The APOE can be used as a scale that combines positive and negative factors for a reliable and valid total score or the two factors can be used separately depending on the goal of the research. Corollary evidence from the second sample demonstrated good convergent validity with college self-efficacy and good concurrent validity with college outcome expectations. The academic goal progress scale correlated in unexpected directions with both college outcome expectations and the academic persistence outcome expectations scale. Specifically, goals appeared to correlate negatively with positive outcome expectations (as measured by both the COE and the APOE) and positively with the negative outcome expectations factor. This was an unexpected finding and should be explored further in research, particularly since it may be the case that the scale itself deserves a more robust psychometric treatment.

The measurement of outcome expectations has been a notoriously difficult problem in the SCCT literature (Fouad & Guillen, 2006; Lent & Brown, 2019). No study in the SCCT literature has found support for Bandura's (1997) three-factor structure of outcome expectations in the entire twenty-five year existence of SCCT. Factor analytic studies in other domains outside of SCCT have found some support for three factors confirming to Bandura's (1986) hypothesis such as in health related outcomes like weight management, but these studies are far the exception rather than the norm (see Wójcicki, White, & McAuley, 2009 for an example). It appears to be more common to measure different subtypes of outcome expectations that conform to either outcome expectations in varying domains (e.g. Lee, Flores, Navarro, and Suh, 2018) or,

like the present research, dimensions corresponding to perceived rewards or punishments within the environment (see Rollnick, Morgan, & Heather, 1996). Though increasing attention has been paid to developing outcome expectations scales that are reliable and valid within SCCT (Lent & Brown, 2019), the three-factor structure that corresponds to Bandura's (1997) hypothesis has not been generally supported within the SCCT literature. That being said, the general construct of outcome expectations is supported. Namely, that outcome expectations refer to anticipated rewards and punishments in the environment seems to be reflected in both samples.

There might be a variety of reasons to explain these findings. Outcome expectations are typically not regarded to be as important as self-efficacy within self-efficacy theory (Bandura, 1997). Thus, little theoretical guidance has been offered in terms of exactly what constitutes a different class of outcome expectations. This could lead to widespread interpretation in terms of what constitutes a given class of outcome expectation and might explain the differences in the observed ratings among the experts. For instance, consider monetary value. Money can be perceived as a social outcome expectation due to its association with social benefits. It also may be considered a physical outcome expectation because of the pleasure that is potentially associated with earning a reward. If one were to write two items to capture this such as "I will be able to afford the lifestyle I want" and "I will feel pleasure from gaining a reward," it follows that these items would likely be highly correlated with each other since affording a desired a lifestyle can be considered earning a reward. In light of the fact that a respondent might be thinking of money when interacting with either item, it would make sense that both items are better thought of as capturing the similar anticipated reward. If it is true that these theoretical items are highly correlated, it would also be true that they can be expected to load on the same factor as an anticipated reward. Thus, the most parsimonious or simple structure could anticipate

rewards and punishments for outcome expectations. Studies that have found support for a three-factor structure (McAuley, Motl, White, Wójcicki, 2010; Wójcicki, White, & McAuley, 2009) focused on outcome expectations in terms of expected rewards and they interpreted the “physical outcome expectations” factor to be items related to one’s own physical body.

Assessing outcome expectations conforming to the three-class structure might also be problematic due to the complexity of the construct resulting in a more complex structure. Theoretically, there are three classes of outcome expectations that correspond to both expected rewards and punishments in the environment. Further, these anticipated outcomes can be both proximal or distal to the performance. Though it is probably naïve to assume that each preposition of the theoretical structure would be represented by its own factor, because the categories would be overlapping (i.e., an anticipated reward that both physical and distal to the performance), it could be argued that a six factor structure might be expected. This factor structure would reflect the three classes within each expected reward or punishment. However, research to this end has not been supported to date. Lee, Flores, Navarro, and Suh (2018) developed a multidimensional negative outcome expectations scale in engineering using exploratory factor analysis. Instead of finding evidence for a three-factor structure within anticipated punishments, these researchers found support for a four-factor structure using both a correlated factors and a second order factors model that corresponded to different types of punishments that were anticipated by engineering students. These included culture related stressors, personal life and work balance, job characteristics, and social costs that included items which could be physical item (e.g.: feeling bored at work) but loading on factors other than a physical factor. This was also the case in the current research. When examining the three-factor structure in the first sample, the second factor consisted of factor loadings that were consistent

with a factor about anticipated financial rewards, which might be theoretically problematic. Examining the two-factor structure is also theoretically consistent and has the advantage of being the most parsimonious solution to the data.

Evidence for simple structures of outcome expectations that depict anticipated punishments or rewards are also present in the literature. Bieschke (2000) developed a single factor structure of anticipated rewards for doctoral students in counseling psychology in the research domain. This single factor of anticipated rewards was a good fit to the data using a confirmatory factor analytic approach. Additionally, Rollnick, Morgan, & Heather (1996) found support for costs and benefits associated with drinking less alcohol using a varimax rotation. Sleath et al. (2010) developed a single factor of anticipated rewards for patients complying with taking their glaucoma medication also using a varimax rotation. Resnick (2005) used principle components analysis to develop a multidimensional scale of exercise outcome expectations, which conformed to a two-factor solution of anticipated rewards and punishments. Resnick (2005) also tested a Rasch model with the retained items and found them to be a good fit to the data on both dimensions. This present study adds to this body of literature that suggests that the most parsimonious conceptualization of outcome expectations when studied through the use of factor analysis might be anticipated rewards and punishments in the environment, which is supported theoretically (Bandura, 1977, 1997).

### **Limitations of the Research and Future Directions**

There are several noteworthy limitations to this research. First, the present study is at the beginning phases of scale development where exploratory factor analysis is most appropriate. This is a limitation because further research using a more robust design or statistical approach might overturn these results or suggest an alternate finding. For instance, it might be that the

current factor structure does not hold up well using confirmatory factor analysis, which does not allow for any cross loadings between items and factors. A bifactor model might yield an even more parsimonious solution as it would do a better job separating out testlets from the construct of outcome expectations. Further, some have argued (e.g.: Sass & Schmidt, 2011) that the rotation method chosen can lead researchers to support factor structures where simply changing the rotation method or allowing correlations between the factors might lead to a different factor solution. In the EFA literature, this is known as model or structural indeterminacy (Marsh, Morin, Parker, & Kaur, 2014). Although the present research was able to support the same model across two samples, this is no guarantee that another model could also be supported across samples. Further, in the initial phases of the present research, low interrater reliability in rating the items to an assigned class may have led to misclassification of the items essentially meaning that an untested CFA structure that conformed to the three hypothesized classes may have existed within the item pool.

In order to guarantee a college student population through Prolific Academic, it was necessary to restrict the sample to traditionally aged college students who were currently attending a full-time university. This effectively limits the validity of the test to traditionally aged full-time college students rather than capturing the experiences of non-traditional college students. Further, a majority of the sample is white thus providing very limited information for students of color.

Future directions should include testing the EFA model found in this present study with confirmatory factor analysis with a third sample. Item response theory might also be utilized to investigate which items provide the most information and if the response categories are equally distributed. Measurement invariance testing would also be a necessary step to test by race and

status as a traditional versus non-traditional student. It would also be useful to establish predictive validity that involved linking scores on this scale to objective and subjective indicators of persistence. Although information on whether students planned on enrolling in college for the next term was collected, it was used primarily as a screener question in the Prolific Academic sample, thus there was no variance in the indicator. Persistence information was not collected in the first sample; as a consequence, predictive validity was not able to be established. Finally, modeling using item response theory may serve to shorten the test.

## **Conclusions**

This present study sought to develop a measure of outcome expectations in the domain of academic persistence that captures the separate classes of outcome expectations as hypothesized. While there appears to be evidence for the development of the scale, there is less evidence for three distinct classes of outcome expectations. The findings of this investigation suggest that students' responses appear to be influenced by anticipating future rewards or punishments within the environment. Neither the type of anticipated reward or punishment, nor the distance to the performance of staying in college, appeared to matter to students as much as whether or not it was a reward or a punishment. Conceptualizing the scale in this manner, the results of this study are consistent across two samples, and provide evidence of convergent and divergent validity in the second sample. These findings provide preliminary support for a reliable and valid scale that can be used to test outcome expectations for the performance model in SCCT.

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Table 1

*Item pool with hypothesized content representation by factor*

Item Description	Physical	Social	Self-Evaluative
1. I will be worried about missed opportunities elsewhere			X
2. I will feel anxious	X		
3. I will feel depressed	X		
4. I would feel as if I have accomplished something			X
5. I will be on track with my peers		X	
6. I will be able to find a good job		X	
7. I will be able to meet my needs	X		
8. My parents will be proud of me		X	
9. My friends will respect me		X	
10. I will make less money		X	
11. I will have no time to do anything else		X	
12. I will not have enough money to pay my bills		X	
13. I will be wasting my time because the economy does not support a college education anymore		X	
14. I will be proud of myself			X
15. I will feel like I accomplished something			X
16. I will feel like I'm going in the right direction with my career			X
17. I will reach my potential			X
18. I will be able to pay for my lifestyle down the road		X	
19. I will get the job I want			X
20. I will have to take on another job			X
21. I will not be able to see my friends as often as I like		X	
22. I will feel impressed with myself			X
23. I will not have enough time to do what I want to do		X	
24. I will feel as though I am consistently behind	X		
25. I will be closer to beginning my career			X
26. I will feel like I belong somewhere		X	
27. I will have accomplished something			X
28. I will have hope for a better future			X
29. I will not be able to manage all of my responsibilities		X	
30. I will be able to be financially independent		X	
31. I will feel excited	X		
32. I will feel afraid for my future	X		
33. I will feel stressed	X		
34. I will feel happy	X		
35. My friends will be proud of me		X	
36. I will lose contact with someone I care about		X	
37. I will feel proud of myself			X
38. I will feel like my career is moving forward			X
39. I will feel optimistic about my future			X
40. I will feel like I have purpose			X
41. I will be doing what society expects of me		X	
42. I will be letting my family down		X	

*Note:* The item stem reads: "If I choose to stay in college this year." The two poorly discriminating items were removed from the table to ease interpretation.

Table 2

*Varimax rotated factor loadings for the three-factor structure on the item pool*

Item	1	2	3
1. I will be worried about missed opportunities elsewhere	0.439	-0.075	0.239
2. I will feel anxious	0.478	0.494	0.062
3. I will feel depressed	0.512	0.435	0.175
4. I would feel as if I have accomplished something	0.129	-0.099	0.694
5. I will be on track with my peers	0.073	0.287	0.52
6. I will be able to find a good job	0.044	0.545	0.587
7. I will be able to meet my needs	0.173	0.484	0.563
8. My parents will be proud of me	-0.035	0.084	0.658
9. My friends will respect me	-0.12	0.157	0.754
10. I will make less money	0.256	0.418	0.108
11. I will have no time to do anything else	0.673	0.255	0.085
12. I will not have enough money to pay my bills	0.529	0.303	0.047
13. I will be wasting my time because the economy does not support a college education anymore	0.595	-0.023	0.383
14. I will be proud of myself	0.207	0.173	0.761
15. I will feel like I'm going in the right direction with my career	0.294	0.091	0.703
16. I will reach my potential	0.074	0.323	0.661
17. I will be able to pay for my lifestyle down the road	0.174	0.533	0.432
18. I will get the job I want	0.072	0.402	0.535
19. I will have to take on another job	0.426	0.161	0.095
20. I will not be able to see my friends as often as I like	0.682	0.02	-0.082
21. I will feel impressed with myself	0.052	0.288	0.764
22. I will not have enough time to do what I want to do	0.811	-0.026	0.032
23. I will feel as though I am consistently behind	0.586	0.373	0.214
24. I will be closer to beginning my career	0.188	-0.125	0.746
25. I will feel like I belong somewhere	0.187	0.244	0.605
26. I will have hope for a better future	0.2	0.115	0.705
27. I will not be able to manage all of my responsibilities	0.67	0.118	0.124
28. I will be able to be financially independent	0.196	0.427	0.148
29. I will feel excited	0.219	0.327	0.726
30. I will feel afraid for my future	0.554	0.254	0.206
31. I will feel stressed	0.577	0.379	-0.108
32. My friends will be proud of me	-0.012	0.082	0.851
33. I will lose contact with someone I care about	0.508	0.211	0.114
34. I will feel proud of myself	0.168	0.025	0.862
35. I will feel like my career is moving forward	0.241	0.061	0.855
36. I will feel optimistic about my future	0.257	0.234	0.77
37. I will feel like I have purpose	0.202	0.134	0.818
38. I will be letting my family down	0.563	-0.191	0.359

Table 3

*Varimax rotated factor loadings for the two-factor structure on the item pool*

Item	1	2
1. I will be worried about missed opportunities elsewhere	0.381	0.198
2. I will feel anxious	0.62	0.145
3. I will feel depressed	0.628	0.236
4. I would feel as if I have accomplished something	0.073	0.659
5. I will be on track with my peers	0.156	0.562
6. I will be able to find a good job	0.238	0.673
7. I will be able to meet my needs	0.324	0.642
8. My parents will be proud of me	-0.025	0.662
9. My friends will respect me	-0.08	0.773
10. I will make less money	0.379	0.182
11. I will have no time to do anything else	0.718	0.104
12. I will not have enough money to pay my bills	0.597	0.085
13. I will be wasting my time because the economy does not support a college education anymore	0.539	0.345
14. I will be proud of myself	0.226	0.772
15. I will feel like I'm going in the right direction with my career	0.274	0.703
16. I will reach my potential	0.164	0.704
17. I will be able to pay for my lifestyle down the road	0.342	0.524
18. I will get the job I want	0.197	0.598
19. I will have to take on another job	0.453	0.106
20. I will not be able to see my friends as often as I like	0.657	-0.11
21. I will feel impressed with myself	0.131	0.797
22. I will not have enough time to do what I want to do	0.751	-0.005
23. I will feel as though I am consistently behind	0.669	0.259
24. I will be closer to beginning my career	0.11	0.701
25. I will feel like I belong somewhere	0.241	0.631
26. I will have hope for a better future	0.2	0.707
27. I will not be able to manage all of my responsibilities	0.664	0.114
28. I will be able to be financially independent	0.325	0.226
29. I will feel excited	0.298	0.764
30. I will feel afraid for my future	0.601	0.228
31. I will feel stressed	0.669	-0.049
32. My friends will be proud of me	-0.011	0.85
33. I will lose contact with someone I care about	0.545	0.132
34. I will feel proud of myself	0.136	0.848
35. I will feel like my career is moving forward	0.213	0.849
36. I will feel optimistic about my future	0.295	0.79
37. I will feel like I have purpose	0.205	0.824
38. I will be letting my family down	0.451	0.301

Table 4

*Varimax rotated factor loadings for the two-factor structure for an EFA on a reduced item pool*

Item	1	2
1. I will be worried about missed opportunities elsewhere	0.343	0.202
2. I will feel anxious	0.63	0.153
3. I will feel depressed	0.636	0.247
4. I would feel as if I have accomplished something	0.046	0.665
5. I will be on track with my peers	0.152	0.563
6. I will be able to find a good job	0.227	0.667
7. I will be able to meet my needs	0.317	0.644
8. My parents will be proud of me	-0.025	0.661
9. My friends will respect me	-0.093	0.772
10. I will make less money	0.375	0.181
11. I will have no time to do anything else	0.719	0.115
12. I will not have enough money to pay my bills	0.584	0.09
13. I will be proud of myself	0.214	0.774
14. I will feel like I'm going in the right direction with my career	0.284	0.707
15. I will reach my potential	0.166	0.704
16. I will get the job I want	0.183	0.588
17. I will have to take on another job	0.431	0.104
18. I will not be able to see my friends as often as I like	0.66	-0.097
19. I will feel impressed with myself	0.118	0.8
20. I will not have enough time to do what I want to do	0.747	0.009
21. I will feel as though I am consistently behind	0.672	0.269
22. I will be closer to beginning my career	0.078	0.707
23. I will feel like I belong somewhere	0.237	0.637
24. I will have hope for a better future	0.188	0.712
25. I will not be able to manage all of my responsibilities	0.661	0.124
26. I will feel excited	0.29	0.77
27. I will feel afraid for my future	0.598	0.235
28. I will feel stressed	0.679	-0.038
29. My friends will be proud of me	-0.022	0.851
30. I will lose contact with someone I care about	0.534	0.138
31. I will feel proud of myself	0.12	0.853
32. I will feel like my career is moving forward	0.204	0.853
33. I will feel optimistic about my future	0.296	0.793
34. I will feel like I have purpose	0.199	0.828

Table 5

*Varimax rotated factor loadings for the two-factor structure on the final retained EFA model*

Item	1 ( $\alpha = .83$ )	2 ( $\alpha = .90$ )
8. My friends will respect me	-0.097	0.77
7. My parents will be proud of me	-0.041	0.661
27. My friends will be proud of me	-0.024	0.849
3. I would feel as if I have accomplished something	0.04	0.666
20. I will be closer to beginning my career	0.07	0.708
17. I will feel impressed with myself	0.103	0.802
29. I will feel proud of myself	0.108	0.854
4. I will be on track with my peers	0.137	0.566
13. I will reach my potential	0.156	0.707
14. I will get the job I want	0.171	0.591
22. I will have hope for a better future	0.183	0.715
30. I will feel like my career is moving forward	0.189	0.856
32. I will feel like I have purpose	0.191	0.83
11. I will be proud of myself	0.202	0.777
5. I will be able to find a good job	0.207	0.672
21. I will feel like I belong somewhere	0.227	0.64
12. I will feel like I'm going in the right direction with my career	0.269	0.712
31. I will feel optimistic about my future	0.278	0.797
24. I will feel excited	0.279	0.774
6. I will be able to meet my needs	0.294	0.65
15. I will have to take on another job	0.427	0.11
28. I will lose contact with someone I care about	0.529	0.146
10. I will not have enough money to pay my bills	0.578	0.099
25. I will feel afraid for my future	0.589	0.244
1. I will feel anxious	0.634	0.164
2. I will feel depressed	0.636	0.258
23. I will not be able to manage all of my responsibilities	0.663	0.134
16. I will not be able to see my friends as often as I like	0.665	-0.086
19. I will feel as though I am consistently behind	0.674	0.28
26. I will feel stressed	0.687	-0.026
9. I will have no time to do anything else	0.704	0.126
18. I will not have enough time to do what I want to do	0.75	0.021

*Note:* Cronbach's Alpha is .89 for the total score

Table 6

*Varimax rotated factor loadings for the two-factor structure on the Prolific Academic sample*

Item	1 ( $\alpha = .82$ )	2 ( $\alpha = .93$ )
8. My friends will respect me	-0.097	0.77
7. My parents will be proud of me	-0.041	0.661
27. My friends will be proud of me	-0.024	0.849
3. I would feel as if I have accomplished something	0.04	0.666
20. I will be closer to beginning my career	0.07	0.708
17. I will feel impressed with myself	0.103	0.802
29. I will feel proud of myself	0.108	0.854
4. I will be on track with my peers	0.137	0.566
13. I will reach my potential	0.156	0.707
14. I will get the job I want	0.171	0.591
22. I will have hope for a better future	0.183	0.715
30. I will feel like my career is moving forward	0.189	0.856
32. I will feel like I have purpose	0.191	0.83
11. I will be proud of myself	0.202	0.777
5. I will be able to find a good job	0.207	0.672
21. I will feel like I belong somewhere	0.227	0.64
12. I will feel like I'm going in the right direction with my career	0.269	0.712
31. I will feel optimistic about my future	0.278	0.797
24. I will feel excited	0.279	0.774
6. I will be able to meet my needs	0.294	0.65
15. I will have to take on another job	0.427	0.11
28. I will lose contact with someone I care about	0.529	0.146
10. I will not have enough money to pay my bills	0.578	0.099
25. I will feel afraid for my future	0.589	0.244
1. I will feel anxious	0.634	0.164
2. I will feel depressed	0.636	0.258
23. I will not be able to manage all of my responsibilities	0.663	0.134
16. I will not be able to see my friends as often as I like	0.665	-0.086
19. I will feel as though I am consistently behind	0.674	0.28
26. I will feel stressed	0.687	-0.026
9. I will have no time to do anything else	0.704	0.126
18. I will not have enough time to do what I want to do	0.75	0.021

*Note:* Cronbach's Alpha is .92 for the total score

Table 7

*Summary table of goodness of fit statistics for factor analytic models*

Model	$\chi^2$	df	CFI	RMSEA	RMR	SRMR
1. CFA <sub>1.1</sub>	1832.32	737	.85	.08	-	.13
2. EFA <sub>1.1</sub>	922.03	663	-	.04	.06	-
2a. EFA <sub>1.1.2</sub>	1065.02	701	-	.04	.07	-
3. EFA <sub>1.2</sub>	766.52	525	-	.05	.07	-
4. EFA <sub>1.3</sub>	694.83	433	-	.05	.07	-
5. EFA <sub>2.1</sub>	1235.96	433	-	.07	.06	-

*Note:*  $p < .001$  for all chi-square tests of model fit. Model 2a is the two factor solution from the first EFA performed.

Table 8

*Correlations between APOE and theoretically relevant measures*

Scale	1	2	3	4	5	6
1. SE	1	.29*	.42*	-.46*	.43*	-.23*
2. APOE	.29*	1	.56*	-0.07	.74*	.25*
3. COE	.42*	.56*	1	-.33*	.78*	-.38*
4. GOALS	-.46*	-0.07	-.33*	1	-.35*	.42*
5. POE	.43*	.74*	.78*	-.35*	1	-.45*
6. NOE	-.23*	.25*	-.38*	.42*	-.45*	1

*Note:* \*  $p < .001$  SE = Self-Efficacy, APOE = Academic Persistence Outcome Expectations Scale, COE = College Outcome Expectations Scale, GOALS = Academic Goal Progress, POE = Positive Outcome Expectations, NOE = Negative Outcome Expectations.

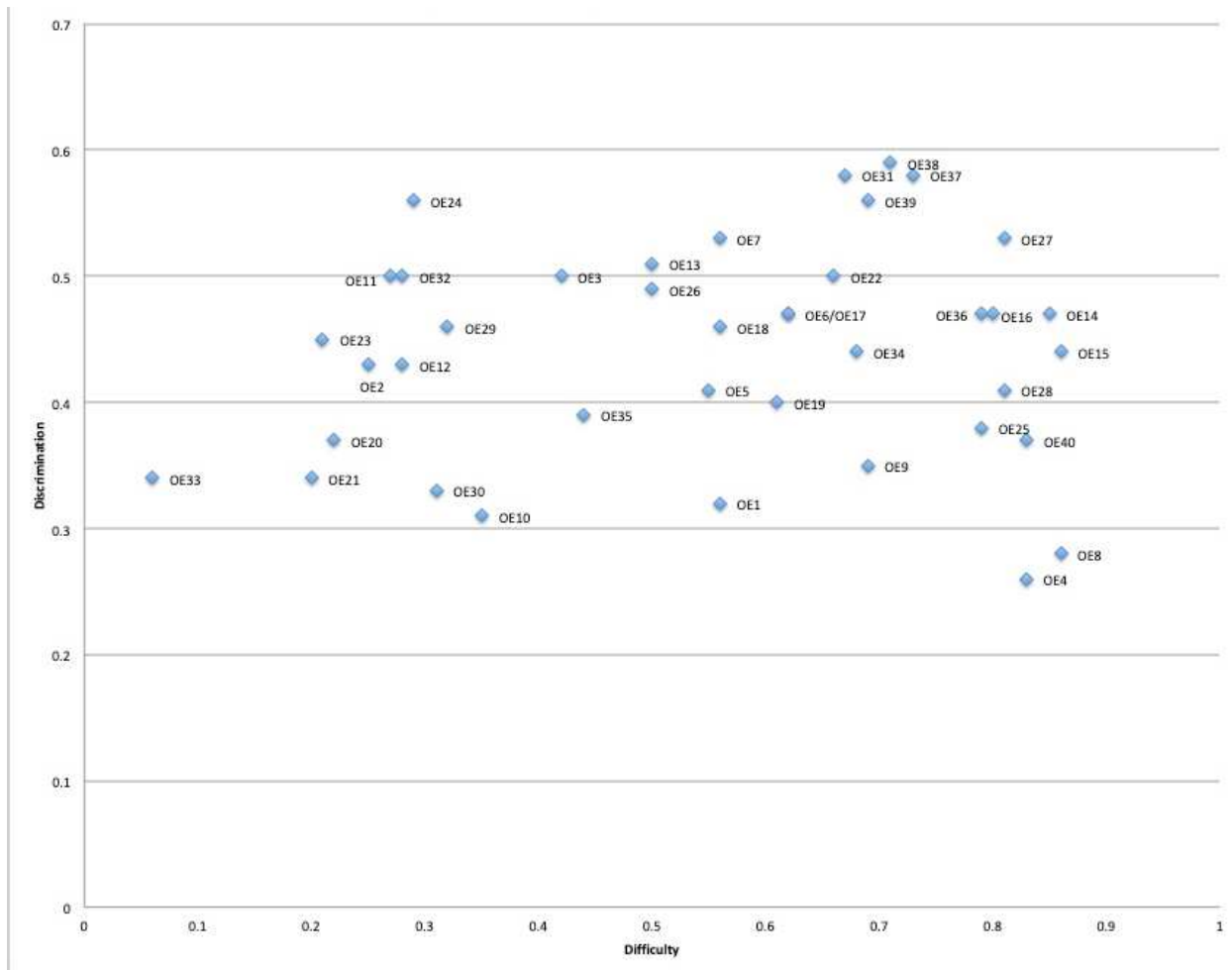


Figure 1. Scatterplot of item difficulty and discrimination indices

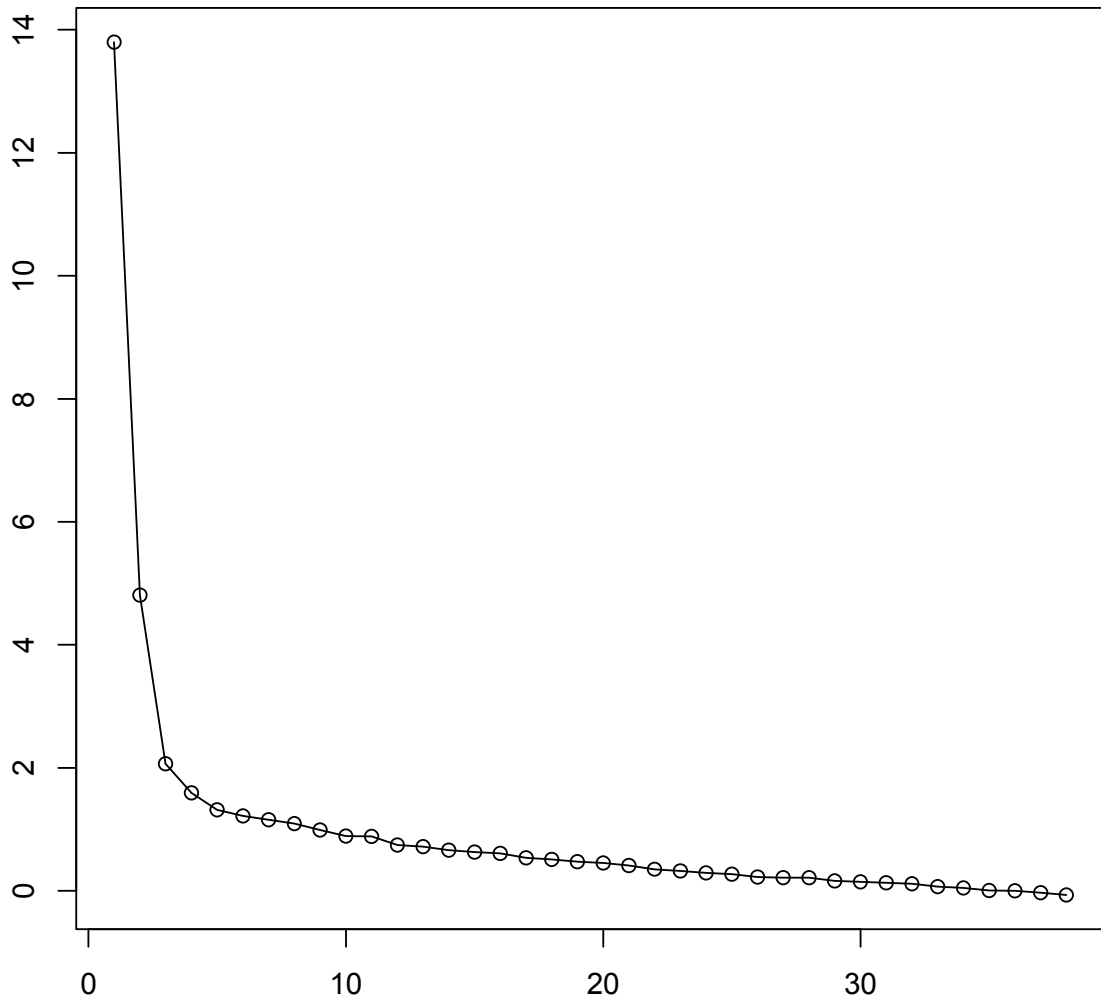


Figure 2. Scree plot on the results of an exploratory factor analysis on the initial item pool.

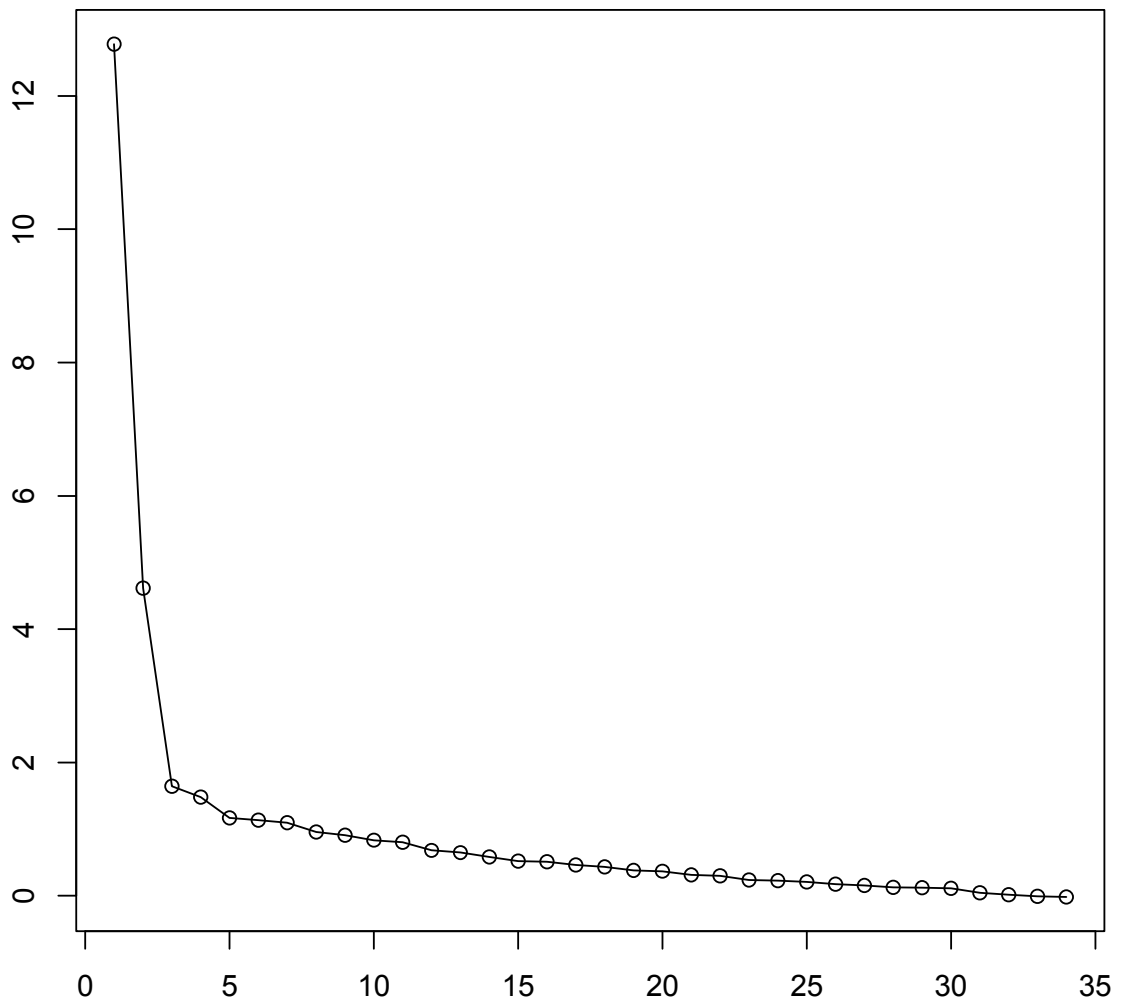
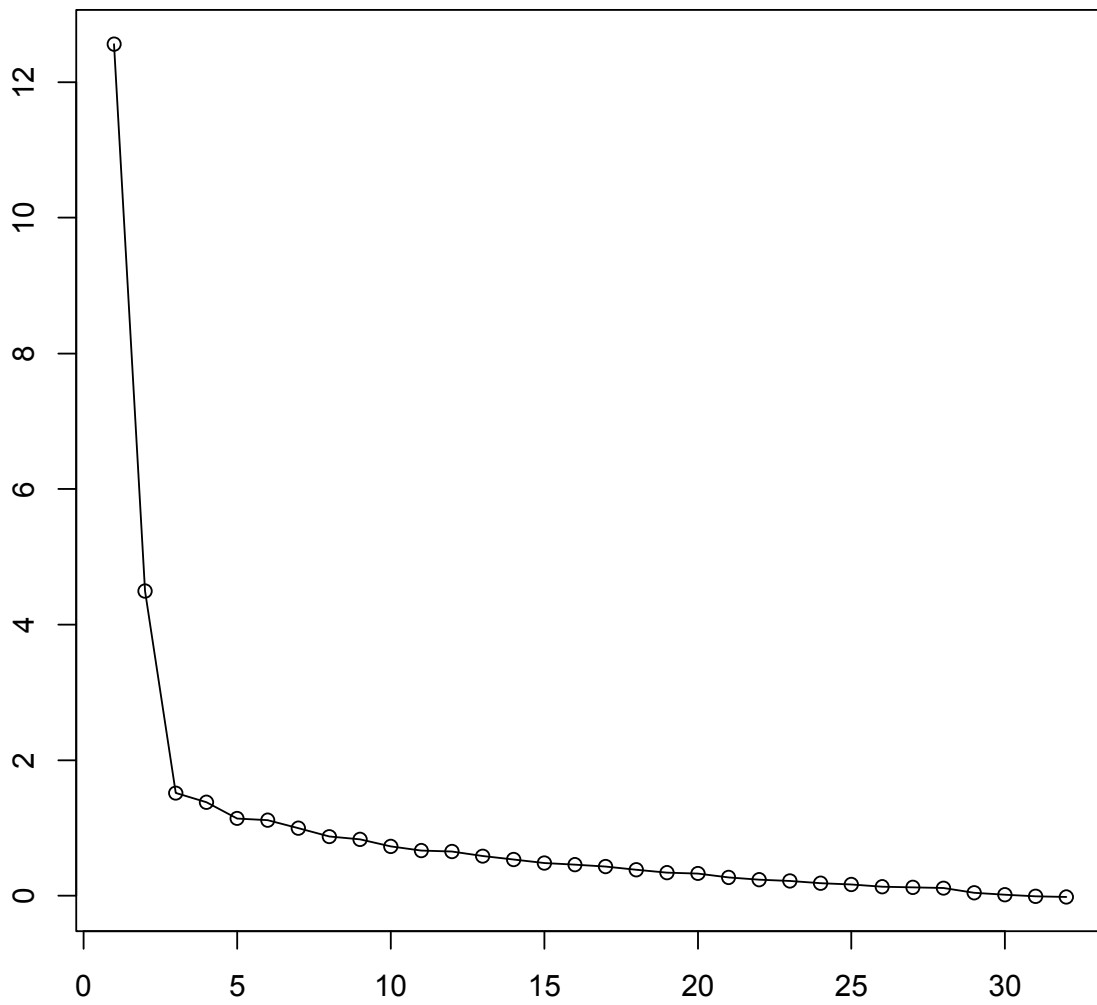


Figure 3. Scree plot on the results of an exploratory factor analysis on a reduced item pool.



*Figure 4.* Scree plot for final retained factor solution in the university sample.

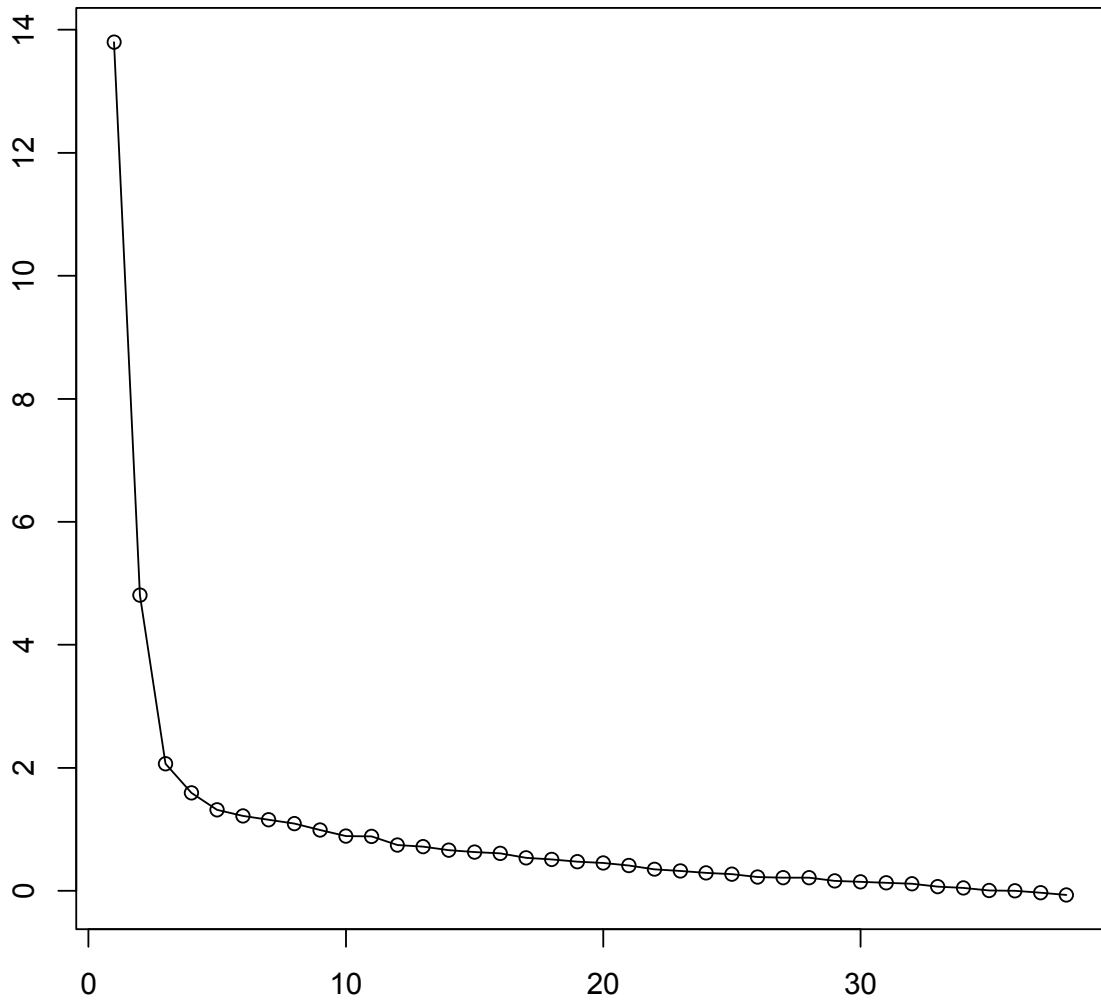


Figure 5. Scree plot for final retained factor solution in the Prolific sample.

## APPENDIX A:

### Item Codebook

#### College Self-Efficacy Instrument

Solberg, V. S., O'Brien, K., Villareal, P., Kennel, R., & Davis, B. (1993). Self-efficacy and Hispanic college students: Validation of the college self-efficacy instrument. *Hispanic Journal of Behavioral Sciences*, 15(1), 80-95.

Below is a set of statements about your confidence to engage in the activities typically required of college students. Please rate them using the following 1-9 scale with the lower numbers indicating less confidence and the higher numbers indicating more confidence.

	Not at all Confident	2	3	4	5	6	7	8	Extremely Confident
Research a term paper									
Write a course paper									
Do well on your exams									
Manage your time effectively									
Take good class notes									
Keep up to date with your schoolwork									
Understand your textbooks									
Participate in class discussions									
Join a student organization									
Ask a question in class									
Talk to your professors/instructors									
Get a date when you want one									
Ask a professor a question outside of class									
Talk with academic and support staff									
Make new friends at college									

## Academic Persistence Outcome Expectations Item Pool

Instructions: Below are some statements that may reflect your expectations of what will happen to you if you choose to remain in college. Please indicate how strongly you agree/disagree with the following set of statements by using the following five-point scale.

If I choose to stay in college this year:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I will be worried about missed opportunities elsewhere					
I will feel anxious					
I will feel depressed					
I would feel as if I have accomplished something					
I will be on track with my peers					
I will be able to find a good job					
I will be able to meet my needs					
My parents will be proud of me					
My friends will respect me					
I will make less money					
I will have no time to do anything else					
I will not have enough money to pay my bills					
I will be wasting my time because the economy does not support a college education anymore					
I will be proud of myself					
I will feel like I accomplished something					
I will feel like I'm going in the right direction with my career					
I will reach my potential					
I will be able to pay for my lifestyle down the road					
I will get the job I want					
I will have to take on another job					
I will not be able to see my friends as often as I like					
I will feel impressed with myself					
I will not have enough time to do what I want to do					
I will feel as though I am consistently behind					
I will be closer to beginning my career					
I will feel like I belong somewhere					
I will have accomplished something					
I will have hope for a better future					
I will not be able to manage all of my responsibilities					
I will be able to be financially independent					
I will feel excited					
I will feel afraid for my future					
I will feel stressed					
I will feel happy					
My friends will be proud of me					
I will lose contact with someone I care about					
I will feel proud of myself					
I will feel like my career is moving forward					
I will feel optimistic about my future					
I will feel like I have purpose					
I will be doing what society expects of me					
I will be letting my family down					

### The College Outcome Expectations Scale

Flores, L. Y., Navarro, R. L., & DeWitz, S. J. (2008). Mexican American high school students' postsecondary educational goals: Applying social cognitive career theory. *Journal of Career Assessment, 16*(4), 489-501.

Instructions: Below are some statements that may reflect your expectations of what will happen to you if you choose to remain in college. Please indicate how strongly you agree/disagree with the following set of statements by using the following nine-point scale.

	1	2	3	4	5	6	7	8	9
A college education will allow me to obtain a well-paying job.									
A college education will allow me to obtain a job I like doing.									
With a college education, I will be respected by others.									
A college education will allow me to get a job where I can use my talents and creativity.									
A college education will leave me enough time to have things like a family, friends, and leisure time.									
A college education will give me the kind of lifestyle that I want.									
With a college education, I will be better able to achieve my career goals.									
A college education will increase my career opportunities.									
If I get a college education, then my family will be pleased.									
If I get a college education, then I will be better able to achieve my future goals in life.									
A college education will increase my knowledge base.									
If I get a college education, then I will be able to pursue the career of my choice.									
If I get a college education, then I will do well in life.									
A college education will give me the opportunity to meet new people.									
If I get a college education, then I will learn what I need to know to make good decisions in my life.									
A college education will give me the time to explore different career interests in my college courses.									
A college education will give me an opportunity to make several friends.									
If I get a college education, then I will be better prepared for life.									
If I get a college education, then it will cause problems in my family.									

### Academic Goal Progress

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.

How much progress do you think you are making toward each of the following goals at this point in time?

	Excellent	Good	Fair Progress	A little progress	None at all
Excelling at your academic major.					
Completing all course assignments effectively.					
Studying effectively for all of your exams.					
Remaining enrolled in your academic major.					
Completing academic requirements of your major satisfactorily.					
Achieving / maintaining high grades in all of your courses.					
Learning and understanding the material in each of your courses.					

## APPENDIX B: Curriculum Vitae

### Education

#### University of Wisconsin—Milwaukee

Doctor of Philosophy (Ph.D.) anticipated August 12, 2020.

Major: Educational Psychology

Concentration: Counseling Psychology [APA Accredited]

Dissertation: Measuring Outcome Expectations in Academic Persistence

Advisor: Nadya Fouad, Ph.D.

#### Western Seminary

Master of Arts (M.A.) awarded with honors April 23, 2011

Major: Counseling

Advisor: Norm Theisen, Ph.D.

#### Washington State University

Bachelor of Science (B.S.) awarded May 3, 2008

Major: Psychology

Advisor: Elizabeth Soliday, Ph.D.

### Current Position

Clinical Fellow, Counseling and Psychological Services [APA Accredited Internship]

Oregon State University, Corvallis, OR 97331, August 2019 - August 2020

*Clinical Supervisors: Ian Kellems, Ph.D. & Ozge Ackali, Ph.D.*

### Papers

2. Fouad, N., **Kozlowski, M.**, Singh, R., Linneman, N., Schams, S., & Weber, K. (2019). Exploring the odds: Gender differences in departing the engineering profession. *Journal of Career Assessment*. doi: 10.1177/1069072719876892

1. Fouad, N. & **Kozlowski, M.** (2019). Turning around to look ahead: Views of vocational psychology in 2001 and 2019. *Journal of Career Assessment* (27)3. pp. 375-390.

### Presentations

17. **Kozlowski, M.**, Schams, S., Gorel, E., Weber, K., & Diaz Tapia, W. (August, 2019). Presenter(s) in N.A. Fouad (Chair), *Why aren't we there yet? A review of women's career development literature*. Symposium conducted at the 127th Annual Convention of the American Psychological Association, Chicago, IL.

16. Schams, S., Fouad, N., & **Kozlowski, M.** (August, 2019). Effect of a major exploration course on career indecision. Poster presented at the Society of Vocational Psychology Poster Session, Chicago, IL.

15. Kjar, K.M., **Kozlowski, M.**, Shavaner, C., & Wester, S.R. (2019, August). Masculinity as a mediator in PTSD symptoms. Poster presented at the 127th Annual Convention of the American Psychological Association, Chicago, IL.

14. Shavaner, C., **Kozlowski, M.**, Kjar, K.M., & Wester, S.R. (2019, August). Masculinity as a protective factor in women's experienced distress. Poster presented at the 127th Annual Convention of the American Psychological Association, Chicago, IL.
13. Estey, E. E., **Kozlowski, M.**, & Cook-Cottone, C., (2019, August). Exploring the utility of the self-compassion scale for pre-adolescents. Poster presented at the 127th Annual Convention of the American Psychological Association, Chicago, IL.
12. Estey, E. E., **Kozlowski, M.**, & Cook-Cottone, C., (2019, August). Mindful self-care as a moderator between eating disorder risk and body esteem. Poster presented at the 127th Annual Convention of the American Psychological Association, Chicago, IL.
11. \*Estey, E. E., **Kozlowski, M.**, & Cook-Cottone, C. (2019, April). Self-compassion as a moderator between peer victimization and eating disorder risk among preadolescents. Poster presented at the 15<sup>th</sup> Annual Celebration of Student Academic Excellence at SUNY Buffalo. **\*this poster was awarded for excellence in creativity and scholarship.**
10. **Kozlowski, M.**, Linneman, N., Kessler, M., & Fouad, N. (2019, April). Initial validation of the career decision making outcome expectations scale. Poster presented at the 91<sup>st</sup> Annual Meeting of the Midwestern Psychological Association, Chicago, IL.
9. Estey, E. E., **Kozlowski, M.**, Cook-Cottone, C., & Guyker, W. (2019, April). A psychometric evaluation of the mindful self-care scale. Poster presented at the 91<sup>st</sup> Annual Meeting of the Midwestern Psychological Association, Chicago, IL.
8. Cleland, A., **Kozlowski, M.**, & Fouad, N. (2019, April). An exploration of meaningful work for pediatricians and pediatric nurses. Poster presented at the 11<sup>th</sup> Annual UWM Undergraduate Research Symposium, Milwaukee, WI.
7. **Kozlowski, M.**, Cleland, A., & Fouad, N. (2018, November). Testing the effect of a major exploration course on career decision-making self-efficacy. Poster presented to the Educational Opportunity Association 44<sup>th</sup> Annual Conference, Milwaukee, WI.
6. **Kozlowski, M.**, Fouad, N.A., & Singh, R. (2018, August). Gender differences on a social cognitive measure of practicing engineers. Poster presented at the 126<sup>th</sup> Annual Convention of the American Psychological Association, San Francisco, CA. **\*This abstract was awarded the graduate student travel award from APA.**
6. Kjar, K.M., **Kozlowski, M.**, & Wester, S.R. (2018, August). Testing gender role conflict in sexual orientation using differential item functioning. Poster presented at the 126<sup>th</sup> Annual Convention of the American Psychological Association, San Francisco, CA.
4. **Kozlowski, M.**, Kjar, K.M., & Wester, S.R. (2018, August). Testing conformity to male role norms in sexual orientation using differential item functioning. Poster presented at the 126<sup>th</sup> Annual Convention of the American Psychological Association, San Francisco, CA.
3. **Kozlowski, M.**, Moore, J., Fouad, N.A., Heyrman, K.E., & Kessler, M.J. (2017, August). Efficacy of an outcome expectations based intervention on college major choice. Poster presented at the 125<sup>th</sup> American Psychological Association Convention, Washington, D.C.

2. Moore, J., **Kozlowski, M.**, Santana, M. & Fouad, N.A., (2017, March). Examining Women in a Multicultural Workplace: A Literature Review. Poster presented at the Association for Women in Psychology Conference, Milwaukee, Wisconsin.

1. Santana, M., Fouad, N.A. & **Kozlowski, M.** (2016, August). Effectiveness of a career intervention course on outcome expectations. Poster presented at the 124<sup>th</sup> American Psychological Association Convention, Denver, Colorado.

## Academic Positions Held

Graduate Assistant to the Mary and Ted Kellner Endowed Chair of Educational Psychology,  
University of Wisconsin—Milwaukee, Milwaukee, WI, August 2016-May 2019\*

*Supervisor: Nadya Fouad, Ph.D.*

\*Nine-month contracts during the academic year

Associate Lecturer, Department of Educational Psychology

University of Wisconsin—Milwaukee, Milwaukee, WI, June 2016-July 2019\*

*Supervisors: Nadya Fouad, Ph.D. & Stephen Wester, Ph.D.*

\*I held four fixed term contracts over this period of time.

Research Assistant, Understanding gender differences in turnover and retention in engineering careers  
National Science Foundation Grant #1136264

University of Wisconsin—Milwaukee, Milwaukee, WI, February 2016-June 2016

*Supervisors: Nadya Fouad, Ph.D. & Romila Singh, Ph.D.*

Teaching Assistant, Department of Educational Psychology

University of Wisconsin—Milwaukee, Milwaukee, WI, August 2015-February 2016

*Supervisors: Nadya Fouad, Ph.D. & Chris Lawson, Ph.D.*

Adjunct Instructor in Counseling, M.A. Counseling Program

Western Seminary, Portland, OR, September 2013-May 2015, July 2018

*Supervisors: Kay Bruce, Psy.D. & Norm Theisen, Ph.D.*

Graduate Assistant, M.A Counseling Program

Western Seminary, Portland, OR, September 2010-May 2011

*Supervisor: Norm Theisen, Ph.D.*

Research Assistant, Department of Psychology

Washington State University—Vancouver, Vancouver, WA, August 2007-May 2008

*Supervisor: Elizabeth Soliday, Ph.D.*

## Counseling Experience

*Ph.D. Practicum:*

Psychology Practicum Student, Department of Plastic Surgery

Medical College of Wisconsin, Wauwatosa, WI 53226, September 2017-July 2018

*Clinical Supervisors: Brad K. Grunert, Ph.D. & Stephen R. Wester, Ph.D.*

Psychology Practicum Student, Norris Health Center—Counseling and Consultation Services Unit

University of Wisconsin—Milwaukee, Milwaukee, WI, 53211, September 2016-May 2017

*Clinical Supervisors: Marina Tierney, Psy.D. & Marty Sapp, Ed.D.*

Psychology Practicum Student, Alternatives to Sexual Assault Program  
Family Options Counseling, Brookfield, WI 53005, September 2015-July 2016  
*Clinical Supervisors: Kimberly Young, Ph.D. & Marty Sapp, Ed.D.*

*Post M.A. Work Experience:*

Licensed Mental Health Counselor, Private Practice  
Vancouver, WA 98662, May 2014-May 2015

Therapist III, Adult Outpatient Program  
Columbia River Mental Health Services, Vancouver, WA, February 2013-July 2015  
*Clinical Supervisors: Doug Chapman, LMHC, Christine Kapral, LMHC, Janet Ragan, LMHC, & Norm Theisen, Ph.D.*

Service Coordinator II, Adult Rehabilitation Program  
Lifeworks Northwest, Gresham, OR, September 2011-February 2013  
*Clinical Supervisors: Gloria Ortiz, LPC, Leila Winnie, LPC, & Norm Theisen, Ph.D.*

*M.A. Practicum:*

Therapist Intern, Adult Outpatient Program  
Columbia River Mental Health Services, Vancouver, WA, September 2010-April 2011  
*Clinical Supervisors: Janet S. Ragan, LMHC, Wayne Cowell, Ph.D., & Norm Theisen, Ph.D.*

Counseling Intern, Inpatient Program  
Salvation Army Adult Rehabilitation Center, Portland, OR, September 2009-August 2010  
*Clinical Supervisors: Jakie Peake, LPC, Bart Fowler, Psy.D, & Carolyn Kohlenburger, LPC*

*Post B.S. Work Experience:*

Sex Offender Treatment Therapist,  
Northwest Treatment Services, Vancouver, WA 98661, May 2008-June 2011  
*Clinical Supervisor: Patrick J. Connell, LPC*

*B.S. Internship:*

Intern, School Counseling Center  
Prairie High School, Brush Prairie, WA 98662, September 2007-April 2008  
*Supervisor: Richard Jones, M.Ed.*

## **Teaching Experience**

University of Wisconsin—Milwaukee: EDPSY 110: Exploring Your Major  
COUNS 600: Introduction to Community Counseling  
COUNS 711: Foundations of Career Development  
COUNS 803: Vocational Psychology\*\*  
COUNS 812: Clinical Studies in Counseling  
EDPSY 838: Research Practicum in Educational Psychology\*\*



- Member, Interview Day Committee (2015-2016)
- Chair, Marketing Committee (2016-2017)
- President, Student Researchers in Educational Psychology (2019-2020)

#### Invited Presentations

- Kozlowski, M. (2019, October). Are Organizational Citizenship Behaviors Ethical? Presentation conducted for Counseling and Psychological Services staff at Oregon State University, Corvallis, OR. 1.5 CEU.
- Kozlowski, M. & Brown, S. (2017, July). Counseling and de-escalation with challenging clients. Presentation conducted for the Legal Action of Wisconsin—Eviction Defense Project, Milwaukee, WI. 1.0 CLE.

#### Oregon Health & Science University

- Volunteer, Developmental Brain Imaging Laboratory (September 2014 - May 2015)