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The Influence of Attachment and Career Calling on Career Decision Self-Efficacy, College Adjustment, and Life Satisfaction in Undergraduate Students

Dylan Firsick

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UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

THE INFLUENCE OF ATTACHMENT AND CAREER CALLING
ON CAREER DECISION SELF-EFFICACY, COLLEGE
ADJUSTMENT, AND LIFE SATISFACTION
IN UNDERGRADUATE STUDENTS

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

Dylan M. Firsick

College of Education and Behavioral Sciences
Applied Psychology and Counselor Education
Counseling Psychology

July 2016

This Dissertation by: Dylan Michael Firsick

Entitled: *The Influence Of Attachment And Career Calling On Career Decision Self-Efficacy, College Adjustment, And Life Satisfaction In Undergraduate Students*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy in the College of Education and Behavioral Sciences in the School of Applied Psychology and Counseling Education, Program of Counseling Psychology

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ABSTRACT

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Emphasizing purpose and meaning in work, career calling has experienced substantial growth in vocational research among college students due to beneficial effects on academic and life satisfaction. Application of vocational theory is needed and this study investigated calling from an integrated social cognitive career theory (SCCT) and attachment theory perspective. Using structural equation modeling in a sample of 433 students, competing theoretical models were tested. The alternative model best fit the data, finding anxious and avoidant attachment to have direct negative effects on career decision self-efficacy (CDSE), and college adjustment, and indirect negative effects on life satisfaction. Avoidant, but not anxious, attachment had a direct negative effect on career calling, which subsequently had direct positive effects on CDSE and college adjustment. CDSE and college adjustment both had positive direct effects on life satisfaction and mediated the positive effect of career calling. These results constitute original findings linking attachment and career calling, while also supporting the integration of career calling and SCCT. Insecure attachment may cause barriers to career calling development, CDSE, and college adjustment, while career calling may improve these variables and indirectly benefit life satisfaction among college students. Results

may be particularly relevant to counseling psychologists and providers in university counseling. Theoretical, research, and practical applications are discussed.

DEDICATION

To Amelia,

My wife, friend, partner, and constant source of love and encouragement. Without you this dissertation would not have been possible. You will never know the ways you have inspired and strengthened me. From the very beginning we have been on this journey together... and will continue to be.

With all my love.

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TABLE OF CONTENTS

CHAPTER I.....	1
INTRODUCTION	1
Attachment Theory	3
Attachment and College Students.....	5
College Adjustment and Career Development	7
Career Calling.....	9
Social Cognitive Career Theory.....	11
Study Rationale and Purpose	16
Limitations	22
Definition of Terms.....	23
Summary	25
CHAPTER II.....	27
REVIEW OF THE LITERATURE	27
Theoretical Foundation	29
Attachment Style and College Adjustment.....	53
Attachment Style and Career Decision Self-Efficacy.....	61
Career Calling, Career Decision Self-Efficacy, and College Adjustment	64
Influences of Career Calling, Self-Efficacy, and College Adjustment on Life Satisfaction	74
Unique Theoretical Contribution	86

Summary	88
CHAPTER III	89
METHODS	89
Design	89
Participants.....	91
Instrumentation	92
Procedures.....	103
Data Analysis	108
CHAPTER IV	121
RESULTS	121
Measurement Model Confirmatory Factor Analyses.....	124
Structural Equation Modeling Results	137
Model Interpretation	146
CHAPTER V	154
DISCUSSION.....	154
Overview of Findings	158
Research Implications.....	160
Theoretical Implications	166
Practice Implications.....	174
Limitations	183
Future Directions	194
Conclusions.....	200
REFERENCES	202

APPENDIX A.....	230
DEMOGRAPHICS QUESTIONNAIRE.....	230
APPENDIX B.....	233
INSTITUTIONAL REVIEW BOARD	233
APPROVAL LETTERS	233
APPENDIX C.....	236
INFORMED CONSENT	236
APPENDIX D.....	239
COPYRIGHT PERMISSION.....	239
APPENDIX E	241
PARTICIPANT RECRUITMENT EMAIL	241
APPENDIX F	243
MANUSCRIPT.....	243

LIST OF FIGURES

Figure 1: Proposed Primary Structural Model.....	20
Figure 2: Proposed Alternative Structural Model.....	21
Figure 3: Model of Adult Attachment Recreated from Bartholomew (1990).....	36
Figure 4: Dimensional Model of Adult Attachment, Recreated from Mikulincer and Shaver (2007).....	40
Figure 5: Social Cognitive Career Theory (SCCT) Model, Recreated from Lent et al., (1994, 2000).....	45
Figure 6: Final Primary Structural Model with Indicators.....	139
Figure 7: Final Alternative Structural Model with Indicators	141
Figure 8: Primary Structural Regression Model with Standardized Parameter Estimates.....	148
Figure 9: Alternative Structural Regression Model with Standardized Parameter Estimates.....	151

LIST OF TABLES

Table 1: Participant Demographics.....	93
Table 2: Descriptive Statistics and Correlations for All Continuous Variables	94
Table 3: Overall Model Fit Statistics for Measurement Models.....	126
Table 4: Maximum Likelihood Estimates of Factor Loadings and Residuals for Full CFA Measurement Model	136
Table 5: Overall Fit Statistics for Primary and Alternative Structural Regression Models.....	142
Table 6: Maximum Likelihood Estimates of Direct and Indirect Structural Paths for the Primary Model.....	143
Table 7: Maximum Likelihood Estimates of Direct and Indirect Structural Paths for the Alternative Model.....	144

CHAPTER I

INTRODUCTION

When considering the college environment and the transition that occurs for incoming students, many fluctuations occur in rapid succession (Robbins, Oh, Le, & Button, 2009). Students often move geographic locations, live for the first time away from parents, and begin acclimating to new social and academic environments (Credé & Niehorster, 2012). In an attempt to identify factors associated with successful college transitions, contemporary research has investigated a wide range of potential variables from social support, attachment and interpersonal relationships (Ávila, Cabral, & Matos, 2012; Hiester, Nordstrom, & Swenson, 2009), to intrinsic motivation and personality (Robbins et al., 2009) to career self-efficacy and academic satisfaction (Duffy, Allan, & Dik, 2011). The interest in this area is warranted as described by Mattanah, Ayers, Brand, and Brooks (2010) because more than 40% of individuals who begin post-high school education never finish. The authors indicated that most college attrition happens in the first year of college and more than half of all students that do leave, do so in the first six months. Over the last decade, many colleges and universities have begun to institute First Year Experience (FYE) courses aimed at helping students acclimate to the college environment, locate resources, establish social supports and begin to explore career options in an effort to ease college transitions and increase positive adaptation (Ishler & Upcraft, 2005). Research into FYE courses and positive student adjustment has identified

the important role that parent and close peer relational attachments play in adjusting to college (Lapsley & Edgerton, 2002; Mattanah, Lopez, & Govern, 2011). Furthermore, research has found that developing career interests and finding intrinsic meaning in a particular line of work is associated with increased academic satisfaction and career decision self-efficacy (Duffy, Allan, et al., 2011).

Of primary concern for university administrators, and indeed much of the purpose behind First Year Experience (FYE) courses for freshman students, has been increased student retention (Robbins et al., 2009). Research on college student persistence has traditionally focused on variables such as the student's prior academic success, standardized test scores, socioeconomic status, gender, ethnicity, current grade point average, and academic major when seeking to identify important variables that may increase college retention and successful adjustment (Ishler & Upcraft, 2005). An area that has been traditionally overlooked, however, is the student's own satisfaction within the academic environment, and more broadly, life satisfaction as a whole during college (Ishler & Upcraft, 2005). Thus, approaches to improve student retention from an administrative perspective may include investigating variables like past academic performance, socioeconomic status, or academic major, improving college retention from a student's perspective may involve identifying those variables that potentially lead to increased academic and life satisfaction. To date, however, little research has examined relationships among attachment variables, career development, and career decision self-efficacy, as they contribute to successful college adjustment, and increased life satisfaction. Student academic performance and retention is a primary goal for university faculty and administrators. However, investigating variables that contribute to life

satisfaction during college may be just as important as variables that contribute to academic performance. Thus, the aims of the current study were to integrate vocational psychology theory with career calling and interpersonal attachment styles to investigate the contributions of these variables toward college student adjustment and life satisfaction.

Attachment Theory

Attachment style in interpersonal relationships has become a variable of particular interest when investigating factors that facilitate positive adaptation to the college environment (Arnett, 2000; Kenny, 1987; Mattanah et al., 2011). During the transition to college, interpersonal relationships are often in a state of change (Arnett, 2000, 2007). Relationships among family members and high school friends become disrupted and the subsequent social support that was previously provided may no longer exist in the same way (Swenson, Nordstrom, & Hiester, 2008). New relationships must be formed and research has often turned to attachment style as a means of assessing an individual's ability to readily form meaningful, secure relationships with others. Attachment style originated with the work of John Bowlby (1969, 1973, 1980) who theorized that early parent-child interactions become the cornerstone and prototype of future relationships. An individual's infantile experiences with their primary caregiver shape the way he or she will view relationships and what they expect from others on a fundamental level. The central tenant of attachment theory is the Internal Working Model (IWM) which consists of expectations about the self and others that form as a result of the type of parent-child interaction the individual experiences (Bowlby, 1973; Pietromonaco & Barrett, 2000). Children that experience consistent and supportive interactions with primary caregivers

develop IWMs as adults in which they expect relationships to be mutually beneficial, are able to trust others, and view themselves as worthy and capable of having meaningful and fulfilling interpersonal relationships. This type of attachment has been described as a secure attachment style. Children who experience inconsistent, neglectful, or abusive interactions with primary caregivers develop IWMs as adults in which they are fearful or anxious of developing intimacy with others due to the expectation that they will be abandoned or rejected (Brennan, Clark, & Shaver, 1998). These children develop insecure attachment styles in which they expect support in relationships to be inconsistent, developing a low sense of self-worth, and believing that they are unable to maintain meaningful, intimate relationships (Pietromonaco & Barrett, 2000). Hazan and Shaver (1987) applied childhood attachment theory to adult, romantic interactions, finding that attachment from childhood extended into relationships as adults. Securely attached individuals tended to have higher self-worth, were more trusting of partners, reported more positive beliefs about love and more positive childhood relationships than insecurely attached individuals. Contemporary research now views attachment styles less categorically and more in terms of a continuous approach in which avoidant and anxious attachment behaviors are on separate spectrums (Brennan et al., 1998). Accordingly, individuals with low anxiety and low avoidance are more securely attached and are comfortable in close relationships. Individuals with high attachment anxiety desire close relationships however they are fearful of interpersonal rejection/abandonment and are insecure in the stability of their relationships, while individuals with high attachment avoidance fear abandonment as well, however they choose to avoid interpersonal

intimacy and dependence on others so as to avoid being hurt (Pietromonaco & Barrett, 2000; Wei, Russell, & Zakalik, 2005).

Attachment and College Students

In an attempt to understand attachment relationships throughout the life span, researchers have begun to apply attachment principles to the common experience of transitioning to the college environment. Many authors have begun to identify the college environment as a second “strange situation” in reference to Mary Ainsworth’s original experimental paradigm (Ainsworth, Blehar, Waters, & Wall, 1978) for studying attachment style in children (Hiester et al., 2009; Kenny & Rice, 1995; Kenny, 1987; Mattanah, Hancock, & Brand, 2004; Rice, FitzGerald, Whaley, & Gibbs, 1995; Vivona, 2000). Kenny (1987) was among the first researchers to conceptualize the college environment as a research paradigm of its own. A fundamental benefit of a secure attachment style to parents in childhood is the freedom and confidence to explore one’s surroundings without fear of danger. If something happens; a fall, getting lost, something unexpected, the child learns over time that his or her parent/caregiver is immediately present to offer support. Kenny (1987) hypothesized that many of these same fundamentals exist when adolescents leave home and transition to their new college environment. For those individuals that leave home and move away for school, this is often their first experience living away from parents and while it offers many opportunities to establish one’s identity and the development of independence, it is also an environment filled with anxiety, potential loneliness and many unknown challenges. In this sense, when the college student transitions to university life they simultaneously increase in self-reliance while often times needing the “secure base” of parental support

to retreat to when problems arise (Kenny & Donaldson, 1991; Kenny & Rice, 1995). Thus, in her study of 173 first-year college students, Kenny (1987) found that individuals who identified secure attachment styles to their parents reported feeling as if their parents both supported their increased autonomy while still existing as a source of help when needed. Students reported that they valued the help they received and that it contributed to increased self-confidence.

Secure attachment style to parents during college has been found to predict increased social adjustment, personal-emotional adjustment (Lapsley & Edgerton, 2002) self-confidence, and college adjustment while decreasing psychological distress (Hiester, Nordstrom, & Swenson, 2009). In a meta-analysis of 156 studies, Mattanah, Lopez, and Govern (2011) analyzed data from over 32,000 college students from 1987-2009. Their analysis found that secure attachment bonds were positively associated with academic competence, social competence, stressful affects, self-worth and developmental advances such as ego identity, separation-individuation, gender identity and career exploration. Secure parent attachment in a sample of Portuguese university college students ($N = 236$) predicted positive romantic relationships which subsequently predicted increased identity development (Ávila et al., 2012). The inverse has also been found to be true in that adolescents with insecure attachment were found to report greater depression, anxiety and for women, decreased college adjustment and lower intimacy (Vivona, 2000). In a sample of 308 college freshman, insecure attachment styles were associated with increased feelings of loneliness and depression, however these effects were mediated by decreased social self-efficacy for anxiously attached individuals and decreased self-disclosure for avoidant attachment (Wei, Russell & Zakalik, 2005). Thus, based on this

and other research it has become obvious that parent attachment styles are influential in facilitating a successful transition to college life. Insecure attachment styles influence individuals' ability to create meaningful relationships that are critical for social support and may contribute to increased feelings of isolation, loneliness and depression.

Individuals with insecure attachment in dyadic and group relationships have been found to struggle in overall college adjustment as compared to individuals with secure attachment (Marmarosh & Markin, 2007).

College Adjustment and Career Development

As a measureable construct in the aforementioned research, college adjustment is multifaceted. Many aspects of one's environment make up the college experience and subsequently there are many different facets of adjustment that must be accommodated. Much of the research on college adjustment focuses on four primary adjustment domains: academic, social, personal-emotional and institutional. The focus on these four categories stems from one of the most commonly used measure of college adjustment; the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1986). The SACQ is frequently used in college adjustment literature both, in its full scale form, and as individual subscales from the four domain categories (Credé & Niehorster, 2012). Typically, attachment style has been used to study the social and personal-emotional aspects of adjustment; however, as research into college career courses have found, successful integration into the college environment involves more than the relationships an individual makes. Identifying a sense of purpose and future life goals have been found to be important aspects in first-year development (Adams, 2012; Arnett, 2000). Adams (2012) emphasizes the importance of developing "prosocial life goals and values" (p. 65)

for the young adult. Developmentally, college students are seeking independence from their parents, establishing autonomy and identity, while also pursuing meaningful, intimate relationships with others (Arnett, 2000, 2007; Erikson, 1968). In his theory regarding emerging adulthood, Arnett, (2000) describes the college period as beneficial in allowing individuals to focus on identity development through such areas as “love, work, and worldviews.” (p. 473) From an occupational standpoint, however, college is also the period in which students identify what their occupational interests are, what plans of study they would like to pursue and eventually, what career paths they will follow.

In a study examining the influence of college career courses, Folsom and Reardon (2003) reviewed 46 studies and 80 different references for positive changes and outcomes associated with career development. The study found that student career development courses were associated with increased self-awareness, career maturity, increased internal locus of control, career decisiveness and vocational identity. From an academic perspective, individuals completing career courses had higher retention and graduation rates, shorter time to graduation, increased job satisfaction and increased cumulative GPA (Folsom & Reardon, 2003). Additional research has found that positive effects of career courses are consistent and stable over several generations of college students (Vernick, Reardon, & Sampson, 2004) and that the skills learned and developed in career courses and career counseling extend beyond graduation from school (Healy, 2001). These studies (Folsom & Reardon, 2003; Healy, 2001; Vernick et al., 2004) give evidence of the beneficial role of developing career interests during college and the importance of encouraging vocational interests and career development throughout the college experience. When considering the multifaceted construct of college adjustment,

career development becomes an important part. Folsom and Reardon's (2003) study reviewed outcome data across a 25-year span from 1976-2001. Over the last decade however, a relatively new topic in career counseling research, career calling (Dik & Duffy, 2009; Wrzesniewski, Mccauley, Rozin, & Schwartz, 1997), has begun to emerge that has been found to also contribute positively to individual career and academic self-efficacy and satisfaction. The study of career calling focuses on individual purpose, meaning, and fit when evaluating prospective career options and has been found to have promising implications for the college student experience (Dik & Duffy, 2009; Duffy & Dik, 2013).

Career Calling

Career calling is an aspect of vocational research that focuses primarily on the meaning an individual places in his or her chosen line of work. The reasons an individual chooses a particular occupation can be many, but when considering career calling, the emphasis is on the meaningful experience an individual perceives in relation to their field of work. Dik and Duffy (2009) defined career calling as "A transcendent summons, experienced as originating beyond the self, to approach a particular life role in a manner oriented toward demonstrating or deriving a sense of purpose or meaningfulness and that holds other-oriented values and goals as primary sources of motivation" (p.427). Historically, the term "calling" itself has been viewed from a religious context such as a calling from God, or higher power, and indeed Dik and Duffy's (2009) definition emphasizes the aspect of calling that considers an extrinsic motivation, such as one's religious or spiritual beliefs, as related to a particular line of work. Contemporary research, however, has also identified a broader context of career calling's external

summons related to one's vocation such as a unique skill set the individual possesses making him or her a perfect fit, or a perceived meaningfulness to satisfying outside motivations such as family legacy, moral duty, or societal need. The construct of career calling is complex, but at its core implies that an individual, who identifies with a sense of calling, is pursuing a chosen career for more than monetary gain or personal advancement, but rather because of a deeper meaning that exists as to the purpose behind the individual's work.

Research on career calling has identified many positive aspects regarding psychological functioning and perception of work (Duffy & Dik, 2013). In one study, Individuals endorsing a career calling were associated with higher levels of income, seeking/obtaining higher levels of education, higher self-perceived status occupations and taking less non-holiday days off than individuals endorsing a job or career (Wrzesniewski, Mccauley, Rozin, & Schwartz, 1997). Individuals who identify their occupation as a calling have also been associated with higher life satisfaction, fulfillment, happiness, and life meaning (Steger, Pickering, Shin, & Dik, 2010). Beneficial qualities within college students and young adults have also been established in more recent literature (Duffy, Allan et al., 2011; Duffy & Dik, 2013). Among college student populations, career calling has been associated with increased career decision making and career development (Duffy & Sedlacek, 2007), career decision self-efficacy (Duffy, Allan, et al., 2011), work hope, academic satisfaction, and life satisfaction (Duffy, Allan, & Bott, 2012; Steger et al., 2010).

In a review of the career calling literature, Adams (2012) discusses the documented benefits associated with the identification and pursuit of a calling. "It seems

that the presence of a calling leads to various positive outcomes, including greater occupational and life satisfaction, increased dedication to one's profession, greater self-concept, and decreased stress and depression", (p. 69). Adams then goes on to state, "Despite this growing body of literature, research is needed to determine the usefulness of calling-based career interventions." (p. 69). Furthermore, in a recent review of career calling outcomes and future directions, Duffy and Dik (2013) emphasized that at this point, the state of the career calling literature is "much like that of a toddler-developed to the point of being able to stand on her own two legs, but with much room for future growth." (p. 435) The authors suggest that one aspect that is in need of further research is the development of a theoretical model for career calling that can consistently incorporate the various empirical findings that have been identified in the career calling research thus far. One such model that may be particularly suited for this task, as the present study has proposed, was designed by Lent, Brown, and Hackett in 1994 and titled social cognitive career theory (SCCT). SCCT examines the role of self-efficacy, learning experiences, and goals setting in career development and was later expanded to include contextual factors as well (Lent, Brown, & Hackett, 2000)

Social Cognitive Career Theory

Lent et al. 's (1994) social cognitive career theory (SCCT) is based on Albert Bandura's (1986) social cognitive theory which emphasizes that one's environment, personal factors, and behaviors play a primary role in learning experiences related to vocational interests and career selection. Specifically, learning experiences are the types of reinforcements the individual receives from his or her environment and others in that environment (Lent, Brown, & Hackett, 1994). Individuals, whose past experiences are

positive, specifically regarding a certain career interest area, develop increased self-efficacy in that area and positive expectations for their future. The key aspects of SCCT are that increased self-efficacy and positive outcome expectations promote solidified interest in a specific line of work. Subsequently, the individual establishes specific goals to pursue these interests, and takes the necessary actions to reach these goals. This ultimately results in the attainment of a career that exemplifies the individual's personal interests, beliefs about themselves and their environment, and their own capabilities (Lent, Brown, & Hackett, 2002). Accordingly, Lent et al., (2002) state that self-efficacy, outcome expectations, and personal goals are seen as the "basic building blocks" of career development and key avenues by which people express "personal agency" (p.262).

Self-efficacy is a central tenant in both Bandura's social cognitive theory and SCCT. According to Bandura (1986), self-efficacy is defined as "people's judgments of their capabilities to organize and execute courses of actions required to attain designated types of performances." He goes on to specify, "It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses." (p. 391). Thus, it is one's cognitive appraisals of a given circumstance and of one's related skills that influence self-efficacy. Brown, Lent, and Gore (2000) describe self-efficacy beliefs as also reflecting the individual's expectations about future performance specifically relating the concept to vocational interests and choices to pursue certain career directions. SCCT (Lent et al., 1994) postulates that positive self-efficacy predicts positive outcome expectations, which is the individual's judgment of how likely it is that his or her desired outcome will occur. Thus from a career selection perspective, individuals that are confident in their capabilities believe that their own desired outcomes are more likely to

happen for them. Therefore, they identify personal interests, create interest-related goals, and take the necessary actions to reach these goals (Lent et al., 2002). Bandura (1986) emphasizes the importance of self-efficacy in determining individual action and Lent et al. (1994) integrate the influence of self-efficacy into the career decision-making (Betz & Hackett, 1986) and career pursuit process through SCCT.

A final aspect of SCCT that influences not only the individual's own sense of self-efficacy and outcome expectations, but also the specific interests, goals, and actions an individual pursues, are personal and contextual factors that are unique and varied to each and every individual. Lent et al. (1994) describe the important role that background and environmental factors can play in an individual's life before career interests are formed and self-efficacy is developed. Aspects such as one's gender, race/ethnicity, health status, and cognitive ability are all examples of personal inputs that substantially influence the selection and pursuit of career interests and goals. Personal inputs are innate predispositions, that individuals can neither choose nor remove from their lives (Lent et al., 2000). Other social supports such as parent relationships, educational opportunities, and role models in a specific career field can provide opportunities for the individual as well. These are known as contextual affordances (Lent et al., 1994, 2000) and two distinct types of contextual affordances exist; background/distal and proximal (Lent et al., 2000). Background or distal contextual factors act as supports or barriers that existed early in the individual's life and may have affected the career and academic direction an individual pursues. Proximal influences, are environmental or personal factors that come into play at a critical time and directly impact certain career or academic choices (Lent et

al., 2000, 2002). Examples of proximal influences could be a job opportunity, taking a certain college course, or receiving funding for educational expenses.

In response to the call by Duffy and Dik (2013) regarding the need for a theory driven referent point to expand career calling research, the present study utilized SCCT (Lent et al., 1994, 2000) as a basis for identifying research questions and making hypotheses related to the roles of attachment style, career calling, career decision self-efficacy, college adjustment, and life satisfaction within college students. Past research has incorporated attachment theory into SCCT as a means of investigating those variables that influence career decision making (Wright & Perrone, 2008). As the present study investigates the intersecting roles and relationships of these variables using an SCCT framework, attachment style (Bowlby, 1969) and career calling (Duffy & Dik, 2013) will be considered as background and proximal contextual affordances, respectively.

Life Satisfaction

Research into life satisfaction among college students has been a primary interest by authors studying the influence of student career calling (Duffy, Allan, et al., 2012; Duffy & Sedlacek, 2010) and by those investigating the influence of career decision self-efficacy (Duffy, Allan, & Dik, 2011). Life satisfaction, in general, is often used as a measure of overall psychological wellbeing (Diener, Emmons, Larsen, & Griffin, 1985). In their development of the satisfaction with life scale (SWLS) Diener et al. (1985) utilized this variable to target one's general happiness or satisfaction with one's life and circumstances, often using it in tandem with psychological adjustment variables (Pavot & Diener, 1993). In working adults, career calling was associated with decreased symptoms of depression and stress, and higher levels of problem-focused coping (Treadgold, 1999).

In a qualitative study of 23 zookeepers, Bunderson and Thompson (2009), found that individuals who identified their job as a calling strongly identified it as “a source of transcendent meaning, identity, and significance” in which they felt a duty, beyond that of themselves, for completing their work, which further contributed to personal satisfaction, meaning, and commitment.

As described previously, Steger, Pickering, Shin, and Dik, (2010) investigated the influence of career calling on life satisfaction among 242 religious and non-religious college students. The results indicated that perceiving a career calling contributed to a stronger sense of life meaning, commitment to work, and overall life satisfaction. These results were true for both religious and non-religious students. Additionally, Duffy, Allan, et al., (2012) also found that among 472 college students, career calling was associated with increased life satisfaction.

It is important to note, that in both of these studies, life meaning or the belief that one understands the meaning and purpose for one’s life, was a significant mediator between career calling and life satisfaction. Duffy, Allan, et al. (2012) also found that academic satisfaction had a significant mediational relationship and that this was true for both religious and non-religious students. Thus, as Duffy, Allan, Autin, and Bott (2013) later stated in a follow-up study, for college students “the reason calling related to increased life satisfaction was because of increased feelings of life meaning and satisfaction within the academic domain” (p. 43). Empirically, these findings emphasize the significant association between career calling and overall life satisfaction and when considered from a theoretical perspective, this is also consistent with the tenants of SCCT mentioned above. As Lent et al. (1994, 2000) postulate in SCCT, the results of positive

self-efficacy and outcome expectations is that the individual is able to establish personal interests, choice goals, and take the necessary actions to attain these goals in the specified domain. Lent et al., (1994) emphasizes the reciprocal loop that exists in which attaining one's goals reinforces the individual's self-efficacy leading to further outcome expectations of success. SCCT postulates that by fulfilling the various pathways of self-efficacy to interests, goals, and actions, desired outcome attainments can be achieved; further reinforcing self-efficacy and positive expectations of the future.

Study Rationale and Purpose

The purpose of this study was to provide a theoretical foundation for conceptualizing and applying the construct of career calling to college student adjustment and development. Attachment theory and SCCT (Lent et al., 1994, 2000) were used as theoretical foundations for examining the relationships among these variables. By utilizing a theoretical approach to career calling and development, the results of the present study sought to shed light on the interconnected domains of attachment, career development, and life satisfaction among college students, and help to inform counseling psychologists and mental health professionals working within college student populations. As student retention and persistence in college is a critical issue for administrators and educators in higher education, authors have suggested that life satisfaction among college students may play a central role in predicting student retention (Ishler & Upcraft, 2005). By examining attachment style, the presence of a career calling, and career-decision self-efficacy among college students, the present study investigated how these variables further influence overall college adjustment and life satisfaction. This study also aimed to provide areas of potential therapeutic focus for counseling psychologists helping students

identify and develop their own sense of career calling and life satisfaction. Finally, this study was the first to integrate attachment style and career calling within a career development framework. These results thus provided a unique contribution to the career and college adjustment literature.

The aforementioned research described various elements contributing to the construct of college adjustment. Attachment style has been found to predict higher self-esteem and self-efficacy, intimacy (Lapsley & Edgerton, 2002) and security (Kenny, 1987) in relationships and increased identity formation in early adulthood (Mattanah, Lopez, & Govern, 2011). Similarly, career development in college students and the identification of a career calling has been found to predict increased career-decision self-efficacy (Duffy, Allan, et al., 2011), life satisfaction, and academic satisfaction (Duffy, Allan, et al., 2012). SCCT has much to offer in considering a theoretical integration of these variables. SCCT emphasizes the important role that background contextual factors and individual personal attributes play in the development of career decision self-efficacy, outcome expectations, and subsequent interests, goals, and actions (Lent et al., 1994). Furthermore, research on the influence of career calling in college students has described specific benefits of this construct during the college period (Duffy & Dik, 2013). The construct of career calling is consistent with SCCT's description of learning experiences that are active during career development and offer unique and beneficial qualities for the individual when identifying career interests, setting goals, and taking goal-directed action (Lent et al., 2000). Thus in many ways, career calling is a natural fit within the framework of social cognitive career theory.

The present study utilized structural equation modeling (SEM) to examine two theoretical models in which the aforementioned variables were interrelated and hypothesized to effect overall life satisfaction, from an SCCT perspective. The primary model (Figure 1) postulated that levels of career calling presence would fully mediate the effect of attachment style on levels of career decision self-efficacy, college adjustment, and life satisfaction. Specifically, the primary model postulated that anxious and avoidant attachment styles would have direct, negative effect on levels of career calling. Subsequently, increased levels of career calling presence would have direct, positive effects on levels of career decision self-efficacy and college adjustment in addition to increased levels of life satisfaction. Finally, increased levels of career decision self-efficacy and college adjustment would also have direct, positive effects on the student's reported levels of life satisfaction.

The alternative model (Figure 2) included the pathways described in the primary model, while also adding two additional direct, negative effects from both anxious and avoidant attachment to career decision self-efficacy and college adjustment. Thus, the alternative model implied that attachment style has both direct and indirect effects on career decision self-efficacy and college adjustment, through the partial mediating variable of career calling. Career decision self-efficacy, career calling, and college adjustment were subsequently hypothesized to have direct effects on life satisfaction. In response to the call by Adams (2012), Duffy and Dik (2013) and other researchers in the field of career development, the present study sought to understand the relationship among attachment style, career calling, career decision self-efficacy, college adjustment, and life satisfaction. Thus, the following research questions (RQs) were tested:

- Q1 Does the primary theoretical model (Figure 1) adequately fit the observed relationships in the data?
- Q2 Does the alternative theoretical model (Figure 2) provide better statistical fit to the observed data than the primary model?

The primary model posits that the exogenous variables of anxious and avoidant attachment style directly and negatively affect the endogenous variable of career calling. Career calling subsequently has a direct, positive effect on the endogenous variables of career decision self-efficacy, college adjustment, and life satisfaction. Career decision self-efficacy and college adjustment are also posited to have direct, positive effects of the endogenous variable of life satisfaction. The alternative model builds from the primary model and includes each of the same direct effects from each variable described above. The alternative model also posits that the endogenous variables of anxious and avoidant attachment style will have direct, negative effects on the endogenous variables of career decision self-efficacy and college adjustment.

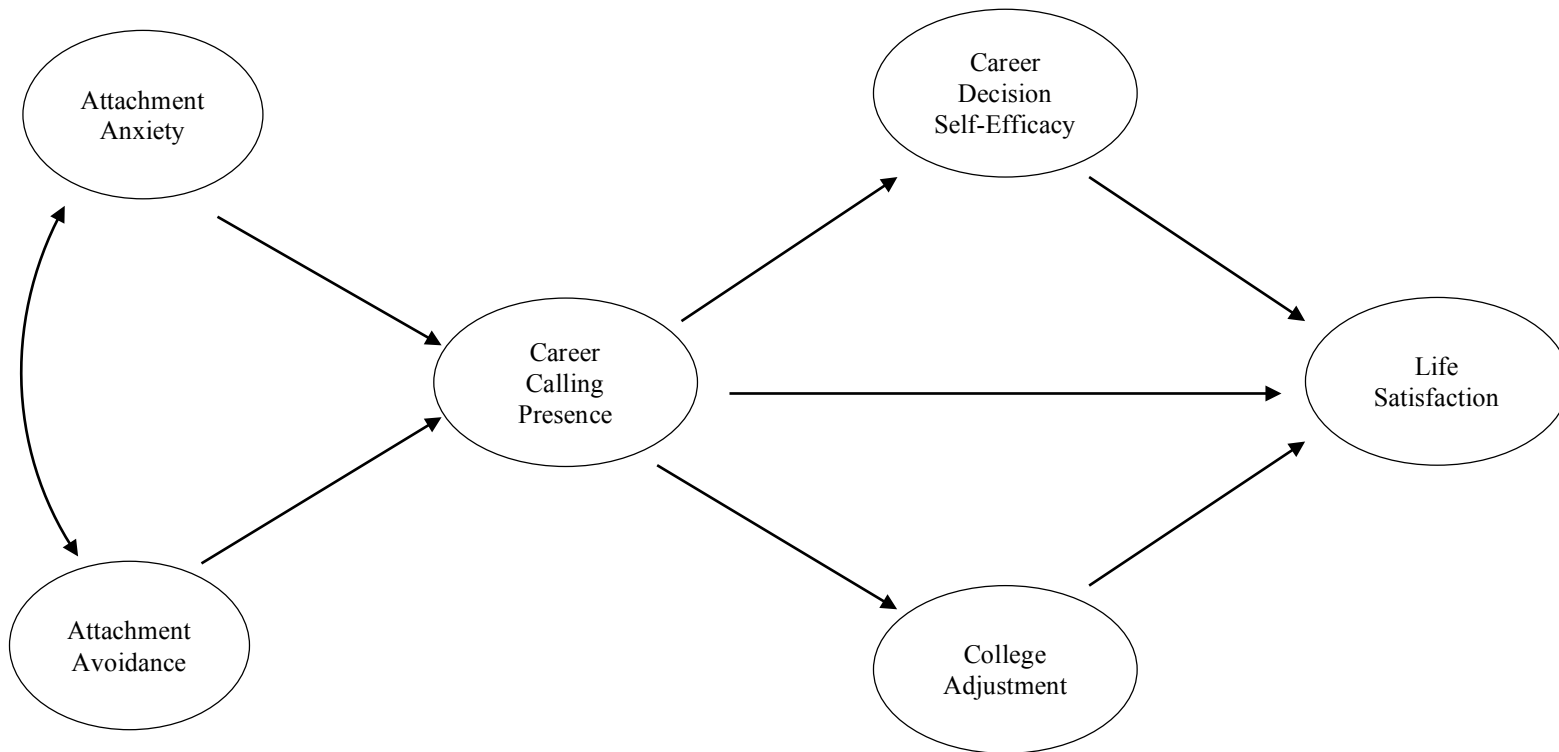


Figure 1. Proposed Primary Structural Model

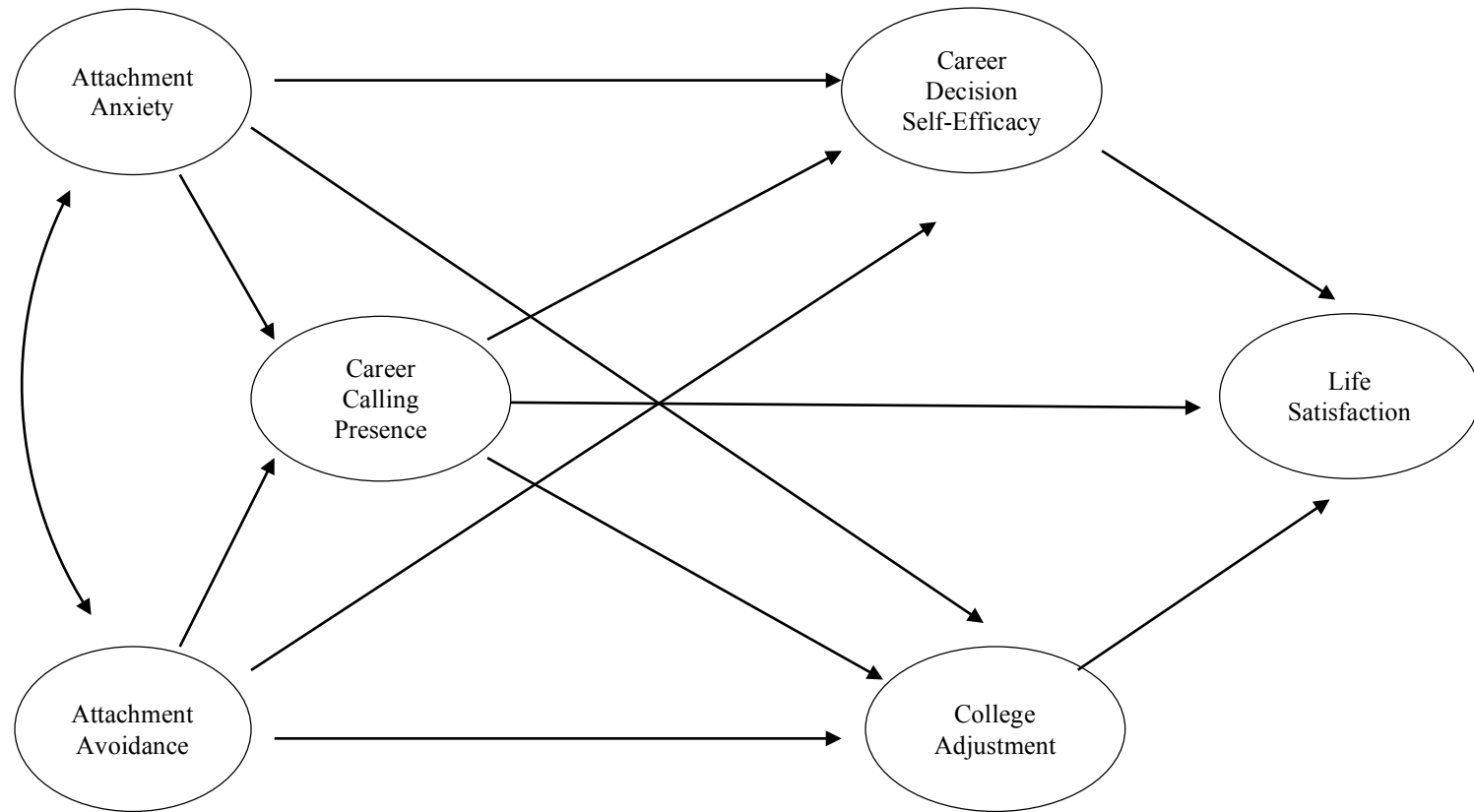


Figure 2. Proposed Alternative Structural Model

Limitations

Certain limitations existed within the present study. Little research on career calling existed, prior to 2007, after which approximately 40 studies specifically investigated the construct (Duffy & Dik, 2013). Research thus far has been concerned with defining career calling and investigating the relationships, this construct has on career development, individual well-being, academic and career performance, and other career and life variables. Steger et al. (2010) stated that, historically, calling has pertained to religious affiliations, as in being called by God, and that contemporary research has identified more than religious connotations when discussing career calling from career development perspectives. Despite the positive effects of career calling found in the literature for both religious and non-religious populations (Duffy, Allan, et al., 2012; Steger et al., 2010), this construct continues to be confused as a religious term or one that is overly ambiguous and lacking a general consensus (Duffy & Dik, 2013). The variability with which career calling has been defined and operationalized in the past presents a potential limitation for the generalizability of this construct, as various studies have defined this construct in several different ways (Davidson & Caddell, 1994; Dik & Duffy, 2009; Wrzesniewski et al., 1997). The present study utilized Dik and Duffy's (2009) definition, as stated in the definition of terms section below, as this is the most commonly used definition of career calling in the academic literature today.

The relatively small empirical foundation for career calling is also relevant in the context of multiculturalism and diversity, as current literature examining the influence of career calling on personal and vocational variables has primarily targeted Caucasian college students and employed adults in North America. Torrey and Duffy (2012)

investigated the effects of career calling variables among unemployed individuals and Hirschi (2012) and Hirschi and Herrmann (2013) investigated career calling among German college students. As Duffy and Dik (2013) also point out, several studies of North American college students and employed adults have utilized racially diverse samples and have found no meaningful differences in perceiving a calling across racial/ethnic backgrounds (Duffy & Autin, 2013, Duffy & Sedlacek, 2010). Nevertheless, research into the influence and effects of career calling from a non-western perspective is lacking and represents a limitation to the current career calling knowledge base.

A final limitation that has been identified by recent authors, but one this study sought to address specifically, was in regards to a theory driven understanding of career calling. Demonstrating how career calling fits within previously established theories of vocational development and specifically how it can be integrated into career counseling, is an aspect that previous writers have identified as lacking in current academic literature (Adams 2012, Duffy & Dik 2013). The incorporation of attachment theory and social cognitive career theory in the present study provided a theoretical basis for understanding career calling as a construct and provided support for how this construct can be incorporated into vocational counseling. The present study aimed to provide further insight into how previously established theories inform the understanding of career calling as a construct and how utilizing an SCCT approach can provide a framework for integrating career calling principles into counseling and career development.

Definition of Terms

Attachment style. Attachment style in the present study referred to an individual's internal working model regarding how the individual views him or herself in

relation to others. Attachment style was conceptualized on a two-axis model in which avoidant and anxious attachment behaviors were on separate orthogonal spectrums (Brennan et al., 1998; Fraley, Waller, & Brennan, 2000). Individuals with low anxiety and low avoidance represent a more secure attachment style and are comfortable in close relationships with others. Individuals high on the anxiety scale desire close relationships with others but are fearful of rejection/abandonment and are insecure in the stability of their relationships. Individuals high on the avoidance scale fear abandonment as well, however they choose to avoid intimacy and dependence on others so as to avoid being hurt or abandoned (Pietromonaco & Barrett, 2000).

Career calling. The present study utilized Dik and Duffy's (2009) definition of career calling as a "transcendent summons, experienced as originating beyond the self, to approach a particular life role in a manner oriented toward demonstrating or deriving a sense of purpose or meaningfulness and that holds other-oriented values and goals as primary sources of motivation." (p. 427).

College adjustment. The present study utilized a definition of college adjustment that is derived from Baker and Siryk's (1986) Student Adaptation to College Questionnaire (SACQ). Specifically, overall college adjustment is made up of four domains and is measured by four subscales on the SACQ: academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment. Academic adjustment refers to the individual's ability to adapt to the academic expectations and demands of the college environment. Social adjustment is the individual's ability to create new social networks and relationships throughout college. Personal-emotional adjustment pertains to the individual's ability to adjust emotionally in terms of identity

formation, finding meaning, and developing personal character during college. Finally, institutional attachment references the individual's feelings of attachment, commitment, and general fit within the university setting.

Career decision self-efficacy. The current study utilized Solberg's (1994) definition that "career search efficacy refers to individuals' efficacy expectations regarding their ability to perform important activities associated with career selection and search" (p. 112). Solberg conceptualized career decision self-efficacy through four primary subscales in creating the Career Search Efficacy Scale (CSES, Solberg et al. 1994). These four domains are job search efficacy, interviewing efficacy, networking efficacy, and personal exploration efficacy.

Life satisfaction. Most research on career calling and life satisfaction considers general well-being, happiness, low psychological distress, and a perceived life meaning as comprising the construct of life satisfaction (Duffy & Sedlacek, 2010, Duffy et al., 2013, Hirschi & Herrmann, 2012). In developing the Satisfaction with Life Scale (SWLS), Diener, Emmons, Larsen, and Griffin (1985), emphasized the importance of allowing the individual to judge his or her own experience of satisfaction to whatever criteria the individual establishes for him or herself. Thus, the present study utilized the definition of life satisfaction provided by Diener et al. (1985); specifically, that life satisfaction is a cognitive process that includes a global assessment of a person's "quality of life" according to his or her "chosen criteria."

Summary

As described in the preceding introductory chapter, the vast majority of contemporary academic literature pertaining to career calling has been conducted within

the last seven years, and thus research on career calling is still in its infancy. This construct has been identified as having important and positive effects on both college students and working adults alike and has been associated with increased life meaning, self-efficacy, vocational commitment, and general life satisfaction. Recent authors (Adams, 2012, Duffy & Dik, 2013) have identified a need for research that examines the construct of career calling from a theory driven perspective that would further provide understanding of those variables that most contribute to, and result from, an individual's perceived career calling, and which would inform how career calling principles should be integrated into career counseling. The present study aimed to integrate a prominent psychological theory of development, behavior, and interpersonal relationships, (i.e., Attachment Theory; Bowlby, 1969, 1973), into an empirically validated theory of career development (i.e., Social Cognitive Career Theory, Lent et al., 1994). Thus, structural equation modeling was used to test two competing theoretical models that investigated the relationships among attachment style, career calling, career decision self-efficacy, college adjustment, and life satisfaction. Ideally, the results of this research will further inform the theoretical and the conceptual understanding of career calling and provide insight and direction for psychologists and other mental health professionals working with college student populations.

CHAPTER II

REVIEW OF THE LITERATURE

Arguably the most important concern for university administrators, department chairs, program advisors, and instructors in higher education is student retention (Ishler & Upcraft, 2005; Robbins et al., 2009). Students cannot complete a college plan of study, earn a degree, or successfully transition into their chosen career fields without continuing to matriculate through a college program (Ishler & Upcraft, 2005). Thus, retention has often been described as the most foundational, most basic, goal for university programs and most university administrations aim to increase the retention of their students (Ishler & Upcraft, 2005). At this foundational level, Ishler and Upcraft (2005) acknowledge that while retention is generally the most important topic for administrators, if for no other reason than the financial ramifications that student drop-out brings, it should not be the only aim and that a wide range of factors contribute to college student persistence. These authors cite Tinto (1993) who wrote, “The point of retention efforts is not merely that individuals be kept in college. Education, the social and intellectual development of individuals, rather than just their continued presence on campus should be the goal of retention efforts” (p.145). In reviewing the student persistence literature up to 2005, Ishler and Upcraft (2005) reported that both student variables and environmental variables contribute to student retention. Student variables were comprised of aspects such as prior academic achievement, socioeconomic status, gender, age, race/ethnicity

and parental support. Institutional variables were comprised of aspects such as selectivity and type of university, size, and gender/racial composition. Other more general environmental variables included grade point average, academic major, interpersonal relationships, and many others. The authors described the various ways that each of these factors influences student retention, but more broadly concluded that many factors contribute to college success. The authors also acknowledged, however, that student satisfaction, alone, is an important predictor of college persistence, but one that is often overlooked in college retention research. Other meta-analytic research has found that academic self-efficacy and achievement motivation are important predictors of both college GPA and retention (Robbins et al., 2004).

From the student's perspective, attending college offers both training and preparation for a specific career field or occupation as well as an opportunity for personal exploration and identity development (Arnett, 2000). Adams (2012) described aspects of life meaning that develop for students during the college period. He suggests that as student identity develops during college, individual life meaning and purpose become more important and thus career development becomes a critical aspect of the college experience. In a meta-analysis of 46 studies investigating the influence of career development courses among college students, Folsom and Reardon (2003) found that career courses were associated with increased career thoughts, career decision-making skills, vocational identity, career decidedness, and college retention. Thus, career development represents an important aspect of not just student retention, but of identity development and life purpose. Adaptation to the college environment is multifaceted and the present study posits that key variables (i.e., attachment, career calling) contributing to

successful college adjustment can be best understood from a career development perspective. College student retention may be an important goal for university administrators, but from a student perspective, adjustment to college may only be one part of a larger framework contributing to overall life satisfaction.

The present study integrated previously established psychological theories (i.e., attachment theory and SCCT) with a contemporary understanding of college adjustment, career development, and life satisfaction. Thus, the following review of current and past academic literature introduces attachment theory and social cognitive career theory (SCCT) as the theoretical foundations used in the study. The chapter then examines literature pertaining to the constructs of career-decision self-efficacy, career calling, college adjustment, and life satisfaction. Literature was also examined pertaining to these variables both as individual constructs and in relation to one another from a theoretical perspective, as they relate to overall life satisfaction. Finally, the hypothesized structural models used in the study are discussed from a theoretically integrative perspective.

Theoretical Foundation

Attachment theory. Beginning first in a series of manuscripts and later revised into a three-volume trilogy entitled *Attachment and Loss* (1969, 1973, 1980), John Bowlby created attachment theory to explain the mutually affectionate relationship that is formed between mother and child, beyond the simple need for food and protection that was the dominant theory of attachment at the time (Cassidy, 2008). Prior to 1958, secondary drive theory was the most widely accepted viewpoint regarding the relationship between parent and child (Bowlby, 1969). From birth, children are completely vulnerable and dependent on their mothers and thus needs such as food,

warmth, and protection are necessary for survival. The child subsequently becomes attached to its mother as a result of the mother's meeting the child's primary physiological needs. Thus, attachment is viewed as a "secondary drive", a necessary by-product of the child's instinctual survival needs (Bowlby, 1969, p. 178). Freud's (1923) psychoanalytic theory of object relations contributed to the development of secondary drive theory, as Freud posited that early development of the id, ego, and superego were linked to unconscious identification with outside objects, such as identification with the father during male development. While object relations theory considered attachment to only be a necessary byproduct of the infant's need for nourishment and libidinal satisfaction, Bowlby saw attachment as a primary drive, that offered important developmental benefits for the child (Kernberg, 1995). For Bowlby, secondary drive theory was less than adequate, especially when considered in light of Henry Harlow's (1958) studies with rhesus monkeys. Harlow found that in times of stress, these monkeys preferred a "cloth mother surrogate" for comfort and nurturing to a "wire mother surrogate", despite the wire mother being the monkey's source of daily food (Harlow, 1958). For Bowlby, these findings left secondary drive theory lacking and unable to account for the full range of attachment related behaviors that occur between mother and child.

In considering the survival needs of an infant, attachment serves the basic purpose of providing food and shelter through the child's mother. Bowlby's attachment theory went beyond basic survival needs, however, and asserted that attachment plays a pivotal role in personality development throughout the life of the child (Bowlby, 1969). It is also important to note that while he often used the terms "mother" or "mothering" in his

writing, Bowlby was careful to specify that attachment occurs between the child and the “person who mothers the child and to whom he becomes attached” (Bowlby, 1969, p. 177), be it the mother, father, grandparent, etc. Thus many contemporary authors, and the present study, use the term primary caregivers to refer to the individual that takes on the primary “mothering” of the child and with which the attachment relationship is formed (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987; Mattanah et al., 2011). For Bowlby, the attachment relationship consisted of much more than simply meeting the physical needs of the child. When a child experiences consistent support and care from its primary caregiver, a sense of confidence begins to develop. As the child grows and becomes more mobile, beginning to exert its own independence and autonomy, the attachment figure becomes a kind of secure base, allowing the child to explore the environment but providing a safe haven to which the child can return in moments of distress, fear, or need (Bretherton & Munholland, 2008; Hazan & Shaver, 1987). Thus, Bowlby described the important role of the caregiver, beyond basic physiologic needs:

“For not only young children, it is now clear, but human beings of all ages are found to be at their happiest and to be able to deploy their talents to best advantage when they are confident that, standing behind them, there are one or more trusted persons who will come to their aid should difficulties arise. The person trusted provides a secure base from which his (or her) companion can operate.” (Bowlby, 1973, p. 359)

In studying different types of child-caregiver interactions, Bowlby began to conceptualize the role attachment relationships had on the child’s development of personality and sense of self. Bowlby (1973) outlines three primary propositions in reference to the role that attachment plays in personality development. First, individuals with consistent support from an attachment figure are less likely to experience chronic anxiety or fear as compared to individuals without this support. Secondly, confidence in

the consistent support of an attachment figure develops slowly throughout childhood and adolescence, and the expectation of this support, or lack thereof, tends to persist throughout life. Third, the expectation of support is based on the experiences the individual had with his or her attachment figure throughout development. Bowlby further elaborated the role that child-caregiver relationships have in his conceptualization of Internal Working Models (IWMs). Bowlby posited that the expectations of consistent support that developed between the child and attachment figure were also generalized toward other relationships in the child's life, throughout the course of development (Bowlby, 1969). This expectation of relationship with others also influenced the child's view of self. The individual's IWMs both inform how future relationships are expected to occur but also the role the individual plays in relationships with others. Early childhood experiences with parents or caregivers in which the child consistently feels safe, protected, and provided for; create a strong IWM and a sense of self-esteem and self-worth. The child comes to expect consistent support from loved ones, and parents become a secure base from which the child can comfortably explore his or her environment knowing that, when needed, support will be present. This supportive childhood environment is in contrast to parent-child interactions that are marked with inconsistency in which the child does not feel safe or protected, but is rather neglected at times and learns that one's environment should be feared as parents or caregivers are not consistently present to offer support in times of need. This type of child-caregiver interaction creates an IWM of being unacceptable and unworthy of consistent relationships (Bartholomew & Horowitz, 1991; Bretherton & Munholland, 2008; Pietromonaco & Barrett, 2000).

Bowlby describes IWMs as generalized beyond attachment relationships and that the child is “busy constructing working models of how the physical world may be expected to behave” (Bowlby, 1969, p. 354). Thus, attachment relationships are just one part of the developing IWM of the child. The environment in which the child has existed, and specifically the child-caregiver relationship, plays a primary role in how the child comes to view himself or herself and the expectations that are formed regarding future relationships. Thus, various types of attachment styles can be formed based on the quality of child-caregiver interactions experienced (Weinfield, Sroufe, Egeland, & Carlson, 2008). Mary Ainsworth and her colleagues first empirically investigated individual differences among attachment relationships between child and caregiver in 1978.

In a seminal research paradigm applying Bowlby’s attachment theory, Ainsworth, Blehar, Waters, and Wall (1978) designed the “strange situation” in which infant children were exposed to a an unfamiliar play environment, separated from and reunited twice with their mother, and also presented with an unfamiliar adult. This structured laboratory environment allowed researchers to temporarily increase an infant’s experience of distress, when the caregiver leaves the room, and subsequently activate the child’s attachment behavioral system, eliciting responses from the child based on attachment, that are observable once the caregiver returns (Ainsworth et al., 1978). Ainsworth and colleagues were able to assess the quality of parent-child attachment based on the way the child responded during the two reunion instances. Based on the demeanor and behaviors exhibited by the children upon reunion with their mother, Ainsworth et al. (1978) identified three attachment styles: secure, avoidant, and resistant.

Children demonstrating secure attachment styles were able to play independently from their mother but demonstrated distress when their mother was initially absent. They were generally soothed by the stranger but preferred to be in close proximity to their mother upon return. Children displaying avoidant attachment styles were able to play independently and showed little distress when their mother left the room. They would generally ignore the stranger when present, occasionally preferring the stranger to the mother, and upon the mother's return, typically showed signs of indifference to mother and moving away when reunited. The third group identified by Ainsworth as demonstrating resistant attachment generally stayed much closer to the mother prior to separation, not playing independently, and were generally avoidant of the stranger when present. When the mother was absent, these children were substantially distressed and not easily soothed. Upon reunion, these children often continued to cry and would seek proximity, but became resistant to the mother's attempts to sooth the child (Ainsworth et al., 1978; Weinfield et al., 2008). A fourth attachment style has also been added to Ainsworth's original conceptualization and was first proposed by Main, Kaplan, and Cassidy (1985). Termed disorganized/disoriented attachment, these children did not show a consistent attachment style related to the other three categories and were often disorganized in their relationship toward the mother. These children often showed characteristics of both the avoidant and anxious categories in addition to a frightened response to their mother upon return and in general lack a single, clear, attachment style (Solomon & George, 2008).

Ainsworth's strange situation (1978) allowed for the identification and classification of various forms of secure and insecure attachments within the child-

caregiver relationship. Bowlby's conceptualization of IWMs suggested a reciprocal relationship in which attachment styles influence the individual's conceptualization of self and subsequently the expectations he or she has of others, in regards to future relationships. In a study examining the influence of childhood attachment style on adult attachment relationships, Bartholomew and Horowitz (1991) examined 33 female and 36 male college students (age 17-24, $M_{age} = 19.5$), assessing attachment style to parents, peers, and self-reported level of interpersonal problems. In modifying Ainsworth's original attachment categories, Bartholomew and Horowitz (1991) showed that attachment styles could be conceptualized on two axes, pertaining to the individual's view of self and view of others (See figure 3).

		Model of Self (Dependence)	
		Positive (Low)	Negative (High)
Model of Other (Avoidance)	Positive (Low)	<p>Secure Comfortable with intimacy and autonomy</p>	<p>Preoccupied Preoccupied, Ambivalent Overly dependent</p>
	Negative (High)	<p>Dismissing Denial of Attachment Dismissing Counter-dependent</p>	<p>Fearful Fear of Attachment Avoidant Socially avoidant</p>

Figure 3. Model of Adult Attachment Recreated from Bartholomew (1990), p. 163.

The authors proposed that individuals with a positive view of themselves and a positive view of others demonstrated secure attachment. A negative view of self and a positive view of others was defined as a preoccupied attachment style or anxious attachment as Ainsworth (1978) had defined. A positive view of self and negative view of others was characterized as dismissing attachment or avoidant as Ainsworth (1978) had defined. Finally, a negative view of both self and others comprised a fearful attachment style, similar to the disorganized attachment style described by Main and Solomon (1990). Using this 2-axis, view-of-self versus view-of-others, categorical system, Bartholomew and Horowitz (1991) showed that the type of attachment style an individual experienced with parents in childhood was associated with the same attachment style they exhibited in peer-relationships as adults. Individuals with a secure attachment style were found to have a higher sense of worthiness and viewed others as accepting and responsive in relationships and thus they expected relationships to be

mutually beneficial. Individuals with a preoccupied/anxious attachment style blamed themselves for rejection by others and interpersonal difficulties and thus desired relationships but were anxious that others would not be consistently present. Individuals with a dismissive/avoidant attachment style blamed others for interpersonal difficulties, not themselves, and subsequently rejected relationships and avoided interpersonal closeness as a means of maintaining self-esteem. The final fearful attachment style perceived both negative views of self and others and subsequently viewed themselves as insecure in their own social capabilities as well as perceiving others as inconsistent and uninviting.

The Bartholomew and Horowitz (1991) study was foundational in establishing not only the link between early childhood attachment styles and adult attachment within peer relationships, but also in establishing four distinct attachment categories based on two axes, view-of-self and view-of-others. In a classic study that also examined the influence of childhood attachment on adult relationships, Hazan and Shaver, (1987) identified parallels between attachment styles with parents in childhood to attachment style with romantic partners in adulthood. In two studies, the first with a sample of 620 participants (415 women, 205 men, $M_{\text{age}} = 36$), the second with a sample of 108 undergraduates (70 women, 38 men, $M_{\text{age}} = 18$), the authors found that the individual's attachment relationship to parents was associated with their attachment style to romantic partners as adults. Furthermore, the authors found that securely attached individuals described their romantic relationships as happy, friendly, and trusting. Individuals with avoidant attachment reported a fear of closeness to others, a fear of intimacy, and typically experiencing emotional instability and jealousy in romantic relationships. Individuals

with anxious attachment reported romantic relationships characterized by obsession, a desire for reciprocation and closeness, jealousy, and difficulty trusting others.

Both Bartholomew and Horowitz (1991) and Hazan and Shaver (1987) describe the influence of attachment relationships in childhood on interpersonal relationships as adults. In both romantic partner and peer relationships, the individual's experiences of closeness, consistency, and support, created within the child-caregiver relationship, influenced the way the individual related to others and viewed him or herself. These results are consistent with Bowlby's (1969, 1973) conceptualization of IWMs, which form as a result of an individual's childhood experiences and continue to impact the individual's relationships and view of self as an adult. Although supporting the work of Bowlby and Ainsworth, the Bartholomew and Horowitz (1991), and Hazan and Shaver (1987) studies underscore a pressing issue in the attachment literature, specifically related to how to categorize attachment styles. Hazan and Shaver (1987) utilized the three category model devised by Ainsworth (1978), while Bartholomew and Horowitz (1991) presented evidence for a four category model based on the two-axis perspective of one's view-of-self versus view-of-others. In response to this issue, Brennan et al., (1998) proposed a four-factor model of attachment style based on two orthogonal dimensions (i.e., anxiety and avoidance) that is considered to be the prevailing model of attachment to date (Mikulincer & Shaver, 2007).

In their approach to measuring attachment styles, Brennan et al. (1998) analyzed 482 items from attachment measures assessing 60 unique subscales that existed within the attachment related literature at the time of publication. After adjusting for redundancy, the authors administered 323 attachment related items to a sample of 1,086 undergraduate

students (682 women, 403 men, Median age 18). Utilizing principal component analysis, Brennan and her colleagues found that of the 60 subscales, two unique underlying factors existed regarding how an individual responds to attachment relationships. The first factor was characterized by avoidance of intimacy, discomfort with closeness, and self-reliance, which the authors titled Avoidance (Brennan et al., 1998). The second factor was characterized by preoccupation, jealousy and fear of abandonment, and fear of rejection, which the authors titled Anxiety (Brennan et al., 1998). The authors then selected the top 18 items from the original pool of 323 that demonstrated the highest absolute-value correlations with the Anxiety and Avoidance factors identified above. The resulting subscales' scores based on their sample each had internal consistencies of $r = .95$ and a between factor correlation of $r = .11$ indicating separate, independent factors.

Based on this study, Brennan et al. (1998) developed the Experience in Close Relationships (ECR) scale which is one of the most widely used measures of attachment theory (Mikulincer & Shaver, 2007, 2008). This study also demonstrated that based on all attachment research at the time, two primary factors underlie attachment relationships, attachment avoidance and attachment anxiety. The authors also demonstrated that their anxiety-avoidance, two-axis model (See figure 4) was compatible with both Ainsworth's (1978) original attachment categories and Bartholomew & Horowitz's (1991) four-factor model. Based on Brennan et al.'s (1998) study, the avoidance and anxiety axes allow attachment style to be identified based on two continuous scales. Low anxiety and low avoidance are indicative of secure attachment, high avoidance and low anxiety are indicative of dismissive/avoidant attachment, high anxiety and low avoidance are

indicative of preoccupied/anxious attachment, and high anxiety and high avoidance are indicative of fearful/avoidant attachment (Mikulincer & Shaver, 2007, 2008).

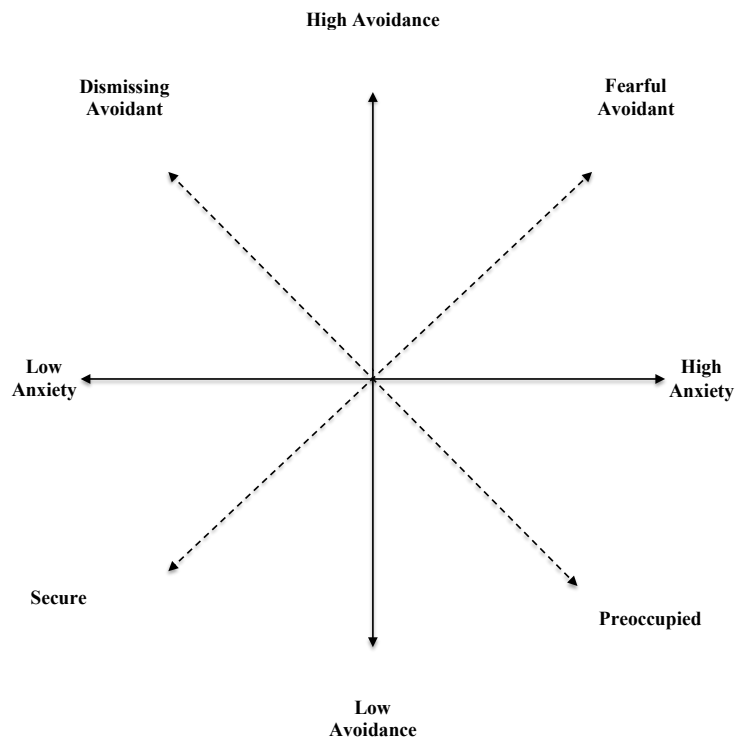


Figure 4. Dimensional Model of Adult Attachment, Recreated From Mikulincer and Shaver (2007), p. 89, Based on Brennan et al.'s (1998) Model.

The ECR (Brennan et al. 1998) has undergone various updates and changes since its original inception, such as the ECR-Short form (Wei, Russell, Mallinckrodt, & Vogel, 2007), the ECR-Revised (ECR-R) which utilized factor analysis and item response theory to revise the original ECR items (Fraley et al., 2000) and the ECR-Relationship Structures Questionnaire (ECR-RS) which investigates parents, romantic partner, and best friend attachment styles (Fraley, Heffernan, Vicary, & Brumbaugh, 2011). As a theoretical foundation for the present study, attachment style based on Bowlby's (1969)

original theory of relationships and internal perceptions of the self, was examined in the context of college student functioning, career calling, career-decision self-efficacy, and life satisfaction. Additionally, the anxiety-avoidance continuous model of attachment style, based on Brennen et al. (1998), was utilized as a means of identifying attachment style among college students.

Social cognitive career theory (SCCT). Created by Robert Lent, Steven Brown, and Gail Hackett (1994), SCCT is a model of career development that examines cognitive-person variables, specifically self-efficacy, outcome expectations, and personal goals, and the interactions these variables have with individual environmental factors, that influence the career interests and directions an individual develops and pursues (Lent et al., 1994). As a foundational element underlying the theory as a whole, SCCT assumes that people possess “personal agency” in their own career outcomes and that beliefs about one’s self and one’s environment strongly influence the goals that one achieves (Lent et al., 2002, p. 255). Theoretically, SCCT is based largely on Albert Bandura’s (1986) social cognitive theory of behavior, which postulates a concept of “triadic reciprocity” (p. 23). Bandura posited that behaviors, personal attributes (such as cognitive states, affect, and physical characteristics), and environmental influences have a bi-directional, causal, influence on each other (Bandura, 1986). Lent et al. (1994) states that other career development theories consider behavior to be a result of the interaction between environment and personal factors (e.g. cognitions), which effectively reduces the role that an individual’s actions may have on their beliefs and environment. Unlike these other models, SCCT incorporates Bandura’s reciprocal model emphasizing that one’s

environmental, beliefs, and behaviors are co-determinants and interact to cause subsequent behaviors, or in this case, career outcomes (Lent et al., 1994).

SCCT postulates that three particular cognitive mechanisms play a pivotal role in the development of career interests and subsequent pursuits. Specifically, self-efficacy, outcome expectations, and personal goals are considered foundational to career development. Citing Bandura (1986, p. 391), Lent et al. (2002, p. 262) describe self-efficacy as “people’s beliefs about their own capabilities to organize and execute courses of action required to attain designated types of performances.” Self-efficacy is specified as a domain-specific trait and not an over-arching, fixed, characteristic of the individual and is based on the individual’s cognitive beliefs about their own performance in a specific context (Brown et al., 2000). Thus, one may have a strong belief in their ability to make friends and excel in social situations, but may feel intimidated by and unable to make important career decisions. This individual would thus demonstrate high social self-efficacy but low career-decision self-efficacy.

In regards to the acquisition of self-efficacy within a specific domain, Bandura (1977, 1997) describes four primary sources. Accordingly, self-efficacy is acquired through personal performance accomplishments, vicarious learning, social persuasions, and physiological/affective states (Bandura, 1977, 1997). Although each of these areas contributes to the development of self-efficacy, personal performance accomplishments are considered the most influential source, acting as learning experiences for the individual (Lent et al., 2002). One’s experiences while engaging in a particular behavior can reinforce the likelihood of that behavior occurring again in the future, specifically if a positive performance accomplishment has occurred. These prior positive learning

experiences then facilitate increased self-efficacy regarding the individual's belief in his or her ability and promote increased consideration of outcome expectations (Lent et al., 1994, 2002).

Outcome expectations are distinguished from self-efficacy in that one's belief about what will occur if he or she engages in a particular behavior is related directly to the outcome the individual expects (Bandura, 1977). Motivation to engage in a particular behavior is based on the perceived outcome that is expected as a result (Bandura, 1977). Outcomes such as extrinsic reinforcements or tangible rewards, self-directed consequences like pride in one's self, or the act of participation alone can all act as motivators to for the individual (Lent et al., 2002). Thus, as one engages in a particular behavior related to a specific domain and experiences positive performance accomplishments related to that domain, self-efficacy in that behavior increases. As self-efficacy increases, positive outcome expectations related to the original behavior act as motivators, increasing the likelihood of the behavior continuing to occur (Bandura, 1977, 1997). Thus, as self-efficacy and outcome expectations increase, goals are set related to the individual's future behaviors.

Lent et al. (1994, 2000) defines goals as "the determination to engage in a particular activity or to effect a particular future outcome" (Lent et al., 2002, p. 263). For SCCT, goals represent an aspect of personal agency that help to organize and plan an individual's future behavior. Thus, in the context of delayed gratification or across periods of little to no external reinforcement, goals help to facilitate the long-term repetition of a certain behavior or set of behaviors (Lent et al., 2002). Within the context

of career development, SCCT postulates that self-efficacy, learning experiences, and goal-setting are foundational to future career outcome attainments (Lent et al., 1994).

In their original conceptualization of SCCT, Lent, Brown and Hackett (1994) aimed to explain career interest development, choice making, and individual performance within three interconnected models, which exist under the larger SCCT framework. It is important to note, that despite being termed a “career” theory, SCCT was also designed to explain the developmental process of interests, choice, performance, and satisfaction within academic domains and is thus most accurately considered a career/academic developmental theory (Lent et al., 1994; Lent & Brown, 2013). Figure 5 illustrates Lent et al. 's (1994) original conceptual framework for SCCT as applied to the three interconnected models of career/academic interest, choice, and performance.

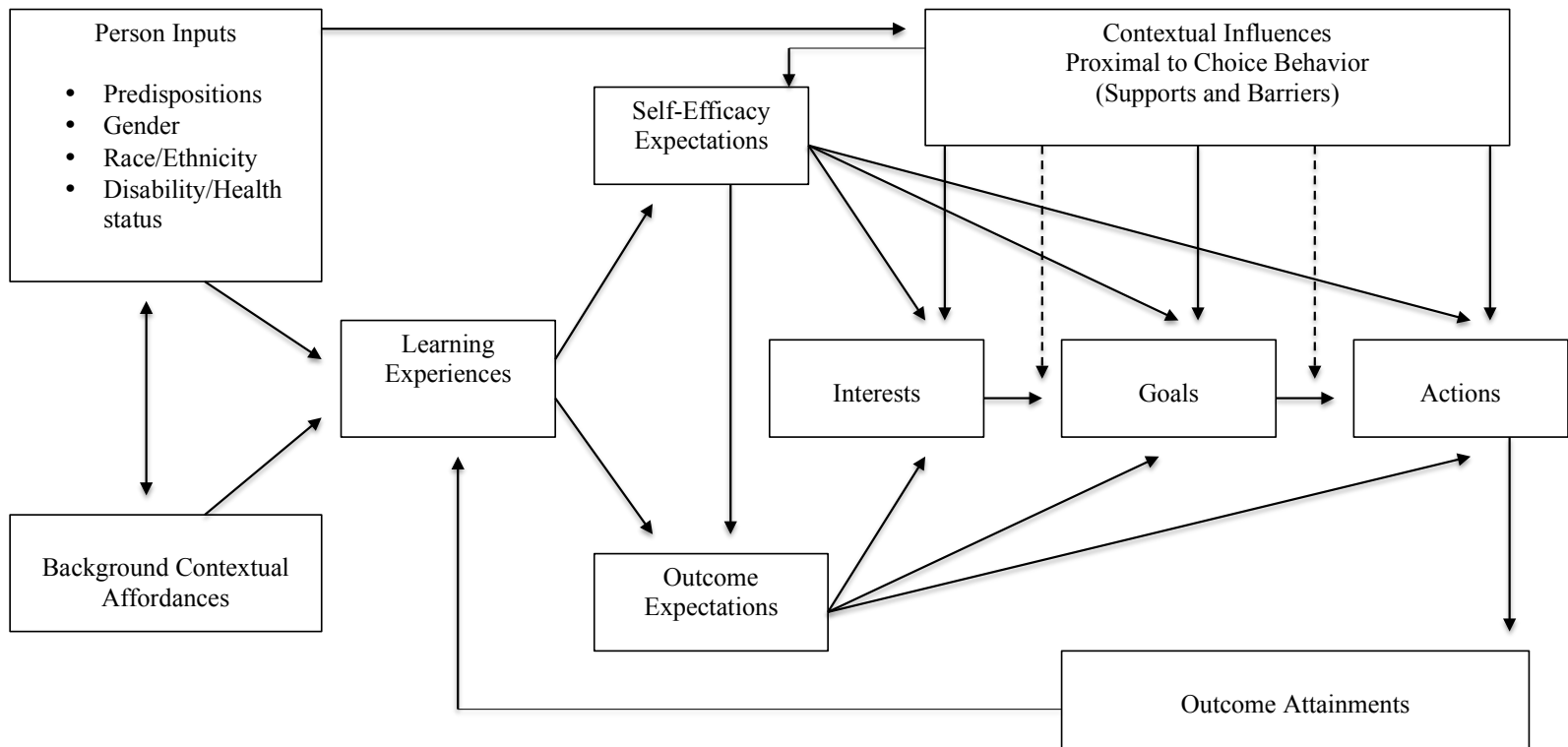


Figure 5. Social Cognitive Career Theory (SCCT) Model, Recreated from Lent et al., (1994, 2000).

The interest development model of SCCT infers that career and academic interests form as a product of experiential and cognitive factors (Lent et al. 1994, 2000). The interest areas one forms are largely the product of learning experiences one has and the subsequent reinforcements one receives from those experiences. Beginning in childhood, as people engage in various activities such as sports, music, and academics, their performance ability, and the subsequent reinforcement they receive from important others (e.g. parents, teachers, coaches), increases the likelihood of continuing that activity. SCCT describes these types of reinforcements as distal background factors that exist early in life and reinforce later behavior (Lent et al., 1994, 2000). Thus performance accomplishments, and the reinforcement received, lead to increased self-efficacy regarding the activity and expectations about the outcome of engaging in this activity in the future (Bandura, 1977). Thus, interest areas are formed when individuals experience a certain activity/behavior, perceive themselves as competent at it, and believe that performing it will produce desirable outcomes (Lent et al., 1994, 2000).

The career/academic choice-making model of SCCT states that individuals first express a primary choice or goal, take actions designed to attain the stated goal, and use subsequent performance attainments to inform future behavior (Lent et al., 2002). Once an individual has made a choice to pursue a particular goal, actions are taken to attain this goal. The reinforcement the individual receives from his or her chosen action will largely determine if future actions are taken. Thus, if the individual succeeds in the actions taken, a feedback loop is created, facilitating further choice action in pursuit of the chosen goal (Lent et al., 1994, 2002). If the individual experiences failure in the actions he or she pursues, it may cause a reevaluation of his or her choice goals, and thus a feedback loop

also occurs in which failed performance attainments facilitate new goals and actions. Self-efficacy and outcome expectations again play an important role in SCCT's choice making model. Increased self-efficacy and outcome expectations promote career and academic interests. Increased interest in a particular career or academic domain subsequently influences the goals that are created, the actions taken, and the performance attainments the individual receives. Positive attainments increase the likelihood that goal-related choices and actions will persist, while negative attainments decrease the likelihood that these same choices and actions will continue (Lent et al., 1994, 2002).

The third model of SCCT is concerned with individual performance and the influence performance accomplishments have on behavior. SCCT states that performance is a product of ability, self-efficacy, outcome expectations, and goals (Lent et al., 2002). Thus, individuals that perceive themselves as capable of performing a specific action and who have experienced successful performances in the past, develop increased self-efficacy. Increased self-efficacy in turn influences the individual's outcome expectations regarding performance, the goals the individual makes related to the performance, and ultimately the outcome the individual experiences. Again a feedback loop is created in which successful performance attainments lead to increased self-efficacy, further skill development and continued goal related behavior while failed performance attainments may lead to the creation of new goals and interests (Lent et al., 1994, 2002).

Each model within the SCCT framework is interconnected and builds on each other. As illustrated in figure 5, learning experiences, influence the development of self-efficacy and outcome expectations. These together influence interests, goals, actions, and performance attainments. The development of interests, goals, and actions, also

independently influence each other in succession, and all contribute to the final performance attainment outcome. Thus, the theory describes each of the three internal models described previously as influencing each other and contributing to an eventual outcome (Lent et al., 1994, 2002). Figure 5 also illustrates the dynamic feedback loop that occurs within the overall SCCT model, which is derived from Bandura's (1977, 1986) triadic reciprocal interaction. The performance domains and attainments the individual experiences create a feedback loop, which directly impacts learned experiences. Successful accomplishments result in increased self-efficacy and outcome expectations, further contributing to interests, goals, and actions. Failures in performance also influence learning experiences but may decrease self-efficacy or prompt interest development in new domains. Regardless of outcome, interest, goals, and actions are dynamic properties informed by the individual's learning experiences, self-efficacy, and outcome expectations (Lent et al., 2002).

A final aspect of the SCCT model is in regards to personal and contextual influences (see figure 5). Lent et al. first described this aspect in their original work in 1994, and then later elaborated on contextual influences in 2000. SCCT postulates that individual predispositions or personal inputs, combined with background supports or barriers, influence the development of self-efficacy and outcome expectations of the future. Person inputs are considered innate attributes of the individual, such as gender, race-ethnicity, physical health/disability, genetic predisposition, and socioeconomic status (Lent et al., 2000, 2002). These are aspects of personality that are largely unchanging but impact learning experiences throughout the life span. Gender, for example, has been found to impact the development of self-efficacy for women

attempting to enter primarily male-dominated industries (Betz & Hackett, 1986). Based on limited opportunities for learning experiences in childhood, girls have been found to develop more self-efficacy for traditionally female occupations than male occupations (Hackett & Betz, 1981). In addition to personal inputs, background contextual affordances are taken into account, suggesting that “opportunities, resources, barriers, or affordances” may be presented by an individual’s environment that help or hinder the development of self-efficacy and outcome expectations (Lent et al., 2000, p. 37). For example, high socioeconomic status implies greater access to educational opportunities and resources, and increased skill development, which subsequently influence one’s self-efficacy and expectations about future careers, as well as each individual aspect of the model (Lent et al., 2000, 2002). SCCT also postulates that personal inputs and background affordances operate as proximal and distal influences. In some cases, one’s background affordances will only influence them in the past, such as parenting style or role models. Conversely, proximal contextual influences are those variables that are particularly important during specific, critical, phases of development, such as an internship opportunity that occurs after graduating from college (Lent et al., 2000). Person inputs and background contextual affordances emphasize the role that variables outside of one’s immediate control can play on overall career and academic development.

Contextual supports and barriers can also be conceptualized based on their proximity to the career or academic decision-making behavior (Lent et al., 2000).

Growing up around positive career role models is an example of a distal contextual factor that acts as a support to the individual by influencing later career-related decisions and supporting the development of career related interests and activities (Lent et al., 2000).

Seeing a vocational counselor or taking a vocational assessment as a college student while attempting to select a career path are examples of proximal contextual factors that act as supports for the individual because they influence career-related decisions in the present and are more active. Lent et al. (2000) also describe ways in which proximal and distal contextual factors can act as barriers to the individual as well. Experiencing discriminatory hiring practices while applying for a job is a proximal contextual factor because it is happening in the immediate present, but is also acting as a barrier to the individual's career pursuits. Subsequently, attending a high school in a low-income area with few career related resources might act as a distal contextual factor, creating a barrier to the individual's career options in the future due to poor education and preparation in career development in the past.

Recent literature of the SCCT model by Lent and Brown (Lent & Brown, 2006, 2008, 2013) has expanded the theory to also include life satisfaction and well-being. Lent and Brown (2006) postulate that in addition to explaining interest, choice-making, and performance, SCCT can also be used to account for the development of academic and career satisfaction. The authors state that self-efficacy and outcome expectations influence satisfaction directly and through participation in, and subsequent progress at, goal directed activities. Thus, individuals with self-efficacy toward their field of work or study, and who have experienced positive outcomes from their work environment, are likely to experience satisfaction at work, and also set and pursue work goals, which further promote satisfaction. Lent and Brown (2006) further specify that experience and affective traits also impact satisfaction. Individuals with more positive affect likely experience their work environment with more satisfaction. Environmental resources and

barriers indirectly influence satisfaction as well, through their influence on self-efficacy, outcome expectations and goal setting.

As a theoretical foundation, the current study will integrate attachment theory and social cognitive career theory as a perspective through which to examine college adjustment and career development variables. Attachment theory provides an understanding of the roles early parent-child relationships play in developing personal identity and future interpersonal functioning. SCCT provides an understanding of the mechanisms that facilitate self-efficacy and future expectations of academic and career interests and goals. Recent scholarship has begun to integrate attachment theory and SCCT together in an attempt to better understand the relationship among background contextual factors, such as attachment style, and later vocational development. Based on the SCCT model (Figure 5) background contextual factors influence learning experiences, which subsequently contribute to self-efficacy beliefs (Lent et al., 1994). Secure parent attachment style can be considered an important early life contextual factor that influences the development of positive internal working models (IWMs) of the self (Wright & Perrone, 2008) and the belief that others can be trusted and depended on in relationships (Bowlby, 1973). Individual's IWMs subsequently contribute to increased self-efficacy beliefs and expectations about one's self and one's abilities (Bowlby, 1973). Adult attachment style, pertaining to the quality of one's attachment relationships to romantic partners in adulthood (Hazan & Shaver, 1987) are conceptualized as person input that positively influence the development of proximal contextual factors such as self-efficacy beliefs, interests, and goals during career development, which subsequently facilitate positive learning experiences, the development of career goals, and taking

actions to attain those goals (Wright, Perrone-McGovern, Boo, & White, 2014). Thus, attachment style fits nicely into the SCCT model as a person input that influences individual career development as both background and proximal contextual influences through parent-child and adult attachment, respectively (Wright & Perrone, 2008).

Just as attachment fits into the SCCT model (figure 5) as a type of person input that influences both proximal and distal contextual factors, the present study posits that career calling, college adjustment and life satisfaction also fit within the model in similar ways. Career calling has been described previously (Domene, 2012) as a type of learning experience that may be influenced by person inputs and background contextual factors, and that once it has been identified and perceived by the individual, can facilitate increased self-efficacy beliefs and outcome expectations. While previous research has not examined college adjustment within an SCCT framework, it may best fit within the model as both a learning experience, interest related goal, action, or outcome attainment. Secure attachment style has been found to predict college adjustment (Lapsley & Edgerton, 2002; Marmarosh & Markin, 2007; Wei et al., 2005), which is consistent with SCCT's model of person inputs influencing learning experiences. Furthermore, as college adjustment is realized, increased academic and life satisfaction have also been reported (Duffy, Allan, et al., 2012; Lent et al., 2014; Lent, Singley, Sheu, Schmidt, & Schmidt, 2007; Ojeda, Flores, & Navarro, 2011). Life satisfaction has also been conceptualized as fitting into the outcome attainments section of the SCCT model as described by Lent et al. (2007) and Singley, Lent, and Sheu (2010). Within college students, both academic and life satisfaction are considered outcome attainments that individuals realize as a product of meeting personal academic and career related goals. Subsequently, experiencing life

satisfaction further facilitates learning experiences, self-efficacy beliefs and future development and pursuit of individual goals (Singley, Lent & Sheu, 2010).

Based on the framework these two theories provide, the present study explored associations among attachment style, career calling, college adjustment, career-decision self-efficacy, and life satisfaction. The following literature review examined existing research pertaining to these five variables and the unique contributions of the study. The review also provided a foundation for the hypothesized models examined.

Attachment Style and College Adjustment

One of the first studies to extend the research on attachment styles in adults (Ainsworth et al., 1978; Hazan & Shaver, 1987) to college student populations was Kenny's (1987) investigation among first year college students. In a sample of 173 first-year residential undergraduate students, Kenny found that individuals with a secure attachment style experienced moderate to low separation distress, valued the continued relationship with their parents while away at school, and turned to their parents as a source of comfort and support when experiencing distress. Securely attached individuals also attributed their own sense of self-confidence to their relationship with their parents. These results lead Kenny to conclude that the college experience, specifically moving away from parents and transitioning into the college environment was akin to Ainsworth's (1978) research paradigm and could thus be considered as a second "strange situation." Thus, for securely attached individual, the parental relationship acts as a secure based which the college student can turn to, generally emotionally rather than physically, for support. Kenny's study was one of the first to investigate the potentially

adaptive role that attachment style can play during the college transition and adapting to the college environment.

In a follow up study, (Kenny & Donaldson, 1991) examined 226 first year-college students (173 female and 53 male) and found that secure attachment in women, but not men, predicted less anxiety over separation from parents, increased social competence, and lower levels of psychological distress. Men were found to be less attached to parents than women are, however, the authors note that this was likely due to the much smaller number of men in the study. Following this and other studies of attachment in college students (Bell, Avery, Jenkins, Feld, & Schoenrock, 1985; Kenny, 1990; Lapsley et al., 1990) an influx in attachment related literature occurred within the context of college student development. Traditional models of development (Erikson, 1968) described the psychosocial stages that occur for the individual throughout adolescence and early adulthood and emphasized the anxiety and distress one inevitably experiences when attempting to create identity and autonomy, during individuation and separation from one's parents. Attachment research began to suggest that complete separation from parents was not the most beneficial approach to creating identity, but rather that secure attachment bonds with one's parent could facilitate more positive and adaptive development.

This hypothesis of the beneficial aspects of secure attachment style was based partly on the idea that parental relationships can act as a "buffer" and protective factor against anxiety and stressful life events during early adulthood (Huebner & Betts, 2002; Petersen, Sarigiani, & Kennedy, 1991). As an extension of attachment theory from childhood (Bowlby, 1973), Kenny and Rice (1995) hypothesized that internal and

external supports, created by secure attachments to parents, enable more adaptive adjustments to college. External supports originate with the parent-child relationship in childhood, in which consistent and responsive parenting allows the child to feel safe and secure. This secure attachment style is thought to persist into early adulthood (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987), providing the transitioning college student with a supportive parental relationship to turn to in times of distress. Secure attachment styles also create a positive sense of self or internal working model (IWM) in which the individual considers him or herself as capable and worthy of relationships with others (Bowlby, 1969; Bretherton & Munholland, 2008). Thus, Kenny and Rice (1995) postulate that external relationship and internal IWMs act as protective factors in times of distress and facilitate positive coping skills, decreased anxiety and increased self-efficacy in meeting personal challenges (Kenny & Rice, 1995).

Parent attachment and college adjustment. Contemporary research has largely confirmed Kenny's 1987 extension of attachment style to the college environment. In a sample of 130 college students (78 male, 52 female M_{age} : 18.5 for freshman and 20.3 for upperclassman), Lapsley, Rice, and FitzGerald (1990) found secure attachment style to both parents and peers to be significantly related to identity development, and college adjustment among both freshman and upperclassman, without differences among gender. Holmbeck and Wandrei (1993) found that "the quality of family attachments plays a role in determining the level of adjustment in a college population", and that this relationship was true for both men and women. In their sample of 286 freshmen (104 male, 182 female, M_{age} : 18.29), the authors found that insecure attachment styles lead to difficulties in separation and adjusting to college such that men demonstrated more isolation, while

women showed increased depression, and enmeshment seeking. Larose and Boivin (1998) found that parent attachment style was consistent and stable throughout college and that secure attachment predicted positive expectations of college and less loneliness during the college transition, with no significant difference by gender. These results confirmed previous findings of the stability of parental attachment and the adaptive influence of secure attachment style that were demonstrated during a two-year longitudinal study of college students by Rice, FitzGerald, Whaley, and Gibbs (1995). In two studies ($n = 173$, $n = 170$) with college students, Vivona (2000) found that individuals with insecure parental attachment reported greater depression, anxiety, and worry than securely attached individuals. The study also found that insecure attachment style was associated with “diminished college adjustment and lower intimacy development” for women but not for men. In an effort to expand attachment style research to African American students, Hinderlie and Kenny (2002) examined a sample of 186 college students (100 women, 86 men, $M_{age} = 19.14$) that identified as “Black or African-American”, Caribbean, and biracial. Using multiple regression equations, the authors found that secure maternal and paternal attachment significantly predicted college adjustment, in some cases beyond the effects of on-campus social supports. These effects were consistent across gender in the sample and showed that attachment influence extended beyond the primarily Caucasian samples of previous research.

Further research examining the mechanisms of parent attachment and college adjustment was conducted by Mattanah, Hancock, and Brand, (2004) in which the authors utilized structural equation modeling to test the mediational role of separation-individuation. Utilizing a sample of 404 college students (158 male, 246 female, M_{age} :

20.57) the authors found that secure attachment to parents was associated with increased separation and individuation for the student, which was subsequently related to increased college adjustment. Previous research (Lapsley & Edgerton, 2002) had indicated that secure attachment predicted positive separation from parents, however this was the first study to investigate mediational relationship within the attachment-college adjustment relationship. Thus, from a developmental context, secure attachment is thought to predict positive and appropriate separation from parents, and identity formation on the part of the college student, thus facilitating positive expectations of college and better overall adjustment. These results were again confirmed by Hiester et al., (2009), indicating that for both men and women, secure parental attachment was related to increased self-competence, decreased psychological distress, and overall college adjustment.

Adult attachment and college adjustment. As research continued to examine the role of parental attachment in adjusting to college, several authors began to question if adult attachment style, that is one's attachment to romantic partners and peers, might be a more accurate and appropriate attachment relationship to use in adjusting to the college environment. Baker and Siryk (1984, 1986) were some of the first authors to create a measure of overall college adjustment and most college adjustment research today relies on their formulation (Credé & Niehorster, 2012). In their conceptualization, college adjustment is made of four distinct areas: academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment. Their measure, the Student Adaptation to College Questionnaire (SACQ) was the first to measure all four of these adjustment categories together, providing both individual subscale scores and a single full scale score for overall college adjustment (Baker & Siryk, 1984). Social adjustment, or

one's ability to create meaningful, positive relationships within the college environment, is seen as a critical aspect to the student's adjustment as a whole. Subsequently, research began to focus on one's social attachment as an adult, specifically within peer and romantic partner relationships.

Armsden and Greenberg's (1987) study and development of the Inventory of Parent and Peer Attachment (IPPA) was one of the first to begin empirically investigating differences in parent and peer attachment styles in adolescents and young adults. The authors based their study on Weiss's (1982) conceptualization of adult attachment in which older individuals begin to seek out attachment figures in emotionally significant relationships, rather than parents. Weiss suggested that this process of transition from seeking parental attachment support to peer attachment begins during adolescence. Using hierarchical regression, Armsden and Greenberg (1987) found that among their sample of 86 college students (32 male, 54 female, M_{age} : 18.6), secure parent and peer attachment predicted increased self-esteem and life satisfaction and decreased depression/anxiety and resentment/alienation. Peer, but not parent, attachment predicted irritability/anger and guilt. The authors concluded that attachment styles were highly consistent between parents and peers, with certain aspects of peer attachment accounting for additional influence than parent among college students.

Specifically related to college adjustment and using the SACQ, Lapsley et al. (1990) found that parent and peer attachment significantly predicted academic and personal-emotional adjustment in freshman students, and social adjustment and personal-emotional adjustment in upperclassman. Subsequent research has shown that securely attached individuals were more likely to perceive social support in their environment and

were more satisfied with it (Priel & Shamai, 1995). However, Lapsley and Edgerton, (2002) lamented that substantial research had identified the adaptive roles of parent attachment and college adjustment up to that point in time (Kenny & Rice, 1995; Larose & Boivin, 1998; Rice et al., 1995), but that still little research had examined adult attachment style among partners and peers, despite the prevalence of interpersonal and social distress in university counseling centers. Lapsley and Edgerton (2002) subsequently found securely attached college students demonstrated individuation from parents that was characterized by less resentment, guilt, and anxiety than insecurely attached students. Additionally, secure adult attachment was positively associated with increased social adjustment and personal-emotional adjustment during the college period.

Contemporary research has subsequently supported the findings that adult attachment style is as important, if not more important, than parental attachment during college and adulthood. Secure attachment within dyadic and group peer relationships has been found to predict increased social self-efficacy, the use of social supports, decreased loneliness and overall college adjustment (Mallinckrodt & Wei, 2005; Marmarosh & Markin, 2007; Wei et al., 2005). Recent literature has also examined the role of romantic partner attachment, specifically, in identity development. Ávila et al. (2012) studied 236 Portuguese university students (68 male, 168 female, M_{age} : 17.96) and found that the relationship between parent attachment and identity development was completely mediated by romantic partner attachment. Given that past research has implicated identity development as a key component to successful college adjustment (Mattanah et al., 2004), this study gives initial support to the influence of romantic partner attachment, beyond that of parents.

Based on the aforementioned research, both parental attachment and attachment to peers and romantic partners have important, adaptive functions in adjusting to college. In a meta-analysis of 156 studies between 1987 and 2009 ($N = 32,969$) Mattanah et al. (2011) found an overall small-to-medium effect size ($r = .23$) between secure parental attachment and favorable college adjustment outcomes. Effects sizes were similar across a range of demographic variables such as gender, ethnicity, and nationality of the sample. In a follow up study, Firsick and Wright (2014) conducted a meta-analysis comparing associations among parent and peer attachment, and college adjustment, as measured by the SACQ. The analysis was based on 12 studies ($N = 3017$) of parent attachment and 9 studies ($N = 1669$) of peer attachment. The study found a small, positive effect size of $r = .27$ for parent attachment, comparable to Mattanah et al.'s (2011) analysis, and also medium, positive effect size of $r = .37$ for peer attachment. The results suggested a comparable, if not stronger, role for peer attachment in overall college adjustment as measured by the SACQ. In examining the relationship among attachment style and college adjustment, both parent attachment and adult attachment have been found to play key roles in social development, interpersonal adjustment, and overall psychological wellbeing during the college period.

In assessing attachment style in adults, investigating romantic partner attachment has become one of the primary means of identifying individual attachment security. Research has shown that attachment relationships that form in adulthood, among intimate romantic partners, are the same types of attachment relationships that form within parent-child relationships (Brennan et al., 1998; Hazan & Shaver, 1987). While theoretically, attachment style to parents is expected to be closely related to attachment to romantic

partners in adulthood, research has found small to moderate correlations (approximately $r = .30$) between parental attachment and adult attachment (Fraley, 2002). Thus overlap certainly exists related to attachment style in parental and romantic partner domains, however a completely causal relationship has not been fully established (Fraley, 2002). The research in the preceding sections emphasizes the influential role that adult attachment style plays in facilitating successful adjustment to the college environment. As the present study is concerned with the influence of attachment relationships that are current and present for students while they are attempting to adjust to the college environment, current adult attachment style within interpersonal relationships was assessed as opposed to attachment style to parents. Thus, the ECR-R (Fraley et al., 2000) will be used to measure adult attachment style in the present study which is an updated and revised version of Brennan et al.'s (1998) ECR measure of adult attachment, one of the most widely used measures of attachment style in use today (Mikulincer & Shaver, 2007).

Attachment Style and Career Decision Self-Efficacy

Lent et al.'s (1994) social cognitive career theory (SCCT) identifies two levels of analysis that impact an individual's ability to attaining desired career outcomes. The first level, cognitive-person variables involve self-efficacy development, learning experiences, and goal setting which are all three necessary to promote personal action toward career development (Lent et al., 2000). The second level involves environmental variables such as physical predisposition, early life experiences, and the types of opportunities that one was afforded leading up to career selection and pursuit. Within the context of these distal environmental factors, SCCT posits that person inputs and background contextual

affordances directly impact cognitive-person variables such as learning experiences, which are believed to be the source of self-efficacy, and outcome expectations. Bandura (1977, 1997) described four types of learning experiences; personal performance accomplishments, vicarious learning, social persuasions, and physiological/affective states, which influence and contribute to the development of self-efficacy beliefs and outcome expectations of the future. Person inputs refer to those characteristics of the individual that are innate and relatively unchanging such as one's ethnicity, gender, health status or disability, intellect, and other predisposed talents or abilities (Lent et al., 1994, 2000) Environmental contextual affordances involve the environmental supports or barriers an individual has experienced throughout life. Examples such as the quality of one's educational experience, the opportunity to go to college, previous academic or career success or failures, limitations based on legal problems, limitations or benefits of socioeconomic status, and the presence or lack of supportive parent and/or role models are all aspects of one's background and experiential environment. Distal contextual factors are those influences that an individual is predisposed to or that influence the individual early in life, while proximal contextual factors occur at a specific time during adulthood and shape the types of interests, goals, and actions the individual engages in (Lent et al., 1994, 2000). Lent, Brown, and Hackett (2000) point out that both personal inputs and background contextual factors can act as supports in facilitating one's career development, or barriers preventing or otherwise impeding one's pursuit of a certain career. SCCT emphasizes the important role that individual agency plays in responding to supports and barriers such that, although one's personal attributes and background experiences are by no means the sole determinant resulting in one's future career, they do

play an important mediational role and influence the subsequent learning experiences, self-efficacy, and goal setting of the individual (Brown et al., 2000; Lent et al., 1994).

Regarding the environmental and contextual background influences an individual is exposed to, recent research has speculated that one's attachment style to parents early in life, and the subsequent adult attachment style that later emerges among peers and romantic partners (Hazan & Shaver, 1987), can impact the development of self-efficacy as described in SCCT. In a review of attachment and career related variables, Wright and Perrone (2008) identified 18 empirical studies from 1989-2005 that targeted attachment style and career variables, 17 of which reported significant results. Career decision self-efficacy was the most commonly studied career construct as related to attachment and the authors concluded that as a whole, secure parental attachment "provide a basis for career development" (p. 98). Ryan, Solberg, and Brown (1996) found that among 220 college students (111 male, 106 female, $M_{age}: 22.98$) both family dysfunction and parental attachment predicted career search self-efficacy beliefs in women, while only parental attachment was a significant predictor in men. In a longitudinal study from 1991-1995, among a sample of female college students ($N = 207$, $M_{age}: 22.22$), O'Brien, Friedman, Tipton, and Linn (2000) found that maternal attachment at time 1, and paternal attachment at time 2, directly affected career self-efficacy which subsequently affected career aspirations. Similarly, Tokar, Withrow, Hall, and Moradi (2003) used structural equation modeling to show that among 350 college students (150 male, 200 female, $M_{age}: 22.7$) those that experienced attachment anxiety, or insecure attachment, reported greater career indecision and less vocational self-concept crystallization than those with secure attachments. Wolfe and Betz (2004) used a sample of 304 college students (114 male,

190 female, M_{age} : 19.6) and found that secure attachment to parents and peers was associated with increased career decision-making self-efficacy and decreased career indecisiveness. These results have been further corroborated with more recent literature such as Vignoli (2009), Braunstein-Bercovitz (2013), and Wright et al. (2014), all of which suggest that secure attachment style is related to increased self-efficacy in the context of one's career and future decision making.

Furthermore, many of the same authors that have found positive associations among attachment style and career self-efficacy have also advocated for the role of integrating attachment style into career specific theories (Wright et al., 2014; Wright & Perrone, 2010). In applying SCCT specifically, Wright and Perrone (2010) used structural equation modeling in a sample of 374 college students (88 male, 283 female, M_{age} : 21.36) and examined the mediational relationship of social self-efficacy and career decision self-efficacy between attachment style and life satisfaction. The authors found that secure attachment style was associated with increased social and career decision self-efficacy, which were then associated with increased life satisfaction. Thus, self-efficacy within social and career domains were found to be partial mediators between attachment and life satisfaction and the model as a whole was found to be in support of using SCCT to conceptualize the role of attachment in career development.

Career Calling, Career Decision Self-Efficacy, and College Adjustment

Although relatively new to vocational research, the construct of career calling has gained increased attention from current researchers and has experienced substantial growth in academic literature over the last seven years (Duffy & Dik, 2013). One of the

first empirical studies of career calling was by Wrzesniewski et al., (1997) in which the authors examined variations between individuals who personally identified with having a job, career, or a calling. Three scenario vignettes were given to each participant ($N = 196$, 79% female, M_{age} : 42), and the participants indicated which scenario most closely fit with their current occupational position. The job scenario described working primarily as a means for financial stability and survival. These individuals did not feel personally fulfilled or particularly enjoyed their line of work. The career scenario described work as somewhat enjoyable, but primarily a means for personal advancement in which the individual is concerned with advancing in his or her career to attain higher income and prestige. The calling scenario described work as a meaningful aspect of the individual's identity, something the individual both enjoys doing and believes benefits other people and society as a whole. In their study, Wrzesniewski et al., (1997) found that the endorsement of each of the three occupational areas was relatively even across the three categories, but that individuals identifying with career calling were far less concerned about the amount of money they make in their job and much more concerned with their overall happiness and feeling as though their job was part of their identity. Personal satisfaction was found to be substantially higher among callings as compared to jobs, leading the researchers to conclude that life and work satisfaction are likely due to an employee's interpretation of his or her work, and the personal meaning assigned to such work, as opposed to income or prestige.

Wrzesniewski et al.'s (1997) study did not specifically define career calling and was concerned primarily with working adults and not college student populations. Early research on career meaning and calling was also focused primarily on adult, working

populations. Davidson and Caddell, (1994) offered another early study on perceptions and beliefs regarding career calling. The authors found that career calling was associated with beliefs in social-justice, higher levels of education, and higher personal beliefs and commitment to work. An additional component of this study was the emphasis the authors placed on religious beliefs as a determinant of perceptions of career calling. The authors indicated that considering one's self as being called to a particular occupation was based on a religious belief that work is part of one's identity and that career calling pertained to a religious view of work over a secular one. The authors constructed a sample ($N = 1869$) derived from 31 protestant and catholic congregations. The authors found that increased self-reported religious salience and participation in religious activities was associated with increased identification with career calling. The authors subsequently concluded that career calling, as a construct, was primarily religious based and most influential among religious populations. The Davidson and Caddell (1994) study was largely influential in labeling career calling as a religious aspect of vocational research and thus definitions of calling have frequently implied the individual's belief that he or she has been called by God to a particular line of work (Adams, 2012; Davidson & Caddell, 1994; Steger et al., 2010). Subsequently, contemporary research into this construct has debated first, the generalizability of career calling beyond religious populations, and second, the application of career calling beyond employed adult populations, and into academic and early adult domains (Duffy & Dik, 2013; Steger et al., 2010).

In a review by Adams (2012), he states that career calling has become particularly relevant to college counselors and professionals working with young adults due to the

developmental period corresponding to the traditional college age range for 18-24 year-olds. Authors like Erikson (1968) characterized young adulthood as a period of establishing identity and autonomy as separate from one's parents, creating meaning and purpose as an adult. More recently Arnett's (2000, 2007) theory of emerging adulthood has also emphasized the unique opportunities that early adult life often provides, allowing individuals to explore areas such as love, work, and personal beliefs, while avoiding the full range of responsibilities inherent to complete adulthood such as full-time work, marriage, or parenthood (Arnett, 2007). Adams (2012) emphasizes that creating meaning in one's work and life is a key component to finding overall satisfaction (Steger, Oishi, & Kashdan, 2009) and laments that since Viktor Frankl's work (Frankl, 1969, 1984) in Logotherapy and life meaning, this topic has been "ignored by social scientists until recently" (Steger et al., 2009, p.66). Part of the increased study regarding meaning and purpose in life and work has been spurred on by the application of career calling to college student populations and career development.

According to Duffy and Dik (2013), most academic literature on career calling has originated over the last seven years. Thus, the empirical foundation for this construct in the academic literature is small and there are several aspects of career calling that are only beginning to be examined or have yet to be examined at all. In an attempt to create a unified definition of the construct, Dik and Duffy (2009) proposed a three part definition that has come to be used as the primary definition of this construct in the literature. The authors stated that career calling is "A transcendent summons, experienced as originating beyond the self, to approach a particular life role in a manner oriented toward demonstrating or deriving a sense of purpose or meaningfulness and that holds other-

oriented values and goals as primary sources of motivation.” (p. 427) Three important aspects emerge from the Dik and Duffy (2009) definition of calling; first, motivation for work comes from an external or transcendent source (e.g., God, higher power, social needs, family legacy), second, congruence exists between one’s sense of meaning and purpose in life with meaning and purpose in one’s occupation, and third a focus on how one’s work may contribute to society in a positive way (Dik & Duffy, 2009; Duffy, Allan, et al., 2011). Calling to a particular career or line of work can originate from many different sources. One’s belief in social justice for instance, or a unique fit between one’s own skill set and a particular occupation, can be examples of a calling that originates beyond the self. Additionally, a key aspect of career calling based on Dik and Duffy’s (2009) definition, is the meaning one takes from a particular career. Career calling postulates that people find meaning and purpose, regarding identity and interactions with the world, through their line of work.

As a product of career calling’s small empirical base, relatively few measures of this construct exist. The most commonly used are the Brief Calling Scale (BCS, Dik et al., 2012), the Calling and Vocation Questionnaire (CVQ, Dik et al., 2012), the Neoclassical Calling Questionnaire (Bunderson & Thompson, 2009), and the Multidimensional Measure of Calling (Hagmaier & Abele, 2012). These measures also vary by operational definition and focus of assessment such as the presence of a calling, search for a calling, or experiencing a calling (Praskova et al., 2015). The CVQ and BCS are the most frequently used among these measures and defines calling from Dik and Duffy’s (2009) three-part definition above. As an example of variations in the focus of assessing this construct, the CVQ and BCS both contain two separate scales, the calling search and

calling presence scales. As described by several authors, these scales are actually used independently as separate experiential aspects of career calling, namely one's search for a career calling versus one's belief of having identified the presence of a calling in one's life (Dik et al., 2012; Duffy et al., 2013; Duffy, Allan, et al., 2012, 2011; Torrey & Duffy, 2012). Given this study's focus on the effects of career calling within current college student functioning and the presence of a calling in one's life, the calling presence scale provided the best theoretical fit in assessing this construct. Thus, the presence scale was utilized over the search scale in measuring career calling.

As mentioned previously, one of the primary issues pertaining to career calling is the religious connotations that have traditionally been applied (Davidson & Caddell, 1994). In an effort to directly assess the role of career calling among a sample of both religious and non-religious individuals, Steger et al. (2010) examined a sample of 242 college students that identified as holding both religious and non-religious beliefs. Using structural equation modeling, the authors found that the presence of a career calling in the individual's life was associated with greater frequency of positive affect, greater feelings of well-being, and supported the general hypothesis that experiencing one's career as a calling resulted in deeper levels of meaning and increased feelings of self-worth. In examining mediational variables between career calling and life satisfaction, religiousness was found to be a mediator for religious students, while life meaning was a mediator for both religious and non-religious students. Thus, the authors concluded that while career calling can fit within religious contexts, as spiritual beliefs can certainly be a motivator toward a particular career field, it is not exclusive to religious populations.

Career calling and career decision self-efficacy. Several studies exist examining the beneficial aspects of career calling for working adults, such as job satisfaction (Duffy, Foley, et al., 2012), increased purpose and meaning (Hirschi, 2012; Wrzesniewski et al., 1997), career commitment (Duffy, Bott, Allan, Torrey, & Dik, 2012), and life satisfaction (Bunderson & Thompson, 2009; Hirschi, 2012; Treadgold, 1999). Research has also begun to address the beneficial influence of career calling among college students as these individuals are often completing educational requirements in order to pursue certain career directions and may be first considering what career areas are most appealing and meaningful to them (Adams, 2012). Duffy and Sedlacek (2007) examined 3,091 incoming first-year college students and found that individuals who identified with the presence of a career calling had higher career decidedness, comfort with career choices, and self-clarity. The authors concluded that the presence of a career calling was associated with stronger career development, even at the beginning of one's college experience. In a large follow-up study ($N = 5,523$, 51% male, 49% female), the same authors found career calling to correlate with life satisfaction and life meaning within first-year college students (Duffy & Sedlacek, 2010). More than 40% of the individuals surveyed identified a career calling as mostly or totally true of themselves. This rate was slightly higher than previous research (Wrzesniewski et al., 1997), which found approximately 30% of working adults identified with a career calling.

In a study directly examining mediational pathways between career calling and academic satisfaction, Duffy, Allan, et al., (2011) utilized a multiple mediator model to assess three potential mediators; career-decision self-efficacy (CDSE), work hope, and meaning in life. In the sample of 312 undergraduate college students (100 male, 212

female, M_{age} : 19.47), the authors found that career calling significantly predicted CDSE and work hope, which subsequently predicted academic satisfaction. Career calling also maintained a significant direct effect on academic satisfaction, indicating that work hope and CDSE were partial mediators. These results were consistent with Dik, Sargent, and Steger's (2008) findings that career calling was positively correlated with career decision self-efficacy and positive career related outcome expectations among 225 college students. Domene (2012) found similar results related to the instrumental role CDSE plays in career related outcomes. In a sample of 855 Canadian undergraduate students (66.5% female, 33.5% male, M_{age} : 21.49) the influence of career calling on future career expectation was fully mediated by career decision self-efficacy such that both the presence of, and search for, a career calling was related to increased CDSE, which was subsequently related to more positive career expectations. Thus, the link between career calling and CDSE has been consistently supported in the research. Furthermore, Duffy and Dik, (2013) state that “college students who perceive a calling to a particular career tend to be more planful, confident, and decided in their career decisions, and more likely to expect positive outcomes for following a specific career path” (p. 430). In addition to its influence on self-efficacy, career calling has also been associated with aspects of positive adjustment and wellbeing among college students.

Career calling and college adjustment. In addition to describing the relationship between career calling and CDSE mentioned above, Duffy, Allan, et al.'s (2011) study also examined the relationship between career calling and academic satisfaction. The authors utilized a definition of academic satisfaction from Lent, Singley, Sheu, Schmidt, and Schmidt (2007) which specifically asked how satisfied college students were with

their selected major, academic life, coursework, and intellectual stimulation on a 7-item scale. Career calling was found to predict academic satisfaction both indirectly through the meditational influence of CDSE and work hope, and as a direct predictor of academic satisfaction. In a follow up study, Duffy, Allan, et al., (2012) used a sample of 472 college student (194 male, 278 female, M_{age} : 18.67) to again investigate the relationship between career calling and academic satisfaction, but in this case, academic satisfaction and life meaning were mediators between career calling and life satisfaction. Academic satisfaction was again measured using Lent et al.'s, (2007) 7-item scale. In this sample of college students, the authors found the career calling to life satisfaction relationship to be fully mediated by life meaning and academic satisfaction. Career calling demonstrated significant direct effects on life meaning ($r = .44$), academic satisfaction ($r = .36$), and life satisfaction ($r = .22$), but once life meaning and academic satisfaction were tested for meditational influence, the direct effect between career calling and life satisfaction was no longer significant. Thus, the authors concluded that for college students, having a career calling allows the individual to be more satisfied with his or her academic environment and helps to create personal meaning, which subsequently contribute to increased life satisfaction as a whole (Duffy, Allan, et al., 2012).

While both studies by Duffy, Allan, et al. (2012, 2011) provide important information regarding the influence of career calling among college students, they also underscore the relative paucity of research regarding the influence on college adjustment that career calling may have. In their introduction, Duffy, Allan, et al. (2011) state that “No studies to date have examined the link between calling and satisfaction with the academic domain” (p. 75). In their follow-up study, Duffy, Allan, et al., (2012) begin to

explore the influence of academic satisfaction, which is considered to be one aspect overall college adjustment (Baker & Siryk, 1984). Several studies have been conducted examining the influence of career calling on work domains such as work satisfaction, work commitment, retention rates, and career development in adults (Bunderson & Thompson, 2009; Duffy, Dik, & Steger, 2011; Hirschi, 2012; Wrzesniewski et al., 1997), and career maturity and development in college students (Dik et al., 2008; Domene, 2012; Duffy & Sedlacek, 2007; Hirschi & Herrmann, 2013; Steger et al., 2010). No research; however, has examined what effects career calling may have on overall college adjustment, beyond academic satisfaction.

College adjustment is often measured across several different domains. The most frequently used college adjustment measure, the student adaptation to college questionnaire (SACQ, Baker & Siryk, 1984; Credé & Niehorster, 2012), designates four separate subscales related to overall college adaptation; academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment. As compared to the college adjustment scale (CAS), another popular measure of college adjustment, the SACQ focuses primarily on the student's adaptation to academic, social, and emotional aspects of the college transition as well as the student's feelings of attachment to the institution. The CAS (Anton & Reed, 1991) in contrast examines the psychological aspects of college adjustment, such as anxiety, depression, and drug and alcohol use. Based on the SACQ's conceptualization of college adjustment as a whole, the career calling literature has only begun to investigate various aspects of academic satisfaction (Duffy, Allan, et al., 2012, 2011), which would most closely fit within the academic adjustment domain of the SACQ. Institutional attachment, one's perceived fit and

identity within the college environment, social adjustment, one's ability to create meaningful relationships, and personal-emotional adjustment, one's experience of psychological or physical distress (Baker & Siryk, 1984; Credé & Niehorster, 2012), are all additional areas of college adjustment potentially impacted by one's perception of a career calling. At this point, relatively little is known about how career calling may or may not influence these additional aspects of college adjustment. In a frequently cited study, Treadgold (1999) found that among 127 working adults (84 females, 42 males) individuals that reported they were engaged in meaningful work as a calling were associated with decreased stress, decreased depression, and increased self-clarity. This and other research on life and academic satisfaction in adult and student populations (Duffy, Allan, et al., 2012; Duffy & Sedlacek, 2010; Steger et al., 2010; Wrzesniewski et al., 1997) allows for generalization regarding the positive influence that career calling has on academic satisfaction. Specific college adjustment variables and behavioral antecedents related to having a calling (Duffy & Dik, 2013) have not been extensively studied, such as the impact of career calling on academic performance, psychological distress, or social development specifically during the college experience.

Influences of Career Calling, Self-Efficacy, and College Adjustment on Life Satisfaction

Career calling and life satisfaction. One of the most consistent findings across the career calling literature has been associations among calling and life satisfaction variables (Duffy et al., 2013). Wrzesniewski et al.'s (1997) early study on career calling among working adult populations found that individuals who identified their job as a calling were happier and experienced greater life satisfaction compared to those

identifying with work as a job or career, which was consistent with Davidson and Caddell's (1994) earlier findings. Bunderson and Thompson's (2009) qualitative study showed consistent themes of personal satisfaction and meaning that were derived from the individual's belief that his or her occupation provides personal identity and meaning. Peterson, Park, Hall, and Seligman, (2009) utilized Wrzesniewski et al.'s (1997) three categories of work as a job, career, or calling among a sample of 9803 working adults. The authors found that individuals who endorsed a career calling were also associated with higher levels of zest for life, work satisfaction, and life satisfaction. In a qualitative study of counseling psychologists who endorsed their line of work as a calling ($N = 8$, 4 male, 4 female), Duffy, Foley, et al., (2012) found individuals typically responded that their career provided a sense of fulfillment and generally stated that they felt blessed and fortunate in their lives due to their career calling. Torrey and Duffy (2012) also found that for both employed and unemployed individuals, having a calling was associated with increased life satisfaction as mediated by a more positive sense of self.

While the link between career calling and life satisfaction variables has been relatively consistent and straight forward for working adults, similar studies among college student samples have found more variability and the influence of career calling seemed to be much less pronounced. In one of the first studies to investigate the link between career calling and life satisfaction, Duffy and Sedlacek (2010) examined a large sample of 5,523 incoming first year college students (51% male, 29% female, M_{age} : 17.88). The authors found that while more than 40% of students believed a having a calling was "mostly or totally true of themselves" (p. 35), only moderate associations were found between career calling and life meaning ($r = .39, p < .01$) and only small

associations were found between career calling and life satisfaction ($r = .16, p < .01$). The authors acknowledged the differences in these results compared to the much stronger calling to life satisfaction link found in adult populations, and stated this difference is likely due to the variability in college students that were currently working. Career calling influence, once in the work force, may be different than within college settings when predicting life satisfaction.

To further investigate these results and the relative inconsistencies found between adult and college student populations as related to life-satisfaction, Duffy, Allan, et al., (2012) hypothesized that for college students, academic satisfaction may play an important mediational role. As mentioned previously, this study examined life meaning and academic satisfaction as mediators between career calling and life satisfaction. Both life meaning and academic satisfaction were found to fully mediate the relationship between career calling and life satisfaction. The authors concluded that perhaps during college, career calling might contribute to satisfaction and a sense of wellbeing within one's academic environment, which subsequently predicts satisfaction and wellbeing with one's life. Once the individual moves out of college, and into the work-force, career calling may more directly influence life satisfaction (Peterson et al., 2009). Interestingly, Hirschi and Herrmann, (2012) found that for a sample of German college students, ($N = 269$, 69.5% female, $M_{age}: 23.32$), career calling only indirectly predicted life satisfaction, through vocational identity development. The authors state that while career calling contributed significantly to increased vocational identity, which then predicted increased life satisfaction; it did not have a direct effect. Furthermore, the authors found that when vocational identity was low, the presence of a career calling actually had a negative

association with life satisfaction. The authors imply that perhaps for individuals with a low sense of vocational identity and development, having a sense of a career calling but being unsure as to how to attain it, may actually contribute to lower life satisfaction. Thus the relationship between career calling and life satisfaction in college students is complex and has been found to be mediated by such variables as academic satisfaction (Duffy, Allan, et al., 2012), life meaning (Duffy & Sedlacek, 2010), and vocational identity development (Hirschi & Herrmann, 2012).

Career decision self-efficacy and life satisfaction. From a career development perspective, SCCT (Lent et al., 1994, 2000) emphasizes the important role that self-efficacy domains, in addition to learning experiences and outcome expectations, have on interest development, goal pursuits, activity selection, and subsequent goal attainment and skill development. Lent (2004) posited that social-cognitive variables (e.g., career-decision self-efficacy) may contribute to the development of overall life satisfaction (Lent et al., 2007). In a study of 153 engineering students (124 men, 21 women, 8 unreported, M_{age} : 19.13), Lent et al., (2007) used path analysis to show that self-efficacy expectations were significantly related to outcome expectations, goal progress, and academic satisfaction. Academic satisfaction has subsequently been found to predict life satisfaction in other research with college students (Duffy, Allan, et al., 2012). Thus, the authors conclude that self-efficacy domains are important predictors of academic satisfaction within college students and the study as a whole provides empirical support for the use of the SCCT model within the academic context.

Research on Lent's (2004) social-cognitive model of academic and life satisfaction has received considerable attention in the literature. Several studies have been

conducted that examine the influence of social cognitive factors within college students. Singley, Lent, and Sheu (2010) examined 769 college students (500 female, 269 male) over eight weeks. Using structural equation modeling, the authors found that academic goal self-efficacy was significantly related to goal progress. Goal progress, was subsequently related to both academic and life satisfaction. Similar results were found in a sample of Mexican American college students ($N=457$, 58% female, 42% male, $M_{age}: 21.53$) in which college self-efficacy was significantly related to academic goal progress and academic satisfaction (Ojeda et al., 2011). Goal progress was also significantly related to academic satisfaction, which was subsequently related to life satisfaction. Within a sample of Portuguese college students ($N = 366$, 94 female, 271 male, $M_{age} = 22.91$), Lent, Taveira, and Lobo (2012) again found significant relationships from self-efficacy expectations to goal progress and academic satisfaction. Goal progress and academic satisfaction were subsequently related to life satisfaction as well. Finally in a sample of African college students from both Angola ($N = 241$) and Mozambique ($N = 425$), Lent et al., (2014) found self-efficacy to predict academic satisfaction though the influence of goal progress. Academic satisfaction then predicted overall life satisfaction. These studies give support to Lent's (2004) model of social cognitive influence in attaining life satisfaction and are also consistent with the tenants of SCCT (Lent et al., 1994, 2000). Self-efficacy as a construct is domain based and reflects an individual's beliefs about their own abilities within the context of a certain performance area (Bandura, 1997). Thus, many of the above studies examined self-efficacy in the context of academic self-efficacy or individuals' beliefs in their abilities within academic

contexts. Career decision self-efficacy can thus be considered a further extension of self-efficacy related constructs.

In a study specifically examining career decision self-efficacy as related to attachment style, social self-efficacy and life satisfaction, Wright and Perrone (2010) found that increased CDSE was associated with greater overall life satisfaction. As mentioned previously, the authors used structural equation modeling in a sample of 374 college students (88 male, 283 female, M_{age} : 21.36) to examine the mediational relationship of social and career decision self-efficacy between attachment style and life satisfaction. This study further supports applications of SCCT to the academic environment in addition to confirming previous findings by Lent et al. (2007). Both studies (Lent et al., 2007; Wright & Perrone, 2010) give evidence of the role self-efficacy plays in predicting life satisfaction, which is consistent with the tenets of SCCT (Lent et al., 1994). From a theoretical standpoint, SCCT posits that global life satisfaction is influenced by person variables, such as self-efficacy, in addition to satisfaction in various life domains (e.g., academic), goal pursuits and personal goal attainments (Lent, 2004). Thus, from an SCCT framework, it is most accurate to conceptualize the CDSE to life satisfaction relationship as one part of the larger system related to an individual's interests, goals, and actions.

The influence of self-efficacy domains, such as CDSE, within the SCCT model are hypothesized to influence several different social-cognitive areas. Lent et al. (1994, 2000) describe the self-efficacy expectations and outcome expectations to predict personal interests. All three of these variables subsequently predict goal setting, goal-directed activity, and eventual performance outcomes such as attaining, or failing to

attain, one's goals. Within the SCCT model, one's performance outcomes influence future self-efficacy beliefs and outcome expectations. Positive outcome attainments increase self-efficacy while negative outcomes may decrease self-efficacy and create negative expectation of the future (Lent et al., 1994, 2000). The aforementioned research by Lent et al. (2007) and Wright and Perrone (2010) support the specific links between CDSE and life satisfaction posited by SCCT, such that, as increased CDSE promotes further goal attainment and positive performance outcomes, individuals experience greater life satisfaction. Thus, a feedback loop is created in which life satisfaction is believed to further promote continued self-efficacy beliefs for the individual and positive outcome expectations, which continue to facilitate one's interests, goal setting, and goal directed activity in the future.

College adjustment and life satisfaction. College adjustment as a construct is broad, and many variables contribute to successful adjustment and transition into the college environment. In a meta-analysis on attachment and college student adjustment Mattanah et al., (2011) identified 120 separate and distinct dimensions of college student adjustment that have been used across the academic literature. Based on these dimensions, the authors identified five domains they believed most effectively defined college adjustment; academic motivation/competence, interpersonal competence, stressful affect/high-risk behaviors, self-worth, and developmental advances. However, Mattanah et al. (2011) also incorporated measures of affective change and personal distress that far exceed the domain of adjustment to the college environment. In examining specifically adaptation and adjustment to the college environment Baker and Siryk, (1984) postulate that college adjustment is best defined as related to four specific categories; academic,

social, personal-emotional, and institutional adjustment domains. As these authors theorized in their development of the SACQ, successful adjustment in these areas is expected to facilitate successful adjustment to the college environment as a whole. Thus, with respect to what constitutes college adjustment many different variables make up Baker and Siryk's (1984) four theoretical domains. It is also important to consider how college adjustment influences the student's perception of life satisfaction.

In first considering academic adjustment, Baker and Siryk (1984) emphasized the degree to which individuals have adapted to academic settings and reflect positive attitudes toward their academic responsibilities (Credé & Niehorster, 2012). In many ways Baker and Siryk's definition of academic adjustment is similar to the construct of academic satisfaction, which emphasizes the extent to which students are happy and satisfied with the academic aspects of their lives. Satisfaction, itself, can be conceptualized as domain specific and as such, one can be satisfied with one's life as a whole (i.e., life satisfaction), or with various aspects of one's life (e.g., academic satisfaction; Lent, 2004). Research has consistently shown that for college students, academic satisfaction, or from a college adjustment perspective, positive/successful adaptation to the academic environment, is a significant predictor of overall life satisfaction (Duffy, Allan, et al., 2012; Lent et al., 2007, 2014; Ojeda et al., 2011). Furthermore, research has also found that when students are experiencing stressful and difficult academic environments, such as during medical school, frustration or unhappiness within the academic environment is also associated with decreased satisfaction with life as a whole (Duffy, Manuel, Borges, & Bott, 2011).

Social adjustment is the second aspect of Baker and Siryk's, (1984) college adjustment framework and emphasizes the student's ability to effectively integrate themselves into the social structure of the college through creating friendships and becoming involved in campus activities. The previous section on attachment and college adjustment has described the beneficial aspects of secure peer attachment during the college transition and the positive effects that peer attachment can have on college adjustment. Authors like Lapsley and Edgerton (2002), Marmarosh and Markin (2007), and Wei et al. (2005) each found significant associations between secure attachment to peers and increased college adjustment and life satisfaction variables. Specifically examining social recognition and perceived support within the college environment, Stevic and Ward (2008) examined a sample of 204 college students (53% female, 42% male, M_{age} : 18.99) and found that individuals who experienced consistent recognition and praise from their peers had higher levels of life satisfaction which was subsequently related to increased personal growth. Thus, the authors concluded that peer support and encouragement played an important role in facilitating life satisfaction among students within the college environment.

The third aspect of college adjustment consists of personal-emotional factors and targets the psychological functioning of the individual such as experience of anxiety, response to stress, and general coping abilities (Credé & Niehorster, 2012). In a brief review of college student distress and functioning, Watson (2012) described recent research, implying that psychological stress and anxiety has increased substantially over the last several decades. Watson cites Sax (1997, 2003) in stating that from 1985-2002 college student identification as "frequently overwhelmed" has increased from 16%-27%.

As related to life satisfaction, specifically among college students, Renshaw and Cohen (2013) utilized a sample of 1,356 undergraduate students (65% female, 35% male, M_{age} : 19.18) and examined a two-continua model of mental health in which psychological distress and well-being are on separate, but related, spectrums. The authors found that students in the mentally healthy group, demonstrating minimal psychological distress, were associated with the best overall academic achievement and best overall physical health. The authors also found that students reporting moderate-to-high life satisfaction were associated with significantly less psychological distress than individuals in the low-to-mixed life satisfaction group. The authors concluded that life satisfaction within college student populations can be considered an indicator of adaptive interpersonal functioning, better physical health, increased academic achievement, and overall decreased psychological distress (Renshaw et al., 2013).

In a similar study investigating attention and concentration problems, ADHD related symptoms, depression, and anxiety, Gudjonsson, Sigurdsson, Eyjolfsdottir, Smari, and Young (2009) investigated a sample of 369 Icelandic college students (70% female, 30% male, M_{age} : 22.5 for males, 23.7 for females). The authors found that poor social functioning in male students and poor emotional control in female students significantly predicted poor life satisfaction overall. As related to problem orientation, problem solving, and coping, Zumberg, Chang, and Sanna (2008) examined 201 college students (53 men, 148 women, M_{age} : 19.71) and found that negative problem orientation, such as negative appraisals of problems in life and doubt in one's problem-solving ability, was inversely related to life satisfaction, overall psychological functioning, and physical functioning, beyond the influence of generalized self-efficacy. The authors concluded

that one's approach to life problems and beliefs in positive coping ability are important factors in predicting life satisfaction in college students (Zumberg et al., 2008). Finally, in a study by Jenkins, Belanger, Connally, Boals, and Durón (2013) the authors investigated coping abilities and psychological functioning related to life satisfaction in first-generation college students. The authors found that in a sample of 1,647 college students (563 men, 1084 women, *M_{age}*: 20.0) life satisfaction was inversely related post-traumatic stress symptoms and depression symptoms within the population as a whole. Additionally, the authors stated that first generation students reported increased depression and PTSD-related symptoms, decreased social support from family and friends, and decreased life satisfaction as compared to other college students. Jenkins et al. (2013) concluded that increased psychological and personal distress within this sample of college students was related to academic acculturative difficulties and that these variables as a whole related to decreased life-satisfaction and academic functioning in college. These studies provide evidence for the personal-emotional adjustment aspect of overall college functioning. Coping ability, stress management, and psychological functioning are all important predictors of life satisfaction within college students.

A final aspect of college adjustment as measured by the SACQ is institutional attachment, which is the individual's identification with the university community and the subsequent attachment and involvement that occurs within the college environment (Baker & Siryk, 1984). In a recent study by Townley and Katz (2013), sense of community was studied among a sample of undergraduate transfer college students. The authors defined institutional attachment as the students' sense of community or emotional belonging within a particular campus climate. The study also investigated the role of

behavioral engagement in academic and extracurricular activity and the role engagement played in facilitating sense of community. In a sample of 53 college students (31 male, 22 female) the authors found that students who reported involvement in academic and extracurricular activities and who experienced a greater sense of community performed better academically than students who were highly involved in activities but who experienced low sense of community (Townley & Katz, 2013). Thus, the role of community and the students' experience of fit within their academic environment was an important aspect of academic success (Townley & Katz, 2013). Similar results were found by Thompson, Orr, Thompson, and Grover (2007) in a sample of 220 first-semester college students (115 female, 105 male). The authors reported a significant relationship between increased university satisfaction and greater sense of belonging and institutional fit.

Other research has also examined the role of university fit and cultural variables. Constantine and Watt (2002) examined the role of cultural congruity, identity, and life satisfaction among African American women in predominantly white institutions. In a sample of 156 women (*Age*: 19.59), cultural congruity, identity development, life satisfaction, and university demographics were measured. The authors found that African American students at historically black colleges and universities (HBCUs) reported higher levels of cultural congruity and subsequently higher life satisfaction than African American students at predominantly white institutions. The authors concluded that the institutional climate of the university played a vital role in academic and social adjustment, in addition to the overall satisfaction, of college students (Constantine & Watt, 2002). The integration of cultural congruity into this study was important in

showing that institutional fit may involve more than creating social networks or becoming involved in academic or extracurricular activities. Developing cultural identity for the transitioning college student and subsequently navigating university environments that may not be culturally congruent is an additional aspect of institutional attachment that also contributes to life satisfaction. This study demonstrated that institutional attachment involving cultural congruity is associated with increased life satisfaction and decreased difficulty in adjusting to college.

Thus, the construct of college adjustment is broad and as the research has indicated, academic, social, personal-emotional, and institutional attachment variables all contribute to individual adjustment, academic performance and life satisfaction domains (Duffy, Allan, et al., 2012; Duffy, Manuel, et al., 2011; Renshaw & Cohen, 2013; Stevic & Ward, 2008; Townley & Katz, 2013). The SACQ provides a multi-dimensional approach to college adjustment and research has consistently validated the four previously described adjustment domains (Credé & Niehorster, 2012). As this literature review has shown, successful and adaptive transition to the college environment is closely tied to not only the academic satisfaction of the college student but to the overall life satisfaction of the individual.

Unique Theoretical Contribution

Adams (2012) lamented the lack of research that exists regarding the most effective ways of integrating career calling principles into career counseling with college students. Duffy and Dik (2013) indicated that one aspect of career calling research that has not yet been addressed is in regards to a theoretical understanding of this construct. These authors stated that, “theoretical models are needed to explain how calling links to

domain satisfaction and overall life satisfaction.” Attachment theory (Bowlby, 1969, 1972) and social cognitive career theory (SCCT; Lent et al., 1994, 2000) are prominent theories of interpersonal relationships, career development and behavior within the field of counseling psychology. SCCT provides insight for counseling psychologists to investigate both the innate, predispositions of the individual client, in addition to contextual supports and barriers, which influence the development of the individual’s self-efficacy, and further contribute to the goals and actions that lead to a career selection.

Regarding theoretical integration across attachment theory, career development, and career calling domains, promising new research is starting to emerge. Recent authors have suggested that attachment theory (Bowlby, 1969) can be conceptualized within an social cognitive career theory (SCCT) framework (Lent et al., 1994, 2000) through the person inputs that influence background contextual variables, which contribute to positive learning experiences, self-efficacy development, and positive outcome expectations (Wright et al., 2014). In this way, one’s relational style and ability both to parents earlier in life, and to peers as adults, contribute to the development and pursuit of career interest domains. Furthermore, Domene (2012) recently suggested that career calling as a construct may be best viewed through the lens of SCCT, stating specifically that “within this theoretical framework, calling could be conceptualized as part of the overall set of learning experience that influence people’s career outcome expectations” (p. 283). Domene (2012) found that career calling influenced career outcomes through the mediational relationship of self-efficacy beliefs. Therefore, as a learning experience, an individual’s identification and perception of a career calling, may increase self-efficacy beliefs and outcome expectations pertaining to that specific line of work (Domene, 2012).

Thus, based on the call to incorporate theory driven understanding of career calling (Duffy & Dik, 2013) and incorporating the suggestions of recent authors in attachment and vocational psychology domains, the current study was the first to create and analyze competing theoretical models integrating attachment theory, SCCT, and career calling together as one.

Summary

The aforementioned review has outlined the relevant academic literature as it currently exists, related to each construct area of the present study. Based on the SCCT model diagram in Figure 5, the current study examined attachment style as a personal input that contributes directly to the development of career calling, career-decision self-efficacy, and college adjustment. Career calling was investigated pertaining to its direct effects on career decision self-efficacy, college adjustment, and overall life satisfaction. Finally, the direct effects of career-decision self-efficacy and college adjustment on life satisfaction were also examined as portrayed in the primary research model (Figure 1). The integration of these variables into the current study's proposed research model and the subsequent application of attachment theory and SCCT to career calling has not been conducted previously in the literature and represents a unique and important contribution of this study to the vocational and counseling psychology literature as a whole.

CHAPTER III

METHODS

Attachment theory and SCCT (Lent et al., 1994, 2000) were used in the present study as theoretical foundations for examining relationships among attachment style, career development, and life satisfaction. The purpose of this study was to investigate the interconnected domains of attachment, career calling, career decision self-efficacy (CDSE), college adjustment, and life satisfaction in a sample of undergraduate college students. This study aimed to identify areas of therapeutic focus for counseling psychologists working with college students to develop their own sense of career calling and increase career related self-efficacy beliefs. This study was also the first to integrate attachment style and career calling within a career development framework and thus provided important practical applications to the career and college adjustment literature.

Design

The present study was a cross-sectional, survey-based design that used structural equation modeling (SEM) to measure current levels of attachment security, CDSE, career calling, college adjustment, and life satisfaction among college students. Specifically, a fully latent structural regression model was utilized. A variable that is not directly measureable or observable is considered a latent construct (Martens, 2005). In order to measure latent constructs, it is necessary to identify observable variables, that can be measured, and that are hypothesized to be theoretically related to the latent construct

(Kline, 2011; Weston & Gore, 2006). The accuracy with which a latent construct is measured is based on the strength of the relationship between that latent construct and the observable variables used to measure it (Weston & Gore, 2006). Six latent variables were used in the present study. Attachment anxiety, attachment avoidance, CDSE, career calling presence, college adjustment, and life satisfaction are all latent constructs that cannot be measured directly, and thus observable measures/indicators of similar variables that are theoretically related, were used to measure these constructs indirectly. The measures used to operationalize these five latent constructs are described in the instrumentation section below.

In conceptualizing the relationships among the aforementioned latent constructs, SEM was selected as the data analysis method due to the inherent ability of SEM to measure both direct and indirect effects between latent constructs and the ability to account for measurement error in each observed variable (Kline, 2011). A primary model was first developed to represent the hypothesized relationship among these constructs (Figure 1). An alternative structural model was subsequently developed (Figure 2) based on Jöreskog's (1993) recommendations for testing structural equation models and the importance of testing multiple a priori models (Kline, 2011). In his "Model Generating" recommendation, Jöreskog (1993, p. 295) described a situation in which a researcher may first propose a theoretical structural model, but in the event this model is not found to be a good statistical fit to the data, both re-specification of the original model, and testing of alternative models should occur, in order to find a model that is both a strong theoretical and statistical fit, and produces the most meaningful interpretation. Others have also discussed the importance of multiple model testing in searching for a parsimonious

explanation of the data (Kline, 2011; Loehlin, 2004). Thus, the present study first tested the statistical fit of the primary model (Figure 1) in which attachment style was hypothesized to influence CDSE, college adjustment, and life satisfaction, through a mediational relationship with career calling. CDSE and college adjustment were also hypothesized to directly influence life satisfaction as well. An alternative model (Figure 2) was subsequently tested in which, in addition to the indirect effects of attachment on CDSE, college adjustment, and life satisfaction through career calling, attachment style was also specified to have direct effects on CDSE and college adjustment. The alternative model also postulated that CDSE, career calling, and college adjustment would have direct effects on life satisfaction.

Participants

The participants for the present study were recruited from the undergraduate student population at a mid-sized, rocky mountain region, public, university ($N = \text{appx. } 13,000$). In an effort to establish a broad participant pool in regards to age, race, ethnicity, and gender, two primary inclusion criteria existed for the present study. Participants were required to be currently enrolled in university coursework and at least 18 years of age in order to consent to research participation. A total of 549 students completed the informed consent procedures, and initiated the study through the online survey website. After accounting for attrition, missing data, and outliers, a final sample of 433 participants was obtained. Detailed information regarding participant attrition, missing data, outliers, and assumption testing are reported in Chapter IV. The sample was comprised of 313 students identifying as female (72.3%) and 118 identifying as male (27.3%). One student identified as “agender/non-gender” and one student did not respond. Demographic

information regarding age, race/ethnicity, gender, years in college, major, parental education level and current relational status of participants as well as parents was recorded via the demographics questionnaire (Appendix A). Participant ages ranged from 18-55 years old (Mean = 21.45, Median =20.00, S.D. 5.24). Eighteen students did not report age. Reported ethnicities were comprised of 71.8% Caucasian, 13.2% Latino/a, 4.8% African American, 1.8% Asian, 1.2% Pacific Islander, 2.1% Native American and 1.4% chose not to answer. Self-reported text responses of ethnicity comprised 3.7% of the sample and represented additional unlisted ethnicities and various mixed/multiple race identities. All participants were undergraduate students, 94% had declared a major, and approximately 25.2% were freshman, 29.6% sophomores, 24.7 % juniors, and 18.9% seniors. Full demographic information including data pertaining to parent education level, parent marital status, and participant relationship status can be found in Table 1.

Instrumentation

Each measure used in the study was scored according to criteria specified through published guidelines by their respective authors (Baker & Siryk, 1989; Diener et al., 1985; Dik et al., 2012; Fraley et al., 2000; Solberg et al., 1994). Cronbach alpha coefficients were calculated for each measure based on the final sample size ($N = 433$) and reported in Table 2.

Table 1
Participant Demographics

Variable	N	%	Variable	N	%
Age Range (years)	18-55	-	Mother's Education Level		
Mean (S.D.)	21.45 (5.24)	-	Some High School	18	4.2
18-23	364	84.1	GED	9	2.1
24-30	30	6.9	Completed High School	80	18.5
31-35	7	1.6	Associates Degree	51	11.8
36-40	4	0.9	Some College	82	18.9
41-55	10	2.3	Completed College	122	28.2
No Response	18	4.2	Some Graduate School	5	1.2
Total Sample	433	-	Comp. Graduate School	57	13.2
Gender			Unknown	9	2.1
Male	118	27.3	Father's Education Level		
Female	313	72.3	Some High School	30	6.9
"Agender/non-gender"	1	0.2	GED	8	1.8
Ethnicity			Completed High School	107	24.7
Caucasian	311	71.8	Associates Degree	34	7.9
Latino/a	57	13.2	Some College	74	17.1
African American	21	4.8	Completed College	94	21.7
Asian	8	1.8	Some Graduate School	6	1.4
Pacific Islander	5	1.2	Comp. Graduate School	60	13.9
Native American	9	2.1	Unknown	20	4.6
Other	16	3.7	Parents' Marital Status		
"Prefer not to answer"	6	1.3	Married to each other	244	56.4
College Classification			Divorced	118	27.3
Freshman	109	25.2	Separated	13	3.0
Sophomore	128	29.6	Never Married	36	8.3
Junior	107	24.7	Other	22	5.1
Senior	82	18.9	Participant Relationship Status		
Other	7	1.6	Single	206	47.6
Declared Major			Dating	143	33.0
Yes	407	94.0	Living w/ a Partner	38	8.8
No	26	6.0	Engaged	20	4.6
			Married	17	3.9
			Divorced	6	1.4
			"Aromantic"	1	0.2
			"Separated"	1	0.2
			No Reponse	1	0.2

Attachment style. Attachment theory supports the notion that attachment style is a latent construct, which can be measured by assessing anxious and avoidant features of an individual's relationship quality within current attachment relationships (Fraley et al., 2000). Thus, the latent variable of attachment in the present study was measured using multiple indicators (Little, Cunningham, Shahar, & Widaman, 2002) based on the Experience in Close Relationships-Revised Scale (ECR-R; Fraley et al., 2000). The ECR-R is comprised of 36 items that are separated into two subscales, titled avoidant (18 items) and anxious attachment (18 items). Participants respond to each item, rating their level of agreement, based on a 7-point Likert type scale (1 “*strongly disagree*” to 7 “*strongly agree*”), in which higher scores on each subscale indicate greater levels of anxious and avoidant attachment style. The anxious subscale of the ECR-R assesses an individual's feelings of security related to the availability and responsiveness of romantic partners and a general fear of abandonment (Brennan et al., 1998; Fraley et al., 2000). Examples of items on the anxious subscale are “I'm afraid that I will lose my partner's love” and “When I show my feelings for romantic partners, I'm afraid they will not feel the same about me”. The avoidant subscale measures an individual's feelings of security related to being emotionally close to others, tendencies to avoid intimacy with significant partners, and general self-reliance (Brennan et al., 1998; Fraley et al., 2000). Examples of items from the avoidance subscale are “I find it difficult to allow myself to depend on romantic partners” and “It helps to turn to my romantic partner in times of need” (reverse scored). In administering the ECR-R, two subscale scores are derived for each participant, as attachment is scored on the two orthogonal subscales of anxious and avoidant attachment style. Participants scoring higher on these two subscales demonstrate greater

insecure attachment styles in their respective areas (i.e., anxious, avoidant), while participants with lower scores on both dimensions demonstrate greater secure attachment styles Fraley et al. (2000).

In a sample of 300 undergraduate college students, Sibley, Fischer, and Liu, (2005) reported strong internal consistency for scores on the ECR-R for both the anxiety ($\alpha = .93$) and avoidance ($\alpha = .94$) subscales with an undergraduate sample. These results were also consistent with other reported measures of internal consistency. Scores on the ECR-R were found to have internal consistency values greater than $\alpha = .90$ (Fraley, 2013) within a sample of 1,085 undergraduate students (age range = 16-50, median = 18; Fraley et al., 2000). Furthermore, in a sample of 142 undergraduate students ($M_{age} = 21.78$) Sibley and Liu, (2004) found scores on the ECR-R to have internal consistency values of $\alpha = .93$ and $.95$ respectively for the avoidance and anxiety subscales. The two factor structure of the ECR-R's avoidance and anxiety subscales proposed by Fraley et al. (2000) were replicated and confirmed through separate exploratory and confirmatory factor analyses by Sibley and Liu (2004), as was the test-retest reliability of the ECR-R, in which the authors reported that at 6-week follow-up, latent variable path analysis found approximately 86% shared variance by each subscale (Sibley & Liu, 2004). The convergent validity of the ECR-R has also been established through significant correlations with other measures of attachment, such as the Relationship Questionnaire (RQ, Sibley, Fischer, and Lui, 2005). When compared to attachment-related constructs, the avoidant subscale of the ECR-R was found to correlate positively with touch avoidance and loneliness, and negatively with affectionate proximity and social support, while the anxiety subscale correlated positively with loneliness and relationship worry,

and negatively with social support (Fairchild & Finney, 2006). Thus the ECR-R is considered one of the most accurate self-report assessments of adult attachment and has been used extensively among college student samples (Sibley et al., 2005; Sibley & Liu, 2004). Similar internal consistency values were found for the anxious and avoidant subscales of the ECR-R in the present sample. Each subscale was converted to three, six-item parcels as indicators for the latent constructs of anxious and avoidant attachment (see Identification section below for more information on item parceling). Alpha coefficients for the three attachment anxiety parcels were $\alpha = .83, .83, .85$, while alpha coefficients for the attachment avoidance parcels were $\alpha = .85, .86, .85$.

College adjustment. The present study utilized the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984, 1986) as a measure of the latent construct of college adjustment. The SACQ is a 67-item self-report measure of college adjustment that assesses four domains: academic adjustment, social adjustment, personal-emotional adjustment and institutional attachment. Each item presents a statement with which the participant indicates his or her level of agreement on a 9-point Likert type scale (1- “*Applies very closely to me*” to 9- “*Doesn’t apply to me at all.*”) The items are aggregated to give both subscale scores and a full-scale college adjustment score with higher scores indicating better overall college adjustment. Academic adjustment refers to the individual’s ability to adapt to the academic expectations and demands of the college environment. Social adjustment is the individual’s ability to create new social networks and relationships throughout college. Personal-emotional adjustment pertains to the individual’s ability to adjust emotionally in terms of identity formation, finding meaning, and developing personal character during college. Finally, institutional attachment

references the individual's feelings of attachment, commitment, and general fit within the university setting. Sample items of the subscales include: "I have been keeping up to date on my academic work", "I am meeting as many people and making as many friends as I would like", "I have been feeling tense and nervous lately", and "I feel that I fit in well as part of the environment."

The reliability and validity of the SACQ was examined using two different college student samples totaling approximately 494 college students (Baker, McNeil, & Siryk, 1985). Based on this sample, internal consistency was measured for each of the four subscales scores and found to range from $\alpha = .84-.88$ for academic adjustment scores, $\alpha = .90-.91$ for social adjustment, $\alpha = .81-.85$ for personal/emotional adjustment and $\alpha = .90-.91$ for institutional attachment. The full-scale internal consistency score was found to range from $\alpha = .93-.95$. Across the four subscales, intercorrelations ranged from $r = .36-.87$. Higher correlation values were found between social adjustment and institutional attachment due to an overlap of several shared common items. Despite the high correlation, several authors have described the important theoretical distinction between social adjustment and institutional attachment that these subscales provide and have thus concluded that while they may be related constructs, retaining these subscales as distinct is critical to the overall assessment of college adjustment (Baker et al., 1985; Credé & Niehorster, 2012). In a meta-analytic review of 237 studies utilizing the SACQ from the mid-1990's to 2010 ($N = 44,668$), Credé and Niehorster (2012) found the predictive validity of the SACQ to be particularly strong for college GPA, accounting for 29.1% of the variance in their sample. The institutional attachment subscale was the strongest predictor of student retention, beyond SAT scores, accounting for 13.8% of the

variance in retention status. Convergent validity was also demonstrated by the significant positive correlations that were found between college adjustment and conscientiousness, self-efficacy, locus of control, self-esteem, positive emotionality, low negative emotionality, low depression, proactive coping, and social support (Credé & Niehorster, 2012). Similar internal consistency values were found in the present sample. Each subscale was converted to four individual indicators for the latent construct of college adjustment with the following alpha coefficients; Academic Adjustment, $\alpha = .89$; Social Adjustment, $\alpha = .89$; Personal-Emotional Adjustment, $\alpha = .87$; and Institutional Attachment, $\alpha = .87$.

Career calling. The latent construct of career calling was measured using the Career Vocational Questionnaire (CVQ; Dik, Eldridge, Steger, & Duffy, 2012) as a measure of career calling; three indicators were used for this latent variable. The CVQ is a 24-item self-report measure that assesses both the presence of and search for three dimensions of career calling; transcendent summons, purposeful work and prosocial orientation. Thus, the CVQ is a multidimensional assessment of career calling with six individual subscales, containing three items each, representing the presence and search for each of the three dimensions in the participant's life. The CVQ asks the participant to read each item and indicate, on a 4-point Likert type scale, how true the given statement is for the individual's own life (1- "*Not at all true of me*" to 4- "*Absolutely true of me*"). Two CVQ scale totals are then calculated from the aggregated response set, the first assessing the presence of a career calling and the second assessing the search for a career calling in the individual's life. Higher scores on the presence subscale indicate greater presence of a career calling in the participant's life, while higher score on searching

indicant a greater emphasis on searching for a calling in the participant's life. Sample items include "I believe that I have been called to my current line of work", "The most important aspect of my career is its role in helping to meet the needs of others", and "I see my career as a path to purpose in my life" (Dik et al., 2012). The calling search and calling presence scales are calculated separately and constitute theoretically separate constructs and can thus be used in tandem or individually to assess the presence of a career calling in an individual's life and/or one's active searching for a career calling (Dik et al., 2012).

In a sample of 456 college student participants, the CVQ was found to have internal consistency scores for each of the six subscales ranging from $\alpha = .83$ -.93, the CVQ-Presence total score had an internal consistency score of $\alpha = .89$, while the internal consistency for the CVQ-Search total score was $\alpha = .87$ within an undergraduate student sample (Dik et al., 2012) One month test-retest reliability scores ranged from $r = .60$ -.67 (Dik et al., 2012). The CVQ has been found to have strong convergent validity with the Brief Calling Scale (BCS), $r = .69$ for presence of a calling and $r = .46$ for searching for a calling (Dik et al., 2012). CVQ presence of a calling was also significantly correlated with the Wrzesniewski Calling Paragraph ($r = .27$, Wrzesniewski et al., 1997), the Work Hope Scale ($r = .35$, WHS; Juntunen & Wettersten, 2006), the Prosocial Work Motivation Scale ($r = .54$, Grant, 2008), and the Meaning of Life Questionnaire (MLQ, Steger, Frazier, Oishi & Kaler, 2006) Presence subscale ($r = .50$, Dik et al., 2012). Internal consistency values were calculated for the present sample. Alpha coefficients for the three subscales of the Calling Presence scale were $\alpha = .67$, $.76$, $.81$ while alpha coefficients for the three subscales of the Calling Search scale were $\alpha = .80$, $.78$, $.85$. As

described further in chapter four, the current study emphasized the influence of career calling on college student experience as a present phenomenon in the student's life, and thus the calling presence scale was used over the calling search scale. Thus, the latent construct of career calling was comprised of three indicators, represented by the three subscales (i.e., transcendent summons, purposeful work and prosocial orientation) of the Calling Presence scale.

Career decision self-efficacy. The Career Search Efficacy Scale (CSES; Solberg et al., 1994) was used to measure the latent construct of career decision self-efficacy in the present study. The CSES is a 35-item self-report measure that consists of four individual subscales: Job Search efficacy (14 items), Interviewing efficacy (8 items), Networking efficacy (8 items), and Personal Exploration efficacy (5 items). Participants indicate their level of confidence regarding each item on a 10-point, Likert type scale ranging from 0 (*very little*) to 9 (*very much*). Each item begins with the statement, "How confident are you in your ability to:" followed by the participant's response regarding his or her level of confidence in the aforementioned areas (Solberg et al., 1994). Higher subscale scores indicate increased confidence in the respective area with higher total scores indicating increased overall career decision self-efficacy. Example items are "Identify the resources you need to find the career you want", "Identify and evaluate your career values", and "Market your skills and abilities to others" (Solberg et al., 1994).

In a sample of 192 college students, scores on the CSES were found to have internal consistency values of $\alpha = .97$ (Full scale), $\alpha = .95$ (Job Search efficacy), $\alpha = .91$ (Interviewing efficacy), $\alpha = .92$ (Networking efficacy), and $\alpha = .87$ (Personal Exploration efficacy). Convergent validity for the CSES was established using the Career Decision

Making Self-Efficacy Scale (CDMSES; Taylor & Betz, 1983). Pearson correlations between the four subscales of the CSES and the five subscales of the CDMSES ranged from $r = .48-.73$ (Solberg et al., 1994), which suggest strong convergent validity. Both the CSES and the CDMSES have internal consistency scores above $\alpha = .95$ with undergraduate samples, indicating that both measures have strong internal consistency (Solberg, 1998). The present study found similar internal consistency scores for each subscale; $\alpha = .96$ for Job Search efficacy, $\alpha = .93$ for Interviewing efficacy, $\alpha = .93$ for Networking efficacy, and $\alpha = .88$ for Personal Exploration efficacy. The four CSES subscale mean scores comprised the four indicators used to measure the latent construct of CDSE (Little et al., 2002).

Life satisfaction. The latent construct of life satisfaction was measured using the Satisfaction With Life Scale (SWLS; Diener et al., 1985). The SWLS is a five-item measure of global life satisfaction. Participants are asked to respond to five statements, indicating their level of agreement on a 7-point Likert type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate increased overall life satisfaction. Sample items are “In most ways my life is close to my ideal”, “I am satisfied with my life”, and “If I could live my life over, I would change almost nothing” (Diener et al., 1985). In a sample of 176 undergraduate college students, the SWLS was found to have an internal consistency score of $\alpha = .87$ and a two month test-retest reliability score of $r = .82$. Convergent and discriminant validity for the SWLS was established based on Pearson correlations with other measure of subjective wellbeing such as the Positive Affect Scale (PAS, $r = .50$) and the Negative Affect Scale (NAS, $r = -.37$) of Bradburn’s (1969) Affect Balance Scale. Recent authors have found that multi-item scales of life

satisfaction, such as the SWLS, possess strong internal consistency and are particularly stable over time, ranging from a few weeks to several years (Diener, Inglehart, & Tay, 2012). Overall internal consistency of the SWLS in the present sample was $\alpha = .872$ which was nearly identical to previous research by Diener et al. (1985). The five items of the SWLS will compose the five indicators of the latent construct of life satisfaction in the present study (Diener et al., 1985).

Procedures

Prior to recruiting participants and starting data collection, the present study was submitted to the University of Northern Colorado's Institutional Review Board (IRB) for institutional review and approval (see Appendix B for IRB Approval Letter).

Participant recruitment. Participants were recruited in several ways. First, students were notified of the present study through the School of Psychological Sciences Participant Pool (SONA) at the University of Northern Colorado (UNC). The SONA system provides a forum in which students login to their own private account, review available research studies in need of participants, sign up to be a participant, and locate study information. Once the student signed-up for the present study, an email was sent to the student which thanked the participant for his or her willingness to participate and provided a link to the online survey website. All data for the present study was collected via an online survey website, (i.e., Qualtrics.com). The student then clicked on the survey link and was redirected to the survey website. Students that participated in the SONA system received class research credit in participating psychology courses. The SONA system automatically awards credit to the student upon participation in the study survey.

Students were also recruited through the Office of Research at the University of Northern Colorado. The present study was authorized to use a random sample of undergraduate students and a list of 1700 email addresses was generated by the Office of Research and provided for recruitment purposes. Recruitment emails were subsequently sent to each student email address provided with a link to the survey website and an invitation to participate in the study (See Appendix E for recruitment email). Participants clicked on the survey link and were redirected to the Qualtrics survey website. Other means of recruitment were offered by contacting undergraduate instructors and providing brief presentations regarding the study in class. Participants whose instructors agreed were also given course credit for participation.

Students not recruited through the SONA system were given the choice to be entered into a random drawing for a \$50.00 Visa gift card. Additionally, three drawings for \$5.00 Visa gift cards were offered to the first 200 participants that completed the study. All students, regardless of recruitment method, were first presented with an informed consent page upon logging into the survey website, which was completed prior to participation.

Informed consent procedures. When participants accessed the survey website on Qualtrics.com, they were first presented with the informed consent information for the study (Appendix C). The informed consent procedures required by the IRB were conducted online in which the participants were informed that their participation in the study was completely voluntary, that no identifying information was recorded, and that they may discontinue participation at any time. No foreseeable risks existed for participants beyond the normative anxiety or discomfort associated with test-taking

procedures or classroom activities. Participants were informed of potential benefits of the study including: increased awareness and consideration of future career goals, personal career callings, attachment relationships, self-efficacy beliefs, current feelings of college adjustment, and overall feelings of life satisfaction. The informed consent page also described for the participants the manner in which data were stored. All participant information was kept in a password-protected data file that was saved on a password-protected hard-drive. No identifying information was collected that linked a participant's identity with his or her subsequent responses. Participants were also made aware of the various incentives available for participation. At the end of the online survey, participants were directed to a separate page and given the option to enter an email address if they wanted to participate in the random incentive drawings. The email address was used to contact the winners of the drawings. A link was provided on this page that linked the participant to a secondary online survey where an email address was entered for participation in the drawings. By utilizing this two-survey system, the participants' responses to the study questionnaires were kept completely separate from the subsequent email address entered for participation in the incentive drawings. As a final aspect of the informed consent procedure, upon completion of the online survey and after given the option to submit an email address, each participant was presented with a debriefing page that outlined the purpose of the study, provided a brief description of each of the study's constructs, and listed this researcher's contact information in the event that future questions or concerns occurred.

Survey construction. Each of the measures described previously were adapted to fit a web-based survey format. By utilizing a survey website, (i.e. Qualtrics.com), all

survey measures were structured in such a way that participants read each item and respond by clicking the appropriate response option that corresponded to the Likert scale presented for each measure. Each item required a response to be entered by the participant before the next survey page would load (i.e. forced completion), with the exception of the SACQ, in an effort to prevent missing or incomplete responses. In constructing the participant response pages, each survey questionnaire's online appearance was formatted to be as consistent as possible with the questionnaire's original paper-based format. The Career Search Efficacy Scale, however, (CSES; Solberg, 1994) was modified to a 9-point Likert-scale response, due to survey error. Internal consistency between the original and modified CSES versions was maintained as displayed in the Instrumentation section above. Additionally, recent authors (Jones & Loe, 2013) have found that number of response options had little to no impact on the reliability or predictive utility of a measure of core personality traits. Dawes, (2008) further states that scale sizes between 5, 7, and 10 points are comparable especially when using structural equation modeling. Thus, the modified version of CSES can be considered comparable to the original.

The Qualtrics website generates a unique URL web address that links the participant directly to the survey materials. As participants completed the survey measures, Qualtrics collected and saved each participant's responses digitally and provided an aggregated data file, which was downloaded for statistical analysis. In this way, no paper test materials were used in the present study, no identifying information was linked to responses, and no physical study measurements were distributed. Once data collection had been completed, the survey data were downloaded to a password protected

hard drive for analysis by the researcher. In order to control for question order effects, the survey website randomized the order in which participants were presented each construct measure. In this way, influence or bias in participant reporting based on the answers to early survey responses was controlled for through randomization (Rasinski, Lee, & Krishnamurty, 2012). Furthermore, IP addresses and demographic information were reviewed for each completed survey to detect duplication of responses.

Data collection and sample size. Online, survey-based data collection has been found to be an effective research method among college student populations. As part of the Pew Research Internet Project, Smith, Rainie, and Zickuhr (2011) investigated a large sample ($N = 9,769$) of 18-24 year olds and found that 98% of undergraduate students utilize the internet in some form and that 92% of undergraduates utilize wireless internet via a laptop or mobile phone. Regarding online survey research, LaRose and Tsai (2014) found that among 600 undergraduate students that received an emailed survey invitation containing a direct link to the online survey materials, 14% of students completed the survey without any incentive for participation, while 22.5% completed the survey when given the opportunity to be entered into a drawing for a \$50.00 Amazon.com gift certificate. These response rates are similar, but slightly lower, than those reported in a meta-analysis of web and mail surveys by Shih and Fan (2008). These authors reported that among 39 studies, college students were more likely to respond to web-based surveys compared to mail-in surveys and that web-based surveys had an average response rate of 34%. Thus, based on the high frequency with which college students use the Internet and the increased likelihood for responses to web-based surveys compared to mail-in surveys

among college students, the present study chose to utilize a fully internet-based recruitment and survey strategy for data collection.

In utilizing structural equation modeling (SEM), recommendations regarding appropriate sample size have varied (Kline, 2011; Martens, 2005; Weston & Gore, 2006). A more conservative view stipulates that approximately 10-20 participants are needed for each parameter of a proposed model. Jackson (2003) recommended the use of the $N:q$ rule, in which N represents the number of participants and q represents a single model parameter. Research has found that a ratio of 20:1 is an ideal size-to-parameter ratio (Jackson, 2003). However, a 20:1 ratio may be difficult to obtain and recent literature has echoed these concerns; thus, other suggestions regarding sample size also exist. For example, Kline (2011) describes using a 10:1 sample size-to-parameter ratio as adequate for most structural equation models. Although no one rule is considered absolute, many authors are in agreement that as a minimum, at least 200 participants should be used when conducting SEM (Kline, 2011; Loehlin, 2004; Martens, 2005; Weston & Gore, 2006) and this number may be more appropriate for less complex models. Thus, the present study considered a sample of 350-400 participants to be ideal, while setting a minimum threshold of 200 participants to be obtained, in order to provide sufficient statistical power (Martens, 2005; Weston & Gore, 2006).

Data Analysis

Kline (2011) has suggested several steps should be utilized in the conducting and reporting of SEM procedures. Based on these recommendations, the five following steps were conducted in carrying out SEM analyses in the present study. In step one, model specifications are discussed, step two, the primary and alternative models are identified,

step three, rationale for measurement selection is described and data is analyzed for any possible violations of SEM assumptions or complications in the data. Step four describes the estimation of the model and respecifications, and step five reports the results of the primary and alternative model fit, path/structural coefficients, and parameter estimates.

Specification. Two a priori models were specified for the current study. Both the primary and alternative structural models are theoretically based on the latent constructs of attachment style, career calling, CDSE, college adjustment, and life satisfaction, described in detail in chapter two. The pairwise relationships between each of these variables has been thoroughly documented in the research and described throughout the previous two chapters. The unique aspect of this study, however, was that no prior research has integrated both attachment theory (Bowlby, 1969, 1973) and career calling (Dik & Duffy, 2009), within an social cognitive career theory (Lent et al., 1994) model framework. Utilizing structural equation modeling for this study was ideal as it allowed both the overall fit of the primary and alternative models to be analyzed in addition to investigating the direct and indirect effects of each latent construct, individually, within each model, as well as accounting for measurement error.

The primary theoretical model (Figure 1) proposed that attachment is an exogenous variable that directly and positively influences career calling. Career calling was hypothesized to be an endogenous variable with direct, positive effects on CDSE (Dik et al., 2008; Duffy, Allan, et al., 2011), college adjustment (Duffy, Allan, et al., 2012, 2011), and life satisfaction (Davidson & Caddell, 1994; Duffy & Dik, 2013; Peterson et al., 2009; Wrzesniewski et al., 1997). Furthermore, CDSE (Lent et al., 2007; Lent, 2004; Singley et al., 2010) and college adjustment (Duffy, Allan, et al., 2012; Lent

et al., 2014; Ojeda et al., 2011) were considered endogenous variables with direct, positive effects on life satisfaction as well. Thus, the primary model proposed an indirect effect from attachment style to life satisfaction via the mediational role of career calling, which was subsequently hypothesized to influence life satisfaction directly and indirectly through mediational relationships with CDSE and college adjustment.

The alternative model (Figure 2) was hierarchically related to the primary model, building upon it by including two additional effect pathways (Kline, 2011). While including the pathways described above, the alternative model also included positive, direct effects from attachment to CDSE and college adjustment. The alternative model accounted for additional research describing the positive influence that secure attachment style has on CDSE (Braunstein-Bercovitz, 2013; Ryan et al., 1996; Tokar et al., 2003; Wolfe & Betz, 2004) and college adjustment (Lapsley & Edgerton, 2002; Lapsley et al., 1990; Mallinckrodt & Wei, 2005; Wei et al., 2005). Thus, attachment style was hypothesized to have direct and indirect effects on CDSE and college adjustment through the mediational role of career calling. Both models were consistent with the theoretical foundation of the current study based on attachment theory and SCCT. While the primary model was a more parsimonious account of how each construct is theoretically related, the alternative model provided an equally plausible theoretical justification among the latent variables.

Identification. Related to structural equation modeling, identification refers to the property of the model that ensures a unique set of model parameters can be estimated when the SEM procedure is conducted (Kline, 2011; Little et al., 2002). In identifying structural equation models, two aspects of the model must be assessed, the measurement

part of the model assesses how well the model's structure fits the collected/observed data, and the structural part of the model assess how well each individual latent construct relates to one another based on the proposed direct and indirect effects. The minimum criteria for an identified model in SEM is that first, the model degrees of freedom is greater than or equal to zero ($df_M \geq 0$), and second that every latent variable is assigned a scale as a reference point and includes multiple indicators (Kline, 2011). The models in the present study met both of these criteria; specifically, the primary and alternative model contained degrees of freedom that were greater than zero. Furthermore, both models can be considered over-identified because more observations exist than estimated free parameters (Kline, 2011). The second criteria of assigning each variable a scale was fulfilled by utilizing a unit loading identification (ULI) constraint that intentionally assigns the direct effect of one path coefficient of one measure indicator for each latent variable to one (Kline, 2011). This technique creates a reference variable in measuring each latent construct (Kline, 2011). In addition to these minimum criteria, the measurement part of the model is considered identified because each latent construct is measured by at least two indicators and the structural part of the model is considered identified because the model as a whole is a recursive model based on the single direction of the proposed construct effects (Kline, 2011).

Both models in the present study were fully latent structural regression models because each construct was a latent variable and multiple indicators measured each variable. As described previously, latent constructs are not, in and of themselves measurable, and thus observable indicators that are measurable are used to estimate the latent construct (Martens, 2005). In measuring the five latent constructs in the current

study, item parceling was used when needed. Parceling is a technique in which items in an overall measure that are assumed to be homogeneous and reflecting a common unidimensional domain, are grouped together into separate sets or groups of items (Kline, 2011). Rather than analyzing several items as individual indicators, parceling places these items into larger groups, reducing the overall number of indicators needed. As described further under Model Estimation below, confirmatory factor analyses (CFA) were used to measure the statistical fit between each construct indicator and the corresponding latent construct as a whole. Kline (2011) describes two cases of problems that often occur in measurement CFA. Indicators of a latent factor may demonstrate better fit with a different construct or may be closely related to each other and thus benefit from an added covariance pathway. Factors might also be found to have too few indicators, too many, or have indicators that load poorly, and thus measurement fit would be improved with the addition or removal of specific indicators in a model. CFA procedures in the current study were first conducted individually for each latent factor, in addition to an overall CFA including all latent factors. Respecifications were utilized when needed and are detailed further in Chapter IV.

In measuring the latent construct of college adjustment, the four subscales of the SACQ (Baker & Siryk, 1984) were initially specified as the four factor indicators of the construct. After respecifications, a covariance pathway was added between Institutional Attachment and Social Adjustment to better reflect theoretical similarities and to improve model fit. In measuring the latent construct of CDSE, the four subscales of the CSES (Solberg et al., 1994) were used as the four indicators of the latent construct. A covariance pathway was also added between the Job Search and Personal Exploration

indicators to improve model fit. In measuring the latent construct of career calling, the three subscales of the CVQ-Presence scale and the three subscales of the CVQ-Search scale (Dik et al., 2012) were initially hypothesized as the six indicators of the construct. After conducting the initial CFA, the CVQ-Search scale was removed, and the CVQ-Presence scale was retained as it provided a better representation of the influence of career calling as a present phenomenon in the life of college students (See Chapter IV). Several authors have provided evidence of utilizing the presence scale over the search scale when assessing the influence of one's current experience of career calling in one's life (Dik et al., 2012; Duffy et al., 2013; Duffy, Allan, et al., 2012, 2011; Torrey & Duffy, 2012). The CVQ is designed to investigate both aspects of this construct and theoretically career calling presence more accurately assessed the desired aspects of calling in this study. Thus, career calling was comprised of three indicators from the CVQ-Presence Scale. In measuring the latent construct of attachment, the ECR-R (Fraley et al., 2000) is comprised of two 18-item scales (i.e., avoidant and anxious attachment). These two scales were parceled into three 6-item indicators each, three parcels for the avoidant scale and three parcels for the anxious scale. In measuring the latent construct of life satisfaction, the five items of the SWLS (Diener et al., 1985) were used as five single-item indicators of the latent construct. A covariance pathway was also specified after the initial CFA between items 1 and 5 to improve model fit.

As the SWLS is made up of only five items, issues that are generally a concern when using item-level indicators versus parcels as indicators such as lower reliability, lower communality, and distributional violations are less of a concern as the number of indicators is relatively small (Little et al., 2002). While it would not be ideal to use the

SWLS full scale score as a single indicator of life satisfaction (Little et al., 2002) as this would indicate an under-identified latent construct, individual item indicators can be used in latent construct estimation (Bagozzi & Edwards, 1998; Hall, Snell, & Foust, 1999) to more accurately identify the latent construct of life satisfaction. Thus, individual item indicators were used over parceling for the SWLS.

It is important to note that several authors (Kline, 2011; Little et al., 2002; Little, Rhemtulla, Gibson, & Schoemann, 2013) have emphasized only using item parceling techniques with items that measure a single construct. As the present study utilized only measures containing subscales with strong internal consistency, parceling based on these measurement items could be considered unidimensional. Certain benefits also exist for utilizing item parceling. By replacing a large number of individual item-indicators with item parcels, less spurious correlations among construct indicators exist, covariance is reduced resulting in better overall model fit (Little et al., 2002), and clarifying construct representation (Little et al., 2013). Additionally, item parceling contributes to better reliability and increased likelihood of normal distributions (Little et al., 2002)

Based on Little et al.'s (2013) recommendation, when using indicator parcels, item means were used, creating similar metrics across parcels and increasing interpretability. I also followed Little et al.'s (2002) method of item-to-construct balance to create parcels derived from using the loadings to guide the procedure (e.g., item-total correlations). By first examining the item-total correlations of each individual item within a measure, it is possible to attain item loadings for each item that will be used in creating item parcels (Hall et al., 1999). For example, if four parcels are to be created, the first four items with the highest construct loadings will be assigned to each of the four item

parcels. Subsequently, the next four highest loading items will also be assigned to separate parcels, but in reverse order, assigning the higher loading item to the parcel that received the lower loading item from the first round of distributions (Little et al., 2002). This process is continued until all items have been distributed among the four parcels. In this way items were assigned to parcels based on individual loadings, equalizing the influence of the primary factor across each item parcel (Hall et al., 1999) and resulting in parcels that were relatively equivalent in representing the primary latent construct.

Measurement selection and data review. Each latent construct was measured using instruments with multiple subscales or factors/indicators. Each measure was selected based on theoretical fit with the construct of interest and previous research utilizing that same measure for similar purposes. Selecting psychometrically strong measures is critical when conducting SEM (Kline, 2011) and thus the present study only utilized measures with strong internal consistency. Each measure was scored using a Likert-scale providing observable indicators of the otherwise latent constructs. The alpha coefficients were stated for each measure based on values reported by the measurement creators or by authors utilizing the measure in previous research with similar samples as the one used in the present study. Once data were collected, Cronbach alpha coefficients were also calculated based on the scores from the present study's sample.

Appropriate procedures were conducted to screen the data for potential problems and for satisfying the assumptions of SEM using the computer program SPSS 23. Multicollinearity is of particular concern in SEM because variables that are hypothesized to be different, and conceptualized as such in the structural model, may in fact be so highly correlated that they measure the same things (Kline, 2011). Squared multiple

correlations were conducted among each variables and values greater than .90 were analyzed for extreme multivariate collinearity (Kline, 2011). Tolerance and variance inflation factors (VIF) were also analyzed as tolerance values less than .10 and VIF values greater than 10.0 may indicate collinearity. The data were screened for outliers, which was considered to be any value more than three standard deviations beyond the mean (Kline, 2011). Influential case outliers were detected using Mahalanobis distance criteria. The issues of incomplete responses or missing participant data were addressed in the online survey design by preventing participants from moving to the next survey page if items are left unanswered. The assumption of multivariate normality was also analyzed by investigating measures of skewness and kurtosis in addition to scatter plots to assess for linearity and homoscedasticity of each variable. As a cut-off for measuring multivariate normality, skewness values greater than $|3.0|$ and kurtosis values greater than $|10.0|$ were considered a violation of normality (Kline, 2011). In the event that non-normal distributions occur, various data transformations will be utilized in an attempt to make the data distributions normally distributed. Transformations such as log, square root, and power transformations may be utilized when non-normal distributions are present (Kline, 2011).

Model estimation. In conducting the model estimations of the proposed and alternative models, an SEM computer program, STATA 14, was utilized. The estimation of the study models was conducted using the maximum likelihood (ML) method. This method calculates all estimates of model parameters simultaneously and provides estimates that are “asymptotically unbiased, efficient, and consistent” (Kline, 2011, p. 155). The ML method requires that all variables possess a normal distribution and are

continuous. The data for the present study were measured on ordinal scales. Several authors have addressed the use of ML in model estimation for both ordinal and continuous data. Some concern has been expressed that using ML with ordinal data may result in biased estimations (Distefano, 2009; Kline, 2011). Other research however, has investigated various parameters around the use of ML with ordinal data. Rhemtulla, Brosseau-Liard, and Savalei, (2012) reported that ordinal data with greater response categories was appropriate for using ML procedures. Other authors have emphasized that as long as severe non-normality is not present in the distribution of variables, and multiple response categories are used, ordinal data can be treated as continuous in ML procedures (Bentler & Chou, 1987; Green, Akey, Fleming, Hershberger, & Marquis, 1997). Thus, the present study utilized ML procedures for estimating model fit.

As mentioned previously, a two-step modeling procedure was conducted that first analyzed the model as a confirmatory factor analysis (CFA). In this step, interpretation of parameter estimates were made, specifically regarding factor loadings, which estimated the direct effects of factors on individual indicators (Kline, 2011). If indicators loaded on multiple factors or did not load significantly on the hypothesized factor, modifications to the measurement model were examined and respecifications made (Weston & Gore, 2006). In the second step, once measurement fit was assured, structural estimation using ML procedures compared the proposed model with the sample data using multiple fit indices. The ML analysis provided a measure of fit between the collected data from the participant sample and the proposed models of the study. This procedure was conducted for both the primary model (Figure 1) and the alternative model (Figure 2).

Analysis of model fit is often conducted using several different fit indexes. The chi-square statistic is used to test the overall fit of the proposed model to the data, with a significant chi-square value indicating poor model fit. A value of zero would indicate a perfect fit between the proposed model and the data. For overidentified models, such as those in the present study, the chi-square method is used to test the exact-fit hypothesis (Kline, 2011). While a value of zero is not expected, a value that is found to be statistically significant ($p < .05$) indicates poor fit and infers that the exact-fit hypothesis should be rejected. It is important to note that chi-square statistics can be negatively affected by non-normal distributions, large correlations between observed variables, high proportions of unique variance, and very large sample sizes (Kline, 2011). Thus, in larger samples, a significant chi-square test is generally expected and many authors do not recommend rejecting a model based exclusively on the chi-square statistic (Kline, 2011; Loehlin, 2004; Steiger, 2007)

Based on the limitations of the chi-square model fit index, the following approximate fit indexes are recommended in evaluating model fit (Kline, 2011). The Bentler Comparative Fit Index (CFI; Bentler, 1990) ranges from 0-1, indicating better fit as values approximate 1. The CFI compares the proposed model to an independence model, or a model in which each construct is independent (Kline, 2011). Hu and Bentler (1999) recommend .95 as a cut-off for adequate fit when using the CFI, while Weston and Gore (2006) recommend a cut-off of .90, when sample size is below 500. Given that fit is determined along a continuum (Hu & Bentler, 1999), both of these recommendations were taken into account in analyzing model fit in the present study. The non-normed fit index (NNFI, Bentler & Bonett, 1980) is also a goodness of fit index,

ranging from 0-1, and has a recommended cut-off value of .95, with values greater than .95 indicating adequate fit (Hu & Bentler, 1999).

Two badness-of-fit measures were also utilized. The Steiger-Lind root mean square error of approximation (RMSEA Steiger, 1990) ranges from 0-1, in which values closer to 0 indicate better fit. The RMSEA decreases as degrees of freedom increase and thus favors more parsimonious models (Kline, 2011). Recommended cut-off for the RMSEA is .06, with scores below .06 indicating best fit (Hu & Bentler, 1999). It is also recommended that the 90% confidence interval associated with the RMSEA should be presented when examining the model fit, allowing the researcher to account for sampling error related to the fit index (Weston & Gore, 2006). The standardized root mean square residual (SRMR, Bentler, 1995), was also used, which measures the “mean absolute correlation residual, the overall difference between the observed and predicted correlations” (Kline, 2011, p. 209). The SRMR is also a measure of poor fit, ranging from 0-1, similar to the RMSEA, with lower values indicating better model fit. The recommended cut-off score for the SRMR is .06, with scores below .06 representing best fit.

As a final note, it has been recommended by some researchers (Weston & Gore, 2006) that the cut-off scores of .95 for the CFI and NNFI and .06 for the RMSEA and SRMR (Hu & Bentler, 1999) are too stringent for smaller samples and that rejection of otherwise acceptable models may be taking place, particularly when the overall sample size is less than $n = 500$. Other authors (Marsh, Hau, & Wen, 2009) have warned against overgeneralizing Hu and Bentler’s (1999) criteria, claiming that it can be overly stringent and unrealistic. Based on the recommendation of Weston and Gore (2006) for a sample

smaller than $n = 500$, cut-off criteria for model fit will be based on CFI and NNFI values greater than .90 and RMSEA and SRMR values below .10 were used as these criteria have been found to be more appropriate for smaller samples.

Interpretation of model fit. Both the primary and alternative models were analyzed based on the two-step process described previously, first examining the measurement aspect of the model using CFA and then examining the structure of the model using fit indices. The parameter estimates of both models were interpreted based on the proposed theoretical relationships between each model construct. Because the proposed and alternative models are hierarchical, they were compared using the chi-square difference test. The best fitting model and a parsimonious explanation was sought after. Due to the nested relationship between these models (i.e., primary model nested in the alternative model), the chi-square test can determine if the more complex model, the alternative model in the present study, provides a significantly better fit than the primary model (Martens, 2005). This process was guided by Jöreskog's (1993) "Model Generating" recommendations, (p. 295) for conducting structural equation modeling described at the beginning of the chapter. Based on recommended SEM reporting procedures (Kline, 2011), all parameter estimates, unstandardized estimates, standard error, standardized estimates, chi-square values, associated p -values, and effect sizes such as R^2 values and standardized path coefficients were reported and discussed (See Tables 1-4, and Figures 8-9).

CHAPTER IV

RESULTS

A total of 549 students initiated participation through the survey website, of which 441 completed the survey in its entirety while 108 terminated participation prematurely, resulting in an attrition rate of 19.7%. Demographic information for incomplete participant responses included 82 females, 17 males, and 10 no report. Ages ranged from 18-46 (Mean = 22, Median = 20, S.D. = 5.16), 17 no response. One participant was under 18 and did not meet inclusion criteria and one participant chose not to consent to the study after reading the informed consent page. Of those participants who initiated the survey, 37 completed some demographic information but discontinued prior to responding to any survey items. In order to control for question order effects, the order in which participants were presented with each construct measure was randomized. Among those participants who completed the demographics page and began the survey but terminated prematurely, 6 completed 36% of the items, 10 completed 40-50%, 22 completed 51-70%, and 22 completed 71-90%. An additional 9 participants completed the majority of the survey but discontinued prior to completing the last construct measure, thus providing an incomplete response set. Forced completion was utilized for all measures preventing participants from skipping to the next construct measure prior to finishing the previous one. This resulted in most attrition occurring after participants finished one measure but before starting another. This pattern of attrition is most likely

due to survey fatigue (Porter, Whitcomb, & Weitzer, 2004). Participants would generally finish the set of items on the screen they were currently working on, but upon clicking to the next block of questions, would discontinue participation before beginning the next set of items.

Forced completion was not required for the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984), which contains two questions not applicable to all participants, resulting in missing responses ranging from 1.5% - 6% of the SACQ data, in 203 cases (47% of the sample). The SACQ scoring manual (Baker & Siryk, 1999) provides specific prorating and scoring instructions which were utilized to address all cases of missing data. One case demonstrated missing data beyond the recommended scoring criteria from the SACQ manual (Baker & Siryk, 1999) and was thus excluded following stated guidelines. No other missing data existed for the remaining measurement instruments.

Both univariate and multivariate outliers were examined based on recommendations from Kline (2011) and others (Martens, 2005; Weston & Gore, 2006). Standardized residuals were converted to Z-scores and values greater than an absolute value of three ($> |3|$) were considered to be univariate outliers (Kline, 2011; Pedhazur, 1997). Multivariate outliers were detected using Mahalanobis distance (D), which measures the standard deviation of a set of scores from a single case compared to sample means from all variables. It is based on chi-square distribution such that D^2 values with p -values below .001 are considered problematic (Kline, 2011). One multivariate and six univariate outliers were identified and removed using list wise deletion. Thus, a final sample of 433 participants was obtained. Assumptions of SEM were first tested prior to

conducting analysis. Normality was assessed through the examination of skewness and kurtosis values for each latent construct indicator using SPSS. Data were considered normally distributed if skewness values were less than $|3|$, and kurtosis values were less than $|10|$ (Kline, 2011). Skewness values in the present study were found to range from $-.987$ to $.219$ and kurtosis values ranged from -1.115 to $.345$. The data were thus considered to be normally distributed. Normality plots were also examined to ensure linearity and homoscedasticity. Multicollinearity was assessed by examining variance inflation factors (VIF) and Tolerance values using recommended criteria of $VIF > 10$, $Tolerance < .10$ (Kline, 2011). VIF values ranged from 1.427 to 1.889 and Tolerance values ranged from $.529$ to $.701$ and thus no extreme cases of multicollinearity were found.

Data were also screened for duplicate participant responses. While all participant responses were anonymous, Internet Protocol (IP) addresses were recorded as a means of detecting possible response duplication. A total of 11 cases of possible duplicate IP addresses were identified. As described by Birnbaum, (2004) reviewing IP address information is a conservative means of assessing possible duplication but also presents its own set of challenges. Internet users operating from a communal internet server or service provider, such as those that exist on university campuses, dorm room buildings, or shared living spaces, may have the same IP address associated with their online survey submission, even if their online activity occurs on a separate Internet device and/or on a separate date. Thus, given the small percentage of duplicate IP addresses found ($< 3\%$) and the possibility that unique participant responses may share a common address, the 11 duplicate cases were included in the final sample.

A final sample of 433 completed surveys was obtained, comprised of 313 students identifying as female (72.3%) and 118 identifying as male (27.3%). One student identified as “agender/non-gender” and one student did not respond. Participant ages ranged from 18-55 years old (Mean = 21.45, Median =20.00, S.D. = 5.24), 18 students did not report age. Reported ethnicities were comprised of 71.8% Caucasian, 13.2% Latino/a, 4.8% African American, 1.8% Asian, 1.2% Pacific Islander, 2.1% Native American and 1.4% chose not to answer. Self-reported text responses of ethnicity comprised 3.7% of the sample and represented additional unlisted ethnicities and various mixed race identities. All participants were undergraduate students, 94% had declared a major, and approximately 25.2% were freshman, 29.6% sophomores, 24.7 % juniors, and 18.9% seniors. Full demographic information including data pertaining to parent education level, parent marital status, and participant relationship status can be found in Table 1. The final sample size exceeded the recommended minimum criteria of $N = 200$ for SEM procedures (Kline, 2011; Loehlin, 2004; Martens, 2005; Weston & Gore, 2006). As described further in Chapter V under Limitations, this sample did not meet Jackson’s (2003) more stringent $N:q$ recommendation of 10-20 participants per parameter as the final alternative model contained 81 parameters (Kline, 2011).

Measurement Model Confirmatory Factor Analyses

Individual measurement model analyses. As recommended by Kline (2011) and others (Martens, 2005; Weston & Gore, 2006), confirmatory factor analyses (CFA) of the five latent constructs in the study were conducted to ensure appropriate model fit. The full five-factor model was comprised of the latent factors of attachment, career calling, career decision self-efficacy, college adjustment, and life satisfaction. Each latent factor

underwent its own CFA to ascertain model fit for each set of parameter estimates using robust methods Maximum Likelihood (ML). Fit was assessed using the guidelines described previously in Chapter III for both Hu and Bentler's (1999) more stringent criteria (CFI and $NNFI > .95$, $SRMR$ and $RMSEA < .06$) as well as the revised recommendations by Weston and Gore (2006; CFI and $NNFI > .90$, $SRMR$ and $RMSEA < .10$). Reporting statistics were based on recommendations by Kline (2011) and overall measurement statistics for each CFA can be found in Table 3.

Table 3
Overall Model Fit Statistics for Measurement Models

Latent Construct	Model	χ^2_M	df	χ^2_D	<i>RMSEA</i>	<i>SRMR</i>	<i>CFI</i>	<i>NNFI</i>
Individual CFA Measurement Models								
Attachment Style								
1-factor model	1	820.82*	2	-	.972	.196	.525	-.426
2-factor model	2	13.29	8	†	.039	.014	.998	.996
Career Decision Self-Efficacy								
1-factor model	1	29.13*	2	-	.177	.014	.985	.956
1-factor model with CSES ₁ \curvearrowright CSES ₄	2	4.43	1	24.71*	.089	.006	.998	.989
Life Satisfaction								
1-factor model	1	35.83*	5	-	.119	.024	.973	.946
1-factor model with SWLS ₁ \curvearrowright SWLS ₂	2	7.83	4	28.00*	.047	.014	.997	.992
College Adjustment								
1-factor model	1	75.79	2	-	.292	.057	.925	.774
1-factor model with SA \curvearrowright AT	2	8.18	1	67.61*	.129	.011	.993	.956
Full CFA Measurement Models								
6-factor standard CFA	1	549.68*	194	-	.065	.048	.954	.946
6-factor CFA with CSES ₁ \curvearrowright CSES ₄ SWLS ₁ \curvearrowright SWLS ₂ SA \curvearrowright AT	2	397.86*	191	151.83*	.050	.038	.973	.968

Note. $N = 433$. * indicates $p < .01$; \curvearrowright indicates error covariance pathway. † indicates non-nested model and thus no chi-square difference test was performed. *RMSEA* = root mean square error of approximation; *SRMR* = standardized root mean square residual; *CFI* = comparative fit index; *NNFI* = non-normed fit index. The individual CFA measurement model for Career Calling was not included as the final model of this latent constructs was just identified and thus assessed through the Full CFA Measurement Model.

The latent construct of attachment style as measured by the ECR-R (Fraley et al., 2000) was initially estimated based on two 9-item parcel indicators from the avoidant attachment subscale and two 9-item parcel indicators from the anxious attachment subscale, for a total of four individual indicators representing attachment style. The CFA of this single factor model produced parameter estimates for each of the four indicators that were statistically significant and suggested good component fit. Model 1 was found to have poor overall fit (Table 3), however, based on the model fit statistics ($RMSEA = .972$, 90% confidence interval of .917-1.029; and $CFI = .525$), the chi-square model fit statistic was also found to be statistically significant ($\chi^2_M(2) = 820.82, p < .001$) indicating the model failed the exact-fit hypothesis. The measurement model was then re-specified based on theoretical suggestions from Fraley et al. (2000) that attachment style is most accurately conceptualized from a two factor approach separating anxious and avoidant attachment styles into separate latent constructs. Subsequently, three 6-item parcel indicators were used for each factor based on recommendations from Matsunaga (2008) that utilizing three parcels per factor creates a just-identified measurement model while accounting for estimation bias. Thus, a CFA for Model 2 (Table 3) was specified with two factors (i.e., avoidant and anxious attachment) estimated by three parcels each and a covariance pathway specified between the two factors. Each parameter estimate was found to be statistically significant and Model 2 demonstrated adequate overall fit based on the model fit statistics ($RMSEA = .039$, 90% confidence interval of .000-.075; and $CFI = .998$). The chi-square model fit statistic was also not found to be statistically significant ($\chi^2_M(8) = 13.29, p = .102$) indicating the exact-fit hypothesis should be retained. Covariance residuals were examined using Kline's (2011) recommendations that

multiple values $> |.10|$ may indicate the measurement model does not explain the sample correlation adequately. The largest covariance residual found in the two-factor model of attachment style was .081.

The latent construct of career decision self-efficacy (CDSE) was estimated based on a single factor model with four specified indicators. Each indicator was created based on one of the four subscales of the CSES (Solberg et al., 1994; i.e. Job Search efficacy, Interviewing efficacy, Networking efficacy, and Personal Exploration efficacy). The CFA of this single factor model produced parameter estimates that were found to be statistically significant suggesting good component fit. Model fit statistics produced mixed results in which *CFI* (.985) and *SRMR* (.014) values suggested adequate model fit while the *RMSEA* index suggested poor model fit ($RMSEA = .177$; 90% confidence interval of .124-.237), and the chi-square model fit statistic was found to be statistically significant ($\chi^2_M(2) = 29.13, p < .001$).

In order to explore potentially unspecified model pathways, Lagrange Multiplier (LM) statistics were examined, which provide estimated improvements to overall chi-square model fit when specifying otherwise omitted pathways in the fitted model (Kline, 2011; Sorbom, 1989; StataCorp, 2015). Examination of LM statistics suggested the addition of a covariance pathway between the Job Search and Personal Exploration indicators would significantly improve model fit. It is important to note that several authors have cautioned the use of modification indexes like LM statistics, stating that theory must be used when adding pathways to a measurement model and decisions should not be based on statistical significance alone (Kline, 2011; Martens, 2005; Weston & Gore, 2006). In the case of the current measurement model of CDSE, theoretical

similarities exist between Solberg's (1994) descriptions of the job search and personal exploration subscales of the CSES. Specifically, both subscales involve the use of personal insight to identify career interest areas and assessing one's environment for possible avenues to pursue career interests. Thus, these indicators are theoretically similar and adding a covariance pathway to the measurement model of CDSE to represent these similarities is warranted.

The CFA of Model 2 for CDSE (Table 3) produced significant parameter estimates for each indicator in addition to a significant parameter estimate for the added covariance pathway. The largest covariance residual found in the model was .032. Model fit statistics were found to be within acceptable ranges as well ($RMSEA = .089$, 90% confidence interval of .019-.180; $CFI = .998$). While the chi-square model fit statistic was still found to be statistically significant ($\chi^2_M(1) = 4.43$, $p = .035$), it was substantially improved. Given the tendency for chi-square exact fit hypothesis testing to be biased by large sample sizes, especially those greater than $N = 200-300$ (Kline, 2011; Steiger, 2007) approximate fit indexes must be taken into account when assessing model fit. Taken together, these data suggest that model fit was found to be adequate for the CFA of Model 2 for CDSE.

The latent construct of life satisfaction was estimated based on a single factor CFA model in which each of the five items of the SWLS (Diener et al., 1985) were specified as single-item indicators. The CFA (Table 3) produced significant parameter estimates for each indicator suggesting good component fit. Model fit statistics produced mixed results in which the CFI index suggested adequate model fit ($CFI = .973$) while the $RMSEA$ index suggested poor model fit ($RMSEA = .119$, 90% confidence interval

of .084-.157) and the chi-square model fit statistic was found to be statistically significant ($\chi^2_M(5) = 35.83, p < .001$). Examination of LM statistics suggested the addition of a covariance pathway between indicators SWLS1 and SWLS2. As both of these items assess the positive conditions of one's life, the addition of this covariance pathway was theoretically warranted. The CFA of Model 2 subsequently produced significant parameter estimates for each indicator and a significant parameter estimate for the added covariance pathway. One covariance residual was found to be $> .10$ (.111 for the association between items SWLS1 and SWLS5); all others were below the .10 cut-off. Model fit statistics were found to be within acceptable ranges as well ($RMSEA = .047$, 90% confidence interval of .000-.096; $CFI = .997$). The chi-square model fit statistic was not found to be statistically significant ($\chi^2_M(4) = 7.83, p = .098$), suggesting the exact-fit hypothesis should be retained.

The latent construct of career calling was first estimated based on a single factor model in which six indicators were specified. Each indicator was created based on the six subscales of the CVQ (Dik et al., 2012). The CFA of this single factor model produced parameter estimates that were statistically significant and suggested good component fit. Model 1 was found to have poor overall fit, however based on the model fit statistics ($RMSEA = .267$, 90% confidence interval of .241-.294; and $CFI = .791$), the chi-square model fit statistic was also found to be statistically significant ($\chi^2_M(9) = 286.78, p < .001$) indicating the model failed the exact-fit hypothesis. The measurement model was then re-specified based on theoretical suggestions from Dik et al. (2012) regarding construction of the CVQ, which specifies two independent factors related to career calling based on the calling presence and calling search scales of the measure. A CFA for

Model 2 was specified with two factors (i.e., calling presence and calling search) comprised of three indicators each and a covariance pathway between the two factors. The CFA of this two factor model produced parameter estimates that were also statistically significant but as with Model 1, was found to have poor overall fit based on model fit statistics ($RMSEA = .28$, 90% confidence interval of .255-.31; and $CFI = .791$), the chi-square model fit statistic was also found to be statistically significant ($\chi^2_M(8) = 284.88$, $p < .001$) indicating the model failed the exact-fit hypothesis.

These results supported research by previous authors in which the search for a calling is theoretically distinct from the presence of a calling (Dik et al., 2012; Duffy et al., 2013; Duffy, Allan, et al., 2012, 2011; Torrey & Duffy, 2012). As described previously, the current study sought to examine the influence of career calling on college student experience, as a present phenomenon in the student's life. Thus, the calling search factor was removed from measurement Model 3 and a CFA was estimated based on a one-factor model of calling presence, with three indicators derived from the three calling presence subscales (i.e., transcendent summons, purposeful work and prosocial orientation). As described by Matsunaga (2008), three indicator CFA models are considered ideal in reducing estimation bias and improving model fit. A three-indicator model such as this is also considered to be just-identified (i.e., $df = 0$) and produces goodness-of-fit statistics that often suggest perfect data fit (Kline, 2011; Matsunaga, 2008). This became evident in examining the measurement fit of Model 3 ($RMSEA = .000$ and $CFI = 1.00$). Thus in order to adequately examine the measurement model of the calling presence latent variable, a full CFA containing all five latent constructs in the study was also conducted, which provided for an over-identified measurement model (df

> 0), and subsequently more robust goodness of fit analyses (Weston & Gore, 2006). The measurement fit statistics of the full CFA are described below.

The final latent construct of college adjustment was estimated based on a single-factor model in which four indicators were specified. Each indicator was created based on the four subscales of the SACQ (Baker & Siryk, 1984). The CFA produced significant parameter estimates suggesting good component fit, while the model fit statistics produced mixed results in which the *CFI* was in an acceptable range (*CFI* = .925) but the *RMSEA* value was not (*RMSEA* = .292). The chi-square model fit statistic was also found to be statistically significant ($\chi^2_{M(2)} = 75.79, p < .001$) indicating the exact fit hypothesis could not be retained. The model was thus respecified based on the SACQ's theoretical design.

Lagrange Multiplier (LM) statistics were examined to investigate otherwise omitted pathways in the first SACQ CFA model (Kline, 2011; Sorbom, 1989; StataCorp, 2015). Examination of LM statistics suggested the addition of a covariance pathway between Social Adjustment and Institutional Attachment. This finding is consistent with the SACQ's theoretical design as well. Three of the four SACQ sub-scales (i.e., Academic, Social, and Personal-Emotional Adjustment) represent unique theoretical aspects of overall college adjustment. While the fourth subscale, Institutional Attachment, represents an additional theoretical aspect (Credé & Niehorster, 2012), eight of its fifteen items are also utilized in calculating the Social Adjustment scale. Thus, a covariance pathway was specified between social adjustment and institutional attachment to reflect this theoretical design. A second CFA model was subsequently specified with four indicators for each subscale and the additional covariance pathway. The CFA of Model 2

produced significant parameter estimates suggesting good component fit and the largest covariance residual was .076. The chi-square model fit statistic was found to be statistically significant ($\chi^2_M(1) = 8.18, p < .001$) suggesting the exact fit hypothesis was not supported. As mentioned previously, given the tendency for chi-square hypothesis testing to be biased by large sample sizes, especially those greater than $N = 200-300$ (Kline, 2011; Steiger, 2007) approximate fit indexes must be taken into account when assessing model fit. The *CFI* and *NNFI* were in acceptable ranges (*CFI* = .993; *NNFI* = .956) regarding goodness-of-fit indices (Hu & Bentler, 1999). Contradictory results, however, were found for the “badness-of-fit” indices (Hu & Bentler, 1998; Marsh et al., 2009) as the *SRMR* was found to be in an acceptable range (*SRMR* = .011; Hu & Bentler, 1999) while the *RMSEA* value was not (*RMSEA* = .129; 90% confidence interval of .058-.216). In evaluating contrasting results between *SRMR* and *RMSEA* scores, several authors have suggested that *SRMR* is a better indicator of model misspecification and less influenced by sample size (Fan & Sivo, 2009; Iacobucci, 2010; Kenny & McCoach, 2009). Given the *SRMR* index met Hu and Bentler’s (1999) recommendation criteria, as did the lower bound of the *RMSEA* 90% confidence interval, Model 2 was retained as the measurement model for college adjustment.

Full measurement model analysis. A full model CFA was estimated which combined each of the final individual CFA models described above, reproducing the same number of indicators and covariance pathways. Six total factors were specified to represent the five latent constructs in the study. Career Calling, Career-Decision Self-Efficacy, Life Satisfaction, and College Adjustment were represented by individual

factors while Attachment Style was represented by two factors (i.e., Anxious and Avoidant Attachment).

Measurement Model 1 (Table 3) of the full CFA included six factors, excluding any error covariance pathways. All parameter estimates were found to be statistically significant ($p < .001$) suggesting good component fit. All model fit statistics were found to be within acceptable ranges ($RMSEA = .065$, 90% confidence interval of .059-.072; $SRMR = .048$, $CFI = .954$, and $NNFI = .946$). The chi-square model fit statistic was found to be statistically significant ($\chi^2_M(194) = 549.68$, $p < .001$). Measurement Model 2 of the full CFA included the error covariance pathways described previously between the job search and personal exploration subscales of the CSES, between items SWLS1 and SWLS2 of the satisfaction with life scale, and between Social Adjustment and Institutional Attachment subscales of the SACQ. All parameter estimates of Model 2 (Table 4) were also found to be statistically significant ($p < .001$) suggesting good component fit. All model fit statistics were found to be within acceptable ranges ($RMSEA = .050$; 90% confidence interval of .043-.057, $SRMR = .038$, $CFI = .973$, and $NNFI = .968$). The chi-square model fit statistic was found to be statistically significant ($\chi^2_M(191) = 397.86$, $p < .001$); however as described previously, given the number of factors in the model and the large sample size ($N = 433$), the chi-square goodness of fit statistic is a biased estimate of model fit and the use of approximate model fit statistics is recommended (Kline, 2011; Loehlin, 2004; Marsh et al., 2009; Steiger, 2007). Based on these results, the CFA for the full six-factor model including all five latent constructs was found to have good model fit. This is particularly important for the construct of career calling which was modified to include three indicators. This prevented the estimation of

CFA measurement model for this construct individually as it is considered to be just-identified ($df = 0$) (Matsunaga, 2008). When included in the full six-factor model however, career calling was found to provide appropriate model fit for the data and thus the three-indicator model respecification was warranted. Several covariance residuals were $> |.10|$ in the full CFA model, the largest of which was .328. While covariance residuals above .10 may indicate poor model fit, this is primarily true for small models with few observed variables and small sample sizes (Kline, 2011). The full CFA model was relatively complex with six latent factors, 22 observed variables, 84 parameters and a large sample size ($N = 433$). Given that all other model fit statistics including the standardized root mean square residual (SRMR, Table 3) were found to be within acceptable ranges, adequate model fit of the full CFA measurement model is supported.

Table 4
Maximum Likelihood Estimates of Factor Loadings and Residuals for Full CFA Measurement Model

Scale/Indicators	Factor loadings			Measurement errors		
	Unst.	SE	Stand.	Unst.	SE	Stand.
<u>Attachment Anxiety</u>						
ECR_Anx1	1.000 ^a	-	.937	.222	.025	.122
ECR_Anx2	.941	.025	.942	.178	.021	.112
ECR_Anx3	.959	.029	.909	.307	.028	.173
<u>Attachment Avoidance</u>						
ECR_Avd1	1.000 ^a	-	.923	.229	.022	.148
ECR_Avd2	.999	.028	.937	.183	.020	.122
ECR_Avd3	.988	.027	.946	.150	.018	.104
<u>Career Calling</u>						
CVQ_P1	1.000 ^a	-	.651	.318	.027	.576
CVQ_P2	1.129	.096	.775	.198	.023	.399
CVQ_P3	1.087	.097	.762	.200	.023	.420
<u>College Adjustment</u>						
SACQ_AA	1.000 ^a	-	.809	.461	.049	.346
SACQ_SA	1.066	.077	.703	1.020	.086	.506
SACQ_PE	1.270	.080	.776	.927	.088	.397
SACQ_AT	1.120	.025	.747	.865	.076	.442
<u>Career Decision Self-Efficacy</u>						
CSES_1	1.000 ^a	-	.962	.152	.025	.074
CSES_2	1.056	.028	.917	.399	.037	.159
CSES_3	1.061	.028	.922	.374	.037	.149
CSES_4	.758	.027	.799	.617	.049	.361
<u>Life Satisfaction</u>						
SWLS_1	1.000 ^a	-	.803	.796	.074	.355
SWLS_2	.953	.047	.762	.951	.080	.420
SWLS_3	1.068	.055	.898	.398	.055	.194
SWLS_4	.879	.058	.710	1.101	.085	.496
SWLS_5	.985	.071	.643	1.990	.148	.586

Note. Unst. = Unstandardized, St. = Standardized, SE = Standard Error of Estimate. Standardized estimates for measurement errors are proportions of unexplained variance.^a Indicator reference, not tested for statistical significance, All other unstandardized estimates, $p < .001$.

Structural Equation Modeling Results

In following procedural recommendations for SEM (Kline, 2011; Martens, 2005; Weston & Gore, 2006), two a priori models were created as primary (Figure 1) and alternative (Figure 2) hypothesized structures of the interconnected relationships among the five latent constructs in the study. Having established adequate model fit for each measurement model through CFA analyses, the primary structural model (Figure 6) was submitted to structural equation modeling procedures using Robust ML estimation procedures for continuous data. The primary model contained 77 parameters while the alternative model contained 81. While the final sample size ($N = 433$) did not meet previous recommendations of a 20:1 or 10:1, parameter to sample size ratio, it did exceed the previously described minimum criteria for SEM procedures of $N = 200$ described by several previous authors (Jackson, 2003; Kline, 2011; Martens, 2005; Weston & Gore, 2006). Model fit statistics (Table 5) were found to be within acceptable limits but were not ideal ($RMSEA = .069$; 90% confidence interval of .063-.075), $SRMR = .142$, $CFI = .947$, $NNFI = .939$) and the chi-square goodness-of-fit test was also found to be significant ($\chi^2_M(198) = 607.86, p < .001$). Most structural parameter estimates were found to be statistically significant ($p < .05$) indicating good component fit (Table 6). The structural path between Career Calling and Life Satisfaction was not found to be significant. Mixed results were also found between Anxious and Avoidant Attachment styles. Avoidant attachment style had a significant, negative direct effect to career calling, such that individuals with increased attachment avoidance were less likely to identify a career calling. Anxious attachment style, however, was not significantly related to career

calling. The alternative structural model proposed for the study was subsequently estimated for improved model fit compared to the primary model.

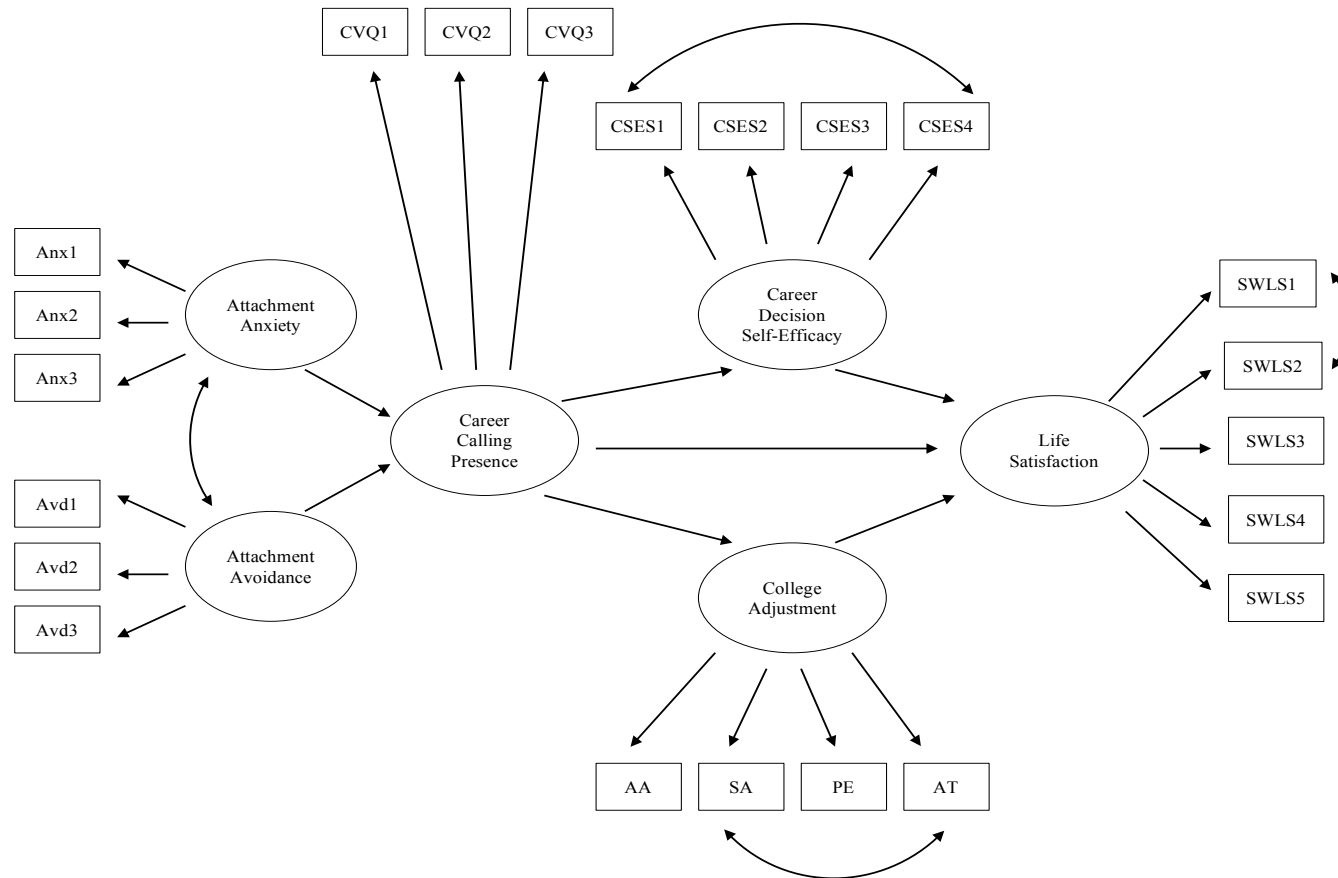


Figure 6. Final Primary Structural Model with Indicators

Anx1, Anx2, Anx3 = ECR-R Attachment Anxiety Subscale Parcel 1, Parcel 2, and Parcel 3, Avd1, Avd2, Avd3 = ECR-R Attachment Avoidant Subscale Parcel 1, Parcel 2, and Parcel 3. CVQ1= Presence of Transcendent Summons, CVQ2= Presence of Purposeful Work, CVQ3= Presence of Prosocial Orientation. CSES1 = Job Search Efficacy, CSES2 = Interview Efficacy, CSES3 = Network Efficacy, CSES4 = Personal Exploration Efficacy. AA= Academic Adjustment, SA= Social Adjustment, PE= Personal-Emotional Adjustment, AT= Institutional Attachment. SWLS1-SWLS5 = Satisfaction with Life Scale Items 1-5.

The alternative model (Figure 7) replicated the primary model while adding additional pathways from both Avoidant and Anxious Attachment to Career Decision Self-Efficacy and College Adjustment. The alternative model was submitted to structural equation modeling procedures using robust ML estimation procedures for continuous data. Most structural parameter estimates were found to be statistically significant ($p < .05$) indicating good component fit (Table 7). All model fit statistics (Table 5) were found to meet minimum cut-off criteria. The *RMSEA* statistic was .054 (90% confidence interval of .047-.060) and the *SRMR* statistic was .056. The *CFI* statistic was .969 and the *NNFI* statistic was .963.

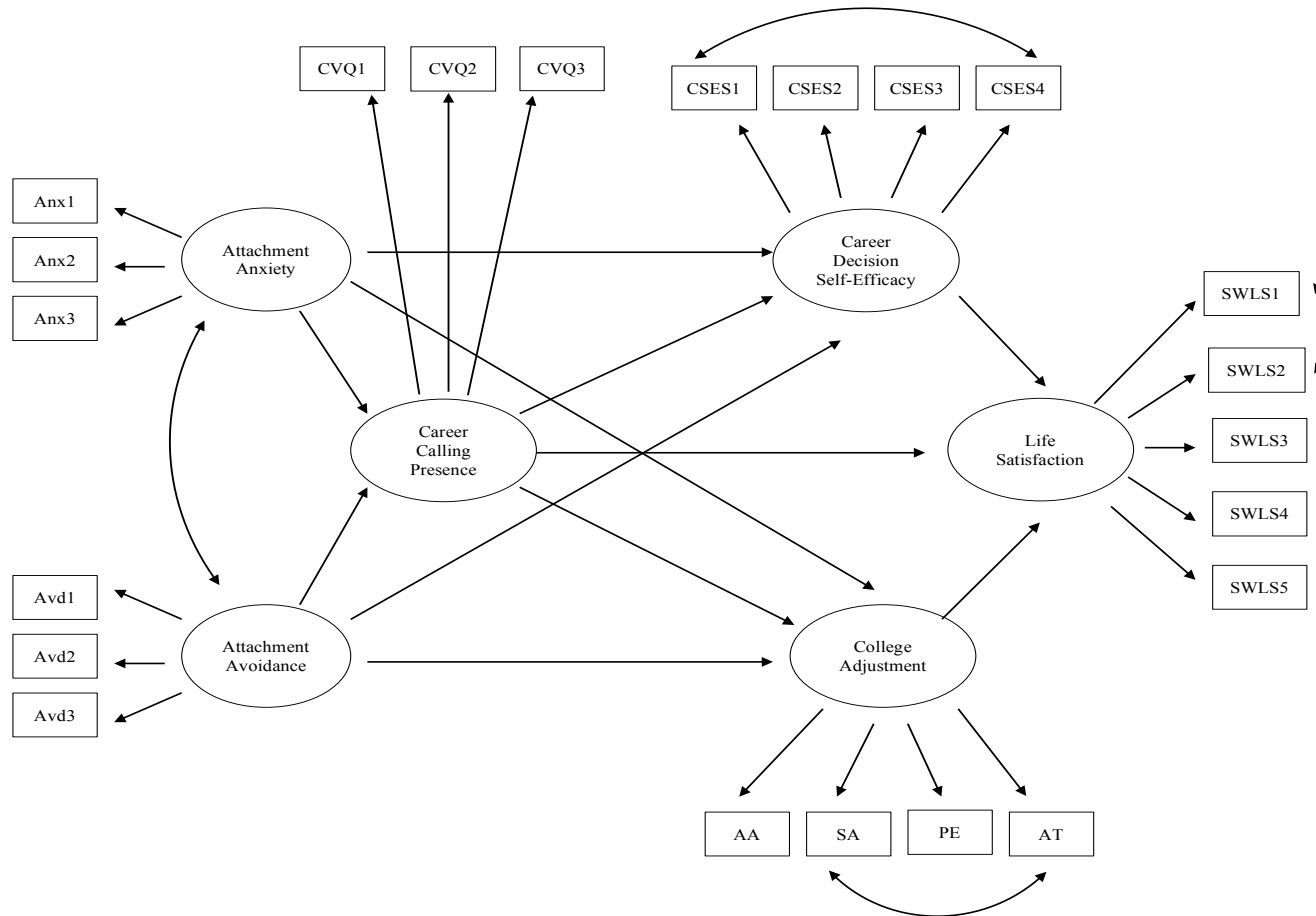


Figure 7. Final Alternative Structural Model with Indicators

Anx1, Anx2, Anx3 = ECR-R Attachment Anxiety Subscale Parcel 1, Parcel 2, and Parcel 3, Avd1, Avd2, Avd3 = ECR-R Attachment Avoidant Subscale Parcel 1, Parcel 2, and Parcel 3. CVQ1= Presence of Transcendent Summons, CVQ2= Presence of Purposeful Work, CVQ3= Presence of Prosocial Orientation. CSES1 = Job Search Efficacy, CSES2 = Interview Efficacy, CSES3 = Network Efficacy, CSES4 = Personal Exploration Efficacy. AA= Academic Adjustment, SA= Social Adjustment, PE= Personal-Emotional Adjustment, AT= Institutional Attachment. SWLS1-SWLS5 = Satisfaction with Life Scale Items 1-5.

Table 5
Overall Fit Statistics for Primary and Alternative Structural Regression Models

Model	χ^2_M	df	χ^2_M / df	χ^2_D	RMSEA	90% CI	SRMR	CFI	NNFI	AIC
Primary	607.86*	198	3.07	-	.069	.063-.075	.142	.947	.939	24438.64
Alternative	434.56 ^a	194	2.24	173.3*	.054	.047-.060	.056	.969	.963	24273.34

Note. $N = 433$. * Indicates $p < .01$. CI = Confidence Interval. χ^2_M = chi-squared goodness-of-fit test for structural model; df = degrees of freedom, χ^2_D = chi-squared difference test; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = comparative fit index; NNFI = non-normed fit index; AIC = Akaike's Information Criteria. ^a indicates the alternative structural model chi-square goodness of fit test (χ^2_M) was found to be non-significant using Iacobucci's (2010) adjusted criteria ($\chi^2 / df \leq 3$) for large sample sizes.

Table 6

Maximum Likelihood Estimates of Direct and Indirect Structural Paths for the Primary Model

Parameter	Unstandardized	SE	95% CI		Standardized
			Lower	Upper	
<u>Direct Effects</u>					
Attachment Anxiety → Career Calling	-.036	.024	-.082	.011	-.094
Attachment Avoidance → Career Calling	-.079*	.026	-.129	-.029	-.192
Career Calling → CDSE	1.53**	.186	1.17	1.90	.528
Career Calling → College Adjustment	.959**	.143	.679	1.24	.472
Career Calling → Life Satisfaction	.046	.156	-.260	.352	.019
CDSE → Life Satisfaction	.232**	.049	.135	.328	.274
College Adjustment → Life Satisfaction	.607**	.079	.452	.762	.502
<u>Indirect Effects</u>					
Attachment Anxiety → Career Calling → CDSE	-.054	.037	-.127	.019	-.050
Attachment Anxiety → Career Calling → Life Satisfaction	-.002	.006	-.013	.009	-.002
Attachment Anxiety → Career Calling → College Adjustment	-.034	.025	-.081	.012	-.045
Attachment Avoidance → Career Calling → CDSE	-.121*	.041	-.202	-.041	-.102
Attachment Avoidance → Career Calling → Life Satisfaction	-.004	.012	-.028	.021	-.004
Attachment Avoidance → Career Calling → College Adjustment	-.076*	.027	-.128	-.024	-.091
Career Calling → CDSE → Life Satisfaction	.355**	.086	.186	.524	.144
Career Calling → College Adjustment → Life Satisfaction	.582**	.110	.367	.798	.237
<u>Covariance</u>					
Attachment Anxiety ↔ Attachment Avoidance	.633**	.081	.475	.791	.437

Note: $N = 433$. * $p < .05$, ** $p < .001$. SE = Standard Error of estimate. CI = Confidence Interval.

Table 7

Maximum Likelihood Estimates of Direct and Indirect Structural Paths for the Alternative Model

Parameter	Unstandardized	SE	95% CI		Standardized
			Lower	Upper	
<u>Direct Effects</u>					
Attachment Anxiety → Career Calling	.005	.024	-.042	.053	.014
Attachment Anxiety → CDSE	-.303**	.053	-.406	-.200	-.279
Attachment Anxiety → College Adjustment	-.325**	.038	-.400	-.250	-.441
Attachment Avoidance → Career Calling	-.063*	.027	-.116	-.011	-.150
Attachment Avoidance → CDSE	-.163*	.058	-.278	-.049	-.137
Attachment Avoidance → College Adjustment	-.127*	.041	-.208	-.046	-.157
Career Calling → CDSE	1.25**	.157	.941	1.560	.441
Career Calling → College Adjustment	.666**	.111	.448	.885	.347
Career Calling → Life Satisfaction	.018	.139	-.254	.289	.007
CDSE → Life Satisfaction	.217**	.048	.122	.312	.252
College Adjustment → Life Satisfaction	.673**	.080	.516	.830	.530
<u>Indirect Effects</u>					
Attachment Anxiety → Career Calling → CDSE	.007	.030	-.052	.066	.006
Attachment Anxiety → Career Calling → Life Satisfaction	.000	.001	-.001	.002	.000
Attachment Anxiety → Career Calling → College Adjustment	.004	.016	-.028	.035	.005
Attachment Anxiety → CDSE → Life Satisfaction	-.066**	.019	-.102	-.029	-.070
Attachment Anxiety → College Adjustment → Life Satisfaction	-.219**	.035	-.286	-.151	-.234
Attachment Avoidance → Career Calling → CDSE	-.079*	.034	-.147	-.012	-.066
Attachment Avoidance → Career Calling → Life Satisfaction	-.001	.001	-.018	.016	-.001
Attachment Avoidance → Career Calling → College Adjustment	-.042*	.019	-.080	-.005	-.052
Attachment Avoidance → CDSE → Life Satisfaction	-.035*	.015	-.065	-.006	-.034
Attachment Avoidance → College Adjustment → Life Satisfaction	-.086*	.030	-.143	-.028	-.083
Career Calling → CDSE → Life Satisfaction	.271**	.070	.135	.407	.111
Career Calling → College Adjustment → Life Satisfaction	.448**	.088	.275	.621	.184
<u>Covariance</u>					
Attachment Anxiety ↔ Attachment Avoidance	.636**	.081	.477	.794	.437

Note: $N = 433$. * $p < .05$, ** $p < .001$. SE = Standard Error of estimate. CI = Confidence Interval.

The chi-square goodness-of-fit statistic, however, was found to be significant ($\chi^2_M(194) = 434.56, p < .001$) indicating the exact-fit hypothesis could not be retained (Kline, 2011). Some disagreement exists in the literature pertaining to interpretations of SEM models with a significant chi-square statistic. Barrett (2007) and Steiger (2007) both infer that using a broad “accept-support” approach to the chi-square test is “misguided” as this kind of rigidity does not take into context nuances like sample sizes, theoretical implications, or that chi-square statistic typically inflates with increased model variables (Iacobucci, 2010). While it has also been suggested that utilizing statistical programming to uncover unidentified pathways and removing non-significant pathways that already exist may facilitate an improved chi-squared statistic (McIntosh, 2007), capitalizing on these “chance sampling fluctuations in the data” may improve fit but at the cost of “theoretical meaningfulness” (Markland, 2007, pg. 856). Barrett (2007) and Goffin (2007) both advocate for assessing model fit based on predictive validity and theoretical usefulness. Given the present study’s substantial theoretical foundation, apriori specification of primary and alternative models, and strong model fit based on the previously stated approximate fit indexes, the alternative theoretical model was found to adequately fit the data. Furthermore, adjustments to chi-square interpretation among large samples has been recommended such that “a model demonstrates reasonable fit” if the chi-square statistic divided by its degrees of freedom is not larger than three ($\chi^2 / df \leq 3$; Iacobucci, 2010).

Using these adjusted criteria, the model was found to demonstrate adequate goodness of fit ($\chi^2 / df = 2.24$). While the model fit statistics all met the generally recommended criteria by Martens (2005) and Weston and Gore (2006), the model also

met the more stringent recommendations (CFI and $NNFI > .95$, $SRMR$ and $RMSEA < .06$) of Hu and Bentler (1999). All parameter estimates were found to be significant with the exception of the Anxious Attachment to Career Calling pathway and the Career Calling to Life Satisfaction pathway. Full structural regression model results for the alternative model are displayed in Figure 9. Taken together with the adjusted chi-square goodness-of-fit criteria of Iacobucci (2010) the alternative structural model was found to demonstrate good model fit with the collected data.

Model Interpretation

As recommended by Jöreskog's (1993) and Kline's (2011) model generating procedures for SEM, both the primary (Figure 1) and alternative (Figure 2) models were specified a priori based on theoretical fit among the study's constructs. The measurement model fit of each latent construct was first ensured based on CFA procedures. Once adequate measurement fit was identified, both models were submitted to SEM procedures to ascertain structural model fit and predictive potential of each model design. Using Cohen's (1988) guidelines for effect size ($< .10$ small effect, $.10 - .50$ medium effect, $> .50$ large effect), standardized and unstandardized path coefficients between each latent constructs were analyzed. All parameter estimates for direct and indirect effects can be found in Table 6 for the primary model and Table 7 for the alternative model.

The primary structural model (Figure 6) displays the proposed direct effects from attachment anxiety and attachment avoidance to career calling presence and from career calling presence to CDSE, college adjustment, and life satisfaction. Two additional direct effects were proposed from CDSE and college adjustment to life satisfaction. The following results are reported as standardized effect sizes (Figure 8). Attachment

avoidance had a small negative direct effect ($r = -.192, p < .05$) on career calling presence. Attachment anxiety, however, did not have a significant ($p = .13$) direct effect on career calling presence. Subsequently, career calling was found to have a significant ($p < .001$) large direct positive effect on CDSE ($r = .528$) and a significant ($p < .001$) medium direct positive effect ($r = .472$) on college adjustment. Career calling did not, however, have a significant direct effect ($p = .796$) on life satisfaction. Finally, CDSE and college adjustment were found to have significant ($p < .001$) direct positive effects on life satisfaction. CDSE displayed a small to medium positive direct effect size ($r = .274$), while college adjustment displayed a large positive direct effect size ($r = .502$).

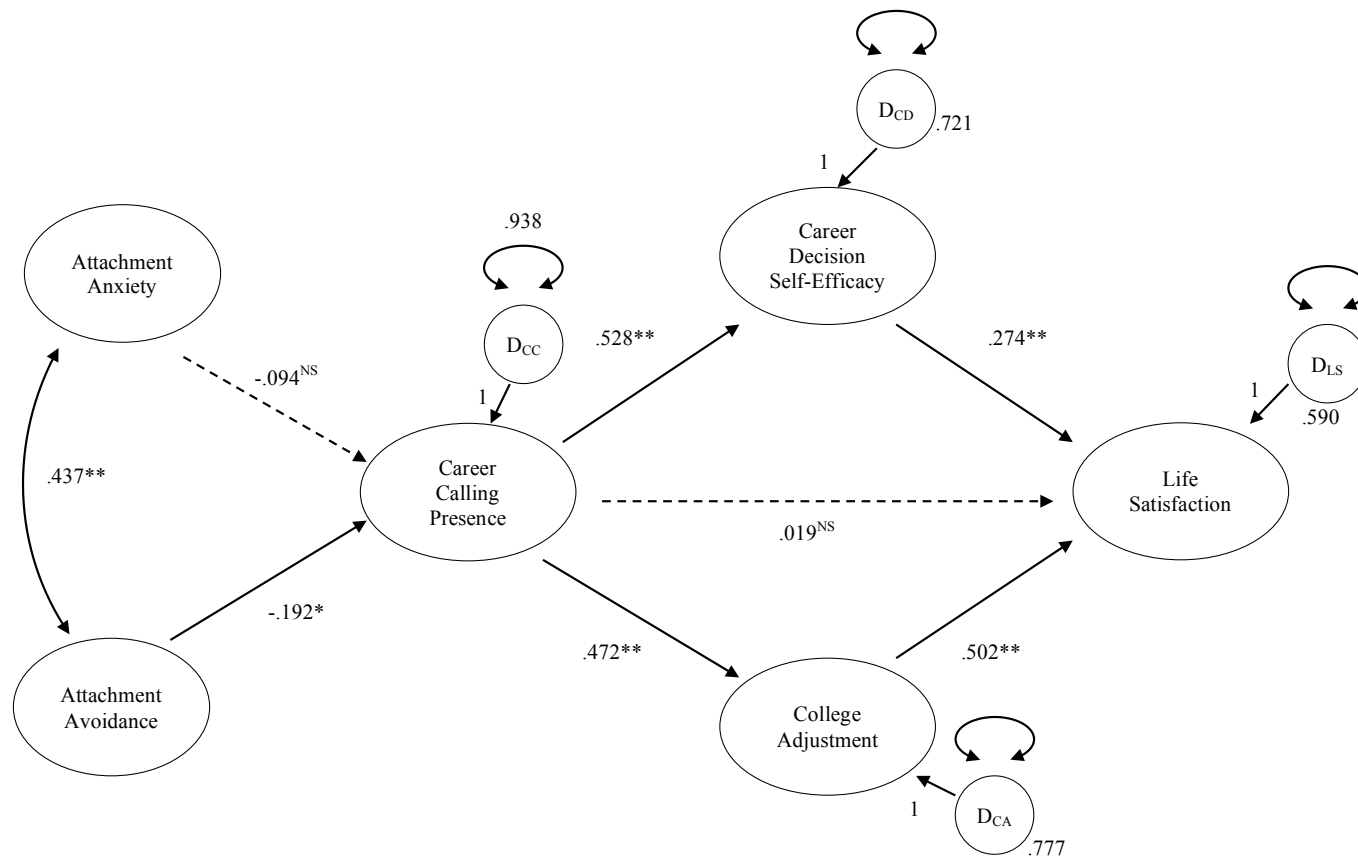


Figure 8. Primary Structural Regression Model with Standardized Parameter Estimates
 Standardized estimates for disturbances are proportions of unexplained variance. * = $p < .05$ ** = $p < .001$, NS = Not Significant.
 Dashed line represents non-significant structural path.

Given the significant positive direct effects of career calling on CDSE and college adjustment, career calling was shown to have an indirect but not direct positive effect on life satisfaction. As described by Kline (2011) and others (StataCorp, 2015; UCLA: Statistical Consulting Group, 2012), indirect effects are calculated by the product of the direct effects they are comprised of. Attachment avoidance demonstrated significant negative indirect effects via career calling on CDSE ($r = -.102, p < .05$) and college adjustment ($r = -.091, p < .05$). Career calling had small, positive indirect effects on life satisfaction through the mediating variables of CDSE ($r = .144, p < .001$) and college adjustment ($r = .237, p < .001$). CDSE and college adjustment fully mediated the effect of career calling on life satisfaction. Combined, career calling had a significant ($p < .001$) medium (.382) positive indirect effect on life satisfaction. Overall, the model accounted for 6.2% of the variance in career calling, 27.9% of the variance in CDSE, 22.3% of the variance in college adjustment, and 41.0% of the variance in life satisfaction.

In an effort to prevent confirmation bias and to generate theoretically driven model development, the alternative model was also submitted to SEM procedures. The alternative structural model (Figure 7) estimated identical direct effects among each latent construct but also added direct effects from both avoidant and anxious attachment to career decision self-efficacy and college adjustment. Standardized parameter estimates are reported here and can be found in Figure 9. Attachment avoidance had a significant ($p = .016$) small, direct negative effect ($r = -.150$) on career calling, a significant ($p = .005$) small, direct negative effect on CDSE ($r = -.137$), and a significant ($p = .002$), small, direct negative effect on college adjustment ($r = -.157$). Attachment anxiety did not have

a significant ($p = .82$), effect on career calling presence but did have a significant ($p < .001$) small to medium, direct negative effect ($r = -.279$) on CDSE and a significant ($p < .001$) medium to large ($r = -.441$) direct negative effect on college adjustment. Career calling was found to have a significant ($p < .001$) medium direct positive effect on CDSE ($r = .441$) and a significant ($p < .001$) medium, direct positive effect ($r = .347$) on college adjustment. Career calling did not, however, have a significant positive direct effect ($p = .892$) on life satisfaction. Finally, CDSE had a significant ($< .001$) medium ($r = .252$) direct, positive effect on life satisfaction and college adjustment had a significant ($p < .001$) large ($r = .530$) direct, positive effect on life satisfaction.

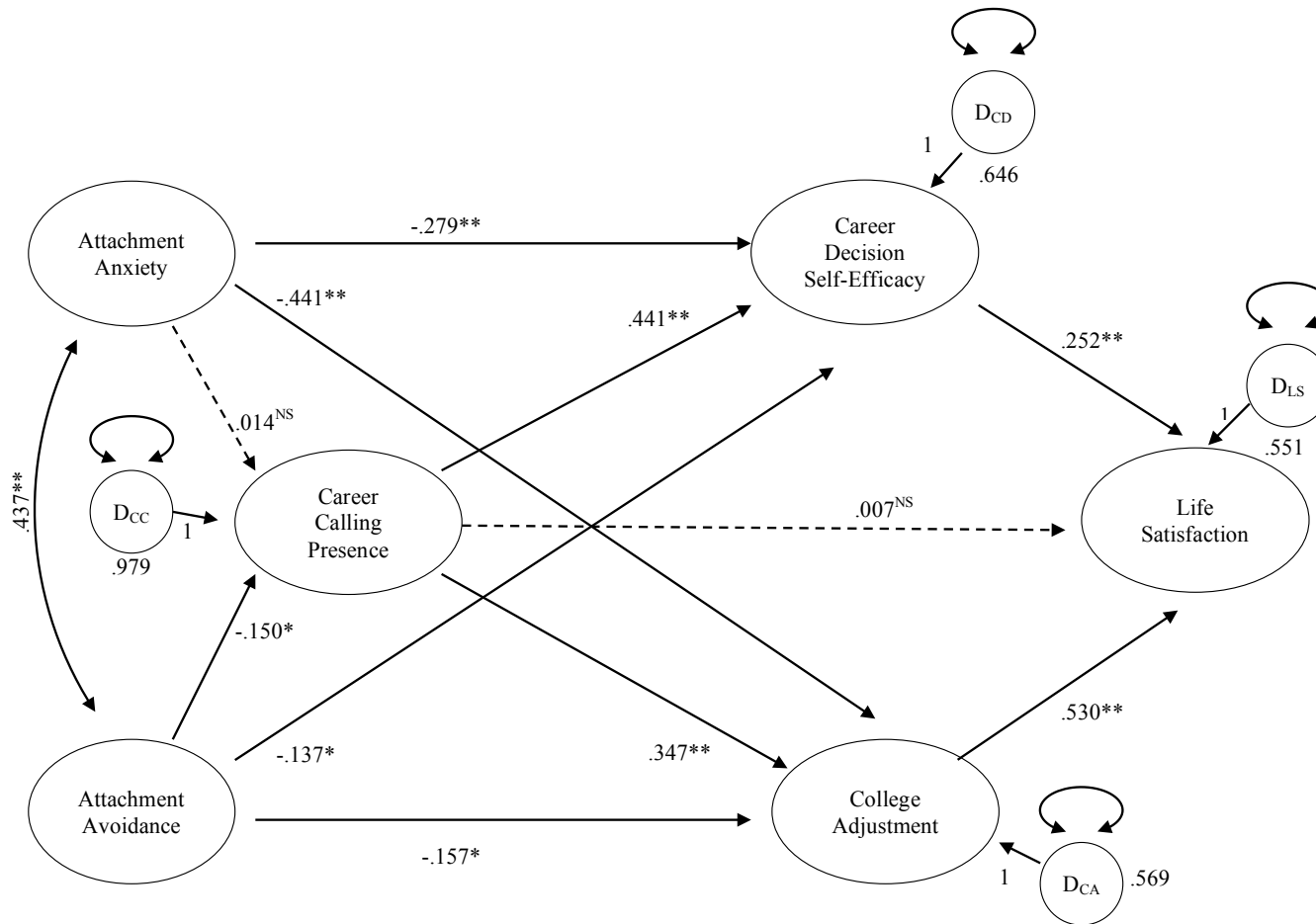


Figure 9. Alternative Structural Regression Model with Standardized Parameter Estimates
 Standardized estimates for disturbances are proportions of unexplained variance. * = $p < .05$ ** = $p < .001$, NS = Not Significant.
 Dashed line represents non-significant structural path.

As was also the case in the primary structural model, in the alternative structural model career calling had significant direct effects on CDSE and college adjustment but not on life satisfaction. Career calling had small, positive indirect effects on life satisfaction through the mediating variables of CDSE ($r = .111$) and college adjustment ($r = .184$). Combined, career calling had a significant ($p < .001$) medium total positive effect ($r = .303$) on life satisfaction. Additionally, attachment anxiety and avoidance also demonstrated indirect effects on life satisfaction through the mediating variables of CDSE and college adjustment. Attachment anxiety demonstrated small negative indirect effects on life satisfaction through the mediating variables of CDSE ($r = -.070$) and college adjustment ($r = -.234$), as did attachment avoidance through the mediating variables of CDSE ($r = -.034$) and college adjustment ($r = -.083$). Overall, attachment anxiety demonstrated a significant ($p < .001$), small-medium negative indirect effect ($r = -.299$) on life satisfaction and attachment avoidance demonstrated a significant ($p < .001$) small negative indirect effect ($r = -.163$) on life satisfaction. Attachment avoidance also demonstrated small negative indirect effects via career calling on CDSE ($r = -.066$, $p < .05$) and College Adjustment ($r = -.052$, $p < .05$).

The alternative model accounted for 2.1% of the variance in career calling, 35.4% of the variance in CDSE, 43.1% of the variance in college adjustment, and 44.9% of the variance in life satisfaction. The alternative model increased the overall variance accounted for in the constructs of CDSE, college adjustment, and life satisfaction but slightly decreased the variance accounted for in career calling. The two models were submitted to a likelihood ratio chi-square difference test (Kline, 2011), which provided a

significant chi-square statistic ($\chi^2(4) = 186.07, p < .001$) which verified significant model improvement occurred by including the additional pathways between attachment avoidance and anxiety to CDSE and college adjustment in the alternative model (Figure 9) over the primary model (Figure 8). An additional means of evaluating model fit is based on the Akaike Information Criterion (AIC) statistic which estimates model fit based on hypothetical replication of the same sample size randomly selected from the same sample population (Barrett, 2007; Kline, 2011; Weston & Gore, 2006). While not informative on its own, the AIC statistic favors parsimony and the smaller value among competing models is considered to have better fit. The AIC values for the primary and alternative models were 24438.64 and 24273.34 respectively. While the AIC value statistic should not be used to compare nested models, which exist in the present study, it is informative in this case as an additional measure of model fit. Taken together, the measures of variance accounted for, model fit, and effect sizes described in the results suggest the alternative structural model was found to best fit the collected data among each latent variable and was thus retained while the primary structural model was rejected.

CHAPTER V

DISCUSSION

The purpose of the present study was to investigate the construct of career calling as it is influenced by anxious and avoidant attachment styles and as it contributes to the development of career-decision self-efficacy, college adjustment, and overall life satisfaction within a sample of undergraduate college students. The study sought to conceptualize the role of career calling from a theoretical perspective that integrated vocational and interpersonal developmental theories. The construct of career calling explores the personal fit, intrinsic meaning, and prosocial orientation that individuals who identify with the presence of a calling feel toward their careers (Dik & Duffy, 2009). It has also been applied to college populations such that students who have identified a career calling experience increased career decision self-efficacy, academic satisfaction, and life satisfaction (Duffy, Allan, et al., 2012, 2011). As applied to vocational development in general, and college student functioning specifically, career calling has a relatively small body of research (Adams, 2012). Recent authors have identified the need for theoretically driven investigation aimed at exploring career calling within the context of other career and developmental variables (Duffy & Dik, 2013). As such, the present study investigated two proposed structural models of career calling and college adjustment based on attachment theory (Bowlby, 1969) and social cognitive career theory (Lent et al., 1994).

As a theory of interpersonal development, attachment theory (Bowlby, 1969, 1973) emphasizes the influence of childhood relational experiences in the creation of trust, self-esteem, and independence as adults (Ainsworth et al., 1978; Bowlby, 1973). Attachment style has also been found to contribute toward better social and emotional adjustment, self-confidence, and overall academic success among college students (Hiester et al., 2009; Lapsley et al., 1990; Mattanah et al., 2011). As a theory of vocational development, social cognitive career theory (SCCT, Lent et al., 1994) emphasizes the role of environment, personal factors, and individual behaviors in learning experiences related to vocational interests, self-efficacy, career selection, and ultimately life satisfaction. Taken together, attachment theory and SCCT provided the theoretical foundation for the present study. Previous authors have described the integration of these two theories among college students in relation to the development of career decision-making and self-efficacy in academic and vocational domains (Wright et al., 2014; Wright & Perrone, 2008). The present study aimed to further investigate the integrative role of attachment style and the effects of career calling within the SCCT framework. Little previous research has integrated career calling and theories of career development in vocational literature and exploring various applications of purpose and meaning within the context of vocational theory is currently a central aspect of the field (Dik et al., 2015). Furthermore, no previous study has specifically examined the relationship of attachment styles and career calling within a developmental model like SCCT.

Based on the comprehensive literature review described in chapter two, anxious and avoidant attachment styles, career calling, CDSE, college adjustment, and life

satisfaction were selected as the constructs of interest in order to integrate attachment theory, social cognitive career theory, and career calling. Research on attachment has consistently found attachment security to be associated with increased self-esteem, self-efficacy, (Mattanah et al., 2011) intimacy, and relationship security in addition to identity formation in college students (Kenny, 1987; Lapsley & Edgerton, 2002). The identification of career calling presence in a student's life has also been found to predict increased career-decision self-efficacy, life satisfaction, and academic satisfaction (Duffy, Allan, et al., 2012, 2011). SCCT appeared to be a natural fit in providing a theoretical foundation for career calling as it emphasizes the roles of background contextual factors and personal attributes in the development of CDSE, outcome expectations, and subsequent career-related interests, goals, and behaviors (Lent et al., 1994). As such, career calling is highly consistent with SCCT's description of proximal contextual factors that become active during career development and greatly contribute to the individual's identification of career interests, goal setting, and action behaviors to meet those goals (Lent et al., 2000).

The present study utilized structural equation modeling (SEM) to examine two theoretical models in which attachment style, career calling presence, CDSE, and college adjustment were interrelated and hypothesized to contribute toward overall life satisfaction. The primary model (Figure 1) postulated that anxious and avoidant attachment styles would have direct, negative effects on levels of career calling presence. Subsequently, increased levels of career calling presence would have direct, positive effects on levels of career decision self-efficacy and college adjustment in addition to increased levels of life satisfaction. Finally, increased levels of career decision self-

efficacy and college adjustment would also have direct, positive effects on the student's reported levels of life satisfaction.

The alternative model (Figure 2) built upon the pathways described in the primary model, by adding two additional direct, negative effects from both anxious and avoidant attachment to career decision self-efficacy and college adjustment. Thus, the alternative model implied that attachment styles have both direct and indirect effects on career decision self-efficacy and college adjustment, through the partial mediating variable of career calling. Career decision self-efficacy, career calling, and college adjustment were subsequently hypothesized to have direct effects on life satisfaction. Thus, the following research questions (RQs) were tested:

- Q1 Does the primary theoretical model (Figure 1) adequately fit the observed relationships in the data?
- Q2 Does the alternative theoretical model (Figure 2) provide better statistical fit to the observed data than the primary model?

The primary model posits that the exogenous variables of anxious and avoidant attachment style directly and negatively affect the endogenous variable of career calling. Career calling subsequently has a direct, positive effect on the endogenous variables of career decision self-efficacy, college adjustment, and life satisfaction. Career decision self-efficacy and college adjustment are also posited to have direct, positive effects of the endogenous variable of life satisfaction. The alternative model builds from the primary model and includes each of the same direct effects from each variable described above. The alternative model also posits that the endogenous variables of anxious and avoidant attachment style will have direct, negative effects on the endogenous variables of career decision self-efficacy and college adjustment.

Overview of Findings

Results from the SEM procedures described in Chapter IV provided evidence that while both primary (Figures 8) and alternative (Figures 9) theoretical models demonstrated structural fit to the data, the alternative model provided considerably better fit than the primary model as evidenced by improved model fit statistics (see Table 5), a significant chi-square difference test, and increased variance accounted for among the constructs of CDSE, college adjustment, and life satisfaction. These data provided some evidence in support of RQ 1; the primary theoretical model did somewhat adequately fit the observed relationships within the data. However, RQ 2 was better supported by the data, which indicated the alternative model provided increased statistical fit to the observed relationships within the data. Thus, the primary model was rejected and the alternative model was retained.

The results from the alternative model demonstrated that anxious and avoidant attachment had a significant direct influence on career calling, career decision self-efficacy (CDSE), and college adjustment, and indirect effects on CDSE and college adjustment as mediated by career calling. Individuals with more anxious or avoidant attachment styles endorsed decreased CDSE, and decreased college adjustment. CDSE and college adjustment also mediated the effects of both attachment styles to life satisfaction. Accordingly, avoidant and anxious attachment styles were associated with decreased life satisfaction via the effects of decreased CDSE and decreased college adjustment. As related to career calling, attachment avoidance, but not anxiety, demonstrated a significant direct effect on career calling presence. Individuals with

increased attachment avoidance were less likely to endorse the presence of a career calling in their lives. Thus, avoidantly attached individuals were less likely to experience a transcendent summons, purpose or meaning in work, or value prosocial orientation, which were the three domains of career calling measured in the study. It is theoretically possible that due to more avoidant individuals not actively exploring their environment or wanting interpersonal closeness, decreased desire for a career calling may also occur. This effect was only significant, however, for attachment avoidance. In the primary model, attachment anxiety did not have a significant effect on career calling. Similar results were found in the alternative model in which a significant, inverse relationship existed between attachment avoidance and career calling while the relationship between attachment anxiety and career calling was not significant.

Results based on the alternative model found that an increased presence of a career calling in the individual's life was associated with increased CDSE and college adjustment. Career calling was also related to increased life satisfaction via indirect effects as mediated by CDSE and college adjustment. Specifically, career calling was found to have significant, direct effects on CDSE and college adjustment, but not life satisfaction. As students endorsed the increased presence of a career calling in their lives, they were also more likely to experience higher self-efficacy related to career decision-making and better adjustment to college. As college adjustment and CDSE increased, students were also more likely to endorse greater life satisfaction. These results indicate that career calling indirectly, but not directly, influences life satisfaction as mediated by the effects of CDSE and college adjustment. These results imply that college students identifying with the presence of a career calling in their lives are also found to endorse

increased life satisfaction due in part to the roles of increased CDSE and better overall college adjustment.

Research Implications

Support for previous research. The results of this study provide both support for previously established research in addition to unique empirical findings and original contributions to the literature. A vast body of research has demonstrated secure attachment to parents, peers, and romantic partners is associated with decreased separation anxiety (Mattanah et al., 2004), increased autonomy during the college transition (Kenny, 1987), improved social competency, decreased psychological distress (Mallinckrodt & Wei, 2005), and better overall adjustment to college (Hiester et al., 2009; Hinderlie & Kenny, 2002; Holmbeck & Wandrei, 1993; Kenny & Rice, 1995; Larose & Boivin, 1998; Rice et al., 1995; Vivona, 2000). The present study's findings that anxious and avoidant attachment style were directly related to decreased overall college adjustment is thus highly consistent. Given that college adjustment in the present study was measured using the SACQ with academic, social, emotional, and institutional attachment domains (Baker & Siryk, 1986, 1999), the findings that anxious and avoidant attachment were inversely related to college adjustment is highly consistent with previous research. Lapsley (1990) and Lapsley and Edgerton (2002) also found insecure attachment to be negatively related to the social and emotional adjustment domains of the SACQ. Secure attachment style has also been found to directly affect career search efficacy, career decision-making efficacy, and decreased career indecisiveness (Braunstein-Bercovitz, 2013; O'Brien et al., 2000; Ryan et al., 1996; Tokar et al., 2003; Vignoli, 2009; Wolfe & Betz, 2004; Wright et al., 2014). The present study supported

these results in finding that attachment anxiety and attachment avoidance were associated with decreased career decision self-efficacy.

Pertaining to the construct of career calling, several aspects of the present study were found to support previously established research as well, most notably, the direct positive effect found between career calling and CDSE. Previous authors have established that career calling contributes to career decidedness, comfort with career choices (Duffy & Sedlacek, 2007), career related planning and confidence (Hirschi & Herrmann, 2013), and career-decision self-efficacy (Duffy, Allan, et al., 2012),). Thus, the direct positive effect between career calling and CDSE further supports this past research. The mediational relationship between career calling and life satisfaction also constituted an important contribution of the present study. Past research has found substantial evidence for a direct link between career calling and life satisfaction in working adult populations (Bunderson & Thompson, 2009; Peterson et al., 2009; Wrzesniewski et al., 1997), however this direct relationship in college students appears to be more elusive. Rather than directly impacting college student life satisfaction, career calling has been found to have an indirect relationship with life satisfaction as mediated by variables like academic satisfaction (Duffy, Allan, et al., 2012), life meaning (Duffy & Sedlacek, 2010), and vocational identity development (Hirschi & Herrmann, 2012). Similar results were found in the present study in which the direct link between career calling and life satisfaction was not significant, however a positive indirect effect via the influence of CDSE and college adjustment was. These results are highly consistent with research by Duffy, Allan, et al., (2012, 2011) who also found the career calling to life satisfaction link to be mediated by such constructs as CDSE, work hope, academic

satisfaction, and life meaning. Thus, it is likely that among college student populations, identifying a career calling does not directly benefit life satisfaction but rather it fosters increased self-efficacy related to career decision making and overall college functioning and adjustment, which subsequently contribute to increased life satisfaction.

Finally, the direct positive effects found in the present study from CDSE and college adjustment to life satisfaction provide further support for previously established research in both of these research domains. Several authors have established links between self-efficacy related constructs such as academic goal self-efficacy (Singley, Lent, & Sheu, 2010), college self-efficacy (Ojeda et al., 2011), and outcome expectations (Lent et al., 2007) as related to academic and life satisfaction. A direct positive link between CDSE and life satisfaction was also previously established by Wright and Perrone (2010). The link between college adjustment and life satisfaction has also been previously demonstrated in terms of academic adjustment (Duffy, Manuel, et al., 2011), social adjustment (Stevic & Ward, 2008), emotional adjustment (Renshaw & Cohen, 2013), and institutional attachment (Townley & Katz, 2013). Thus, the links between CDSE, college adjustment, and life satisfaction in the present study further contribute to an established body of literature in these domains.

Original empirical findings. Two specific findings in the present study represent original contributions to the literature. While previous research has demonstrated a positive link between career calling and academic satisfaction (Duffy, Allan, et al., 2012, 2011), which is often considered to be one part of overall college adjustment (Baker & Siryk, 1986, 1999), little research has examined the influence of career calling on other domains of college adjustment such as social or emotional adjustment. As described by

Credé and Niehorster (2012), Mattanah et al., (2011), and others, the construct of college adjustment is multifaceted and composed of numerous variables. In utilizing the SACQ (Baker & Siryk, 1986, 1999) to measure the latent construct of college adjustment in the present study, data were gathered pertaining to the domains of academic adjustment, social adjustment, emotional adjustment, and institutional attachment (see figure 7).

While the finding of a direct positive effect from career calling to college adjustment represents a replication of previous research as it pertains to the academic domain (Duffy, Allan, et al., 2012, 2011), the incorporation of social, emotional, and institutional related data constitute original empirical findings. No previous research has examined the link between career calling and college adjustment as measured by the SACQ. These data imply that in addition to academic satisfaction and adjustment, career calling may also have positive effects on other aspects of college functioning such as social adjustment, emotional adjustment, and institutional attachment.

It may be the case that as one's commitment to and satisfaction in academic performance increases, as a product of having identified a career calling (Duffy, Allan, et al., 2012), so too might other areas of college functioning. For example, feelings of attachment to one's institution might improve as a product of the meaning a student has derived from their coursework. Social connectedness and adjustment might improve by creating relationships to others with similar career interests as a product of an identified career calling. Increased feelings of self-efficacy, identity development, and satisfaction, previously documented effects of career calling presence (Duffy & Dik, 2013), may contribute to overall improvements in mood and emotional well-being, further facilitating successful overall college functioning. While these possible interpretations can only be

considered speculation at this point, they underscore the need for continued research and replication, to investigate the influence of career calling on college adjustment broadly defined, incorporating more than just academic domains, but also social and emotional functioning.

The second original contribution of this study was in regards to the relationship between attachment styles and career calling presence. While attachment theory has been applied to many aspects of college student functioning in the past (Mattanah et al., 2011), no previous research has examined the influence of attachment styles toward the development and identification of a career calling. As described further under theoretical implications below, attachment styles, social cognitive career theory, and career calling were conceptualized from an integrated perspective. Previous authors have hypothesized that attachment may fit within an SCCT framework as a background contextual factor that influences learning experiences, self-efficacy, and outcome expectations (Wright et al., 2014) and career calling has been suggested to fit within SCCT as a learning experience that also affects career outcome expectations (Domene, 2012). As applied to college student functioning, research has suggested that secure attachment style is associated with developmental advances such as increased career identity and exploration (Mattanah et al., 2011). Thus, the present study hypothesized that attachment styles would be directly related to career calling; specifically, that attachment anxiety and attachment avoidance would be inversely related to career calling presence. In both the primary (Figure 8) and alternative (Figure 9) structural models, attachment avoidance demonstrated a significant, direct negative effect on career calling presence. Attachment anxiety, however, had no significant associations with career calling, demonstrating a

non-significant, effect in the alternative model. Thus, attachment anxiety does not appear to have any significant effect on career calling.

These results implied that students endorsing more attachment avoidance, were less likely to endorse the presence of a career calling. Inversely, individuals endorsing less attachment avoidance were more likely to identify a career calling as present in their lives. These data provided partial support of Mattanah et al.'s (2011) finding that decreased levels of insecure attachment and subsequently increased levels of secure attachment, were associated with increased career identity and career exploration, which in this case took the form of a career calling. This result also provides evidence for a plausible link between avoidant attachment and the development of career calling in general, which has not been previously studied in the career calling literature. Individuals with an avoidant attachment style fear rejection in intimate relationships and subsequently avoid interpersonal closeness as a result, frequently blaming others for interpersonal difficulties as a means of maintaining self-esteem (Bartholomew & Horowitz, 1991). It stands to reason that these individuals might lack the self-awareness needed to develop a career calling or might avoid the personal investment, vulnerability, and risk of failure required to pursue it as a career. Securely attached individuals, however, are more trusting of themselves and others in relationships and are willing to experience intimacy with others despite the potential risk emotionally injury (Bartholomew & Horowitz, 1991). It stands to reason that these individuals might possess the internal awareness needed to identify a calling, and would be more willing to make the necessary personal investments and risk potential failures in order to pursue it as a career.

As stated previously, this interpretation is only speculation at this point. It does not, for example, offer any possible explanation for why attachment anxiety was not found to have a significant effect on career calling nor does evidence exist to confirm or deny the assumptions made about attachment avoidance. Anxiously attached individuals often rely on the opinions and decision-making of significant others in their lives, in an attempt to avoid separation or isolation, which also prevents self-exploration and the acquisition of new information or skills (Mikulincer & Shaver, 2007). This overreliance on interpersonal closeness may negatively impact the development and presence of a career calling, as anxiously attached individuals would likely struggle with identifying personal interests and meaning making, separate from their partner. The non-significant link between attachment anxiety and career calling, however, provides little support for this interpretation beyond speculation. While these results constitute original findings pertaining to attachment and career calling development, they further emphasize the need for continued research between these constructs. The interpretations provided here should be taken with caution, as simply not enough information currently exists regarding the relationship between these constructs. Further replication of these findings is needed to provide more accurate interpretations and theoretical understanding.

Theoretical Implications

The primary goal of this study was to provide evidence in support of a theoretical foundation from which to conceptualize and apply the construct of career calling to college students' adjustment and functioning. As noted by previous researchers (Adams, 2012; Domene, 2012; Duffy & Dik, 2013), the need for a theoretical application and foundation from which to apply this construct has long been a glaring omission in the

relatively small career calling literature. Since its original development, social cognitive career theory (SCCT; Lent et al., 1994, 2000) has been utilized to consider both the personal agency that exists within one's career pursuits, while also taking into account background contextual factors from the environment that can create supports or barriers. Personal inputs such as personality style can also influence not only career pursuits, but also self-efficacy beliefs, and expectations of the future. Personal inputs like gender, ethnicity, and heredity can operate as a distal influence, largely occurring in the past, a proximal influence, occurring in the present, or both, manifesting throughout the life of the individual (Lent et al., 2000). An example of a personal input with both proximal and distal effects is attachment style, which begins with the early parent-child relationship, but also manifests later in life through interpersonal and romantic relationships in adulthood. Attachment theory (Bowlby, 1969) provides a comprehensive understanding regarding this progression in which early parent interactions create a foundation from which individuals view themselves and their roles in adult relationships. While the SCCT model did not originally incorporate attachment styles, recent authors have found this conceptualization further accounts for attachment styles, as person inputs, influencing supports or barriers that occur throughout one's career pursuits (Wright et al., 2014; Wright & Perrone, 2008), and thus attachment styles are considered to be congruent with the SCCT model.

This study hypothesized that in utilizing the SCCT framework (Figure 5), attachment styles represented personal inputs of the individual, that create either supports or barriers based on the quality of interpersonal relationships the individual experiences, first with parents and later with romantic partners and peers. According to SCCT (Lent et

al., 1994), personal inputs and background contextual factors influence learning experiences for the individual, such as hearing about a particular topic in class, or gaining exposure to a particular career field. If an individual has a positive learning experience via novel exposure or task participation, increased self-efficacy regarding personal ability is thought to develop, in addition to further positive expectation toward activity reengagement in the future. Thus, career interests form as a product of experience, perceptions of competence, and beliefs in future positive outcomes (Lent et al., 1994, 2000). Career calling has been thought to exist as a learning experience within the SCCT model (Domene, 2012). As individuals become exposed to potential career domains, the hallmarks of a career calling may more become evident, such as a transcendent summons, sense of purpose and meaning, and prosocial orientation toward work (Dik et al., 2012). Subsequently, interests contribute toward goals, which lead to career oriented action, and ideally increased satisfaction with one's life and career (Lent & Brown, 2008). As a learning experience, an individual's identification of a career calling may increase self-efficacy beliefs and outcome expectations pertaining to their specific line of work (Domene, 2012).

In designing the SEM procedures for the present study, both primary and alternative models were designed in such a way as to test the theoretical integration of attachment styles and career calling within SCCT. Anxious and avoidant attachment styles were established as exogenous variables, exerting influence on career calling presence (in the primary model), in addition to CDSE and college adjustment (in the alternate model) in much the same way personal inputs exert influence on learning experiences and self-efficacy expectations in the SCCT model (Figure 5). Additionally,

both models incorporated the SCCT mediational relationship between learning experiences and outcome attainments via self-efficacy and outcome expectations as represented by the indirect effect of career calling presence to life satisfaction via the mediational roles of CDSE and college adjustment. While the primary and alternative models in the present study were not designed to reproduce the SCCT framework in its entirety, as evidenced by the exclusion of career interests, goals, and actions, they do represent one of the first attempts within the career calling literature to apply a theoretical foundation toward the understanding of career calling functioning.

Thus, from a theoretical perspective, the results from both primary (Figure 8) and alternative (Figure 9) models are noteworthy. The significant direct negative effect of attachment avoidance to career calling provides support of person inputs influencing career calling as a learning experience. Furthermore, the inverse relationship between these two variables supports the belief that avoidant attachment style, in which an individual distrusts others, experiences intense self-criticism, inflates positive views of self, and avoids interpersonal closeness for fear of rejection (Mikulincer & Shaver, 2007), may obstruct the development and presence of a career calling. The critical aspects of career calling as defined by Dik et al., (2012; i.e. transcendent summons, sense of purpose and meaning, and prosocial orientation) seem largely inconsistent with the personality traits associated with attachment avoidance (Bartholomew & Horowitz, 1991; Mikulincer & Shaver, 2007), in which individuals may lack the personal awareness needed to develop a calling or the desire to benefit society through prosocial work (Dik et al., 2012). This interpretation was further supported by the negative relationship between attachment avoidance and career calling found in this study. From an SCCT perspective,

this finding is highly consistent with the detrimental effect that negative personal inputs can have on learning experiences. Securely attached individuals; however, are more trusting of themselves and have been found to possess increased internal awareness and balanced perceptions of self (Mikulincer, 1995). Attachment security likely manifests as a personal input that facilitates positive learning experiences, as described in the SCCT model (Lent et al., 1994, 2000), in this case aiding in the development and presence of a calling.

The direct negative effects from attachment anxiety and attachment avoidance to CDSE and college adjustment in the alternative model (Figure 9) are also consistent with the potential negative influence of personal inputs on learning experiences as described by SCCT. Per SCCT, learning experiences directly influence self-efficacy expectations. Braunstein-Bercovitz (2013) found that in both anxious and avoidant attachment, individuals experienced increased self-criticism and subsequently decreased career decision-making. Similarly, the results of the present study demonstrate decreased self-efficacy as related to career decision-making and decreased perceptions of college adjustment among individuals with anxious and avoidant attachment. The positive direct effects from career calling to CDSE and college adjustment also provide support for the role of career calling as a learning experience. Both models of the present study found that as individuals endorsed the presence of a career calling, they also endorsed increased feelings of self-efficacy and increased perceptions of positive college adjustment outcomes. Both of these results are highly consistent with Lent et al.'s (1994) description of positive learning experiences in SCCT. When learning experiences are positive, they cause the individual to feel more confident in their personal ability and develop positive

outcome expectations of themselves in the future. Similarly, increased career calling presence was associated with increased self-efficacy related to career decision-making and more positive expectations and perceptions of the student's own functioning within the college environment.

The negative direct effects from attachment anxiety and avoidance to CDSE, in addition to the negative direct effect from attachment avoidance to career calling offer support to the role of attachment as a personal input that influence proximal and distal effects respectively and are further consistent with SCCT principles (Lent et al., 1994, 2000). Taken together, person inputs and learning experiences also contribute ultimately to preferred outcome attainments. In recent articles discussing further applications of the SCCT model, preferred outcome attainments, such as work and life satisfaction have been discussed as the ultimate goal of vocational development (Lent & Brown, 2008, 2013). This theoretical extension is highly consistent with current career calling research in which the presence of a calling has been found to contribute to academic, work, and life satisfaction within college student populations (Duffy, Allan, et al., 2012). The results from both primary and alternative models in this study thus support the influence of learning experience on outcome attainments, via indirect, but not direct effect pathways. Positive effects were found from career calling to life satisfaction via the mediational role of CDSE and college adjustment. It is important to note the direct effect pathway from career calling to life satisfaction was not found to be significant. These results are highly consistent with both past research on career calling and SCCT. Pertaining to the career calling literature, self-efficacy and academic satisfaction have been previously found to mediate the effects of career calling to life satisfaction (Duffy,

Allan, et al., 2012, 2011). The present study extends this research to include CDSE and college adjustment as mediators of career calling to life satisfaction. These findings also lend further support to the role of career calling as a learning experience in that CDSE contributed a significant direct positive effect on the outcome attainment of life satisfaction in addition to mediating the positive effect of career calling to life satisfaction, while the direct effect from career calling to life satisfaction was not significant. Both findings are consistent with the SCCT framework (Lent et al., 1994).

Furthermore, the role of college adjustment is also particularly relevant. This construct was measured by assessing student perceptions of their own functioning in academic, social, emotional, and institutional domains via the SACQ (Baker & Siryk, 1984, 1999) and contains similarities with outcome expectations in SCCT. For example, one's belief and expectation about their own ability to adapt within academic, social, and emotional domains all comprise the central aspects of college adjustment and are consistent with the role of outcome expectations within the SCCT model. Both primary and alternative models demonstrated significant positive direct effects from college adjustment to life satisfaction and significant indirect effects from career calling and attachment style to life satisfaction, as mediated by college adjustment. These results imply that college adjustment mediates the link between career calling, attachment style, and life satisfaction. Further research is still needed to identify similarities between college adjustment and the outcome expectations, goals, and actions of SCCT (Lent et al., 1994, 2000). While this study considered the student's perceptions and individual expectations associated with their own college adjustment, this construct is also comprised of the choices, goal setting, and goal-directed actions students engage in,

facilitating their own academic success. Further research might build upon these results by measuring more specifically how career calling presence influences the types of goals a student may establish and the actions taken to reach those goals as related to overall college functioning. As described by Lent and Brown (2006), SCCT can be used to account for the development of personal satisfaction in career and academic domains as influenced by self-efficacy and outcome expectations through participation and progress within goal directed activities. These activities may very well involve the academic, social, emotional, and institutional adjustment domains measured by college adjustment and demonstrated in the primary and alternative models of the present study.

The final theoretical implication from these results in support of integrating attachment styles, career calling, and college adjustment within SCCT, is found in the overall fit of the two models throughout the SEM procedures. As described in chapter four, the alternative model was retained and found to provide a stronger fit to the collected data than the primary model. These two models differed due to the addition of direct main effect pathways from attachment anxiety and avoidance to CDSE and college adjustment in the alternative model. From a theoretical perspective, these additional pathways provide a better representation of the SCCT model due to the potential for personal inputs to influence not just learning experiences, but self-efficacy expectations, and ultimately outcome attainments. As described by Lent and Brown (2008), personality and affective traits may influence life satisfaction via numerous cognitive, affective, behavioral, and social pathways such as self-efficacy beliefs and environmental experiences. Data from the alternative model in the present study supports this statement by providing evidence of personality traits, represented by attachment styles, having

significant direct effects on self-efficacy beliefs, learning opportunities, and environment experiences represented by CDSE, career calling presence, and college adjustment, in addition to indirect effects on outcome attainments such as life satisfaction. Thus, the improved statistical fit found in the alternative model is both theoretically consistent with SCCT and lends further theoretical support to the hypothesis that attachment style, career calling, and college adjustment can each be further understood using the social cognitive career theory model.

Practice Implications

Previous research pertaining to the clinical application of career calling is relatively scarce. What literature does exist implies that integrating the identification and development of a career calling into career counseling may contribute to increased academic performance and life satisfaction for college students. Counseling psychologists are uniquely suited to offer career counseling services as the educational and vocational development of individuals and environments has long been a fundamental underlying theme within the profession (Gelso & Fretz, 2002). Furthermore, recommendations oriented toward vocational domains may be particularly relevant as career counseling has historically been a point of differentiation for counseling psychologists but has been declining in prevalence over the last 20 years (Goodyear et al., 2008). Dik, Duffy, and Eldridge (2009) further assert that discussing the integration of calling into career counseling may be an ideal fit as clients often present to treatment with a desire to find meaning and purpose in work and life. The authors also endorse the use of SCCT (Lent et al., 1994) as a model through which career calling may be explored in counseling. This link between SCCT and career calling, as supported in the results of this research,

constitutes the primary practice implication of the present study. The results described in the preceding chapters support theoretical integration of SCCT and career calling in addition to potential benefits college students stand to gain from building awareness in this area. Thus, counseling psychologists providing career development services, particularly within the context of university counseling centers, are best positioned to apply these results.

The results of this study suggest that developing a sense of calling within college student populations contributes to increased self-efficacy beliefs regarding one's career decision in addition to better college adjustment and ultimately life satisfaction. Thus, integrating calling within college counseling settings may directly influence students' wellbeing and functioning on campus. In their discussion of incorporating calling principles into clinical settings, Dik, Duffy, and Eldridge (2009) focused on the three specific content areas of: transcendent summons, meaningful work, and other-oriented values. These three areas provide potential intervention opportunities for treatment. By facilitating discussion of a transcendent summons, psychologists can encourage client exploration of personal desires for future work, clarifying values and belief systems. Given that transcendent summons originates from numerous areas (e.g., religion, spirituality, family legacy, or societal need; Dik & Duffy, 2009), helping clients connect current academic strivings and work with a larger sense of calling may directly facilitate the positive effects on overall college adjustment found in this study. From a similar treatment approach, discussing personal meaning as derived by work might also contribute to the increased life satisfaction described in this data as mediated by increased CDSE and college adjustment. This should involve discussing evidence for the link

between career calling and college adjustment, academic satisfaction, career self-efficacy and life satisfaction as described in this study and by others (Adams, 2012; Duffy, Allan, et al., 2012, 2011).

One particular intervention strategy found to be effective within vocational counseling is the use of written exercises, assigned between sessions, to provide opportunity for self-exploration and application of treatment discussions (Brown & Ryan Krane, 2000). Given the intrinsic nature of feeling called to a particular line of work, providing ample opportunity for individual processing and self-reflection may be critical. Written exercises would allow clients to identify personal values, consider the areas from which they derive meaning in life, and explore how their own work might contribute to the benefit of others. As sense of calling increases, these results suggest that one's perceptions of CDSE will also increase in addition to college adjustment. From a treatment perspective, encouraging active exploration of potential career areas, via modeling experiences (Brown & Ryan Krane, 2000), could also facilitate CDSE development (Bandura, 1997). By helping to locate professionals who identify with a sense of calling and facilitating modeling interactions, further positive learning experiences could be created. Based on SCCT theory and this study's results, as positive learning experiences occur, belief in personal ability is further solidified and client self-efficacy beliefs increase. Thus, clinical focus on both self-exploration of one's calling, combined with encouraging active pursuit of an identified career field would support the findings of this and previous research in facilitating increased CDSE and life satisfaction (Duffy et al., 2013).

The link between career calling and college adjustment is one of the unique findings of this study. While treatment focused on cultivating a calling and engaging in career learning experiences would facilitate CDSE development, results from this study also imply that targeting specific aspects of college adjustment also contribute to overall life satisfaction. Given that academic, social, personal-emotional, and institutional factors comprised the latent construct of college adjustment, practical applications should target each of these areas. As sense of calling increases, experience of academic satisfaction may naturally follow, as students begin to see a connection between academic commitment, calling realization, and future life satisfaction (Duffy, Allan, et al., 2012; Duffy & Sedlacek, 2007). Ideally, coursework is no longer viewed as a “necessary evil” (Adams, 2012) but rather a critical component needed in working toward developing personal meaning and facilitating career goal attainment. Personal-emotional adjustment would also benefit from discussions in therapy that link meaning-making with identity formation and finding a purpose in work, which is directly supported in this study and previous research (Hirschi & Herrmann, 2013) and linked to increased life satisfaction.

Helping connect current student identity with future work identity may allow clients to better navigate and endure the difficult academic demands of college life. Socially, students may benefit from applying their growing sense of calling and increased CDSE toward engagement and connection with others through vocational development classes, vocational clubs, and student organizations. By encouraging students to discuss their own sense of calling with others in similar career or academic fields, counseling psychologists can help students build further support for vocational interest while reinforcing career commitment and general wellbeing. The effects of social development

are particularly important as increased relational connectedness improves social adjustment and creates social supports for the individual (Lent et al., 2000). As described in SCCT, proximal supports can provide resources when attempting to cope with academic or career difficulties (Lent et al., 2000).

Finally, treatment could encourage clients to become involved within the campus environment through service opportunities related to career interest areas. While helping to develop calling-related prosocial values and a sense of belonging and purpose through benefiting others (Adams, 2012), campus service would also contribute to institutional attachment and subsequently overall college adjustment. As a result, student perceptions of life satisfaction will likely increase based on the current study's findings.

Pertaining to the mediational results of this study, it is important to remember that a significant, direct link between career calling and life satisfaction was not found; rather CDSE and college adjustment mediated this link. Thus, in working with college students, fostering a sense of calling is important, but engagement in activities that build self-efficacy and successful college adjustment will likely contribute to more noticeable feelings of wellbeing and satisfaction. Even when presenting concerns are specific to career distress or questions of purpose and meaning, broadening interventions to also target self-efficacy beliefs and improvements in adjustment should not be overlooked. It may be that while beneficial, focusing exclusively on career calling development is not sufficient in contributing toward increased life satisfaction. Students are often not yet working in their chosen career field and may see the experience of career calling as a future oriented state (Adams, 2012). Thus, focusing treatment on the mediating variables of this study might provide more opportunity for immediate applications toward the

student's current experience. Sharing the results of this and other research with the student would also increase understanding of the role of career calling and likely facilitate increased buy-in and commitment toward therapy. It may be beneficial, from a clinical perspective, to use counseling as an opportunity to develop both an internal sense of one's career calling and practical skills in career and academic domains such as communication skills, career networking, strategies to increase academic performance, and experiential training opportunities (e.g., summer internships). Career calling would likely increase motivation in each of these areas, but taking goal-directed action toward increasing self-efficacy and college functioning may be more directly applicable and contribute to more noticeable improvements to student satisfaction as the results of this study and the SCCT model would suggest (Lent et al., 1994).

An additional practice application is in regards to attachment avoidance and the negative effects observed in this research. When considered in the context of SCCT's model (Lent et al., 1994), data in the present study suggest that as a person input, avoidant attachment style negatively impacts learning experiences (e.g. career calling), self-efficacy, and college adjustment, in addition to indirectly influencing decreased life satisfaction. Conversely, individuals with less avoidant attachment were more likely to endorse the presence of a calling, which subsequently related to increased CDSE, college adjustment, and ultimately life satisfaction. From a clinical perspective, individuals presenting to counseling for career-related distress, who already possess a less avoidant attachment style, may be more readily able to identify a calling, or if previously identified, may be more able to work toward increasing CDSE and college adjustment, all of which contribute to increased satisfaction. However, individuals presenting to counseling with

more avoidant attachment may be less likely to have an identified career calling and may subsequently struggle to readily develop or apply this concept to their lives. Thus it stands to reason when attachment avoidance is low, career interventions might focus less on searching and more on application and development of calling, self-efficacy, and college functioning. When attachment avoidance is high, however, clinical interventions may need to focus on the client's attachment style and subsequent internal working model of the self before calling development can occur.

Research on attachment-related psychotherapy interventions implies that while attachment styles are deeply engrained, a positive therapeutic relationship within the context of therapy can provide a corrective emotional experience. By functioning as a "secure base" (Bowlby, 1969) for the client, counseling psychologists can help to redefine the client's internalized understanding and build more positive working models of the self (Mikulincer & Shaver, 2007). Essentially psychotherapy can help to reform attachment style caused by early childhood experiences. This same principle of attachment-focused psychotherapy has been studied within the context of career counseling and exploration. Given the hallmarks of attachment avoidance, these individuals are more likely to display emotional distance to the therapist, are less likely to engage in career exploration, have less career decidedness, and lower career satisfaction in general (Mallinckrodt, 2010; Mikulincer & Shaver, 2007). Counseling psychologist should be aware of this pattern and treatment may need to focus initially on carefully challenging the emotional distance of the client through rapport building and the corrective emotional experience of the therapeutic relationship (Mallinckrodt, 2010).

Given the self-exploration required for career calling identification, development may be slow when attachment avoidance is high. Treatment should also focus on the other mediating variables described in this study when working toward increased life satisfaction for the individual. For example, helping the client develop skills related to communication and vulnerability within the safety of therapy, and then encouraging application of these skills to outside relationships, may help reduce the avoidance tendencies of the individual and contribute toward increased self-efficacy development. Helping the client identify and problem-solve areas of distress regarding college functioning would both contribute toward the therapeutic alliance and sense of rapport with the client, while providing a corrective experience in regards to attachment style. Thus, career calling development may become secondary to rapport building with more avoidantly attached individuals, however intervening in the areas of self-efficacy and college adjustment may help build trust and commitment, which would ideally contribute to increased vulnerability and deeper self-exploration (e.g., career calling) as treatment progresses.

Counseling psychology as a field has historically focused on several unique domains, distinguishing itself from the broader practice of professional psychology. Social justice initiatives, a focus on preventative measures, and working with intact populations are a few examples of these areas (Gelso & Fretz, 2002). The results of this study have much to offer to these practical domains. As applied to social justice perspectives, SCCT attempts to account for not just the interests, goals, and actions an individual takes in pursuit of career outcome attainments, it also incorporates the systemic and environmental influences that create potential supports or barriers during

career pursuit (Lent et al., 2000). The present study found that attachment avoidance, a type of systemic factor or person input in the SCCT model; negatively influences career calling, CDSE, college adjustment, and life satisfaction. Attachment style can be considered a cultural or systemic variable because individuals do not choose the kind of parent-child relationship they will have, but are born into these relationships. Pertaining to social justice or the recognition of underserved and marginalized groups of people from cultural and systemic perspectives, the present study has illuminated an area of important future research. While these results have found career calling to be beneficial in the context of college student functioning and life satisfaction, this study did not directly account for differences in accessibility to educational experiences, career domains, or learning areas as they may be impacted by one's cultural identity factors such as race, ethnicity, gender, socio-economic status, or sexual orientation. This is a much needed area of inquiry pertaining to the field of career calling as previous authors have identified that access to important career or educational opportunities may be significantly impacted by one's cultural identity (Allan, Autin, & Duffy, 2014). Within the context of this study, social justice implications is considered a limitation of these results and is further discussed in the limitations section below.

Pertaining to the domains of prevention and intact populations, application of these findings within college students directly implicates both of these areas. For clinicians working with college students, these results have shown that developing a sense of career calling may have important beneficial effects on self-esteem, college adjustment, and life satisfaction. In holding to counseling psychology's focus on preventative measures and working with intact populations, the domain of career calling

offers a unique opportunity to help students develop personal meaning and purpose within their lives. These benefits translate into both successful college functioning at present as well as more fulfilling and meaningful career functioning in the future. Thus, college students need not to be experiencing significant psychological distress or pathology to benefit from the results of this study. Indeed, these results may have much to offer in the way of overall student functioning, among students that are both struggling to succeed, in addition to those who are currently successful. Given counseling psychology's emphasis on identifying the innate, personal strengths of the individual and helping not only in a remedial approach to pathology, but in preventative roles as well, instituting career calling development within college student populations is highly consistent with the central tenants of counseling psychologists (Gelso & Fretz, 2002). From a preventative perspective, these results may be particularly relevant to students in high stress, high demand, academic or athletic fields such as elite student-athletes, medical students, musicians, and doctoral candidates. By deriving personal meaning from work, the intense preparation, long hours, and personal sacrifice innate to these fields may be interpreted as adding to one's self-concept as opposed to being viewed as an obligation or necessary evil. Thus as described further in the limitations section below, further research is needed to ascertain the most effective means by which career calling principles can be integrated within academic and institutional domains.

Limitations

Several limitations exist for the present study, the first of which pertains to the issue of sample size. As described previously, some debate exists pertaining to the recommended number of participants needed to conduct SEM procedures (Weston &

Gore, 2006). A minimum required number of $N = 200$ has been proposed as a general rule of thumb for all SEM procedures (Kline, 2011) however other authors have implied more stringent criteria. A parameter to sample size ratio ($N:q$) of 10:1 or 20:1 has been suggested as a means of ensuring adequate power and fit assessment of the proposed model to the data (Jackson, 2003). In summarizing previous literature, Weston and Gore (2006) describe large sample size as most important with complex models, when severe non-normality exists, with large amounts of missing data, and when measurement reliability is questionable. While the present study utilized psychometrically strong measures and data were not found to have severe non-normality or missing in large proportions, the proposed models may be considered more complex. Thus future research attempting to replicate or build from the results of the present study would benefit from a sample size fitting closer to Jackson's (2003) $N:q$ recommended ratio of 10:1 or 20:1, which would be around 840 participants based on the 84 parameter full CFA model in this study.

An additional limitation of the study is in regards to the measured construct of career calling. Due to the relatively small body of career calling literature and the recent prevalence of this construct within the world of vocational research (Duffy & Dik, 2013), only a few measure of career calling exist. The most commonly used are the Brief Calling Scale (BCS, Dik et al., 2012), the Calling and Vocation Questionnaire (CVQ, Dik et al., 2012), the Neoclassical Calling Questionnaire (Bunderson & Thompson, 2009), and the Multidimensional Measure of Calling (Hagmaier & Abele, 2012). While each of these measures has been used to assess career calling, they vary by operational definition and focus of assessment such as the presence of a calling, search for a calling, or experiencing

a calling (Praskova et al., 2015). Additionally, many of these measures were designed to be used with both pre-career populations (e.g., college students) and working professionals. The CVQ for example, used in the present study, was developed with college student populations and has demonstrated excellent reliability, but was not created exclusively for university settings, but also for use with individuals currently in the workforce (Dik et al., 2012).

Two potential limitations thus exist based on the current study's use of the CVQ. First, the CVQ-Presence subscale was utilized to measure students' current experience of the presence of a calling in their lives. Research has shown that perceiving a calling may have different effects on career and life outcomes than searching for a calling or living a calling, which can also differ by pre-employment compared to currently employed populations (Duffy et al., 2013; Duffy & Autin, 2013). The results of this study can only be generalized to college students that have currently identified the presence of a calling in their lives. Future research should attempt to replicate these findings with both college students and working adults, in addition to exploring possible differences in orientation toward a calling such as individuals currently searching for a calling, individuals with an identified calling who are not pursuing it, those having never identified a calling, and those who have identified a calling and are currently engaging in it.

Secondly, while the CVQ was designed and evaluated using a college student sample (Dik et al., 2012), it does not take into account any developmental theory or aim to assess any specific stage of development pertaining to university populations. A recent study of career calling assessment by Praskova, Creed, and Hood (2015) aimed to develop a measure of career calling based on Arnett's (2000) theory of emerging

adulthood, which takes into account the developmental experience of contemporary university students, between the ages of 18 – 25 years old. Their measure, the Career Calling Scale for Emerging Adults, also considers one's career from a future oriented perspective (i.e., "It is my calling to benefit others in my future chosen career"), which may be more representational of current college students' views of career calling (Praskova et al., 2015). While more research and application is still needed, this measure may provide a more accurate assessment of the effects of career calling than currently used measures and provides a promising direction for future career calling research.

As related to measurement error, one other limitation exists in this study pertaining to the Career Search Efficacy Scale (CSES; Solberg et al., 1994). In creating the online survey interface, each assessment measure was modified from its original paper-based format to a compatible, online, web-based format allowing participants to click on responses digitally. During this process, the CSES was modified to a 9-point Likert-scale response, due to survey error. While all 35 items of this measure were administered identically to the original version, the modification to the response scale represents a potential limitation of the present study as the original CSES contained a 10-point Likert response scale. To assess the extent of this potential measurement error, internal consistency between the original and modified CSES versions was examined and found to be highly consistent with previously published psychometrics. Alpha coefficients (α) ranged from .87-.97 as reported by Solberg et al., (1994) and ranged from .88-.96 in the present study. Further review of current literature pertaining to modified response scales (Jones & Loe, 2013) found that the number of response options of a given measure had little to no impact on the reliability or predictive utility of a

measure of core personality traits. Furthermore Dawes, (2008) stated that scale sizes between 5, 7, and 10 points are comparable especially when using structural equation modeling. Thus given the nature of the modification made (i.e., 9-point versus 10-point response scale) and the statistical procedures used in this study (i.e. Structural Equation Modeling) the impact of this potential measurement error is very likely non-existent. This issue does represent a possible limitation and thus consistency between paper and online-based measures is recommended for future research.

A further limitation related to sample characteristics exists regarding generalizability. The sample for the present study was a voluntary sample of university students. It is important to note that concern has traditionally been expressed regarding the use of voluntary and college student samples in behavioral and psychological research (Kazdin, 2010, p. 58; Remler & Van Ryzin, 2011, p. 141). Issues of selection bias, external validity and samples of convenience are generally raised. While certain subject matter which impact a wide range of individuals (e.g., treatment modalities) require a much wider sample than what would be represented in a college population, the current study was concerned specifically with attachment, career calling, college adjustment, career development, and life satisfaction among college students. Thus, for accuracy of interpretation, theoretical implications, and practical understanding, recruiting from a college student population was ideal for the purposes of this study. Pertaining to the application of these results, however, data from the present study can only be generalized to college student populations with similar demographics as in this study. These results may not be reflected in other populations such as adults currently in the workforce, older

adults retired from the world of work, or younger students in middle and high school who may not yet be able to identify or pursue a career calling.

In an effort to explore the generalizability of this sample of college students, the present study utilized several nationally representative data sets of both college students and U.S. adults for comparison. The first database utilized was the 2015 National College Health Assessment (NCHA) data set (American College Health Association, 2016) which is an annually administered survey of college student health behaviors. The 2015 data contained participant responses from 16,760 college students from 40 universities across the United States, 13 from the Northeast, 14 from the South, 10 from the West, and 3 from the Midwest. Demographic data pertaining to age, gender, year in school, ethnicity, and relationship status were compared between the NCHA and this study's sample.

Pertaining to age, the NCHA reported an overall mean age of 21.30 with a standard deviation of 5.51. The present study's sample demonstrated a mean age of 21.45 with a standard deviation of 5.24 and thus, the age range of this study is highly consistent with a nationally representative sample. Regarding gender, the NCHA reported 67% of participants identified as "Woman", 31.4% identified as "Man", and approximately 1.5% identified as "Trans woman", "Trans man", "Genderqueer", or "Another identity." The present study contained 72.3% of participants identified as "female", 27.3% as "male", and .2% as "Agender/non-gender." Thus the sample in the present study contained slightly more female participants (appx. 5%) and slightly less male participants (appx. 3%), in comparison to a nationally representative sample of current U.S. college students. Additionally, the present study did not assess for individuals identifying beyond the

binary male-female spectrum to include individuals who identify as transsexual, thus representing a limitation.

The NCHA reported 29.8% of the sample was first year students, 23.9% were second year, 21.8% were third year, 17.8% were fourth year, and 6.7% were fifth year or higher. This was largely consistent with the present study's sample which demonstrated 25.2% were first year, 29.6% were second year, 24.7% were third year, 18.9% were fourth year, and 1.6% were fifth year or higher. Regarding ethnicity, the NCHA sample was comprised of 78% "White" participants, 8% "Black/African American", 9.3% "Hispanic/Latino/a", 7.8% "Asian/Pacific Islander", 2.9% "American Indian or Alaskan", 3.8% "Biracial/Multiracial", and 2.4% Other. Comparatively, the present study's sample contained 71.8% "Caucasian" participants, 13.2% "Latino/a", 4.8% "African American", 1.8% "Asian", 1.2% "Pacific Islander", 2.1% "Native American", 3.7% identified as Other including multi racial or biracial. Thus the present study's sample contained substantially fewer participants identifying as African American or Black, Asian, or Pacific Islander. However, percentages among Caucasian, Native American, and Biracial or Multi racial participants were highly consistent among the two samples. The present sample also contained slightly more participants identifying as Latino/a which is representative of the unique demographics of the University of Northern Colorado in which approximately 14% of the overall student body identifies as Hispanic/Latino/a as cited by the 2014 UNC Impact Report (University of Northern Colorado, 2014). The present study's sample was found to be slightly more diverse than the overall student population at the university as well, which contains approximately 3% of students identifying as "African American", 2% as "Asian", .3% as "Native American", .2% as

“Hawaiian”, 3% as “Multi-racial”, 61% as “White”, 3% as “Non-US Citizen/International”, and 13% as unreported.

Finally, in comparing relationship status among participants, the NCHA reported 53.2% of participants were not in a relationship, 33.1% were dating, and 13.7% were living with a dating partner. Furthermore, approximately 8.1% were married/partnered, 1.6% were separated/divorced, and 1.5% were “other”. The present study found similar rates in which 47.6% were single, 33% were dating, 8.8% were living with a partner, 4.6% were engaged, 3.9% were married, and 1.6% were separated or divorced.

In order to assess the additional demographics variables of mother and father education level across a nationally representative sample, the General Social Survey (GSS; Smith, Marsden, Hout, & Kim, 2016) was utilized. The GSS is an annual survey conducted by the National Opinion Research Center (NORC) and assesses society trends and change over time among U.S. adults. The present study utilized the 2014 data set of the GSS which included 2,538 participants ages 18 – 89/or older (Mean = 49.01, S.D. = 17.412). The GSS found that for paternal education level, approximately 31.8% obtained less than a high school education, 43.8% obtained a high school degree, 3.4% completed an associate’s degree, 12.9% completed a bachelor’s degree, and 8.1% completed a graduate degree. For maternal education level, the GSS found approximately 29.6% obtained less than a high school education, 49.2% obtained a high school degree, 5.9% completed an associate’s degree, 9.7% completed a bachelor’s degree, and 5.6% completed a graduate degree. For paternal educational level, the present study found 8.7% obtained less than a high school education/GED, 24.7% obtained a high school degree, 25% completed some college/an associate’s degree, 21.7% completed a

bachelor's degree, and 15.3% completed some graduate school/a graduate degree, and 4.6% unknown. For maternal educational level, the present study found 6.3% obtained less than a high school education/GED, 18.5% obtained a high school degree, 30.7% completed some college/an associate's degree, 28.2% completed a bachelor's degree, and 14.4% completed some graduate school/a graduate degree, and 2.1% unknown.

Compared to the national sample collected by the GSS, the sample in the present study was found to have parents with substantially higher levels of education. For both maternal and paternal education, most GSS responders indicated high school as the highest level of educational attainment. In contrast participants in the present study reported that the majority of their parents attained at least a college degree. These discrepancies likely reflect generational differences in access to and prioritization of education. Most participants in the GSS were significantly older adults, beyond college age, and were thus reporting on the education of their parents, a generation before the parents of the college students who completed the current study. None the less the GSS provides important comparison data for the present study.

Taken together, data from the NCHA and the GSS suggest this study's sample is generally representative of college student populations across the United States, specifically among the demographic variables of age, gender, year in college, and regarding certain racial and ethnic identities. Participants in the present study were also found to come from families with higher levels of education than most working adults in the U.S. These comparisons imply that the sample utilized in this study is generally representative of college student populations nationwide. Future research; however, would benefit from using stratified samples that specifically seek to match nationally

representative populations in regards to race and ethnicity as this was a weakness of this research. Furthermore, future research should also target college students identifying outside of the binary male-female gender domains as this was also a weakness of this study's sample. A final recommendation is in regards to SES among college students. An important characteristic of the University of Northern Colorado is that most students come from middle class families as evidenced by 77% of incoming freshman receive grants or scholarships, and 58% receive financial aid via student loans (University of Northern Colorado, 2014). As described previously and in the section below, the construct of career calling is often influenced by access to educational resources which is subsequently influenced by economic resources. Future research should directly account for SES as a mediating variable and attempt to replicate these findings with college student populations from higher SES backgrounds, in addition to populations with relatively low economic resources. The present study did not control for SES which represents a limitation that future research should seek to overcome.

A final limitation to the interpretation and application of these results pertains to multiculturalism and diversity across various populations. Diversity in this context applies to not only ethnic and racial identity, but also employment status, socioeconomic status, and economic privilege. Several authors have investigated differences in outcome effects of career calling for individuals who are currently unemployed, do not identify with a calling, or are unable to live or pursue a calling in their current vocation (Duffy et al., 2013; Duffy & Autin, 2013; Torrey & Duffy, 2012). These results have suggested that many positive outcomes associated with a career calling (e.g., life satisfaction, job satisfaction, self-efficacy, work hope, career commitment, work meaning) may dissipate

for unemployed populations, or individuals having identified but not currently living out their career calling (Duffy, Bott, et al., 2012). These results also underscore a potentially larger issue, that the potential benefits associated with a career calling may be a function of economic or societal privilege and may actually be excluded for individuals with significant career or personal barriers, from lower socioeconomic backgrounds, or less access to educational and employment resources (Dik et al., 2015). This issue is not only a problem within career calling literature but within most vocational research as a whole which has largely failed to take into account issues of diversity, building instead “an elegant science about the work lives of a small proportion of individuals who live in relative affluence in Western countries” (Blustein, 2001, pg. 171).

Recent authors (Allan et al., 2014; Duffy, Blustein, Diemer, & Autin, 2016) have investigated meaning in work and prosocial work orientation across a wide range of social classes, as suggested by the psychology of working framework (PWF; (Blustein, Kenna, Gill, & DeVoy, 2008; Duffy et al., 2016). While the PWF does not directly assess the construct of career calling, work meaning and prosocial orientation are core aspects of calling’s definition (Dik et al., 2012). The authors found that individuals in lower and working-class groups reported lower meaning in work than higher-class groups. This study also suggested that for individuals that did identify a sense of meaning in work, prosocial orientation or helping others/contributing to a sense of greater good was the primary source, regardless of social class (Allan, Autin, & Duffy, 2014). In a separate study, the authors also found that work volition partially mediated the relationship between social class and work meaning such that individuals from lower socioeconomic classes may feel like they have less choice and freedom in career-related decision making

and subsequently experience less meaningful work. This was particularly salient for financial constraints and barriers, potentially leading individuals to undertake occupations providing financial stability but not intrinsic meaning (Allan et al., 2014; Blustein et al., 2008). Thus, without considering issues of power and privilege among various populations and identity factors within society, vocational research as a whole, and career calling research specifically, may be extremely limited in scope and generalizability (Dik et al., 2015). Although previous research has not found meaningful differences across racial/ethnic backgrounds (Duffy & Autin, 2013, Duffy & Sedlacek, 2010), consideration of larger systemic factors as described by the PWF (Blustein et al., 2008; Duffy et al., 2016) continues to be a limitation of the career calling research. Thus, future research is needed to replicate current career calling findings with more diverse samples, not only in terms of racial or ethnic diversity, but in employment status, socioeconomic status, accessibility to educational resources, and other areas of economic and societal privilege.

Future Directions

Drawing from each of the preceding discussion domains, specific future directions and applications can be made. In regards to research directions, the results of the present study replicated and supported previously established links such as the beneficial effects of attachment security to college student adjustment (Mattanah et al., 2004; Rice et al., 1995; Vivona, 2000) and CDSE (Wolfe & Betz, 2004; Wright et al., 2014), the link between career calling and CDSE (Dik et al., 2008; Domene, 2012; Duffy & Sedlacek, 2007), the role of CDSE as a mediator of career calling to life satisfaction (Duffy, Allan, et al., 2012, 2011), and the positive effects of CDSE and college adjustment to life satisfaction (Duffy, Manuel, et al., 2011; Renshaw & Cohen, 2013;

Stevic & Ward, 2008; Townley & Katz, 2013; Wright & Perrone, 2010). While these findings provide credibility and consistency between the present study and past research, future research implications may benefit more from focusing on the original findings of the present study and the unique contributions made to the empirical literature. These unique findings include the link between career calling and college adjustment and the link between attachment style and career calling.

Although previous research exists linking career calling and academic satisfaction (Duffy, Allan, et al., 2012), the suggested links between calling and the other aspects of college functioning such as emotional and social adjustment or institutional attachment (as measured in the present study) have not been previously studied. It is unclear if a direct pathway between calling and more nuanced aspects of these variables exist, if an unidentified mediational variable is exerting influence, or if the relationship demonstrated in the present study actually reflects the unified method of assessing college adjustment as a whole. Would similar links exist if each aspect of the construct were to be measured independently? Thus replication is needed, in general, to further validate these findings, however, these results should also be replicated at more specific levels using other measures of college adjustment beyond the SACQ, such as the College Adjustment Survey (Anton & Reed, 1991) and other measures of emotional distress and social functioning. This would provide further insight toward more accurate discernment of the effects of career calling on college adjustment.

Pertaining to the second original finding in this study, more research is needed linking attachment style and various aspects of career calling. As described previously, career calling literature has examined not just the presence of a calling, but the search for

calling, having but not living a calling, and not identifying with a calling (Duffy et al., 2013; Duffy & Autin, 2013; Torrey & Duffy, 2012). While this study examined career calling presence, it is not yet known how attachment style manifests when individuals are ambivalent about a calling, or feel unable to pursue it. Additionally, the mixed result between attachment avoidance and anxiety was a unique and unexpected finding of the present study. It is not clear as to why attachment avoidance demonstrated a significant direct effect but attachment anxiety was not significant. While differences may be due to variations in the characterological manifestations across various aspects of attachment style (Mikulincer & Shaver, 2007), interpretations based on this study alone are only tentative. It may also be the case that mediational effects of an unidentified third variable are being exerted and thus further research directly assessing the influence of attachment styles to other important individuals (i.e., mother, father, peers, romantic partner; using the ECR-RS; Fraley et al., 2011) and career calling is needed. As was utilized in the present study's design, future researchers should control for order effects when exploring additional possible variables (Rasinski et al., 2012). Additionally, researchers utilizing internet-based survey responses should employ duplicate response detection measures. IP addresses were reviewed as a measure of duplication detection in the present study, however this is only one strategy. Other research has suggested more advanced strategies such as programming the survey's internet server to automatically reject repeated IP addresses, using internet "cookies" to track number of submissions, or constructing common gateway interface (CGI) scripts that monitor the web page from which data were submitted and allow only a single submission (Birnbbaum, 2004).

A final note regarding future research directions is in regards to the long-term effects of career calling on overall life satisfaction. Significant research has been conducted to examine the influence of career calling presence on college students and working adult populations, respectively (Duffy & Dik, 2013). At this point, however, no research has examined the influence of career calling longitudinally. It is largely unknown how career calling changes over time. For example, do college students who identify and pursue a career calling while attending school, as was the case in this study, continue to pursue the same calling, with the same positive effects on self-esteem and life satisfaction, or does the source or impact of calling change over time? Future research should attempt to replicate the present study's results, with a similar participant sample, over time to ascertain if the influences of career calling are stable. Additionally, the question of life satisfaction should also be studied further as students progress out of college into the world of work. The results of this study implied that career calling indirectly influences life satisfaction in college students. As college students become members of the workforce, does career calling continue to influence life satisfaction in the ways it did while the individual was in school? Future research should continue to investigate this relationship. Although one may find a career calling and experience beneficial effects while in college, future research is needed to examine how this career calling continues to impact life satisfaction over the lifespan.

Future directions pertaining to theoretical implications constitute an additional aspect of original contribution in the present study. Theoretical application of career calling has been frequently cited as an important next step in the evolution of this construct (Adams, 2012; Domene, 2012; Duffy & Dik, 2013). This study aimed to

provide evidence in support of a theoretical foundation from which to apply career calling, namely in the form of social cognitive career theory (SCCT; Lent et al., 1994, 2000). As such, the hypothesized primary and alternate models in the study were designed to reflect the theoretical structure of Lent et al.'s (1994) original SCCT model (Figure 5). The significant direct effect pathways that were found to comprise the alternate (Figure 9) over the primary model (Figure 8), provided strongest support in replicating the SCCT model, specifically within the context of attachment style's influence as a person input toward calling presence, CDSE, and college adjustment. Career calling also functioned as a learning experience, in replicating the SCCT model, providing direct effects to CDSE and college adjustment, as well as indirect effects on choice outcome attainments represented by life satisfaction.

The present study thus represents the first empirical investigation of attachment theory and career calling functioning within an SCCT model and applied to a college student population. These results offers new information in response to the expressed need from past authors to apply vocational theory to career calling research (Adams, 2012; Dik et al., 2015; Duffy & Dik, 2013). The unique aspect of this research, however, also implies the need for caution in the application of these findings. Additional research is needed to replicate this study, from a further defined SCCT perspective. While these results are encouraging, the next step would be to create a more detailed model representation of the SCCT theory, testing not just person inputs, learning experiences, self-efficacy, and outcome attainments as existed in the current study, but the additional roles of outcome expectations, interests, goals, and actions. Career calling and attachment style may yet further influence these latter aspects of the SCCT model that were largely

untested in the present study. In the only other current study exploring the role of career calling within SCCT, Kaminsky and Behrend (2015) found that while career calling was found to be a good fit within the model, it performed in a different capacity than in the present study. Rather than self-efficacy mediating the effects of career calling, these authors found that calling mediated the effects of self-efficacy on outcome expectations, career interests, and career goal. As the influence of career calling increased, the influence of self-efficacy became decreased. While this study was much different in design and scope than the present study it further asserts the need for research that both replicates these findings and provides additional support for the role of calling within a fully representational SCCT model.

The final future direction in this study pertains to the practical application of these results. While more research is still needed to replicate and further explore these findings in empirical and theoretical domains, this study combined with previous literature suggest that career calling presence provides an adaptive aspect of college student and general life functioning. This body of literature has much to offer, both for mental health professionals functioning in university settings and within society as a whole. Counseling psychologists may stand to benefit the most from this developing area of vocational research by differentiating from other mental health providers through specialization and populations served. As documented by Goodyear et al. (2008), career counseling and development has long been a central aspect of counseling psychology's professional identity, which has steadily declined over the last several decades. As research continues to emerge pertaining to the beneficial effects of career calling, a renewed focus on career counseling may help reignite a previous area of specialization and differentiation within

the field. The current state of the career calling literature suggests that while substantial benefits have been found with college student populations, the beneficial scope of this construct can be broadened to include working adults, helping individuals identify and foster a sense of calling in their work, ultimately leading to increased overall life satisfaction. Thus, practice implications stretch beyond the benefits of college students and university settings, but also to counseling psychologists in private practice, veteran administration centers, and community mental health agencies. Developments in career calling should not be considered only a college student phenomenon, as current research suggests that developments in this construct may in fact benefit working professionals throughout the lifespan.

Conclusions

The present study sought to investigate the construct of career calling from a theoretical perspective integrating vocational and interpersonal theories of development among a sample of undergraduate college students. Social cognitive career theory (Lent et al., 1994) was utilized as the primary theoretical framework emphasizing the roles personal and contextual factors play in contributing to learning experiences, self-efficacy beliefs, outcome expectations, and desired career outcomes. Bowlby's (1969) attachment theory was utilized as a theory of interpersonal development in which early childhood relational experiences are believed to influence the development of intimacy, self-esteem, and autonomy as adults. Two competing structural models (i.e., primary and alternative) were created to explore relationships among the latent constructs of attachment style, career calling, career-decision self-efficacy (CDSE), college adjustment, and life satisfaction. Structural equation modeling was utilized and the alternative model was

found to provide the best statistical fit to the data. Attachment avoidance and anxiety were found to have significant negative direct effects on CDSE and college adjustment. Attachment avoidance, but not anxiety, was found to have a significant negative direct effect on career calling presence. Career calling presence subsequently displayed significant positive direct effects on CDSE and college adjustment. Finally, CDSE and college adjustment both demonstrated significant positive direct effects on life satisfaction, in addition to mediating the significant positive indirect effect of career calling and the significant negative indirect effect of attachment avoidance on life satisfaction. These results confirm several previous studies linking attachment style, CDSE, college adjustment, and life satisfaction. Additionally, these results constitute original findings linking attachment style to career calling and provide initial evidence supporting the integration of career calling as a learning experience within the SCCT model framework. These results also suggest that avoidant attachment style may cause a barrier to developing a career calling, building career-decision self-efficacy, and successful adjustment to college. Increased career calling presence however, may contribute to increased career-decision self-efficacy, college adjustment, and indirectly relate to increased life satisfaction among college students. Future research is needed to replicate these results using more complete SCCT modeling and among larger, more diverse samples. These results provide clinical implications for counseling psychologists working within university setting such that career counseling focused on the identification and pursuit of a career calling may not only help college students increase in career related self-efficacy, but also promote better overall college adjustment and functioning in addition to increased life satisfaction.

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APPENDIX A
DEMOGRAPHICS QUESTIONNAIRE

1. Your age in years
2. Sex
 - a. Male
 - b. Female
 - c. Other (Please Specify)
3. Race/Ethnicity? (check all that apply)
 - a. Caucasian
 - b. Latino/a
 - c. African American
 - d. Asian
 - e. Pacific Islander
 - f. Native American
 - g. Other (Please Specify)
 - h. Prefer not to answer
4. What is your college classification?
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
5. Have you declared a major?
 - a. Yes
 - b. No
6. If you have declared a major, what is it?
 - a.
7. What is the highest level of education your father completed?
 - a. Some high school
 - b. GED
 - c. Completed high school
 - d. Associates degree
 - e. Some college
 - f. Completed college
 - g. Some graduate school
 - h. Completed graduate school
 - i. Unknown
8. What is the highest level of education your Mother completed?

- a. Some high school
 - b. GED
 - c. Completed high school
 - d. Associates degree
 - e. Some college
 - f. Completed college
 - g. Some graduate school
 - h. Completed graduate school
 - i. Unknown
9. Your relationship status
- a. Single
 - b. Dating
 - c. Living with a partner
 - d. Engaged
 - e. Married
 - f. Divorced
 - g. Other (please specify)
10. Your parents' marital status
- a. Married to each other
 - b. Divorced
 - c. Separated
 - d. Never married
 - e. Other (please specify)

APPENDIX B
INSTITUTIONAL REVIEW BOARD
APPROVAL LETTERS

UNIVERSITY of
NORTHERN COLORADO



Institutional Review Board

DATE: December 1, 2014

TO: Dylan Firsick, M.A.

FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [688302-1] The Influence of Attachment and Career Calling on Career Decision Self-Efficacy and Life Satisfaction in College Students

SUBMISSION TYPE: New Project

ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS

DECISION DATE: December 1, 2014

Thank you for your submission of New Project materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

Hello Dylan,

I am the reviewer on your IRB application. I found your proposal to be thorough and clearly presented. Thank you for this excellent work.

Your IRB application is approved. However, there is updated contact information which needs to be changed in your Consent - the last sentence of the verbatim paragraph should include: 'please contact' Sherry May, IRB Administrator, Office of Sponsored Programs, 25 Kepner Hall, 970-351-1910. No need to submit your consent form with this small change for subsequent review.

I appreciate your attention to this updated information and wish you luck with your study.

Sincerely,

Nancy White, PhD, UNC IRB Co-Chair

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

UNIVERSITY of
NORTHERN COLORADO



Institutional Review Board

DATE: January 14, 2015

TO: Dylan Firsick, M.A.
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [688302-2] The Influence of Attachment and Career Calling on Career Decision Self-Efficacy and Life Satisfaction in College Students

SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS

DECISION DATE: January 14, 2015

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

Hello Dylan,

Thank you for your modifications on the Consent. You are approved and good luck with your study.

**Sincerely,
Nancy White, PhD, IRB Co-Chair**

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

APPENDIX C
INFORMED CONSENT



CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

Project Title: **The Influence of Attachment and Career Calling on Career Decision Self-Efficacy and Life Satisfaction in College Students**

Research Team: Dylan Firsick, M.A., Doctoral Candidate
Doctoral Program in Counseling Psychology
Department of Applied Psychology & Counselor Education
College of Education and Behavioral Sciences

Phone Number: 970-351-2828

e-mail:

Firs44109@bears.unco.edu

Research Advisor: Stephen Wright, PhD

Phone Number: 970.351.1838

e-mail: stephen.wright@unco.edu

The current study is researching the interactions among interpersonal relationships, career beliefs, career-related self-efficacy, adjustment to the college environment, and overall life satisfaction among college students. By examining interrelationships among these variables, I believe a better understanding of successful college adjustment, career development, and life satisfaction among college students can be obtained. Your participation in this study will not only contribute to providing a better understanding these variable, but may also prompt you to consider your own career-related interests and current experience in college.

Participation in this study should take about 30 minutes of your time and will involve completing an online survey consisting of a series of questions regarding various aspects of your interpersonal and romantic relationships with others, your beliefs about future career pursuits, your general adjustment to college, and your current life satisfaction. The risks associated with participation in this study are believed to be minimal and no greater than those normally encountered during regular classroom participation.

Your responses will be completely anonymous. Nobody, including the researchers in the study, will be able to link your identity to the responses you give. To participate in the study, you must be at least 18-years-old and enrolled as a student at the University of Northern Colorado. Please do your best and answer each online survey item truthfully. If

you would like a summary of the results of the study, or have any questions regarding your participation in the study, please send an email to Dylan Firsick, at firs4419@bears.unco.edu.

As a student at the University of Northern Colorado, your participation in this study is completely voluntary. Nonparticipation or withdrawal from the study will not affect your grade or treatment at UNC in anyway. Having read the above information, please complete the questionnaire if you would like to participate in this study. By completing the questionnaire, you give your permission to be included in this study as a participant. This study has received Institutional Review Board (IRB) approval from the University of Northern Colorado.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. By choosing to begin the online survey, you have given your consent to participate in this study. If you have any concerns about your selection or treatment as a research participant, please contact Sherry May, IRB Administrator, Office of Sponsored Programs, 25 Kepner Hall, 970-351-1910.

Thank you very much for your consideration of this study and your participation is greatly appreciated. You are encouraged to print this page for your records.

Dylan Firsick, MA, Doctoral Candidate
Doctoral Program in Counseling Psychology
Department of Applied Psychology & Counselor Education
College of Education and Behavioral Sciences University of Northern Colorado

APPENDIX D
COPYRIGHT PERMISSION

From: **Robert W. Lent** boblent@UMD.EDU
Subject: RE: Copyright Question
Date: December 5, 2014 at 10:20 AM
To: **Firsick, Dylan** firs4419@bears.unco.edu



Hi Dylan,

You are welcome to reprint the figure in your dissertation.

Dr. Lent

From: Firsick, Dylan [mailto:firs4419@bears.unco.edu]
Sent: Friday, December 05, 2014 10:58 AM
To: Robert W. Lent
Subject: Copyright Question

Hello Dr. Lent,

My name is Dylan Firsick and I am a doctoral candidate in the counseling psychology PhD program at the University of Northern Colorado. You and I actually met at the APA convention over the summer during the student mentoring lunch along with Dr. Brown and several other students. I am currently finalizing my dissertation proposal manuscript and I am writing to ask for your permission to use the SCCT figure that you originally published on pg. 93 in your article, Lent, Brown, and Hackett (1994) titled "Toward a unifying social cognitive theory of career and academic interest, choice, and performance". I would like to reprint this model in my dissertation study as I am using SCCT as the theoretical foundation. Please let me know if this would be acceptable and if you have any additional questions. Thank you for your help with this.

Sincerely,

Dylan Firsick, M.A.
Doctoral Candidate
Counseling Psychology
University of Northern Colorado
661-916-2940
firs4419@bears.unco.edu

APPENDIX E
PARTICIPANT RECRUITMENT EMAIL

Dear UNC Student,

My name is Dylan Firsick and I am a doctoral student in Counseling Psychology here at UNC. I would like to invite you to complete a brief online survey regarding your career interests and personal experiences as a UNC college student. Your opinion is highly valued and your participation is greatly needed for this research.

The title of the study is:

The Influence of Attachment and Career Calling on Career Decision Self-Efficacy and Life Satisfaction

You will be asked a series of questions related to your interpersonal relationships, career decision-making, and life satisfaction. The survey takes approximately 15 minutes, is fully anonymous, and is completely online... just click on the link below!

What's in it for YOU?

For participating in the study...

1. The first 200 participants will be entered for a chance to win one of three \$5.00 Visa Gift Cards.

And

2. All participants will also be entered for chance to win an additional \$50.00 Visa Gift Card

To participate in the study, you must meet the following requirements:

- **At least 18 years of age**
- **A current University of Northern Colorado student**
- **Must not have completed this survey at an earlier time**

Please click on the survey link below to get started now!

https://unco.col.qualtrics.com/SE/?SID=SV_cOe2tVvBTPidrL

If you have any questions or concerns about the study please contact me at firs4419@bears.unco.edu

Thank you very much for reading this email and for considering this study, your time and opinion is greatly appreciated!

Sincerely,
 Dylan Firsick, M.A.
 Doctoral Candidate
 Counseling Psychology
 University of Northern Colorado
 firs4419@bears.unco.edu

This study has received Institutional Review Board (IRB) approval from the University of Northern Colorado, IRB # 688302-1.

APPENDIX F
MANUSCRIPT

How Attachment and Career Calling Influence Self-Efficacy, College Adjustment and
Life Satisfaction

Dylan M. Firsick

Stephen L. Wright

University of Northern Colorado

Author Note:

Dylan M. Firsick and Stephen L. Wright, Counseling Psychology Program,
Department of Applied Psychology and Counselor Education, University of Northern
Colorado.

Correspondence concerning this article should be addressed to Dylan Firsick,
Counseling Psychology Program, Department of Applied Psychology and Counselor
Education, University of Northern Colorado, 501 20th Street, 248 McKee Building, Box
131, Greeley, CO 80639. Contact: Dylan.firsick@gmail.com

Abstract

Emphasizing purpose and meaning in work, career calling has experienced substantial growth in vocational research among college students due to beneficial effects on academic and life satisfaction. Application of career calling within vocational theory is needed and this study investigated calling from an integrated social cognitive career theory (SCCT) and attachment theory perspective. Using structural equation modeling with a sample of 433 undergraduate students, competing theoretical models were tested. The alternative model best fit the data, finding anxious and avoidant attachment to have direct negative effects on career decision self-efficacy (CDSE), and college adjustment, and indirect negative effects on life satisfaction. Avoidant, but not anxious, attachment had a direct negative effect on career calling, which subsequently displayed direct positive effects on CDSE and college adjustment. CDSE and college adjustment both had positive direct effects on life satisfaction and mediated the indirect positive effect of career calling. These results constitute original findings linking attachment and career calling, while also providing initial evidence supporting the integration of career calling and SCCT. Avoidant attachment may decrease career calling development, CDSE, and college adjustment, while increased career calling, may improve these variables while indirectly benefiting life satisfaction among college students. These results may be particularly relevant to counseling psychologists. Theoretical, research, and practical applications are discussed.

Keywords: attachment theory, social cognitive career theory, career calling, self-efficacy, college adjustment

How Attachment and Career Calling Influence Self-Efficacy, College Adjustment and Life Satisfaction

During the transition to college that ensues each year for incoming students, many fluctuations rapidly occur. When seeking to find variables predictive of student success, research has often focused on prior academic success, standardized test scores, or SES (Ishler & Upcraft, 2005). An area traditionally overlooked, however, is the student's own satisfaction within the academic environment (Ishler & Upcraft, 2005). Attachment style in interpersonal relationships (Bowlby, 1969) has become a variable of particular interest related to positive adjustment to college (Kenny, 1987; Mattanah, Lopez, & Govern, 2011). During this transition, relationships fluctuate (Arnett, 2000) and connections to family and friends may become disrupted and strained (Swenson, Nordstrom, & Hiester, 2008). Bowlby's attachment theory emphasizes childhood relationships in building internal perceptions of self, which later facilitate better adjustment to the college environment (Kenny, 1987).

Attending college also provides opportunity for identity development and career exploration, prompting questions of purpose in life (Adams, 2012; Arnett, 2000). Career calling has experienced substantial growth in vocational literature due to its focus on creating meaning in one's chosen line of work (Duffy & Dik, 2013). Career calling is a transcendent summons to a line of work that creates purpose or meaning and holds prosocial values as primary sources of motivation (Dik & Duffy, 2009). Among college students, calling has been associated with increased career development (Duffy & Sedlacek, 2007), career decision self-efficacy (CDSE; Duffy, Allan, & Dik, 2011),

academic satisfaction, and life satisfaction (Duffy, Allan, & Bott, 2012). Recent authors have identified the need for both calling-based interventions and development of a theoretical model for career calling research (Duffy & Dik, 2013). One such model of vocational development is social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994) which examines the role of self-efficacy, learning experiences, and goal-oriented action. Research has integrated SCCT and attachment style in studying the effects of CDSE and life satisfaction among college students (Wright & Perrone, 2010). Thus, the purpose of this study was to further understand how career calling may be an active influence in college students lives, while conceptualizing from an SCCT and attachment perspective. Competing structural models tested the theoretical fit among each latent construct; anxious and avoidant attachment, career calling, CDSE, college adjustment, and life satisfaction.

Attachment Theory and SCCT

Attachment theory (Bowlby, 1969) postulates that early parent-child interactions become prototypes for future relationships, shaping internal perceptions of the self and others. Children with consistently supportive caretakers develop attachment security, can trust others, and view themselves as worthy of mutually beneficial relationships. Children experiencing inconsistent or neglectful interactions develop insecure attachment, defined as anxious or avoidant. Research views attachment style on a continuum (Brennan, Clark, & Shaver, 1998) and individuals with low anxiety and low avoidance are more securely attached. Individuals with high attachment anxiety constantly fear abandonment and distrust the relationship while individuals with high attachment avoidance choose to avoid intimacy and interpersonal dependence to prevent emotional injury (Mikulincer &

Shaver, 2007). Research has demonstrated that childhood attachment extends to intimate partner relationships as adults in which attachment security is associated with increased self-worth and more fulfilling relationships (Hazan & Shaver, 1987).

As applied to career development, SCCT emphasizes that one's environment and personal factors play a primary role in learning experiences related to career selection (Lent et al., 1994). Learning experiences facilitate career interests, self-efficacy, and future expectations (Lent et al., 1994). As interests become solidified, individuals establish goals and take action toward career outcome attainments and ultimately life satisfaction (Lent & Brown, 2008). Unique personal and contextual factors are also taken into account. Personal inputs are innate predispositions (e.g., personality, gender, ethnicity) and contextual factors are environmental affordances (e.g., social supports, educational opportunities, or SES), both of which act as supports or barriers toward learning experience and self-efficacy development (Lent, Brown, & Hackett, 2000). Considered a personal input, individuals with secure attachment experience more career self-efficacy, social support, and perceive less career barriers (Wright, Perrone-McGovern, Boo, & White, 2014).

Attachment to Self-Efficacy and College Adjustment

Attachment style has been found to influence self-efficacy beliefs and college adjustment. Secure attachment to parents and peers was associated with increased student CDSE and decreased career indecision (Wolfe & Betz, 2004). Wright and Perrone (2010) used structural equation modeling to demonstrate the effects of attachment security to life satisfaction were mediated by increased social self-efficacy and CDSE. Pertaining to college adjustment, positive effects of attachment security have been reported. In a meta-

analysis of 156 studies ($N = 32,969$) Mattanah et al. (2011) found an overall small-to-medium effect size ($r = .23$) between secure parental attachment and college adjustment. Research on adult relationships (i.e., peers and romantic partners) has also found attachment security to predict increased social self-efficacy, the use of social supports, decreased loneliness and overall college adjustment (Mallinckrodt & Wei, 2005; Marmarosh & Markin, 2007; Wei, Russell, & Zakalik, 2005). Thus, attachment styles positively affects self-efficacy beliefs and overall psychological adjustment during college.

Career Calling to Self-Efficacy, College Adjustment, and Life Satisfaction

Career calling has gained increased attention for its positive association with increased career decision self-efficacy (CDSE), academic functioning, and life satisfaction among college students. CDSE pertains to individual beliefs in one's own ability to engage in career-related decisions and actions (Solberg et al., 1994). Several studies have documented the beneficial effects of career calling in college samples (Adams, 2012). Students who identified with the presence of a career calling had higher career decidedness, comfort with career choices, and self-clarity (Duffy & Sedlacek, 2007) and Domene (2012) found the influence of career calling on career expectations was fully mediated by CDSE. Calling has also been associated with positive college functioning and wellbeing. Duffy et al. (2011) found the positive effects of career calling on academic satisfaction were partially mediated by CDSE and work hope. In a follow up study, Duffy, Allan, et al. (2012) found the career calling to life satisfaction relationship to be fully mediated by life meaning and academic satisfaction. Thus, for college students,

having a career calling facilitated increased academic satisfaction, CDSE, and personal meaning, which subsequently contributed to increased life satisfaction as a whole.

Self-Efficacy and College Adjustment to Life Satisfaction

Within the SCCT model, self-efficacy domains are hypothesized to influence several areas. Lent et al. (1994, 2000) state self-efficacy and outcome expectations predict personal interests. All three of these variables subsequently predict goals, activity, and performance attainments, which if positive, can lead to work and life satisfaction while also reinforcing future self-efficacy beliefs and outcome expectations (Lent & Brown, 2008). Academic, social and career self-efficacy have been associated with goal progress, academic satisfaction, and life satisfaction (Singley, Lent, & Sheu, 2010; Wright & Perrone, 2010). These studies provide evidence of the role self-efficacy plays in predicting life satisfaction, consistent with the tenets of SCCT (Lent & Brown, 2008). Similar to CDSE, positive college adjustment has been associated with increased life satisfaction. Difficult and stressful academic environments were associated with negative effects while increased academic satisfaction was linked with increased life satisfaction as a whole (Duffy, Allan, et al., 2012). Similarly increased social and emotional adjustment (Renshaw & Cohen, 2013), and feelings of institutional belonging were associated with improved performance and satisfaction (Thompson, Orr, Thompson, & Grover, 2007).

Purpose of the Study

A lack of research exists integrating career calling into existing theoretical models and applied settings (Adams, 2012; Duffy & Dik, 2013). Attachment theory and SCCT are prominent interpersonal and career development theories. While attachment has been

previously integrated as a personal input (Wright & Perrone, 2008), career calling may also fit within the SCCT framework as a learning experience (Domene, 2012). This study explored theoretical links between attachment style, career calling, CDSE, college adjustment, and life satisfaction. This is also the first study to integrate attachment style and career calling within a vocational theory (i.e. SCCT), providing unique contributions to the career and college adjustment literature. Using structural equation modeling (SEM) two a priori models were constructed. The primary model postulated anxious and avoidant attachment would have negative effects on career calling, that career calling would have positive effects on CDSE, college adjustment, and life satisfaction, and that CDSE and college adjustment would have positive effects on life satisfaction. The alternative model contained identical pathways while adding two negative effects each from anxious and avoidant attachment to CDSE and college adjustment (see Figure 1).

Methods

Participants

The study's sample consisted of undergraduate students recruited from a mid-sized public university ($N = 13,000$) in the rocky mountain region. A final sample of 433 participants was obtained, ages ranged from 18-55 years old ($M = 21.45$, $SD 5.24$), 72% identified as female. Reported ethnicities were: 72% Caucasian, 13% Latino/a, 5% African American, 2% Asian, 1% Pacific Islander, 2% Native American, 1% no answer, and 4% other or multi-racial identities. Most (94%) had declared a major and the college classification included: 25% freshman, 30% sophomores, 25% juniors, and 19% seniors.

Instruments

Attachment styles. The latent constructs of anxious and avoidant attachment was measured using the Experience in Close Relationships-Revised scale (ECR-R; Fraley, Waller, & Brennan, 2000), comprised of 36 items, separated into two subscales, avoidant (18 items) and anxious attachment (18 items). Participants rate their level of agreement on a 7-point Likert-scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), in which higher scores indicate greater levels of anxious or avoidant attachment. The anxious subscale assesses feelings of security and fear of abandonment while the avoidant subscale measures avoidance of intimacy and self-reliance (Fraley et al., 2000). Internal reliability scores on the ECR-R are consistently greater than $\alpha = .90$ for both subscales scores (Fraley et al., 2000; Sibley, Fischer, & Liu, 2005). The two factor structure, 6-week test-retest reliability (86% shared variance), and convergent validity with other attachment measures (i.e., Relationship Questionnaire; Bartholomew & Horowitz, 1991) has also been consistently reproduced (Sibley & Liu, 2004). The measurement model of anxious and avoidant attachment contained three, 6-item parcel indicators each, created using the item-construct method described by Little, Cunningham, Shahar, & Widaman (2002). Item parceling is recommended due to increased fit and reliability of estimation (Little et al., 2002). The item-construct method ensured balanced and unidimensional parcels were created, the means of which represented each indicator. Alpha coefficients for each item parcel in the study ranged from $\alpha = .83$ -.85 for anxiety and $\alpha = .85$ -.86 for avoidance.

College adjustment. The Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984) measured the latent construct of college adjustment. The SACQ is

a 67-item self-report measure of college adjustment assessing four domains: academic, social, and personal-emotional adjustment, and institutional attachment. Participants indicate level of agreement a 9-point Likert-scale ranging from 1 (*Applies very closely to me*) to 9 (*Doesn't apply to me at all*). Higher scores indicate better overall adjustment. Academic adjustment refers to adaptation to academic expectations and demands, social adjustment is the ability to create social networks during college, personal-emotional adjustment pertains to emotional distress, identity formation, and character development, and institutional attachment references fit and belonging to the university setting. Internal consistency across subscales scores ranged from $\alpha = .81-.91$ (Baker & Siryk, 1984) and similar values were also found in the present study ($\alpha = .87-.89$). Convergent validity has been demonstrated among SACQ scores and measures of conscientiousness, self-efficacy, emotionality, reduced distress, and social support (Baker & Siryk, 1999). Each subscale mean score comprised the four indicators for the latent construct of college adjustment.

Career calling. The latent construct of career calling was measured using the Career Vocational Questionnaire (CVQ; Dik, Eldridge, Steger, & Duffy, 2012), a 24-item self-report measure comprised of the calling presence and calling search scales. Each scale contains three subscales; transcendent summons, purposeful work and prosocial orientation. Participants indicate, on a 4-point Likert type scale, how true each item is in their own lives (1- "*Not at all true of me*" to 4- "*Absolutely true of me*"). Higher scores indicate increased calling presence and increased calling search. As this study aimed to investigate the influence of a career calling on present college experiences, only the calling presence scale was used. Among college students, the CVQ was found to have internal consistency scores ranging from $\alpha = .87-.89$ and one month test-retest reliability

scores ranging from $r = .60-.67$ (Dik et al., 2012). Convergent validity has been found with the Brief Calling Scale ($r = .69$), the Wrzesniewski Calling Paragraph (Wrzesniewski, Mccauley, Rozin, & Schwartz, 1997; $r = .27$), and the Work Hope Scale ($r = .35$; Dik et al., 2012). The latent construct of career calling was comprised of three indicators, represented by the three subscale means scores of the calling presence scale, and were found to have internal consistency values ranging from $\alpha = .67-.81$.

Career decision self-efficacy. The latent construct of CDSE was measured using the Career Search Efficacy Scale (CSES; Solberg et al., 1994), a 35-item self-report measure consisting of four individual efficacy subscales: Job Search, Interviewing, Networking, and Personal Exploration. Participants indicate levels of confidence on a 10-point Likert-scale ranging from 0 (*very little*) to 9 (*very much*). Internal consistency ranged from $\alpha = .87-.95$ across subscale scores with college students (Solberg et al., 1994). Convergent validity was established using the Career Decision Making Self-Efficacy Scale (CDMSES; Taylor & Betz, 1983) and correlations ranged from $r = .48-.73$ (Solberg et al., 1994). The present study found similar internal consistency scores ranging from $\alpha = .88-.96$. The four CSES subscale mean scores comprised the four indicators used to measure the latent construct of CDSE (Little et al., 2002).

Life Satisfaction. The latent construct of life satisfaction was measured using the five-item Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Participants indicate level of agreement on a 7-point Likert-scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate increased satisfaction. The SWLS was found to have an internal consistency of $\alpha = .87$ and a two month test-retest reliability of $r = .82$. Convergent and discriminant validity were established based

on correlations with the Positive ($r = .50$) and Negative ($r = -.37$) Scales of the Affect Balance Scale (Diener et al., 1985). Overall internal consistency of the SWLS in the present sample was $\alpha = .872$. The five items of the SWLS composed the five indicators of the latent construct of life satisfaction in the present study.

Procedures

Approval for the study was received by the authors' institutional review board (IRB). Participants were recruited via in-class announcements, the university online survey system, and email notifications from the university's office of research. Participants whose instructors agreed received course credit. All participants were given the opportunity to enter a random drawing for one \$50.00 gift card and three \$5.00 gift cards for the first 200 participants. Data were collected from participants using an online survey website. Participants logged onto the site and completed the informed consent before accessing the survey. The IP addresses were reviewed as a validity check. Participant identities were anonymous and all data were stored securely.

Data Analysis

Five steps were completed in conducting structural equation modeling (SEM) procedures via the statistics program Stata 14 (Kline, 2011; StataCorp, 2015). The primary and alternative models were first specified prior to analysis. Next, identification was ensured such that a unique set of parameters could be estimated and each latent construct was assigned a measurement scale and reference point (Kline, 2011). Both models were fully latent structural regression models and were considered identified as each construct was measured by more than two indicators. Third, each latent construct was measured using instruments with multiple factors, selected based on strong

theoretical fit, and all data were screened to for assumptions of SEM. Fourth, model estimation was conducted using maximum likelihood (ML) for all analyses due to its robust estimation and assumption of multivariate normality (Weston & Gore, 2006). To ensure appropriate fit to the data, the following indexes were examined. The chi-square statistic was used to test overall fit of the proposed model, with a significant value ($p < .05$) indicating poor model fit. As this statistic can be biased due to various factors (e.g., sample size, number of factors), approximate fit indexes were also used (Kline, 2011). Two “goodness of fit” measures, the Comparative Fit Index (CFI; Bentler, 1990) and the Non-Normed Fit Index (NNFI; Bentler & Bonett, 1980) and two “badness of fit” measures, the Root Mean Square Error of Approximation (RMSEA Steiger, 1990) and the Standardized Root Mean Square Residual (SRMR; Bentler, 1990), were employed (Kline, 2011). Previously specified cut-off scores of $>.95$ for the CFI and NNFI and $<.06$ for the RMSEA and SRMR (Hu & Bentler, 1999) have been considered too stringent for smaller samples causing type II error when sample size is less than $N = 500$ (Marsh, Hau, & Wen, 2009; Weston & Gore, 2006). Thus, cut-off criteria in this study were based on CFI and NNFI values $>.90$ and RMSEA and SRMR $<.10$ (Weston & Gore, 2006). In the fifth step, model interpretation was made by examining standardized parameter estimates, effect sizes, and associated p -values among the latent constructs in each model.

Results

Preliminary Analysis

Descriptive statistics were calculated for each construct indicator. Means, standard deviations, correlations, and alpha coefficients can be found in Table 1. A total of 549 students initiated participation through the survey website, of which 109

terminated participation prematurely, resulting in an attrition rate of 19.9%. Forced completion was implemented excluding the SACQ, which contains two elective items, resulting in missing responses for 1.5% - 6% of the SACQ data in 203 cases. Missing data were prorated following SACQ scoring instructions (Baker & Siryk, 1999). No other missing data existed. Assumptions of SEM were first tested prior to analysis. Univariate and multivariate outliers were assessed using standardized residuals and Mahalanobis distance (D) values (Kline, 2011). One multivariate and six univariate outliers were identified and removed. Data were found to be normally distributed using recommended skewness ($< |3|$) and kurtosis ($< |10|$) values (Kline, 2011). Normality plots were examined to ensure linearity and homoscedasticity. Multicollinearity was assessed by examining variance inflation factors (VIF) and tolerance values using recommended criteria (VIF > 10 , Tolerance $< .10$; Kline, 2011) and no extreme cases were found.

Model fit analysis

A two-step procedure was followed for SEM (Kline, 2011) in which confirmatory factor analyses (CFA) were conducted to ensure the measurement fit followed by structural model testing. A full CFA was conducted, allowing covariance pathways among each latent construct; attachment anxiety and avoidance, career calling, CDSE, college adjustment, and life satisfaction. All parameter estimates in Model 1 were statistically significant ($p < .001$) and all model fit statistics were within acceptable ranges ($RMSEA = .065$, [90% CI = .059-.072]; $SRMR = .048$, $CFI = .954$, and $NNFI = .946$). The chi-square statistic was statistically significant ($\chi^2_M(194) = 549.68$, $p < .001$). Lagrange Multiplier (LM) statistics were examined to explore unspecified model pathways (Kline, 2011; StataCorp, 2015) and three error covariance pathways were

added between the search and exploration indicators of CDSE, the social and institutional indicators of college adjustment, and item-indicators one and two of life satisfaction. The CFA of Model 2 incorporated these changes and the results suggested improved model fit. All parameter estimates were statistically significant ($p < .001$) and all model fit statistics were within acceptable ranges ($RMSEA = .050$ [90% CI = .043-.057], $SRMR = .038$, $CFI = .973$, and $NNFI = .968$). The chi-square model fit statistic was statistically significant ($\chi^2_M(191) = 397.86$, $p < .001$) however, given the number of factors and sample size ($N = 433$), this statistic may be biased (Kline, 2011). Thus measurement Model 2 demonstrated adequate model fit.

Structural analysis

The primary structural model was first submitted to SEM analysis with the error covariance pathways from measurement Model 2. Most parameter estimates were statistically significant ($p < .05$) indicating good component fit. Model fit statistics were not ideal ($RMSEA = .069$; 90% CI = .063-.075, $SRMR = .142$, $CFI = .947$, $NNFI = .939$) and the chi-square goodness-of-fit test was significant ($\chi^2_M(198) = 607.86$, $p < .001$). Following Joreskog's, (1993) model generating recommendation, the alternative model was next submitted to SEM analysis. Most parameter estimates were statistically significant ($p < .05$), indicating good component fit. All model fit statistics were within acceptable ranges ($RMSEA = .054$, 90% CI = .047-.060, $SRMR = .056$, $CFI = .969$, $NNFI = .963$). The chi-square goodness-of-fit statistic, however, was found to be significant ($\chi^2_M(194) = 434.56$, $p < .001$). The alternative model demonstrated better structural fit than the primary model (Figure 1). Attachment avoidance had direct negative effects ($p < .05$) on career calling ($r = -.150$), CDSE ($r = -.137$), and college adjustment ($r = -.157$),

and indirect negative effects ($p < .05$) on life satisfaction via the mediating variables of CDSE ($r = -.034$) and college adjustment ($r = -.083$). Attachment anxiety had direct negative effects ($p < .001$) on CDSE ($r = -.279$) and college adjustment ($r = -.441$), but not career calling. Attachment anxiety also demonstrated negative indirect effects ($p < .001$) on life satisfaction through the mediating variables of CDSE ($r = -.070$) and college adjustment ($r = -.234$). Overall, attachment avoidance ($r = -.163, p < .001$) and anxiety ($r = -.299, p < .001$) demonstrated combined, small-medium total negative effects on life satisfaction (Cohen, 1988). Career calling was found to have direct positive effects ($p < .001$) on CDSE ($r = .441$) and college adjustment ($r = .347$) and indirect effects ($p < .001$) on life satisfaction via the mediating variables of CDSE ($r = .111$) and college adjustment ($r = .184$). Combined, career calling had a total medium positive effect ($r = .303, p < .001$) on life satisfaction (Cohen, 1988). Finally, CDSE ($r = .252$) and college adjustment ($r = .530$) also had significant ($p < .001$) direct positive effects on life satisfaction. The alternative model accounted for 2.1% of the variance in career calling, 35.4% in CDSE, 43.1% in college adjustment, and 44.9% in life satisfaction. A chi-square difference test ($\chi^2(4) = 186.07, p < .001$) verified significant model improvement occurred by including the additional pathways of the alternative model, which was thus retained as the best fitting structural model to the data.

Discussion

The purpose of the present study was to conceptualize the role of career calling, integrating vocational and interpersonal developmental theories. Career calling explores the personal fit, intrinsic meaning, and prosocial orientation individuals with a calling feel toward their careers (Dik & Duffy, 2009). It has also been applied to college

populations such that students who have identified a calling experience increased CDSE, academic satisfaction, and life satisfaction (Duffy, Allan, et al., 2012; Duffy et al., 2011). As applied to vocational development, career calling has a relatively small literature base (Adams, 2012). As such, the present study investigated two proposed structural models based on attachment theory (Bowlby, 1969) and social cognitive career theory (Lent et al., 1994). Results of the SEM procedures provided evidence that while both models demonstrated structural fit to the data, the alternative model (Figure 1) provided considerably better fit than the primary as evidenced by improved fit statistics and increased variance accounted for among CDSE, college adjustment, and life satisfaction. These results demonstrate insecure aspects of attachment styles have negative effects on career calling, CDSE, and college adjustment. In the alternative model, individuals with more anxious or avoidant attachment reported decreased CDSE, and decreased college adjustment. CDSE and college adjustment also mediated the negative effects of anxious and avoidant attachment on life satisfaction. Related to career calling, avoidant but not anxious attachment demonstrated a significant inverse relationship. Increased avoidance was associated with decreased career calling presence. This effect was not significant for attachment anxiety. Increased career calling presence was associated with increased CDSE and college adjustment via direct effects, and increased life satisfaction via indirect effects. As students endorsed increased calling presence, they were more likely to experience higher career decision self-efficacy, better adjustment to college, and greater life satisfaction. These results imply that career calling indirectly influences life satisfaction as mediated by the effects of CDSE and college adjustment. College students

identifying with a career calling also endorse increased life satisfaction due in part to the roles of increased CDSE and better college adjustment.

Research Implications

The results of this study supported previous research and provided original contributions to the academic literature. The finding that anxious and avoidant attachment styles was directly related to decreased college adjustment and CDSE is highly consistent with past research on adult attachment in college students (Marmarosh & Markin, 2007; Wei et al., 2005). Similarly, the positive effects from career calling to college adjustment and CDSE, and the indirect effect of career calling to life satisfaction, via CDSE and college adjustment, was also support by past research (Duffy, Allan, et al., 2012; Duffy et al., 2011). Finally, the positive effects of CDSE and college adjustment to life satisfaction support the role that self-efficacy beliefs and college functioning play in facilitating life satisfaction (Renshaw & Cohen, 2013; Wright & Perrone, 2010).

While previous research has examined academic satisfaction, this is the first study to show a positive effect from career calling to college adjustment, measured by the SACQ. Data were gathered pertaining to academic, social, emotional, and institutional adjustment and imply calling may have positive effects on other aspects of college functioning beyond academics. Social adjustment may improve by creating relationships with others that have similar career interests via an identified calling. Emotional adjustment may improve due to increased self-efficacy and satisfaction as a product of calling's presence. These speculative interpretations underscore the need for continued research on career calling and college adjustment, broadly defined. The second original finding was in regards to the effect of attachment style on career calling, as no previous

research has examined relationships among these constructs. The significant negative effect from attachment avoidance provides evidence for a plausible link to career calling. While individuals with avoidant attachment develop inflated positive views of self and avoid negative experiences (Mikulincer & Shaver, 2007), it stands to reason these individuals might lack the self-awareness needed to develop a career calling and avoid the personal investment, vulnerability, or risk of failure required to pursue it as a career. Further research on attachment and calling is needed to provide more accurate interpretations and further theoretical understanding of differences between anxious and avoidant styles.

Theoretical Implications

The primary goal of this study was to conceptualize the construct of career calling using SCCT, as applied to college student functioning (Lent et al., 1994). In utilizing this framework, attachment styles represented personal inputs of the individual based on interpersonal relationship quality and internal models of the self. According to SCCT (Lent et al., 1994) personal inputs influence learning experiences, which influence self-efficacy beliefs and reinforce activity engagement in the future. Career calling was considered to be a learning experience in this study. As individuals become exposed to possible career domains, the hallmarks of career calling may become evident, such as experiencing a transcendent summons, sense of purpose, or prosocial orientation (Dik et al., 2012). As a learning experience, an individual's identification of a career calling may increase self-efficacy beliefs and outcome expectations pertaining to their specific line of work (Domene, 2012). The results from the alternative model in this study support the hypothesized roles of attachment style and career calling within SCCT. The significant

negative affect of attachment avoidance provides initial support of personal inputs influencing career calling as a learning experience. The inverse relationship supports the idea that the person input of avoidant attachment may also influence the learning experiences of career calling presence, as well as CDSE and college adjustment. According to SCCT, person inputs influence self-efficacy and outcome expectations via learning experiences (Lent et al., 1994); this theoretical proposition was supported by the current study's findings. The positive effects of career calling, directly on CDSE and college adjustment, and indirectly on life satisfaction, support the role of career calling as a learning experience, consistent with the SCCT model (Domene, 2012). These results also support the theoretical influence of learning experiences on outcome attainments, via indirect, but not direct effect pathways, through self-efficacy beliefs (Lent et al., 1994). In mediating the effects of calling to life satisfaction in this study, college adjustment functioned similarly to the way outcome expectations and goal-directed actions influence outcome attainments in SCCT (Lent et al., 1994). As described by Lent and Brown (2006), SCCT can account for the development of academic and career satisfaction as self-efficacy and outcome expectations influence participation and progress within goal directed activities. Thus, data from the alternative model provided evidence consistent with SCCT, further supporting the hypothesis that attachment style, career calling, and college adjustment can each be further understood using the SCCT model.

Practice Implication

Given the beneficial affects discussed in this study, vocational counseling in university settings may provide an ideal application of these results, as students are often seeking to find meaning and purpose in life (Dik, Duffy, & Eldridge, 2009). By

discussing calling's summons and meaningful work aspects, counselors can encourage exploration of client desires for a future career and clarify values. As this study showed, CDSE and college adjustment mediated the link between career calling and life satisfaction. Written exercises and modeling are effective career interventions (Brown & Ryan Krane, 2000), and may provide opportunity for personal application of calling principles. Encouraging positive modeling opportunities with professionals who identify a calling would provide also positive learning experiences and increased CDSE.

Regarding college adjustment, psychologists should focus on the four areas defined by the SACQ. Helping students equate academic success with career goal attainment and encouraging engagement in vocational clubs/organizations would improve academic and social functioning. Discussions of meaning-making within student identity and future work identity may improve emotional adjustment by helping clients better navigate demands of college life. Encouragement to become involved through campus service opportunities might increase prosocial values and a sense of belonging for the student contributing to institutional attachment.

As these results implied, attachment avoidance may decrease career calling, CDSE, college adjustment, and life satisfaction. Avoidant individuals are more emotionally distant to therapist (Mallinckrodt, 2010) and less likely to engage in career exploration (Mikulincer & Shaver, 2007; Wright & Perrone, 2008). Treatment may need to focus on carefully challenging this emotional distance via rapport building and the corrective experience of therapy. When avoidance is high, psychologists may benefit from targeting the mediating variables discussed in this study to build commitment and rapport prior to deeper career calling self-exploration.

Limitations

The first limitation in this study pertains to sample size. Some debate exists regarding the number of participants needed to conduct SEM (Weston & Gore, 2006). A minimum number of $N = 200$ has been proposed (Kline, 2011). Other authors have asserted a sample size to parameter ratio ($N:q$) of 10:1 (Weston & Gore, 2006). The alternative model in this study contained 81 parameters with a sample of $N = 433$, which met the minimum criteria suggested (Kline, 2011) but failed to meet the $N:q$ recommendation. Thus sample size is a limitation and future research should utilize the more stringent $N:q$ ratio recommendation. A second limitation is related to the use of the CVQ to measure career calling. Although designed using a college student sample (Dik et al., 2012), the CVQ does not take into account developmental theory in assessing career calling among university samples. A recent study of career calling assessment (Praskova, Creed, & Hood, 2015) sought to investigate calling among students, while also integrating the developmental theory of Emerging Adulthood (Arnett, 2000). While more research and application is needed, the Career Calling Scale for Emerging Adults (Praskova et al., 2015) may provide a more accurate assessment of career calling among college students than the CVQ and other existing calling measures. Future research would benefit from using measures of career calling developed specifically for use within college student populations. The final limitation pertains to demographics as this study utilized a voluntary sample of primarily Caucasian, female, undergraduate students and thus generalizability is limited. Research has suggested positive outcomes associated with a calling may dissipate for unemployed populations or employed individuals not living out a calling (Duffy, Bott, Allan, Torrey, & Dik, 2012). Others has also implied the

benefits of career calling may be a function of economic/societal privilege, excluded for those with personal barriers, from lower SES backgrounds, or less access to educational or employment resources (Dik et al., 2015; Duffy, Blustein, Diemer, & Autin, 2016). Future research is needed to explore the role of career calling with diverse samples in terms of ethnicity, employment status, SES, accessibility to education, and other areas of social privilege.

Conclusions

This study investigated the construct of career calling, integrating SCCT (Lent et al., 1994) and attachment theory (Bowlby, 1969), as articulated by Wright and Perrone (2008). The alternative structural model adequately fit the data and found attachment avoidance and anxiety had significant negative effects on CDSE and college adjustment. Avoidant, but not anxious, attachment had a significant negative effect on career calling, which subsequently displayed significant positive effects on CDSE and college adjustment. CDSE and college adjustment both demonstrated significant positive effects on life satisfaction, in addition to mediating the indirect positive effect of career calling and indirect negative effect of attachment avoidance on life satisfaction. These results constitute original findings linking attachment to career calling and provide evidence supporting the integration of career calling as a learning experience within SCCT. These results also suggest insecure attachment style may cause a barrier to career calling development, building CDSE, and successful college adjustment, while increased calling presence, may contribute to increased CDSE, college adjustment, and life satisfaction among college students. These results may be particularly relevant to counseling psychologists and mental health providers in college counseling settings.

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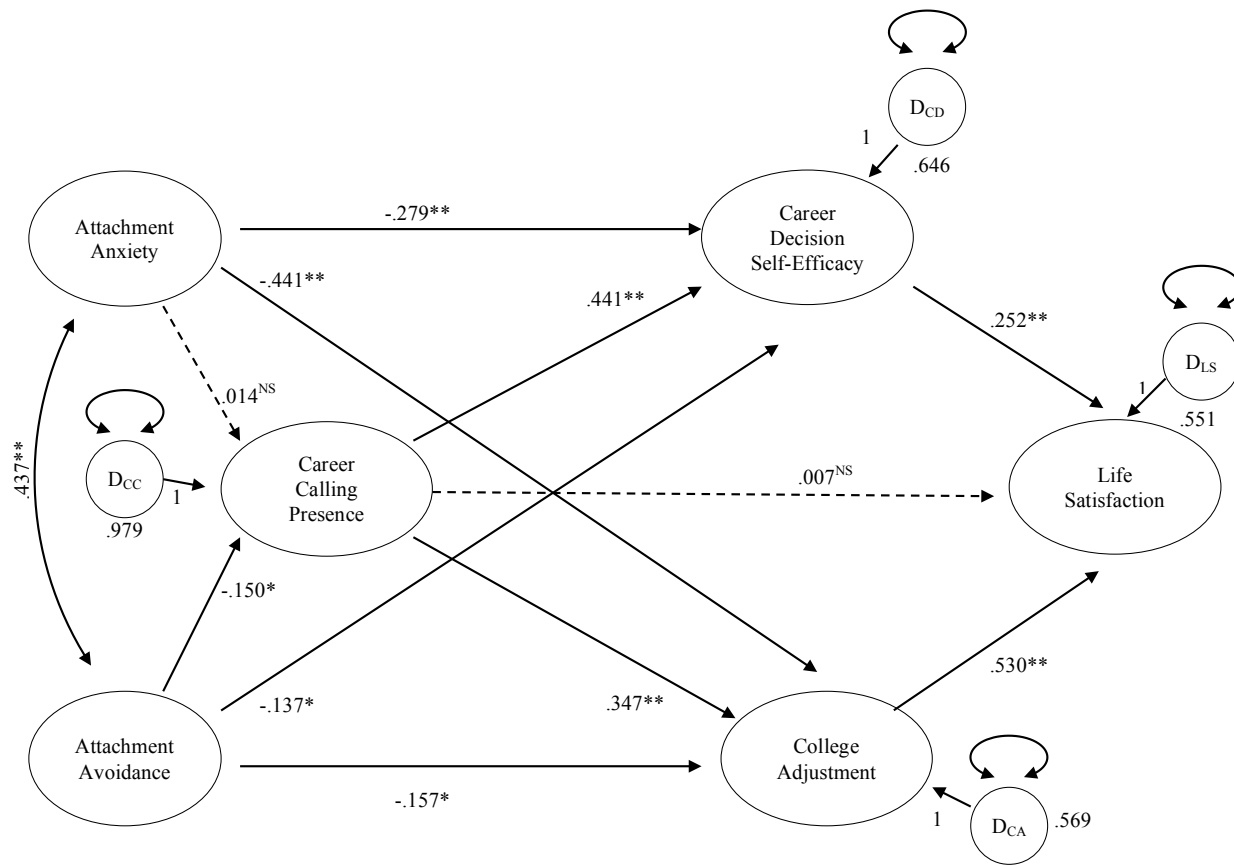


Figure 1: Alternative structural regression model with standardized parameter estimates. Standardized estimates for disturbances are proportions of unexplained variance. * = $p < .05$ ** = $p < .001$, NS = Not Significant. Dashed line represents non-significant structural path.

Table 1
Descriptive Statistics and Correlations for All Continuous Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	α	M	$S.D.$	
1 ECR_An timers1	-																									.83	3.33	1.35	
2 ECR_An timers2	.88	-																									.83	3.28	1.26
3 ECR_An timers3	.85	.86	-																								.85	3.17	1.33
4 ECR_Avd1	.40	.37	.42	-																							.86	2.84	1.25
5 ECR_Avd2	.40	.38	.41	.86	-																						.85	3.02	1.23
6 ECR_Avd3	.37	.36	.38	.88	.89	-																					.86	2.86	1.20
7 CVQ_P1	-.02	<.01	<-.01	-.02	-.04	-.05	-																				.67	2.68	0.74
8 CVQ_P2	-.09	-.09	-.07	-.08	-.09	-.08	.52	-																			.76	2.91	0.71
9 CVQ_P3	-.01	-.01	<.01	-.15	-.14	.16	.47	.60	-																		.81	3.12	0.69
10 CVQ_S1	.07	.07	.06	.01	.04	-.02	.04	.20	.22	-																	.80	2.56	0.80
11 CVQ_S2	<.01	<.01	<-.01	-.08	-.06	-.10	.24	.63	.52	.51	-																.78	3.17	0.68
12 CVQ_S3	-.03	-.03	-.03	-.18	-.16	-.17	.42	.52	.85	.24	.54	-															.85	3.22	0.70
13 SACQ_AA	-.36	-.33	-.34	-.30	-.29	-.29	.29	.25	.31	-.10	.11	.32	-														.89	6.13	1.16
14 SACQ_SA	-.39	-.35	-.33	-.24	-.28	-.25	.19	.22	.25	<.01	.10	.27	.53	-													.89	6.07	1.42
15 SACQ_PE	-.47	-.43	-.43	-.29	-.31	-.31	.15	.06	.12	-.05	-.03	.15	.63	.54	-												.87	5.40	1.53
16 SACQ_AT	-.35	-.32	-.30	-.22	-.24	-.23	.17	.19	.24	-.06	.09	.28	.64	.83	.57	-											.87	6.65	1.40
17 CSES_1	-.34	-.31	-.31	-.29	-.30	-.28	.30	.34	.36	-.06	.20	.34	.48	.46	.38	.40	-										.96	6.92	1.43
18 CSES_2	-.29	-.28	-.28	-.29	-.27	-.25	.23	.32	.28	.02	.22	.28	.37	.39	.30	.29	.88	-									.93	6.52	1.59
19 CSES_3	-.33	-.32	-.30	-.29	-.30	-.26	.27	.30	.30	-.08	.17	.31	.43	.51	.38	.41	.88	.85	-								.93	6.55	1.59
20 CSES_4	-.29	-.27	-.27	-.24	-.25	-.25	.30	.33	.38	-.07	.22	.37	.47	.39	.37	.36	.82	.71	.74	-							.88	7.30	1.31
21 SWLS_1	-.37	-.34	-.34	-.29	-.33	-.28	.24	.16	.17	-.10	.01	.18	.43	.46	.47	.39	.47	.41	.48	.43	-						-	4.85	1.50
22 SWLS_2	-.29	-.28	-.29	-.24	-.28	-.25	.18	.12	.14	<.01	.05	.15	.34	.41	.47	.34	.39	.37	.41	.34	.73	-					-	5.12	1.51
23 SWLS_3	-.36	-.31	-.29	-.28	-.31	-.30	.23	.18	.22	-.04	.06	.22	.47	.46	.48	.41	.43	.36	.40	.40	.71	.69	-				-	5.36	1.43
24 SWLS_4	-.26	-.23	-.22	-.24	-.27	-.26	.21	.16	.18	-.11	.10	.19	.33	.29	.27	.28	.33	.29	.32	.29	.55	.51	.67	-			-	5.23	1.49
25 SWLS_5	-.23	-.21	-.19	-.23	-.26	-.23	.23	.15	.20	-.06	.02	.16	.30	.35	.34	.32	.32	.29	.33	.31	.54	.51	.57	.45	-	-	4.41	1.85	

Note. N = 433. Bold Type = $p < .05$

Experience in Close Relationships-Revised (ECR), Anx1-3 = Anxious Subscale Parcels 1-3, Avd1-3 = Avoidant Subscale Parcels 1-3. Calling and Vocation Questionnaire (CVQ), P1= Presence of Transcendent Summons, P2= Presence of Purposeful Work, P3= Presence of Prosocial Orientation, S1= Search for Transcendent Summons, S2= Search for Purposeful Work, S3 = Search for Transcendent Summons. Student Adaptation to College Questionnaire (SACQ), SACQ_AA = Academic Adjustment, SACQ_SA = Social Adjustment, SACQ_PE = Personal-Emotional Adjustment, SACQ_AT = Institutional Attachment. Career Search Self-Efficacy Scale (CSES), CSES_1 = Job Search Efficacy, CSES_2 = Interview Efficacy, CSES_3 = Network Efficacy, CSES_4 = Personal Exploration Efficacy. Satisfaction with Life Scale (SWLS) = Items 1-5.