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By Jennifer Danielle Lockman

Entitled

College Student's Suicidal Ideation: Testing the Predictions of the Existential - Constructivist Theory of Suicide

For the degree of Doctor of Philosophy

Is approved by the final examining committee:

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11/23/2016

Date

COLLEGE STUDENTS' SUICIDAL IDEATION: TESTING THE PREDICTIONS OF
THE EXISTENTIAL - CONSTRUCTIVIST THEORY OF SUICIDE

A Dissertation

Submitted to the Faculty

of

Purdue University

by

Jennifer Danielle Lockman

In Partial Fulfillment of the

Requirements for the Degree

of

Doctor of Philosophy

December 2016

Purdue University

West Lafayette, Indiana

*To college students who have experienced the pain associated with suicidal thoughts.
May we continually learn how to help emerging adults cultivate a life of meaning and
compassion that is subjectively experienced as “worth living.”*

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ABSTRACT

Lockman, Jennifer D. Ph.D., Purdue University, December 2016. College Students' Suicidal Ideation: Testing the Predictions of the Existential - Constructivist Theory of Suicide. Committee Chair: Heather Servaty-Seib, Ph.D.

Suicide is the second leading cause of death in the college student population (Schwartz, 2006), and empirically supported theories for understanding suicide among college students are lacking (Lester, 1989; Prinstein, 2008; Rogers & Benson, 2013). Although not yet examined empirically, Rogers (2001) proposed an Existential - Constructivist Theory of Suicide (ECTS), in which existential distress and the inability to reconstruct meaning from adverse life events contribute to suicidal ideation. ECTS includes both interpersonal and intrapersonal drivers of suicidal ideation, and for this reason, may better explain suicidal ideation in college students than existing theoretical models. Existing research focuses on Joiner's (2005) Interpersonal Theory of Suicide (ITS) which proposes that two interpersonal cognitive - affective states (i.e., perceived burdensomeness, thwarted belongingness) contribute to suicidal ideation (i.e., thoughts about death by suicide). Thus, in the present study I (a) tested the central hypotheses of the ECTS in a college student sample and (b) compared the model fit of the ECTS to the ITS to assess which statistical model best explained suicidal ideation in college students. Survey data were collected electronically from 195 college students (i.e., aged 18 – 25) attending Purdue University. Data were analyzed using SEM. The results supported the

predictions of the ECTS. Specifically, existential distress was positively associated with suicidal ideation and meaning reconstruction was negatively associated with suicidal ideation. Contrary to Rogers's (2001) original model of ECTS, but consistent with recent literature on meaning reconstruction, existential distress mediated the association between meaning reconstruction and suicidal ideation. Although both ECTS and ITS demonstrated adequate model fit to the data, goodness of fit statistics indicated ECTS fit the data better in this sample, overall. Results of this study provide preliminary support that meaning reconstruction may be a protective factor for suicidal ideation, which can be used to (a) refine theories of suicidal ideation and (b) develop suicide prevention and treatment programs for suicidal college students. Results should be interpreted considering limitations of this study, such as low survey response rate, homogeneity of the sample, measurement limitations, and lack of ITS replication compared to previous research.

CHAPTER I. INTRODUCTION

Overview of the Problem

According to the National Strategy for Suicide Prevention (2012), suicide is a leading public health concern for college students. Suicide is the second leading cause of death for youth attending college (Schwartz, 2006), and approximately 1,088 traditionally-aged (i.e., 18-24) college students in the United States (U.S.) die by suicide each year (American College Health Association, 2001; Furr, Westefeld, McConnell, & Jenkins, 2001; Gutierrez, Osman, Kopper, Barrios, Bagge, & Hansen, 2000). Suicide death data does not fully capture the magnitude of this public health concern. Data from the National Youth Risk Behavior Survey (YRBS) suggests that the ratio of suicide attempts to suicide deaths in youth (i.e., ages 15-24) may be as high as 800 to 1 (Berman, Jobes, & Silverman, 2006). Regarding college students specifically, approximately 9 to 22% of students report experiencing suicidal ideation (i.e., thoughts of death by suicide) during college (Lamis & Lester, 2011; Suicide Prevention Resource Center, 2004). The prevalence of college students' suicidal ideation is concerning because suicidal ideation is associated with suicidal behavior (e.g., suicidal gestures, suicide attempts; Rudd, 1989). That is, suicidal ideation is a prerequisite of all suicidal behavior (i.e., of 9.2% of all adults who consider suicide 2.7% will attempt), and little is known about what distinguishes individuals who experience suicidal ideation from those who go on to attempt suicide (Glenn & Nock, 2014; Nock, Borges, Bromet, Cha, Kessler, & Lee,

2008). Although the rate of suicide deaths is lower in college students (i.e., 6.5 – 7.1 per 100,000; Suicide Prevention Resource Center, 2004) than other age groups (e.g. older adults; 16.3 per 100,000; Centers for Disease Control and Prevention, 2012), scholars suggest that suicide deaths among college students are most notable for the number of healthy years of life lost (Lamis & Lester, 2011; Schwartz, 2011). Further, actual rates of suicidal ideation among college students may be higher than those reported, considering social stigma about suicide and fear associated with disclosure (Arria et al., 2011; De Luca, Yan, Lytle, & Brownson, 2014). Research is needed that explains the *mechanisms* that contribute to college students' suicidal ideation so that death losses in college campus communities can be prevented.

Although suicide is a leading cause of death for college students, there is a dearth of empirically supported theories that explain suicidal ideation in this population (Lester, 1989; Prinstein, 2008; Rogers & Benson, 2013). For this reason, mental health providers have historically assessed the lethality of college students' suicidal ideation, when present, by identifying characteristics (e.g., having a mental disorder, being divorced, history of trauma; disclosing suicidal thoughts) that are distally (i.e., known as risk factors) or proximally (i.e., known as suicide warning signs) associated with suicide deaths (Rudd et al., 2011). Students presenting with suicidal ideation who exhibit higher numbers of risk factors and warning signs are considered at greater risk for death by suicide (SPRC, 2004). However, suicidal ideation can occur at varying levels of intensity, and assessing the lethality of students' suicidal ideation based on risk factors and warning signs is ineffective for several reasons. First, risk factors may be difficult to distinguish from imminent warning signs (Rudd, 2003). For example, on the American Foundation

for Suicide Prevention (i.e., AFSP) website, mental illnesses such as depression and anxiety are listed both as a risk factor and a warning sign (AFSP, 2016). Second, the sheer number of risk factors and warning signs identified in the literature makes it difficult for psychologists to assess the lethality of students' suicidal ideation based on these factors alone (Joiner, 2005; Rudd et al., 2011). Third, clinical procedures (e.g., clinical interviews, questionnaires) that assess the lethality of suicidal ideation based on risk factors or warning signs rely on self-report are lacking in reliability and predictive validity (Brown, Beck, Steer, & Grisham, 2000; Glenn & Nock, 2014; Kessler, Borges, & Walters, 1999; Rudd, 2003).

Theories that explain why suicidal ideation occurs are needed so that psychologists can accurately assess suicide risk (Joiner, 2005; Lamis & Lester, 2011; Rogers & Benson, 2013). In fact, numerous scholars have criticized the field of suicidology (i.e., the scientific study of suicide) for failing to integrate known risk factors into cohesive theoretical models that are useful in clinical practice (Joiner, 2005; Lester, 1989; Prinstein, 2008; Rogers & Benson, 2013). Of the few theoretical models of suicide that do exist such as Psychache theory (Schneidman, 1997), escape theory (Baumeister, 1990), and self-determination theory (Britton, Van Orden, Hirsch, & Williams, 2014; Ryan & Deci, 2000), most have been proposed within the past twenty years and many have not been studied using quantitative methods. Quantitative methods are important because they allow for statistical tests of theories' central hypotheses that explain suicidal ideation.

One understudied theory that may explain college students' risk for suicidal ideation and death is Rogers' (2001) Existential Constructivist Theory of Suicide (i.e.,

ECTS). Rogers (2001) suggests that adverse life events (i.e., particularly those that evoke spiritual, relational, psychological, or physical health distress) may challenge individuals' core constructions (i.e., mental schemas) about themselves and the world around them. Core constructions are important because they provide a comprehensive framework that allows individuals to meet their most important needs in a changing and uncertain world. Once core constructions are challenged, individuals must resolve their existential distress by either (a) interpreting the life event in a way that fits with their existing framework of constructions (i.e., assimilation) or (b) generating or restructuring new core constructions in order to interpret the life event in a way that fits with their broader life narrative (i.e., accommodation). If individuals do not effectively engage in meaning reconstruction (i.e., rebuilding "long – held hopes and aspirations that still move us down familiar life paths;" Neimeyer, 2001, p. 34) from adverse life events, they are unable to resolve existential distress and consider ending their lives through suicide. In the ECTS, individuals are motivated to die by suicide not only due to heightened awareness of self, as in Beumeister's escape theory, but also due to an inability to reconcile shattered beliefs about relationships with others and the world around them. The ECTS suggests that individuals die by suicide in order to end existential distress at levels which have become psychologically intolerable by fully violating one's core beliefs about themselves and the world around them. Thus, the ECTS recognizes both interpersonal (e.g., relational distress) and intrapersonal (e.g., meaning reconstruction) contributions to suicidal ideation.

Only two studies have directly examined the ECTS as an explanation of suicidal ideation and death. First, in a content analysis of suicide notes, Rogers, Bromley,

McNally, and Lester (2007) found that suicide notes left by persons who attempted suicide with lethal means and died included references to the inability to reconstruct meaning to specific adverse life events. Further, a pilot study conducted by Lockman and Servaty-Seib (2016) suggests that meaning reconstruction is a negative intrapersonal predictor (i.e. protective factor) of suicidal ideation in college students that accounts for additional variance in suicidal ideation after controlling for interpersonal contributions. Thus, preliminary research suggests that meaning reconstruction is negatively associated with suicidal ideation and that meaning reconstruction is not fully accounted for by the Interpersonal Theory of Suicide. Additional research is needed to understand the ECTS and its association with suicidal ideation, particularly in college students.

Although not explicitly accounted for in the ECTS, the developmental period of emerging adulthood may explain why meaning reconstruction is particularly important in college. Arnett (2001) suggests that college students in the U.S. are in a particular developmental stage when they are likely to encounter certain adverse life events (e.g., serious romantic break-up; death of a family member) for the first time. Adverse life events are associated with increased suicidal ideation in college student samples (e.g., Boelen & Reijntjes, 2008). Further, neurological research suggests that emerging adults have lower cognitive capacity than adults to re-appraise adverse life events in adaptive ways (Williams et al., 2006). Thus, meaning reconstruction may be a particularly important buffer for college students' suicidal ideation.

In order to assess the degree to which the ECTS adds a novel contribution to theory development in suicidology, it is important to examine how it compares to existing, more established theories of suicide, such as the Interpersonal Theory of Suicide

(ITS). Much of the recent theory development and research on suicidal ideation focuses on Joiner's (2005) Interpersonal Theory of Suicide (i.e., ITS). The ITS posits that suicidal ideation is interpersonal in its nature. In essence, regardless of the type or intensity of adverse life events experienced, individuals will not desire death by suicide unless they experience the interpersonal cognitive-affective states of perceived burdensomeness (i.e., belief that one is a burden to others) and thwarted belongingness (i.e., real or perceived experience of not belonging in important social groups). In the ITS, perceived burdensomeness and thwarted belongingness are state-like conditions that generate suicidal ideation. Further, suicide risk is increased when perceived burdensomeness and thwarted belongingness co-occur and when individuals experience hopelessness about these conditions (Van Orden, Witte, Cukrowicz, Braithwaite, Selby, & Joiner, 2010). In the ITS, suicidal ideation is considered distinct from the physical ability to enact the lethal self-injury required to die by suicide. According to the ITS, individuals acquire the capability to enact lethal self-injury through repeated exposures to physically painful and provocative experiences (e.g., combat exposure, sky diving, non-lethal self-injury, previous suicide attempts; Joiner et al., 2005; Van Orden et al., 2008). Thus, the ITS suggests that the three-way interaction between perceived burdensomeness, thwarted belongingness, and the acquired capability for suicide is associated with suicide deaths (Joiner, 2005; Van Orden et al., 2010). Research suggests that perceived burdensomeness and thwarted belongingness are positively associated with suicidal ideation in vulnerable populations such as older adults (Cukrowicz et al., 2011), military veterans (Bryan, Morrow, Anestis, & Joiner, 2010) and college students (Cukrowicz, Schlegel, Smith, Jacobs, Van Orden, Paukert, Pettit, & Joiner, 2011). In college student

samples, the variance in suicidal ideation uniquely explained by ITS constructs has ranged from between 13% and 54% (e.g., Lockman & Servaty-Seib, 2016; Servaty-Seib, Lockman, Shemwell, & Marks, 2015; Van Orden et al., 2008). Perceived burdensomeness and thwarted belongingness are established predictors of suicidal ideation in diverse populations, including college students.

Scholars suggest that the ITS is a primary milestone in the history of suicidology (Spencer-Thomas & Jahn, 2012) because several studies support central hypotheses of the theory (e.g., Lamis & Malone, 2011; Van Orden, et al., 2008; Van Orden et al., 2010). Indeed, the ITS represents the first time since the inception of the field of suicidology that a theory claiming to explain and predict suicide has generated substantial research-based support (Spencer-Thomas & Jahn, 2012). Initial research supporting the ITS has even served as a catalyst for new national funding streams for suicide prevention research (e.g., Department of Defense Military Suicide Prevention Research Consortium), many of which have focused on further examining the scientific merit of the ITS and examining how the ITS can be used in applied settings.

The ITS has made a considerable and historical impact on the field of suicidology; however, the benefits of having more than one theory to explain suicide risk cannot be ignored. That is, having more than one empirically supported theory that explains suicide would be beneficial because (a) a single theory cannot be both parsimonious and all-inclusive because human behavior is often complex, (b) psychologists tend to focus their interventions on elements included in a theory while excluding other possible causes of behavior, and (c) multiple theories would allow for greater customization of clinical interventions to specific individuals and populations

(Rogers, 2001). Related to the ITS specifically, the theory focuses exclusively on interpersonal (i.e., through perceived burdensomeness, thwarted belongingness) and physiological (i.e., acquired capability) aspects of suicide, but does not emphasize intrapersonal elements unique to the individual (e.g., difficulty generating meaning from adverse life events, difficulty coping with adverse life events) and hypothesized elsewhere in the literature (e.g., Beck, Steer, Beck, & Newman, 1993; Rogers, 2001; Schneidman, 1997). Intrapersonal aspects of suicidal ideation have been recognized in recent recommendations published by the Suicide Attempt Survivors Task Force of the National Action Alliance for Suicide Prevention (NAASP; 2014). In fact, the first core value acknowledged by the Suicide Attempt Survivor Taskforce is an intrapersonal one: To “foster hope and help people find meaning and purpose in their lives” (NAASP: Suicide Attempt Survivors Task Force, p. 10). Although proponents of the ITS have indicated it may be too early to test the ITS against other theories of suicide, the evidence for ITS is so compelling that future theories may need to demonstrate unique contributions if they are to be valuable for clinical practice (Van Orden, 2016). Further, additional theory development in suicidology is likely to advance the science and practice of clinical care for specific populations.

Importance of the Study

This study contributed to the existing research on college students’ suicidal ideation and to the professional practice of applied psychology in two ways. First, previous research on suicidal ideation in college students has focused on risk factors and warning signs of suicide. Research has demonstrated that assessing the lethality of suicidal ideation by examining risk factors and warning signs is unreliable and does not

predict suicide deaths (Joiner, 2005; Rudd et al., 2011), which limits the ability of university staff to prevent suicide deaths. Further, risk factors and warning signs are not unique to college students and the field is lacking in explanations for why suicide is the second leading cause of death among college youth. Considering that Arnett conceptualizes emerging adulthood as a developmental period when core constructions about the self and the world are shifting (2004), emerging adults may be developmental novices at recreating meaning when adverse life events occur. Thus, this study examined whether ECTS better explained suicidal ideation in college students because meaning reconstruction is a skill that many college students are still learning. The proposed study also extended the knowledge base by testing the core hypotheses of the ECTS to assess how well it applied to suicidal ideation in college students.

Second, because few empirically supported theories are available that explain suicidal ideation, clinical strategies for *treating* suicidal ideation are limited. Commonly recommended clinical strategies for working with suicidal clients include using problem-solving theoretical orientations (“Using Effective Evidence-based Care,” 2014), limiting clients’ access to lethal means of suicide (Stanley & Brown, 2012), and recognizing the importance of collaboration in the therapeutic alliance (Jobes, 2012). Further, there are only three evidence-based theoretical frameworks (i.e., Interpersonal Psychotherapy, Klerman, Weissman, Rounsaville, & Chevron, 1984; Cognitive Behavioral Therapy, Beck, 1970; Dialectical Behavior Therapy, Linehan, 1993) for treating suicidal ideation listed on the Suicide Prevention Resource Center’s (SPRC) Best Practices Registry. Because many psychologists use a scientist-practitioner approach to building treatment plans and working with clients, empirically supported theories of suicide are imperative

for clinical work with college students. Thus, the present study examined the central hypotheses of the ECTS, which serves as a scientific foundation for using the ECTS to assess, monitor, and treat suicidal ideation in college students.

Statement of Purpose

The purpose of the present study was to test the central hypotheses of Rogers's (2001) ECTS and to compare the fit of the ECTS statistical model to the ITS statistical model to assess which theory better explained suicidal ideation in college students. Although each theory has merit, I did not examine a combined model considering that (a) the purpose of this study was to examine the central hypotheses of the ECTS, (b) the models are considered to be theoretically distinct, and (c) available literature does not suggest patterns of relationships among constructs if the theories were to be combined. Further, although research indicates that suicidal ideation occurs at a higher rate in populations (including college students) than suicide attempts or deaths, I chose to study suicidal ideation as the dependent variable in this study because (a) both ECTS and ITS indicate one cannot die by suicide without having a desire to die (i.e., suicidal ideation) and (b) the base-rate of reported suicide attempts in samples is often too low to examine statistically and may be underreported due to fear of disclosure.

Considering that the ECTS focuses on meaning reconstruction as an adaptive, protective process, the theory is consistent with strength-based approaches to care typically used by counseling psychologists. Existential-constructivist strategies (e.g., meaning reconstruction) for helping college students build resiliency to suicide remain unexplored as a theoretical basis for treating suicidal ideation. Thus, this study examined the degree to which Roger's (2001) existential - constructivist model offered college

administrators, counselors, and psychologists insight into suicidal ideation in college students.

Terminology and Concepts

Throughout this study, I use terms that may be unfamiliar to some readers. I have provided definitions for these terms in this section.

- The term *emerging adults* is used to refer to individuals in the United States who are between 18 and 25 years old. Arnett (2001) suggests that persons in this developmental stage exhibit common characteristics such as identity exploration, career exploration, geographic mobility, self-focus, and relationship changes with family and peers. Elements of this study (i.e., description of developmental trends, defined sample) benefit from this age restriction (Chickering & Reisser, 1993).
- The term *core constructions* refers to the mental schemas individuals actively create to provide “an idiosyncratic map of the world and [their] place within it” (Neimeyer, 2009, p. 8). Core constructions are used by individuals to anticipate future events, confront life challenges, and overcome potential barriers to meeting important psychological and physical needs (Mahoney, 2003; Neimeyer, 2009).
- For this study, I have created the term *existential distress* to refer to individuals’ cognitive-affective internal pain as described by the ECTS (Rogers, 2001). According to the ECTS, existential distress emerges when individuals experience adverse life events that challenge their core constructions in one or more domains (i.e., spiritual, relational, psychological, physical health).

- The term *meaning reconstruction* is used to refer to the internal cognitive-affective processes individuals use to reconcile challenges posed to core constructions through rebuilding “long – held hopes and aspirations that still move [them] down familiar life paths” (Neimeyer, 2006, p. 34). Two common processes of meaning reconstruction are assimilation and accommodation.
- The term *suicidal ideation* is used to refer to “thoughts of engaging in suicide-related behavior” (NAASP, 2012, p. 14).
- The term *suicidology* is used to refer to “the study of suicide and suicide prevention” (Merriam-Webster’s Medical Dictionary, 2008).
- The term *means of suicide* refers to the “instrument or object used to carry out a self-destructive act (e.g., medications, illicit drugs)” (NAASP, 2012, p. 14).
- The term *suicide attempt* is used to refer to “A nonfatal, self-directed, potentially injurious behavior with any intent to die as a result of the behavior. A suicide attempt may or may not result in injury” (NAASP, 2012, p. 14).
- The term *suicide* refers to “death caused by self-directed injurious behavior with any intent to die as a result of the behavior” (NAASP, 2012, p. 14).

Relevance to Counseling Psychology

Examining the central hypotheses of the ECTS is consistent with the professional identity and aims of counseling psychologists. First, the present study focused on understanding suicidal ideation in college students, a population with whom counseling psychologists have historically worked closely with (Gelso & Fretz, 2001). Second, the theoretical framework used in this study (ECTS) is consistent with the unifying themes of the profession (e.g., intact personalities, person-environment interactions, strength-based

approaches). Third, the outcomes of this study are relevant to the applied roles of counseling psychologists (i.e., remedial, preventive).

Counseling psychologists are uniquely attuned to research and practice with college students due to their focus on normative development. Even before the origination of division 17 (i.e., Society of Counseling Psychology) within APA, counseling psychologists advised college students on a myriad of academic and life adjustment concerns (Maera & Meyers, 1999). Counseling psychologists have historically worked with college students on career development; thus, employment in college counseling centers is common (Gelso & Fretz, 2001). Gelso and Fretz (2001) contend that more than half of all counseling psychologists work in a university-based setting. Further, counseling psychologists actively conduct research on topics applicable to college student development such as academic adjustment, student retention, grief and bereavement, relational health, and career choice (Gerdes & Mallinckrodt, 1994; Maera & Meyers, 1999; Sevaty-Seib & Taub, 2010). The present study focused on explaining suicidal ideation in college students, which is consistent with counseling psychologists' historic focus on this population.

The theoretical framework used in my study (i.e., ECTS) includes premises which reflect the unifying themes of counseling psychology (Gelso & Fretz, 2001). Related to counseling psychologists' focus on intact personalities, the ECTS suggests that suicidal ideation can occur in intact personalities due to existential distress. That is, according to ECTS, suicidal ideation can occur even if a mental health disorder is not present. Related to counseling psychology's focus on persons in their environment, the ECTS suggests that suicidal ideation occurs when individuals experience adverse life events (e.g.,

romantic break-up, academic failure, death loss) that challenge their core constructions and lead to existential distress. When existential distress cannot be resolved through meaning reconstruction persons may develop suicidal ideation. Related to counseling psychologists' focus on strength-based approaches to intervention, the ECTS suggests that suicidal ideation can be ameliorated through meaning reconstruction processes. With its focus on meaning reconstruction, the ECTS not only explains suicidal ideation, but also explains suicide resilience. That is, meaning reconstruction consists of cognitive and affective processes that harness individuals' strengths to allow them to incorporate their constructed meanings of adverse life events into their broader life narrative.

The outcomes of the present study are directly applicable to the applied roles of counseling psychologists. Counseling psychologists functioning in a remedial (i.e., treating psychological symptoms) role recognize that maladjustment can occur across the lifespan in response to environmental life events (Gelso & Fretz, 2001). In this study, the ECTS suggests suicidal ideation is a fathomable response that occurs due to the inability to alleviate existential distress through meaning reconstruction processes. Thus, counseling psychologists working in a remedial role could use the theory to understand, assess, and treat suicidal thoughts using a developmental, person-in-environment framework.

Counseling psychologists functioning in a preventive role often provide psycho-educational workshops and learning opportunities to prevent mental health symptoms. In the present study, the ECTS suggests that meaning reconstruction is likely to ameliorate suicidal ideation and bolster suicide resiliency. Currently, few mechanisms capable of preventing suicidal ideation have been identified, and the field is lacking in primary

suicide prevention initiatives. Primary suicide prevention initiatives (i.e., those that prevent symptoms) are considered the most important method of reducing new cases of suicidal ideation (Sher, 2004). However, many suicide prevention programs implemented on college campuses are secondary prevention programs designed to prevent persons already thinking of suicide from making an attempt (Capuzzi & Golden, 2011; Lamis & Lester, 2011). For example, secondary suicide prevention programs such as Question, Persuade, Refer (QPR) and Applied Suicide Intervention Skills Training (ASIST) train college communities (i.e., faculty members, resident assistants) to recognize early warning signs of suicide and refer persons most at risk to campus resources. Counseling psychologists can apply the ECTS theory by training *all* college students in meaning reconstruction skills (i.e., a primary suicide prevention technique). Skills-based training in meaning reconstruction is a primary suicide prevention activity that goes beyond typical suicide prevention programs implemented on college campuses (e.g., QPR, ASIST) and may prevent suicidal ideation among students campus-wide.

CHAPTER II. LITERATURE REVIEW

Suicide is the second leading cause of death for college students (Swartz, 2006), and counseling psychologists are in need of empirically- supported theories that explain suicidal ideation in this population. The purpose of the present study was to examine the ECTS in college students. To accomplish this purpose I (a) tested the central hypotheses of the ECTS in a college student sample and (b) compared the model fit of the ECTS to the ITS to assess which statistical model best explained suicidal ideation in college students. In this chapter, I provide an integrated summary and critique of the empirical literature related to my research questions and hypotheses. First, I provide an overview of suicide risk in college students. Specifically, I describe potential associations between college student development and suicide risk, research on college student risk factors for suicide, and empirical literature on adverse life events and college student suicide. Second, I provide a summary and critique of the ECTS (Rogers, 2001; Rogers et al., 2007). Specifically, I offer an overview of the theory, describe the theoretical underpinnings of the ECTS, and summarize the empirical evidence related to each central hypotheses proposed by the theory. Third, I provide a summary and critique of the ITS (Joiner, 2005). I describe the ITS and summarize the empirical evidence related to the central premises of the theory. Finally, I provide the research questions and hypotheses for the present study.

College Students and Suicide Risk

The field of suicidology is in need of evidence-supported theories that explain suicidal ideation in college students (Lamis & Lester, 2011; Lester, 2013; Westefeld et al., 2006). Of the few theories of suicide that have been applied to college students (e.g., ITS, Joiner 2005; Psychache, Schneidman, 1997), none account for developmental aspects of suicide risk in this population (Lester, 2013). In fact, college students are often used as a convenience sample with the sole intent of generalizing outcomes to populations that have higher rates of suicide (e.g., middle-aged adults, older adults; Lester, 2013, 2014). As Lester (2013) has noted, “We know a lot about suicidal behavior in college students, but not as college students” (p. 106). Theories are needed that explain suicidal ideation in college students while accounting for the developmental period (i.e., emerging adulthood) in which college occurs.

Theories Pertaining to College Student Development

In this section, I describe theories that pertain to college student development. Specifically, I describe Arnett’s (2000, 2004) theory of emerging adulthood and Chickering and Reisser’s (1993) model of psychosocial development. I also describe neurobiological research related to college students’ cognitive capacity to interpret and re-appraise adverse life events.

Emerging adulthood and development. One theory that may provide context for the developmental aspects of suicide risk in college students is Arnett’s (2000, 2001, 2004) conceptualization of emerging adulthood. According to Arnett (2000, 2007), emerging adulthood is a distinct developmental period (i.e., ages 18-25) in industrialized countries that is characterized by prolonged exploration of career choice, romantic

relationships, and worldviews. Specifically, demographic transitions (e.g., prolonging marriage until after college; prolonging birth of first child) in industrialized nations have allowed youth to extend identity exploration beyond adolescence. Due to the delaying of developmental markers that have traditionally signaled adulthood status (e.g., marriage, career, childbirth), emerging adults are less likely to view themselves as adults and often see themselves as “in between” adolescence and adulthood (Arnett, 2001, p. 206).

Although the theory of emerging adulthood is not specific to college students, many youth in the United States attend college during this age range (i.e., 18 – 25). Further, for students who choose to attend college, aspects of the campus environment (e.g. academic training, cultural diversity) may promote identity and worldview exploration during this developmental period (Labouvie-Vief, 2006).

A unique aspect of Arnett’s (2000, 2001, 2004) theory of emerging adulthood is the focus on prolonged identity exploration. That is, emerging adults may explore a number of career identities, romantic relationships, and worldviews before deciding what constellation of factors define their adult identity separate from their family of origin. Numerous scholars have contended that the process of identity exploration in a fast-paced industrialized society can be stressful and disconcerting to emerging adults (Arnett, 2007; Cote, 2006). Emerging adults may experience distress when their own choices and worldviews shift from those of their family or cultures of origin to their own (Arnett, 2007). Further, identity development is often constructed to account for new life experiences. Identity shifts occurring in response to adverse life events (e.g., romantic break-up, academic failure, death loss) are likely to feel uncomfortable or distressing to emerging adults (Arnett, 2001). Aspects such as agentic functioning (i.e., ability to self-

organize and make choices; Schwartz, 2005), commitment to personal values (Arnett, 2001), and family support (Stringer & Kerpleman, 2010) are positively associated with emerging adults' ability to navigate identity development. Further, meaning reconstruction has been associated with positively-oriented identity shifts in emerging adulthood (Dezutter et al., 2014; O'Connor et al., 2010). Taken together, these findings suggest that identity construction is an essential process that characterizes emerging adulthood, and the outcomes of the identity exploration process may lead to psychological adjustment or psychological distress.

Psychosocial model of development. Chickering and Reisser (1993) have proposed a psychosocial model of college student development in which contextual aspects of the college environment play a direct role in students' development. Specifically, exposure on college campuses to a diverse range of individuals and world-views is likely to challenge students' thought processes, emotions, value-norms, and self-identity. Chickering and Reisser (1993) suggest that college student development consists of seven core non-linear areas (i.e., vectors): (a) Developing competence, (b) managing emotions, (c) moving through autonomy toward interdependence, (d) cultivating mature interpersonal relationships, (e) defining the self-identity, (f) developing purpose, and (g) developing integrity. A central contribution of Chickering and Reisser's (1993) theory is that the campus environment (e.g., curriculum, learning environment, diversity, student-faculty relationships) influences students' ability to develop the emotional (e.g., emotion perception, emotion regulation) and psychological (e.g., relational maturity, coping) skills needed to successfully navigate identity expansion during college. Although Chickering and Reisser's (1993) psychosocial theory views college development using a positive

developmental lens, it also suggests that there are specific pathways wherein students may experience delayed development and distress in college. Delayed development and distress in college, according to Chickering and Reissereer's psychosocial theory, may contribute to college students' suicide risk (Buelow, Range, & Schreiber, 2011; Sanlo, 2005). That is, if students are unable to develop the emotional, social, and psychological skills necessary to navigate experiences encountered in college, they may become severely distressed and consider death by suicide.

Neurobiological advancements and college student development. Advances in neurobiological research suggest that emerging adults' (i.e., ages 18-25) capacities to interpret adverse life events are different from adults. For example, emerging adults are more likely than adults to attend to negative information associated with events in contrast to older adults, who are more likely to attend to positive information associated with events (Kisley, Wood, & Burrows, 2007). Differentially attending to negative information may contribute to emerging adults making hasty decisions that are not based entirely on all facts available to them (Cacioppo & Bentson, 1994; Kisley et al., 2007). Further, the ability to interpret negative emotional stimuli associated with life events appears to increase with age (Williams et al., 2006). Emerging adults may also lack the same neurological capacity as adults to use medial prefrontal control to interpret negative emotional information. Of particular relevance, mFRI studies suggest that gray matter allowing for neural processing of emotionally-charged information (such as that associated with adverse life events) increases with age (Williams et al., 2006). Williams et al. (2006) suggest that emerging adults, due to fewer "accumulated life experiences and the motivation for meaning" (p. 126) have less selective control over emotional

processing of information. Further, the neurological ability to cognitively re-appraise information is an essential task of meaning reconstruction that appears to increase with age (McRae et al., 2012). Taken together, these findings suggest that emerging adults' cognitive abilities to reconstruct meaning from adverse life events are underdeveloped compared to adults who have more life experiences.

Risk Factors Associated with Suicide in College Students

Consistent with the broader field of suicidology, research on suicide in college students has focused on risk factors and warning signs apart from any theoretical framework for interpreting them. Although numerous risk factors for college student suicide have been examined in the literature (e.g., sleeplessness, depression, hopelessness, extroversion), I briefly review the literature on three primary clusters of risk in college students: Demographic indicators, mental health, and adverse life events.

Demographic characteristics and suicide risk. Numerous studies have examined the associations among demographic indicators and suicide risk in college samples. Specific demographic indicators frequently examined in the literature include biological sex, race, and sexual orientation. Biological sex is often examined as a risk factor for suicide in college students. In national samples, more women than men report suicidal ideation and attempts; however, more men than women die by suicide (e.g., Center for Disease Control and Prevention, 2015). Outcome data is inconclusive regarding the association between sex and suicidal ideation in college student deaths. Whereas some studies with college students have identified significant differences in men and women's suicidal thinking (e.g., Wilcox, Arria, Caldeira, Vincent, Pinchevsky, & O'Grady, 2010), other studies have reported no sex differences (e.g., Shiner, Scourfield,

Fincham, & Langer, 2009). Regarding race, students with a majority-group racial identity (e.g., Caucasian) are more likely than students with a minority-group racial identity (e.g., Black, Hispanic) to die by suicide (Lamis & Lester, 2011). However, several studies have demonstrated that acculturation functions as a moderator for suicide risk across racial groups (e.g., Castle, Conner, Kaukeinen, & Tu, 2011; Walker, Wingate, Obasi, & Joiner, 2008). That is, individuals experiencing high acculturative stress due to adapting to a new cultural environment may be more likely to be depressed and experience suicidal ideation. Regarding sexual orientation, sexual minority youth report higher and more frequent levels of suicidal ideation when compared to same aged heterosexual peers (Garofalo, Wolf, Wissow, Woods, & Goodman, 1999; Kisch, Leino, & Silverman, 2005). Taken together, these findings suggest that suicide risk is higher in students who are biologically male, exhibit a majority racial identity or a minority identity coupled with low acculturation, and in students who identify as a sexual minority.

Mental illness and suicide risk. Considering that the prevalence and complexity of mental illness is increasing among students presenting for treatment at college counseling centers, several studies have examined the association between symptoms of mental illness and suicide risk (Holmes & Silvestri, 2016; Zivin, Eisenberg, Gollust, & Golberstein, 2009). Depression and hopelessness, for example, are established risk factors for suicidal ideation in college students representing multiple intersections of diversity (Hirsch, Webb, & Jeglic, 2011; Lester, 1999; Meng, Li, Adrian, Wu, & Chen, 2013). In a secondary data analysis of the National College Student Assessment Survey, Kisch et al. (2005) found that 96% of students reporting suicidal ideation also reported feelings of hopelessness, and 93% of students who reported a previous suicide attempt

reported debilitating levels of depression. Substance abuse has also been associated with suicidal ideation and deaths in college students (Brenner, Hassan, Sohela, & Barrios, 1999; Gonzalez, Bradizza, & Collins, 2009; Manza, 2009). Kresnow et al. (2001), for example, found that individuals who attempted suicide with lethal means were statistically more likely to have been drinking within three hours of the attempt than those who attempted suicide with less lethal means. Other psychological indicators of suicide risk in college samples include affect dysregulation (e.g., Arria et al., 2009) and borderline personality disorder symptoms (e.g., Jeglic, Pepper, Vanderhoff, & Ryabchenko, 2007). These research findings suggest that students who come to college with a diagnosed mental illness, or who are diagnosed while in college, are at increased risk for suicide.

Adverse life events and suicide risk. Students are likely to experience one or more adverse life events while enrolled in college, and many adverse life events have been associated with increased suicide risk. In a seminal study of a large cross-country sample of undergraduate students, Drum, Brownson, Burton-Denmark, and Smith (2009) found that problems with romantic relationships and academic setbacks were associated with college students' suicidal ideation in the past twelve months. Other life events such as experiencing dating violence in college (e.g., Chan, Straus, Brownridge, Tiwari, & Leung (2008); Nicoletti, Spencer-Thomas, & Bollinger, 2010), loss of financial support (e.g., Westefeld, Homaifar, Spotts, Furr, Range, & Worth, 2005), and career indecision (Popadiuk, 2013) are positively associated with suicidal ideation in college student samples. Whereas many college students will experience one or more adverse life events while attending college, a comparatively small proportion will experience suicidal

ideation or die by suicide. Thus, more research is needed to understand the association between adverse life events and suicidal ideation.

A few studies have moved beyond examining associations between types of adverse life events and suicidal ideation to examining specific mechanisms in which adverse life events may engender suicide risk. For example, Lamis and Jahn (2014) found that parent-child conflict partially mediated the relationship between depression and suicidal ideation in college students. Further, individual difference variables such as coping style (e.g., Zhang, Wang, Xia, Liu, & Jung, 2012), perfectionism (e.g., Hamilton & Schweitzer, 2000), and self-esteem (e.g., Wilburn & Smith, 2005) are established moderators of the relationship between adverse life events and suicidal ideation in college students. Research substantiates a relationship between adverse life events and suicidal ideation. However, to be clinically useful, theories of suicidal ideation in college students should explain the specific mechanisms by which adverse life events are associated with suicidal ideation.

Summary and Critique

Suicide in college students is a public health problem, and empirically-supported theories for understanding suicidal ideation in this population are lacking. Despite the presence of theories (e.g., Arnett, 2001; Chickering and Reiser, 1993) that describe the unique aspects college student development, few research studies have examined these aspects of college student development. Further, theoretical models of suicide risk do not include or account for unique aspects of college student development. Research that does exist on college student suicidal ideation focuses broadly on individual risk factors for suicide (e.g. demographic indicators, mental health symptoms) and specific adverse life

events experienced by suicidal college students (e.g., romantic break-up, academic setback, death loss). However, research focusing on specific adverse life events and their association with suicide risk has limited value for applied psychologists, considering that not all college students who experience adverse life events also experience suicidal ideation. Counseling psychologists are in need of empirically supported theories that account for specific mechanisms that mediate the relationship between adverse life events that college students experience and suicidal ideation. That is, it would be clinically useful for theories of suicidal ideation in college students to account for the developmental challenges (e.g., identity exploration) experienced by emerging adults, the stress adverse life events can place on identity development, and the fact that emerging adults are developmental novices at reconstructing meaning from adverse life events.

The Existential Constructivist Theory of Suicide

One theoretical model that may explain suicidal ideation in college students is the ECTS (Rogers, 2001). According to Rogers' (2001, 2007) ECTS, suicidal ideation occurs when individuals encounter adverse life events that challenge their core constructions about the self and their external world, experience existential distress one or more domains (i.e., spiritual, relational, psychological, physical health), and do not effectively resolve existential distress through meaning reconstruction. Rogers (2001, 2007) suggests that individuals reconstruct meaning from adverse life events by encoding the life event into their existing core constructions (i.e., assimilation) or by altering their constructions to create a more cohesive life narrative (i.e., accommodation). In the ECTS, suicidal ideation emerges when one cannot effectively reconstruct meaning.

In this section, I summarize the theoretical premises of the ECTS and describe the empirical evidence that supports the ECTS as a viable model for suicidal ideation in college students. First, I broadly describe existentialism and constructivism which are two theoretical foundations of the ECTS. Second, I describe three theoretical premises of the ECTS which are (a) adverse life events challenge individuals' core constructions, which generates existential distress in one or more domains (i.e., spiritual, relational, psychological, physical health), (b) existential distress prompts meaning reconstruction processes and (c) meaning reconstruction is negatively associated with suicidal ideation. I have synthesized these three theoretical premises of the ECTS into predictive pathways of a statistical model that I will use in my study (i.e., *Figure 1*). Third, I describe the empirical evidence for the three theoretical premises of the ECTS that I will examine in my study. I describe each premise in the order that they appear in the model on the following page (from left to right).

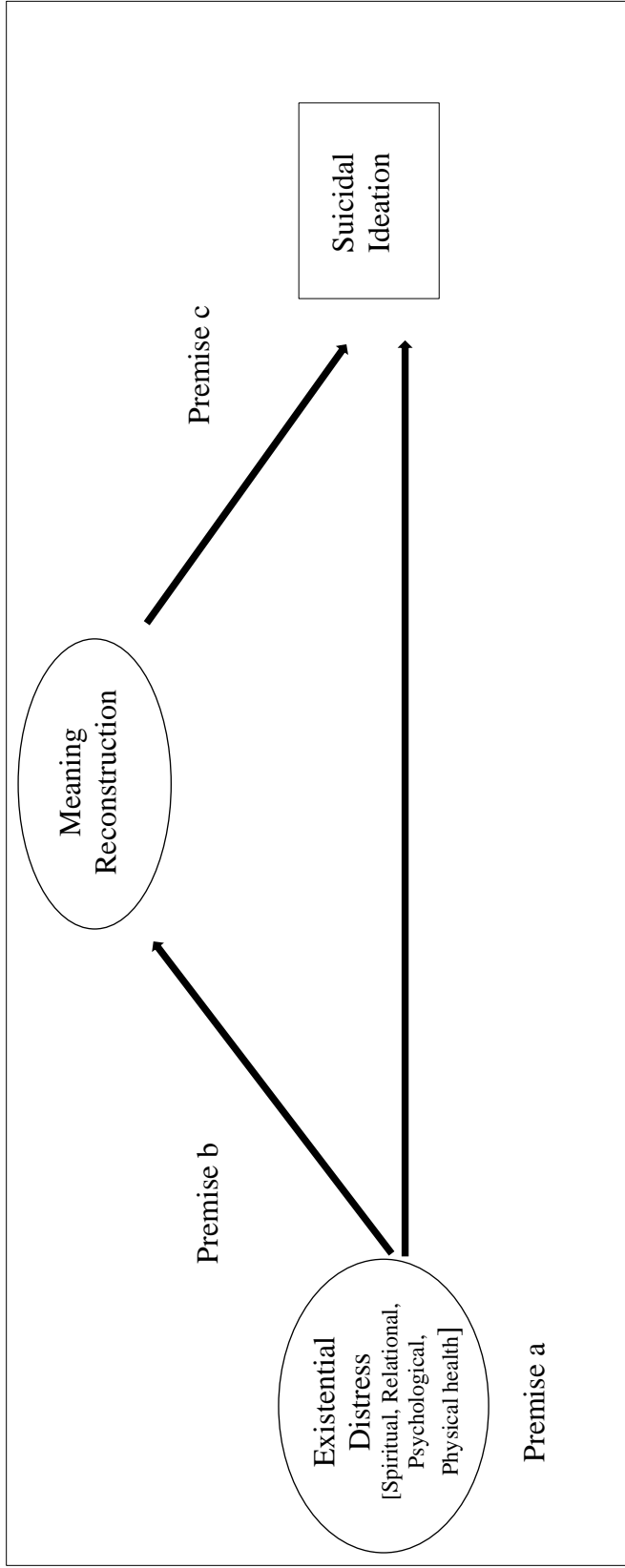


Figure 1. A Priori Theoretical Model: Rogers's Existential - Constructivist Theory of Suicide

Note: For premise a, the effect of adverse life events on challenges to core constructions are not pictured graphically because individuals' core constructions are idiosyncratic. Thus, in my study, I used a demographic questionnaire to assess stressful life events experienced in the past twelve months including spiritual, relational, psychological, and physical health events, and I assessed meaning made of these events using the ISLES.

Theoretical Foundations of the ECTS

Rogers (2004, 2007) argued it is essential for any new theory of suicide to be built upon existing psychological theories of human distress. After a systematic literature review, Rogers (2001) developed the ECTS from the theoretical underpinnings of existentialism (Mahoney, 1991) and critical constructivism (Neimeyer & Mahoney, 1995; Yalom, 1980). Each of these foundations is described below.

Existentialism. The ECTS, as conceptualized by Rogers (2001) is firmly rooted in Yalom's (1980) dynamic existential model. In the dynamic existential model, Yalom (1980) suggested that the very nature of human existence involves managing anxiety rising from four existential conditions: Death, freedom, isolation, and meaninglessness. Adverse life events may activate individuals' concerns about these existential conditions and can generate existential angst (i.e., anxiety). More specifically, existential angst can be experienced within or outside of individuals' conscious awareness (Yalom, 1998). Regarding the first existential condition, death is the central driving force of existential angst and psychological disorders (Yalom, 1980). Humans are aware that they will one day die, and yet they must persist in a world where life is temporary and finite (Yalom, 1987, 1998). Indeed, individuals often experience tension between "the awareness of the inevitability of death and the wish to continue to be" (Yalom, 1980, p. 174). The second existential condition is freedom. Individuals also encounter a number of options (e.g., career, romantic relationships) that shape life, and they must manage these options in ways that are congruent with their core selves. Having too much freedom may be considered a "terrifying" condition (Yalom, 1980, p. 173) because individuals realize that there are endless possibilities in life and no perfect structure for organizing them. The

third existential condition, isolation, refers to the fact that individuals must die alone, regardless of how many personal connections they form in life. Moreover, despite individuals' desire to belong in social groups, some levels of human consciousness can only be experienced independently (Yalom, 1980, 1985). Lastly, the fourth existential condition, meaninglessness, refers individuals' experienced tension between knowing death will come, and yet being forced to live a temporary existence. Such tension gives rise to questions such as "why do we live?" and "what meaning does life have" (Yalom, 1980, p. 302). Individuals must grapple with forming meaning in a life while knowing that life will ultimately end in death. According to Rogers (2001, 2007), existentialism explains why individuals are prompted to reconstruct meaning when faced with adverse life events.

Constructivism. In the ECTS, Rogers uses critical constructivism to describe how individuals respond to adverse life events, particularly those that evoke existential angst related to death, freedom, isolation, and meaninglessness. Critical constructivism (Mahoney, 1991; Neimeyer & Mahoney, 1995) suggests that individuals examine their life experiences to generate core constructions (i.e., mental schemas) about themselves and the world around them (Janoff-Bulman, 1992). Core constructions are used by individuals to anticipate future events, confront life challenges, and overcome potential barriers to meeting important psychological and physical needs. Individuals may experience existential distress when they encounter adverse life events (e.g., death of a loved one, interpersonal violation such as sexual abuse) that challenge their core constructions about themselves and the world (e.g., in terms of safety, autonomy, and choice). Ultimately, to quell existential distress, individuals must reconstruct meaning by

either reconciling life events with their existing core constructions or changing their core constructions to interpret the adverse life event in the context of their broader life narrative (Rogers, 2001). These principles provide the framework for the theoretical premises of Rogers's ECTS.

Theoretical Premise A: Adverse Life Events Challenge Individuals' Core Constructions, Which Generates Existential Distress in One or More Domains

In the ECTS, Rogers (2001) argues that adverse life events challenge core constructions about the self and the world, which in turn generates existential distress. This theoretical premise has not been examined in the literature; however, the association between adverse life events and suicidality is well documented. Adverse life events (e.g., romantic break-up, academic set-back, death loss) have frequently been examined as risk factors for suicidal ideation and attempts (e.g., Spokas, Wenzel, Stirman, Brown, & Beck, 2009; Stroebe, Stroebe, & Abakoumkin, 2005; Waelde, Silvern, & Hodges, 1994). A few studies have gone beyond examining specific adverse life events to examine the cumulative impact of adverse life events on suicidal thoughts and behaviors. For example, Rompili et al. (2011) found that adult clinical outpatients who attempted suicide, versus clients who experienced suicidal ideation only, were statistically more likely to have experienced adverse life events in the past six months. Further, research suggests that the time since an adverse life event (Blaauw, Arensman, Kraaij, Winkel, & Bout, 2002), optimism (Hirsch, Wolford, LaLonde, Brunk, & Parker-Morris, 2007), social support (Heikkinen, Aro, & Lonqvist, 1993), and mental illness (e.g., Nrugham, Holen, & Sund, 2010) may moderate the association between adverse life events and

suicidal ideation. Rogers (2007) suggested a single adverse life event can generate distress in more than one domain. I describe each domain below.

Spiritual distress. In the ECTS, spiritual distress can take many forms (Rogers et al., 2007). Rogers et al. (2007) describe that spiritual distress occurs when adverse life events challenge core constructions associated with religiosity (i.e., connection with a higher power or participation in a religious group) or spirituality (i.e., connection with life, the earth, others). Rogers et al. (2007) suggest that spiritual distress may be exhibited as (a) a desire to be with a higher power or (b) a desire for punishment as a function of the belief that a higher power has forsaken the self. Spiritual distress may also be manifested as a general loss of meaning in life (Rogers et al, 2007). Thus, individuals experience spiritual distress in a variety of ways apart from religious affiliation (e.g., Atheism, Buddhism, Christianity, Islam, Judaism, Wiccan).

Although not studied within the context of the ECTS, research suggests that spiritual distress is associated with suicidal ideation. In a longitudinal study of diverse community members who had experienced an earthquake, Stratta et al. (2012) found that individuals who believed they were being punished by God, or engaged in negative spiritual coping, were statistically more likely to experience suicidal ideation than their peers who did. In college students, the absence of spiritual distress (i.e., spiritual well-being) has been negatively associated with suicidal ideation (Exline, Yali, & Sanderson, 2000; Taliaferro, Rienzo, Pigg, Miller, & Dodd, 2009). Additional research is needed to understand the association between spiritual distress and suicidal ideation.

Relational distress. According to Rogers et al. (2007), relational distress occurs when adverse life events (e.g., romantic break-up, death loss) challenge core

constructions associated with relational themes. To describe how relational distress is associated with suicidal ideation, Rogers et al. (2007) draws from Emile Durkheim's (1897/1951) work which suggests that suicide is a social phenomenon. Accordingly, Rogers et al. (2007) view relationship distress, and association with suicidal ideation, broadly. In their content analysis of suicide notes, Rogers et al. (2007) suggest that relational distress can be manifested in association with death losses (e.g., "Life has no meaning without Dad." p. 185) and individuals' desire to sacrifice their life for the social good (e.g., "I cannot . . . inflict [my pain] upon others," p. 185).

Studies examining the association between relational distress and suicidal ideation have dominated suicide prevention research since Durkheim's exposition of suicide as a sociologically-derived force (Joiner, 2005; Lester & Baumier, 2008). Adverse life events which are associated with relational distress and suicidal ideation include marital separation (e.g., Gibb, Fergusson, & Horwood, 2011; Kolves, Ide, & De Leo, 2010) and the death loss of a loved one (e.g., Pitman & Osborn, 2013; Stroebe et al, 2005). In college students, specifically, adverse life events associated with relational distress and suicidal ideation include romantic break ups (e.g., Field, Diego, Pelaez, Deeds, & Delgado, 2009) and loss of social support (Hirsch & Barton, 2011). Of particular relevance to the present study, Rich et al. (1991) conducted a longitudinal study of age cohorts and found that relational distress was associated with suicidal ideation in emerging adults more than any other cohort (e.g., adults, older adults). Further, Steele, Kidd, and Castano (2015) found that ostracism, an extreme form of relational distress stemming from social rejection, was associated with increased accessibility to death – related thoughts in a sample which included university students.

Psychological distress. According to Rogers et al. (2007), psychological distress occurs when individuals are unable to meet important intrapersonal psychological needs. Specifically, Rogers et al. (2007) conceptualized psychological distress as the equivalent of psychache (Shneidman, 1993). Psychache, originally proposed by Schneidman (1992, 1999) is the cumulative state of mental and emotional anguish that results from unmet psychological needs (e.g., achievement, affiliation, autonomy). Schneidman (1997) asserted that psychache is a proximal cause of suicidal ideation and death, and that psychache mediates the association between all other known risk factors (e.g., hopelessness, depression) and suicide. Psychache includes a prominent affective component (i.e., “mental pain of negative emotions such as guilt, anguish, fear, panic, angst, loneliness, and helplessness”; Schneidman, 1999, p. 87) that results in cognitive constriction (i.e., inability to problem solve). According to Schneidman, individuals die by suicide to escape the internal perturbation (i.e., intense anxiety) and psychological press (i.e., urgency to respond to mental pain) caused by psychache (Schneidman, 1992, 2005).

Existing research supports the association between psychological distress (as psychache) and suicidal ideation in multiple populations including homeless youth (Patterson & Holden, 2012), incarcerated men (Mills, Green, & Reddon, 2005), and college students (DeLisle & Holden, 2009). Of relevance to the present study, Troister and Holden (2012) longitudinally assessed (i.e., baseline, two-year follow-up) psychache in small sample of undergraduates and found that it was the only variable associated with suicidal ideation over time. Further, psychache is a statistical mediator in the relationship between perfectionism and suicidal ideation in college students (Flamenbaum & Holden,

2007). Additional research is needed to understand psychological distress as psychache with the ECTS.

Physical health distress. According to Rogers et al. (2007), physical health distress occurs when adverse life events (e.g., becoming terminally ill) challenge core constructions related to what it means to be healthy. Specifically, Rogers et al. (2007) suggest that physical health distress may be associated with “biological conditions such as terminal illness, chronic pain, and otherwise diminished quality of life issues” (p. 184). Further, the authors purport that physical health distress is associated with suicide due to (a) the desire to end or avoid extreme physical pain, (b) choosing between physical pain or death, or (c) the motivation to “preserve one’s own dignity” when facing a life-threatening or physically debilitating health condition (Rogers et al., 2007; p. 184). In a content analysis of suicide notes, Rogers et al. attributed the following statement to physical health distress: “I killed myself because I have two diseases colitis & cystitis. Life is not worth living...I don’t want to be a sick man” (p. 186). The inclusion of physical distress is unique to Rogers’ (2001, 2007) theoretical conceptualization of suicide.

A few studies have examined the association between physical health distress and suicidality. For example, Bariatric surgery patients experience increased risk for suicide after surgery, an outcome that has been partially attributed to the physical pain and lifestyle changes associated with recovery (Chen, Fettich, & Mccloskey, 2012; Mitchell et al., 2013). Individuals with chronic pain are statistically more likely than those who do not have chronic pain to consider suicide (Ratcliffe, Enns, Belik, & Sareen, 2008), an association that persists when controlling for multiple covariates (e.g., mental illness,

gender, pain intensity, Dafoe & Stewart, 2004; Ilgen, Zivin, McCammon, & Valenstein, 2008). Research suggests that physical pain, a form of physical health distress, is associated with suicidal ideation in older adults (Fiske, O'riley, & Widoe, 2008; Ku, Tsai, Lin, & Lin, 2009; Lapierre, Boyer, Desjardins, & Dube, 2012; Meeks et al., 2008). In adolescents, enduring chronic pain, a form of physical health distress, is associated with suicidal ideation (van Tilburg, Spence, Whitehead, Bandiwala, & Goldston, 2011). In my review of the literature, I found only one study examining the concept of physical health distress in connection with suicidal ideation in college students. Specifically, King, Hampton, Bernstein, and Schichor (1996) found that college students rated suicide acceptability as high for vignettes that featured chronic pain or a debilitating illness. Additional research is needed to examine the association between physical health distress and suicidal ideation in college students.

Theoretical Premise B: Cumulative Existential Distress Prompts Meaning

Reconstruction

According to the ECTS, Rogers (2001, 2007) proposes that existential distress (i.e., spiritual, relational, psychological, physical health) prompts meaning reconstruction to occur. When individuals reach their own threshold of existential distress, they may consider suicide as a way to relieve existential distress. Meaning reconstruction reduces psychological distress either altering existing core constructions or creating new core constructions that account for adverse life events. Rogers and colleagues (Rogers et al., 2007) liken retaining existing core constructions to “weathering the storm,” and associate meaning reconstruction with “becoming more adaptive” (p. 21).

Although Roger's conceptualization of meaning reconstruction has not been directly or empirically examined, meaning reconstruction has been examined in the field of grief and bereavement. Gillies and Neimeyer (2006) have described a model of meaning reconstruction in bereavement in which there are three core dimensions of meaning reconstruction: Making sense of the death loss, finding benefit in the loss, and re-constructing the identity in a way that incorporates the death loss into their broader life narrative. Sense-making refers to the active, non-linear process in which individuals interpret how the loss occurred, what caused the loss, and how the loss affects their broader life narrative (Gillies & Neimeyer, 2006; Neimeyer, 2001; Park, 2010). Sense-making processes ultimately result in the individual assimilating the death loss into their existing core constructions or altering core constructions to accommodate the loss into their views of self and the world (Holland, Currier, & Neimeyer, 2006). Benefit finding refers to "positive re-appraisal" (Gillies & Neimeyer, 2006, p. 37) of the death loss such that the individual is able to see adaptive gains (e.g., reduced suffering for loved one, existential growth). Benefit finding includes cognitive re-appraisals of the event (Folkman, 1997), which may occur sometime after the death loss (Gilles & Neimeyer, 2006). Identity change refers to the process of rebuilding one's sense of self through personal growth (Neimeyer, 2001). Life events that challenge core constructions may result in varying degrees of identity disruption, with some individuals reporting high degrees of thrownness in response to the event (Neimeyer, 2001). Identity reconstruction involves rebuilding core views of self in relationship others and the greater world. Meaning reconstruction may also include processes that reduce the discrepancies between

individuals' core constructions and their worldview (Holland, Currier, Coleman, & Neimeyer, 2010).

More recent approaches to meaning reconstruction have focused on the holistic outcome of meaning reconstruction (Holland, Currier, Coleman, & Neimeyer, 2010). That is, rather than examining three separate outcomes of meaning reconstruction (i.e., sense-making, benefit finding, identity change), researchers have examined the degree to which individuals have adaptively incorporated reconstructed meanings into their broader life narrative. Because meaning reconstruction is considered to include dual processes (i.e., assimilation/ accommodation, comprehensibility/ significance), recent conceptualizations of meaning reconstruction have examined the degree to which each process contributes to individuals' broader life narrative (Holland et al., 2010). Having a cohesive life narrative is important because it provides individuals with frameworks for understanding the world around them and ensuring they can adaptively respond to adverse life events in order to meet their most important needs (e.g., physical and emotional safety; Holland et al., 2010; Janoff-Bulman, 1992; Park 2010).

Regardless of how meaning reconstruction is conceptualized, research supports a positive association between reconstructing meaning and grief outcomes. Specifically, meaning reconstruction is associated with reduced psychological distress after experiencing a death loss or other stressful life event (Neimeyer, Baldwin, & Gillies, 2006). Meaning reconstruction has also been associated with a reduced propensity for prolonged grief (Currier, Holland, & Neimeyer, 2009; Neimeyer, 2001). Sense-making and benefit finding after a death loss has been associated with adjustment in college students after a death loss (Gillies & Neimeyer, 2010; Holland, Currier, & Neimeyer,

2006). Further, adaptive integration of loss experiences into a coherent life narrative has been associated with adjustment and psychological health (Holland et al., 2010).

Theoretical Premise C: Meaning Reconstruction is Negatively Associated with Suicidal Ideation

In the ECTS, Rogers (2001, 2007) proposes that when existential distress cannot be resolved through meaning reconstruction processes, individuals consider suicide as a way to alleviate their distress. That is, meaning reconstruction is negatively associated with suicide risk. Meaning reconstruction as a protective factor for suicide risk is, perhaps, the most innovative concept proposed by the ECTS. Meaning reconstruction assists individuals in modifying core assumptions about the self and worldview or taking on new constructions that allow for a cohesive interpretation of the life narrative. Meaning reconstruction processes subvert suicidal ideation by allowing individuals to construct worlds that makes sense and that are congruent with their identity (Rogers, 2004).

In my review of the literature, only four studies have examined meaning reconstruction in relation to suicidal ideation. Rogers et al. (2007) conducted a content analysis of suicide notes and found that persons who attempted suicide and died, in contrast to those who attempted suicide with less lethal means and lived, were characterized by references to the inability to construct meaning. In a sample of undergraduate veterans, Holland, Mallot, and Currier (2014) found that meaning reconstruction (i.e., comprehensibility) was associated with suicidal ideation after controlling for a number of demographic covariates in the model (e.g., age, ethnicity, gender, education). Of importance to the present study, Kolves, Vamic, Schneider, Fritze,

& Allic (2006) examined the number and type of adverse life events occurring prior to recorded suicide deaths and concluded, “It seems it is not the number of life events, but rather their meaning and disposition that creates the risk of suicide” (p. 2887). Further, a pilot study with a college student sample (Lockman & Servaty-Seib, 2016) suggested that meaning reconstruction is negatively associated with suicidal ideation and contributed additional variance to suicidal ideation after accounting for ITS contributions. These studies provide preliminary, yet cautious, support for a negative association between meaning reconstruction and suicidal ideation.

Summary and Critique

Rogers (2001, 2004, 2007) proposed the ECTS in which adverse life events generate challenges to core constructions. Core constructions lead to existential distress in one or more domains (i.e., spiritual, relational, psychological, physical health). According to Rogers et al., (2007), existential distress will lead to suicidal ideation unless one successfully engages in meaning reconstruction processes (i.e., assimilation, accommodation).

Although only a few studies have empirically examined the ECTS, the theory may be particularly applicable to college students for several reasons. First, the ECTS is grounded in established, evidence-based theories of human distress (i.e., existentialism, constructivism). Second, the ECTS posits a proximal rather than distal association between adverse life events and suicidal ideation, and adverse life events are often experienced during the college years (Arnett, 2000). Third, the ECTS includes meaning reconstruction as a specific mechanism that explains why some but not all individuals experience suicidal ideation. Because college students are developmental novices at

constructing meaning from adverse life events, and because their brain structures have not fully developed to be able to do this (Arnett, 2000; Chickering & Reisserer, 1993; Williams et al, 2006), the inability to make meaning may be associated with suicidal ideation in college students.

The ECTS is also distinct from other existing theories of suicide in several ways. First, ECTS is a model of both suicide risk (e.g., challenges to core constructions) and suicide resiliency (i.e., through meaning reconstruction). Several authors have called for viewing suicide through a positive psychology, resilience-based lens (Galligan, Barnett, Brennan, & Israel, 2010; Kleiman & Beaver, 2013; Wingate et al., 2007), and ECTS proposes a specific, proximal, and causal mechanism of suicide resiliency (i.e., meaning reconstruction in the face of life events). Second, the ECTS recognizes that adverse life events are associated with suicidal ideation because they generate existential distress. The fact that ECTS includes established predictors of suicidal ideation (i.e., relational distress, psychological distress) and includes risk domains previously excluded from other theories (i.e., spiritual distress, physical health distress) may contribute to the variance explained by the theory. Third, the theoretical underpinnings of ECTS (i.e., existentialism, constructivism) allow for further modifications of the model for specific high risk populations (e.g., college students, older adults).

In my review of the literature, I did not find empirical critiques of the limitations of the ECTS. However, this lack is likely a function of the limited empirical support the theory. Thus, I offer some of my own critiques of the ECTS. First, ECTS has received little empirical attention in the scholarly literature, and only three studies have examined central premises of the ECTS. Despite the fact that research supports individual elements

of ECTS (e.g., the association between physical distress and suicidal ideation), the central hypotheses of the ECTS have not been examined using quantitative methods. The present study will be the first to examine the central hypotheses of the ECTS as a cohesive theoretical model for suicide. Second, ECTS does not specify whether there is a distinction between predictors of suicidal ideation and suicide attempts. Previous theories of suicide have failed to distinguish the characteristics that predict individuals who will experience suicidal ideation versus individuals who will also attempt and/or die by suicide (e.g., Schneidman, 1992). Currently, the ITS is the only theoretical model (ITS; Joiner, 2005) that accounts for the observed phenomenon that a small portion who think about suicide die by suicide. The lack of specificity of ECTS may prove problematic in distinguishing between suicidal ideation and death by suicide. Third, it is difficult, though not impossible, to operationalize the ECTS using quantitative methods. Because the theory has received little empirical attention, it is unclear what measures best capture the constructs in the model. Thus, in the present study, I have worked extensively to find measures to represent the ECTS that have been used in studies related to suicide and, when possible, that have been used in college student samples. In my study, I will examine the central hypotheses of the ECTS in a college student sample.

The Interpersonal Theory of Suicide

Although existing theories of suicide do not explain unique aspects of suicidal ideation in college students, one universal theory that has garnered strong empirical support in the past decade is the ITS (Joiner, 2005). In the ITS, Joiner (2005) proposes that death by suicide is a distinctly interpersonal phenomenon that occurs due to the interaction between three factors: Perceived burdensomeness, thwarted belongingness,

and the acquired capability for suicide. More specifically, suicidal ideation occurs when individuals (a) believe their death will contribute more to others' well-being than their life (i.e., perceived burdensomeness) and (b) experience disconnection or isolation from social groups (i.e., thwarted belongingness). In the ITS, suicidal ideation alone does not generate suicidal actions and behaviors. Rather, individuals must also acquire the ability to lethally wound themselves through repeated exposures (i.e., habituation) to painful stimuli that engender fearlessness about death and physical pain tolerance (Anestis & Capron, 2016; Joiner, 2005; Van Orden et al., 2008). Thus, perceived burdensomeness and thwarted belongingness explain *why* individuals become at-risk for suicide, whereas the acquired capability for suicide explains physiological mechanisms associated with *how* individuals are able to enact lethal self- injury (Joiner, 2005; Van Orden et al., 2010).

The ITS is considered by experts to be a primary milestone in the history of suicidology in the U.S. (Spencer-Thomas & Jahn, 2012). For this reason, the ITS is likely to serve as a benchmark for future theory development in suicidology. In this section, I summarize the empirical evidence for the ITS and describe central contributions Joiner's (2005) theory has made to the field of suicidology. I then provide a summary and critique of the ITS, including the rationales scholars have provided for why additional theory development is needed.

Empirical Support for the ITS

The ITS, as proposed by Joiner (2005), has been examined in diverse populations and sub-groups in the U.S. According to Joiner et al. (2009), the cognitive-affective states of perceived burdensomeness and thwarted belongingness contribute to suicidal ideation.

Individuals who are at the highest risk for suicide experience both suicidal ideation and the acquired the physical ability to die by suicide. Indeed, in support of the ITS, several researchers have found that perceived burdensomeness and thwarted belongingness are positively associated with suicidal ideation, even after controlling for robust predictors of suicidal ideation such as depression and hopelessness (Anestis & Joiner, 2011; Joiner et al., 2005; Van Orden, Lynam, Hollar, & Joiner, 2006). In one of the most comprehensive evaluations of the ITS, perceived burdensomeness and thwarted belongingness were positively associated with suicidal ideation, and the three-way interaction of these two variables with acquired capability were positively associated with current suicide attempt status (Joiner et al., 2009). Empirical support for the ITS has been gathered in military samples (Bryan et al., 2010), young adults (Van Orden, Witte, Gordon, Bender, & Joiner, 2008), older adults (Cukrowicz, Cheavens, Van Orden, Ragain, & Cook, 2011; Jahn & Cukrowicz, Linton, & Prabhu, 2011), and veterans residing in a psychiatric hospitals (Monteith, Menefee, Pettit, Leopoulos, & Vincent, 2013). Below, I describe empirical evidence for each of the sub-components of the ITS.

Perceived burdensomeness. Perceived burdensomeness is the belief that one's death is worth more than one's life to others in important social groups (e.g., family friends, society; Joiner, 2005). Joiner emphasizes that perceived burdensomeness is a cognitive-affective state that is often built upon false cognitions. That is, whereas suicidal persons believe their death benefits others, their loved ones would likely vehemently disagree. Joiner (2005) and Van Orden et al. (2010) suggest that perceived burdensomeness is comprised of cognitive beliefs associated with liability to others (i.e., believing one does not contribute in important ways) and the affective state of self-hate.

Further, scholars have proposed that perceived burdensomeness may be the most salient predictor of suicidal ideation across demographic factors such as age, gender, socio-economic status, and sexual orientation (e.g., Hill & Pettit, 2012; Van Orden et al., 2010).

Several studies have examined perceived burdensomeness as it relates to the broader constructs of the ITS. In older adults, perceived burdensomeness functions as a statistical mediator of the relationship between depression and suicidal symptoms, explaining as much as 68% of the variance after controlling for known risk factors (e.g., hopelessness, depression) for suicide (Cukrowicz et al., 2011; Jahn et al., 2011). In community outpatient samples, perceived burdensomeness is positively associated with suicidal ideation, and is a stronger predictor of suicidal ideation than hopelessness on screening mechanisms (Van Orden et al., 2006). Support for the association between perceived burdensomeness and suicidal ideation is also evident through the examination of themes in suicide notes (Joiner et al., 2002). Specifically, individuals who attempt suicide with lethal means and subsequently die are more likely to discuss burdensomeness beliefs in their letters than individuals who attempt suicide with less lethal means and live.

Thwarted belongingness. In the ITS, thwarted belongingness occurs when individuals experience real or perceived social isolation, ostracism, or emotional disconnection from important social groups (e.g., romantic partner, family, friends, community). Joiner's concept of thwarted belongingness coincides with the ideas of other theorists who have asserted that belongingness is a fundamental human need that is critical to human survival (Baumeister & Leary, 1995; Durkheim, 1987/1951). Specifically, thwarted belongingness includes cognitive state of absence of reciprocal

care (i.e., belief one is not cared for by others; Van Orden et al., 2010) and the affective state of loneliness. In the ITS, thwarted belongingness is also characterized by distrust of social relationships (Van Orden et al., 2010). Ostracism (Williams, 2001) is a particularly pernicious form of social exclusion that can engender thwarted belongingness (Joiner, 2005). In fact, Joiner builds his concept of thwarted belongingness, in part, from research suggesting that ostracism activates the anterior cingulate cortex (i.e., an area of the brain associated with physical pain; Eisenberger, Lieberman, & Williams, 2003). Joiner (2005) concluded that ostracism, as a form of thwarted belongingness, is “like death, figuratively and often literally, for highly social animals” (p. 118).

The relationship between thwarted belongingness and suicidal ideation has been established for populations who are at risk for suicide. Thwarted belongingness is positively associated with suicidal ideation in youth who have been displaced from their families and the interaction between parental displacement (i.e., due to death, abandonment, divorce) and low levels of belongingness is associated with suicide attempts in adolescents (Timmons, Selby, Lewinsohn, & Joiner, 2011). Further, studies across age groups, ethnic identities, and socio-economic status suggest that persons who experience low levels of belongingness are at high risk for suicide (Duberstein et al., 2004; Trout, 1980).

Acquired capability for suicide. Distinct from the contributions of perceived burdensomeness and thwarted belongingness, the acquired capability for suicide explains the process by which individuals are able to enact lethal self-injury. Specifically, Joiner (2005) proposes that persons acquire the ability to die through repeated exposures to painful and provocative life experiences that increase their fearlessness about death and

their physical pain tolerance (Joiner et al., 2009; Smith & Cukrowicz, 2010;). Both physiological life experiences (e.g., history of being physically abused, recovering from a major surgery) and suicide-specific experiences (e.g., cutting, suicidal gestures, past suicide attempts) can increase one's acquired capability to die by suicide (Joiner, 2005; Van Orden et al., 2008). The acquired capability for suicide is important because it functions as a proximal indicator of suicide risk. According to the ITS (Joiner, 2005, 2009), of the many people who think about suicide or plan their own deaths, only those who have the acquired capability for suicide will be able to overcome the fearlessness about death and physical pain (e.g., associated with various means such as knife wound, self-poisoning) required to end their life.

Several studies have demonstrated empirical support for the acquired capability component of the ITS. In military samples, frequency of combat experience is positively associated with the acquired capability for suicide, even when controlling for symptoms of psychological disorders (e.g., depression, post-traumatic stress disorders; Bryan, Cukrowicz, West, & Morrow, 2010). Similarly, violence, aggression, and death experiences in combat have been positively associated with acquired capability for suicide (Bryan & Cukrowicz, 2011). In clinical samples, research indicates that disorders associated with physical pain such as anorexia nervosa (Fink, Bodell, Smith, & Joiner, 2013) and body dysmorphic disorder (Witte, Didie, Menard, & Phillips, 2012) are also associated with higher levels of acquired capability for suicide. Recent studies have demonstrated that the acquired capability for suicide is cultivated not only through physically painful experiences, but also through emotionally provocative experiences

(e.g., performing euthanasia; Witte, Correia, & Argarano, 2013). The acquired capability for suicide is considered to be the most novel contribution of Joiner's ITS theory.

The ITS in college student samples. Of relevance to the present study, a few researchers have examined the associations among perceived burdensomeness, thwarted belongingness, and the acquired capability for suicide in college students. Although researchers have not examined why college students as a distinct developmental group may be at risk for death by suicide, preliminary evidence does support the applicability of the ITS in college students. For example, Hill and Pettit (2012) examined the associations among the ITS constructs in college students identifying as heterosexual, lesbian, gay, and bi-sexual. Perceived burdensomeness accounted for the relationship between sexual orientation and suicidal ideation, suggesting that perceived burdensomeness may be particularly important contributor to LGB students' thoughts of suicide. Related to the construct of thwarted belongingness, suicidal ideation appears to vary across semesters (Van Orden et al., 2008). Specifically, undergraduate students report lower levels of suicidal ideation in the fall and spring semesters when school is in session and higher levels of suicidal ideation in the summer months, suggesting a negative association between belongingness and suicidal ideation (Van Orden et al., 2008). Family belongingness is also negatively and uniquely associated with suicidal ideation in college students (Ploskonka & Servaty-Seib, 2014; Servaty – Seib, Lockman, Shemwell, & Reid, 2014). Further, studies have demonstrated that the affective component of the acquired capability of suicide (e.g. fearlessness about death) is associated with suicidal ideation in college students (Anestis, Bagge, Tull, & Joiner, 2011). In fact, since college students frequently engage in risk-taking behavior (e.g., substance abuse, risky-driving), they may

be more likely to develop the fearlessness about death required to end their lives (Canterbury et al., 1992). Additional research is needed to understand the college student experience as it relates to the ITS and suicidal ideation.

Summary and Critique

Despite the clear contributions of Joiner's (2005) ITS to the field of suicidology, a few scholars have offered criticisms of the ITS. Paniagua et al. (2010) argue that ITS is an overly simplistic, reductionist approach to understanding suicide, considering that a single theory is unlikely to account for all variation in suicidal ideation and deaths across demographic groups (e.g., age, sex, socio-economic status, sexual orientation), clinical sub-groups (e.g., major depressive disorder, borderline personality disorder), and world cultures. Habek (2006) argues that the ITS does not account for specific types of suicide such as suicide-terrorism. For example, some scholars question whether persons who die by terror-suicide believe that they are a burden on loved ones. The conceptualization of suicide as a purely interpersonal phenomenon has also been questioned by scholars, considering that it does not specifically account for known intrapersonal risk factors for suicide inherent to individual differences (e.g., meaning reconstruction, personality, coping style; Lockman & Servaty-Seib, 2016).

Perhaps one of the comprehensive criticisms of the ITS is related to the falsifiability of the theory. According to Popper (1959), theories of psychological and biological phenomena are only useful to the degree that they can be tested empirically, and are empirically falsifiable (i.e., ability to fail to reject the null hypothesis through viable research methods). Paniagua et al. (2010) suggest that there are two reasons why the ITS is confounded empirically and cannot be falsified. First, it is difficult if not

impossible to study the constructs of ITS separate and apart from traditional risk factors for suicidal ideation. That is, one cannot experience thwarted belongingness apart from the specific adverse life events that generate it. Second, Paniagua et al. (2010) question the degree to which the acquired capability of suicide, and its association with suicide attempts and death, can be empirically validated. That is, experimental designs and randomized control trials are heralded as gold standards in demonstrating the causal relationship between a specific variable and outcome. Yet, these methodological designs cannot be implemented ethically, without risking participants' acquiring a higher ability to die by suicide.

With regard to clinical applications for of the ITS, a few scholars have raised concerns with applying ITS in the suicide risk-management of clients. Rogers (2008) argues that there are inherent dangers with having prioritized or dominant theories of the treatment of suicide (i.e., ITS or otherwise), considering that this may contribute to therapists focusing exclusively on these aspects of the clinical presentation while neglecting individual differences. Further, Joiner views ITS as a risk management strategy for suicidal clients rather than a new theoretical model for treating suicidal ideation (Joiner, Van Orden, Witte, & Rudd, 2009). The utility of using the ITS as suicide risk-reduction strategy has not yet been empirically supported in the literature.

Criticisms of the ITS are proportionately small compared to the overarching empirical support for the theory in the literature. However, taken together, current criticisms of the ITS raise concerns about the degree to which the theory should be used exclusively in the treatment of suicidal ideation. Joiner (2009) and Van Orden et al. (2010) have expressed support for attempts to falsify the premises of ITS in an effort to

make modifications to the existing ITS model, or to develop competing theoretical models of suicide. Of relevance for the present study, Joiner's (2005) ITS theory may not explain why suicide is the second leading cause of death among college students. Thus, further theory development is essential to advancing the science and practice of suicidology.

Summary of Research Questions and Hypotheses

The purpose of the present study was to test the predictions of Rogers's (2001) existential-constructivist theory of suicide (i.e., ECTS) in college students. Specifically, I (a) tested the central hypotheses of the ECTS in a college student sample and (b) compared the model fit of the ECTS to the ITS to assess which statistical model best explained suicidal ideation in college students. This study had four primary research questions. The first three research questions addressed tests of the core hypotheses of Rogers's ECTS. The fourth research question addressed the model fit of ECTS compared to the model fit of the more established ITS. Below, I provide each research question, and its associated hypothesis.

Research Question #1: Is cumulative existential distress (i.e. spiritual, relational, psychological, and somatic distress) associated with meaning reconstruction and suicidal ideation?

Hypothesis 1: Cumulative existential distress will be negatively associated with meaning reconstruction and positively associated with suicidal ideation

Research Question #2. Is meaning reconstruction associated with suicidal ideation?

Hypothesis 2: Meaning reconstruction will be negatively associated with suicidal ideation.

Research Question #3. Is the effect of existential distress on suicidal ideation only through the influence on meaning reconstruction?

Hypothesis 3: The effect of existential distress on suicidal ideation will only occur through its influence on meaning reconstruction (i.e., mediation).

Research Question #4: Which model (i.e., ECTS or ITS) better explains suicidal ideation in college students?

Hypothesis 4: Based on the possible alignment between ECTS and the development experiences of college students, Rogers's (2001) ECTS model will exhibit a better fit to the data than the model representing Joiner's (2005) ITS.

CHAPTER III. METHOD

In this chapter, I describe the method used in the present study. First, I provide a description of the participants for this study. Specifically, I describe participant characteristics, the inclusion and exclusion criteria used, and my sample size. Second, I describe the measures that I used in this study to capture variables specified by the ECTS and the ITS models, respectively. Third, I describe the procedures I used for participant recruitment and data collection in this study.

Participants

The final sample for this study consisted of 195 undergraduate and graduate college students (i.e., 18 – 25 years old) enrolled at Purdue University. Both international and domestic students were included in this study, considering that the literature suggests that the ECTS and the ITS are universal (i.e., applying across cultures) theories of suicide (Joiner et al., 2005; Rogers, 2001, 2007). Because emerging adults may have unique meaning reconstruction processes compared to adults (Neimeyer, 2001; Williams et al., 2006), students who self-identified as less than 18 years old or more than 25 years old were excluded from the final sample.

Demographic characteristics. The final sample for this study ($N = 195$) included 124 females (64%), 67 (34%) males, and 4 (2%) individuals who identified as “other” (i.e., including demigirl, genderqueer, transgender man). The mean age of participants was 20.26 ($SD = 2.47$), with a median age of 20 years, and a modal age of 18 years. In terms of residency status, 184 (94%) of participants identified as domestic students and

11 (6%) identified as international students (e.g., including countries such as China, India, Bangladesh, Paraguay). Regarding race/ethnicity, 159 (82%) participants identified themselves as Caucasian/White, 11 (6%) identified as Asian or Asian American, 10 (5%) identified as Multiracial, 5 (3%) identified as African American, 5 (3%) identified as Hispanic, Latino, or Latina, and 5 (3%) identified as Middle Eastern or East Indian. Regarding sexual orientation, 163 (84%) individuals identified themselves as heterosexual, 12 (6%) identified as bisexual, 9 (5%) identified as asexual, 3 (2%) identified as lesbian, 2 (1%) identified as gay, 2 (1%) identified as questioning, and 4 (2%) identified as other (e.g., pansexual).

Participants were asked to identify their year in college, in which 67 (34%) identified as first year undergraduate, 28 (14%) identified as sophomore, 20 (10%) identified as junior, 47 (24%) identified as senior, 9 (5%) identified as professional degree (i.e., DVM, pharmacy) student between 18 – 25 years old, 14 (7%) identified as M.S. student between 18 – 25 years old, and 10 (5%) identified as PhD student between 18 – 25 years old. Thus, the final sample was comprised of 162 (83%) undergraduate students, 9 (5%) professional degree students, and 24 (12%) graduate students.

Considering that the ECTS includes spiritual distress, participants were asked to describe their religious/spiritual preferences, how important they considered their religious/spiritual beliefs to their identities, and the degree to which they had questioned/changed their religious/spiritual beliefs since entering college. Participants' religious/spiritual preferences are summarized in Table 1. Regarding spiritual/religious preference, participants self-identified as Christian ($n = 107$; 55%), Agnostic ($n = 27$), None ($n = 23$; 12%), Atheist ($n = 21$; 11%), Hindu ($n = 3$; 2%), Jewish ($n = 3$; 2%),

Unitarian/Universalist ($n = 2$; 1%), Buddhist ($n = 1$; 1%); Muslim ($n = 1$; 1%), and Other ($n = 7$; 4%). Participants rated how important their religious/spiritual beliefs were to their personal identity on a Likert - type scale ranging from 1 (*not at all important*) to 3 (*moderately important*) to 5 (*very important*). The mean level of religious/spiritual beliefs importance was 2.97 ($SD = 1.4$), which corresponds to the scale anchor of *moderately important*. Participants rated the degree to which they had questioned/changed their religious beliefs since entering college using a Likert - type scale ranging from 1 (*significantly less sure of my beliefs*) to 3 (*no change*) to 5 (*significantly more sure of my beliefs*). The mean degree of questioning/change was 3.09 ($SD = 1.01$), which corresponds to the scale anchor *no change*.

Table 1.

Demographic Information on Spiritual/Religious Preferences (N = 195)

Variables	Yes	%
Christian	107	55%
Agnostic	27	14%
None	23	12%
Atheist	21	11%
Hindu	3	2%
Jewish	3	2%
Unitarian or Universalist	2	1%
Buddhist	1	1%
Muslim	1	1%
Other	7	4%

To assess the representativeness of my sample, I compared the demographic characteristics of my sample to the demographic characteristics of (a) Purdue University students (i.e., including undergraduate, graduate) enrolled during the Fall 2015 semester and (b) national sample of college students reported in the 2012 United States Census

Bureau (Table 2; Purdue, 2015; United States Census Bureau, 2012). The demographic characteristics of the current sample, overall, were similar to the Purdue University student body with a few exceptions. Specifically, the current sample included fewer males ($n = 67$; 34%) compared to the Purdue University student body ($n = 22,857$; 58%), $\chi^2(1, n = 195) = 44.48, p < .01$. The current sample also included more first year students ($n = 67$; 34%) compared to the Purdue University student body ($n = 7151$; 18%), $\chi^2(1, n = 195) = 35.05, p < .01$. The current sample was similar to the national sample, overall, with a few exceptions. The present sample includes lower representation of African American ($n = 5$; 3%; $\chi^2(1, n = 195) = 21.18, p < .01$) and Hispanic ($n = 5$; 3%; $\chi^2(1, n = 195) = 21.18, p < .01$) students compared to the national averages of enrolled college students.

Table 2.
Comparison of Demographic Characteristics of the Current Sample with Purdue and National Enrollment

Variables	Yes (<i>n</i> = 195)	% (<i>n</i> = 195)	Purdue	
			University % (<i>n</i> = 39,409)	National % (<i>N</i> = 242,248)
Sex				
Female	128	64	42	57
Male	67	34	58	43
Other	4	2	--	--
Residency Status				
Domestic	184	94	77	96
International	11	6	23	4
Race/Ethnicity				
African American/African	5	3	3	14
Asian/ Asian American	11	6	6	6
Caucasian/White/European	159	82	59	58
Hispanic, Latino, or Latina	5	3	4	14
Middle Eastern or East Indian	5	3	--	--
Biracial/Multiracial	10	5	2	2
Native American	<1	<1	<1	--
Native Hawaiian/Other Pacific	<1	<1	<1	--
Year in College				
First Year	67	34	18	--
Sophomore	28	14	17	--
Junior	20	10	17	--
Senior	47	24	23	--
Professional	9	5	2	--
Graduate (Masters, Doctorate)	24	12	23	--

Note: The dash represents information that has not been reported.

Adverse life events. I used the demographic form to collect data on (a) adverse life events participants experienced in the past two years and (b) the “most impactful” life event in the past year (i.e., 12 months; *Table 3*). The adverse life events most frequently endorsed were: academic major/career indecision (*n* = 164; 84%), interpersonal conflict (*n* = 139, 71%), financial problems (*n* = 123; 63%), academic setback (*n* = 101; 52%),

and parental pressure ($n = 87$; 44.6%). The “most impactful” life events were: academic major/career indecision ($n = 46$; 24%), academic setback ($n = 32$; 16%); interpersonal conflict ($n = 19$; 9.7%), financial problems ($n = 16$; 8.2%), and death of a family member ($n = 13$; 7%). Participants were asked to report their perceived stress on twenty stressful life events using a Likert – type scale ranging from 1 (*not at all stressful*) to 5 (*extremely stressful*). In order to assess the cumulative stress associated with students’ experienced adverse life events, I summed participants’ responses to the twenty stressful life event items (i.e., with the scale score ranging from 20 to 100). The mean perceived stress associated with students’ adverse life events was 48.52 ($SD = 10.98$; range = 2 – 83 on a 100 point scale). Length of time since participants’ most impactful life event was a mean of 5.36 months ($SD = 4.16$, range = 0 – 12 months). I assessed the degree to which participants searched for meaning using a single item which read “Have you searched to make sense or find purpose in these adverse life events.” Participants responded to this item with *yes* (1) or *no* (0) (Davis, Wortman, Lehman, & Silver, 2000). Regarding the most impactful adverse life event, 151 (77%) participants reported they had searched for meaning and 44 (23%) of individuals reported they had not searched for meaning.

Suicidal thoughts and behaviors. Regarding suicidal ideation, 23 (12%) of participants reported that they had “seriously considered suicide” in the past 12 months. Of those, 3 (2%) participants reported having attempted suicide in the past 12 months. The rate of suicide ideation and suicide attempts in the current sample is similar to other studies examining suicidal ideation and behavior among college students (Brownson, Drum, Smith, & Burton-Denmark, 2011; Wong, Brownson, & Schwing, 2011).

Table 3.

Frequencies, Means, and Standard Deviations of Reported Adverse Life Events

Adverse Life Event	Experienced This Event		Endorsed as Most Impactful Life Event		Perceived Stress Associated with Event	
	n	%	n	%	M	SD
1.Academic Major/Career indecision	164	84.1%	46	23.6%	3.57	1.18
2.Academic Setback	101	51.8%	32	16.4%	3.74	1.36
3.Interpersonal Conflict	139	71.3%	19	9.7%	3.44	1.14
4.Financial Problems	123	63.1%	16	8.2%	3.24	1.20
5.Death of Family Member	66	33.8%	13	6.7%	3.03	1.53
6.Romantic Break-Up	76	39.0%	12	6.2%	3.37	1.44
7.Family Member Injury or Illness	63	32.3%	10	5.1%	3.00	1.45
8.Suicide Death Family/Friend	40	20.5%	8	4.1%	2.43	1.55
9.Self Injury or Illness (Self)	68	34.9%	7	3.6%	2.79	1.35
10.Parental Pressure/Conflict	87	44.6%	7	3.6%	2.93	1.41
11.Discrimination	61	31.3%	3	1.5%	2.31	1.26
12.Drug or Gambling Addiction	52	26.7%	3	1.5%	2.10	1.23
13.Parent Separation/Divorce	35	17.9%	3	1.5%	2.31	1.71
14.Trauma Witness	36	18.5%	3	1.5%	2.44	1.68
15.Death of Close Friend	45	23.1%	1	0.5%	2.56	1.58
16.Pregnancy (Self/Partner)	31	15.9%	1	0.5%	1.68	1.14
17.Rape Victim	42	21.5%	1	0.5%	2.07	1.61
18.Getting Arrested	33	16.9%	1	0.5%	1.82	1.29
19.Crime Victim	37	19.0%	1	0.5%	2.03	1.36
20.Abortion	32	16.4%	1	0.5%	1.75	1.19

Note: $n = 195$. Adverse life events experienced in past calendar year (12 months). Table sorted by most impactful life event.

Measures

In this section, I describe all the measures I used in the present study. I provide a description of each measure including its intended purpose, number of items, structure of subscales, sample items, and psychometric properties (i.e., internal consistency, validity). I also note the scaling of each measure by stating specifically what higher scores mean. I describe the measures used for this study in the following order. First, I describe the demographic questionnaire. Second, I describe measures of the ECTS (i.e., Spirituality Index of Well-being, Social Connectedness Scale, Psychache Scale, WHOQOL-BREF Physical Health Subscale, MRQ, ISLES; *Table 4*). Third, I describe measures of the ITS (i.e., Interpersonal Needs Questionnaire, General Mattering Scale, 3-Item Loneliness Scale; *Table 5*). Fourth, I describe measures of ostracism (i.e., Ostracism Experiences Scale, Need Threat: Meaningful Existence Sub-scale) which were included upon the recommendation of a committee member. I have included Cronbach's alpha reliability for scores for each measure in the current study.

Table 4.

Summary of Latent and Observed Variables for the Existential-Constructivist Theory of Suicide (Rogers, 2001)

Construct and Operationalization	Source*	Number of Items	Cronbach's alpha	
			Past	Current
Existential Distress (<i>latent</i>)				
Spiritual Distress: Spirituality index of well-being (<i>observed</i>)**	Daalman & Frey, 2004	6	.89	.90
Relational Distress: Social connectedness scale (<i>observed</i>)**	Lee & Robbins, 1995	8	.91	.95
Psychological Distress: Psychache scale (<i>observed</i>)	Holden & Mehta, 1998	13	.92	.97
Physical Distress: WHOQOL-BREF Physical Health Subscale (<i>observed</i>)**	Skevington et al., 2004	7	.82	.80
Meaning Reconstruction (<i>latent</i>)				
MRQ Sense-making (<i>observed</i>)	Neimeyer et al., 2006	1	-	-
MRQ Benefit finding (<i>observed</i>)	Neimeyer et al., 2006	1	-	-
MRQ Identity change (<i>observed</i>)	Neimeyer et al., 2006	1	-	-
ISLES Footing in the World (<i>observed</i>)	Holland et al., 2010	11	.96	.91
ISLES Comprehensibility (<i>observed</i>)	Holland et al., 2010	5	.85	.78
Suicidal Ideation (<i>observed</i>)	Rudd, 1989	4	.91	.89

*Note: All scales use Likert - type items.

**Note: High scores on all measures indicate greater distress due to all items being reverse-scored.

Table 5.

Summary of Latent and Observed Variables for the Interpersonal Theory of Suicide (Joiner, 2005)

Construct and Operationalization	Source*	Number of Items	Cronbach's alpha	
			Past	Current
Perceived Burdensomeness (<i>latent</i>)				
INQ liability to others (<i>observed</i>)	Van Orden et al., 2012	4	.93	.93
INQ self-hate (<i>observed</i>)	Van Orden et al., 2012	5	.73	.74
GMS Mattering to others (<i>observed</i>)**	Marcus, 1991	5	.80	.85
Thwarted Belongingness (<i>latent</i>)				
INQ loneliness (<i>observed</i>)	Van Orden et al., 2012	4	.93	.89
INQ absence of reciprocal care (<i>observed</i>)	Van Orden et al., 2012	5	.77	.82
3-Item Loneliness scale (<i>observed</i>)	Hues et al., 2004	3	.72	.80
Suicidal ideation (<i>observed</i>)	Rudd, 1989	4	.91	.89

*Note: All scales use Likert - type items.

**Note: Reverse-scored to where higher scores indicate greater perceived burdensomeness

Demographic questionnaire. I collected demographic and background information using a form I developed for this study (Appendix A). Participants responded to questions regarding their age, sex, race/ethnicity, sexual orientation, year in school, relationship status, and student status. In addition, participants were presented with a list of twenty adverse life events (e.g., academic set-back, death loss, relationship break-up) and asked which events they have experienced in the past 12 months. The 20 adverse life events items were included from the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978) and items endorsed as stressful by college students (Smyth et al., 2008). Deatherage, Servaty–Seib, and Askoz (2014) have previously used this list of adverse life events to examine the prevalence of adverse life events experienced by college students. For each item endorsed, participants will be asked to rate “how stressful the event was when it first occurred” using a scale ranging from 1 (*not at all stressful for me*) to 5 (*extremely stressful for me*).

Participants were asked to rank order up to five adverse life events “in terms of which one affected you the most to the least in the past 12 months.” Participants were also asked whether they attempted to reconstruct meaning from those life events. This approach has previously been used by scholars to examine adverse life events experienced by participants and whether they attempted to reconstruct meaning from them (e.g., Davis et al., 2000; Neimeyer et al., 2006). Specifically, participants were asked, “Of the difficult life events listed in item 7 above, which one(s) have impacted you the most in the past 12 months? and “How many months ago did each of these impactful life events occur?” Participants were also asked, “Have you searched to make sense or to

find purpose in these impactful adverse life events?” with response options being 1 (*yes*) or 0 (*no*).

Spirituality Index of Well-being. I used the Spirituality Index of Well-being (SIWB; Daaleman & Frey, 2004; Appendix B) life scheme subscale to assess participants’ degree of perceived spiritual distress. The 12-item SIWB was developed to assess spiritual aspects of health-related quality of life. I used the 6-item life scheme subscale for this study. The SIWB life scheme subscale assesses the effect of spirituality on general well-being and recognizes that spiritual well-being may be drawn from various sources (i.e., God or Higher Power, connection to nature). An example item of the SIWB life scheme subscale is “There is a great void in my life at this time.” Participants rate their level of agreement with each item on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly disagree*). Item ratings were summed to create a total scale score of spiritual distress. Higher scores indicated greater spiritual distress.

Previous research has indicated the SIWB life scheme subscale scores have acceptable psychometric properties (Cohen, 1988). Daalman and Frey (2004) reported a Cronbach’s alpha reliability of .89 (.79 test-retest) for the life scheme subscale. Cronbach’s alpha for scores on the SIWB life scheme subscale in the current sample was .90. Daalman and Frey (2004) reported convergent validity between the subscale score on the SIWB has been reported with regard to measures of general well-being (i.e., General Well-being scale; $r = .64$; $p < .001$) and measures of spiritual well-being (i.e., Spiritual Well-being scale; $r = .62$, $p < .001$). The SIWB total score correlates modestly with the religious well-being subscale of the Spiritual Well-being Inventory ($r = .35$; $p < .001$), indicating that spirituality as measured in the SIWB is distinct from religiosity. Thus, the

SIWB is a broad measure of spirituality that is applicable to all individuals regardless of whether they consider themselves to be religious. The SIWB was developed using a sample of older adults (Daaleman & Frey, 2004), and its use has not been recorded with college students.

Social Connectedness Scale. I used the 8-item Social Connectedness Scale (SCS; Lee & Robbins, 1995; Appendix C) to assess participants' degree of perceived relational distress. The SCS is based on an extension of Kohut's (1984) self-psychology theory. The SCS measures social connectedness as a broad construct of belongingness by including aspects of connectedness, affiliation, and companionship. Participants rate their level of agreement with each item on a 6-point Likert - type scale ranging from 1 (*strongly agree*) to 6 (*strongly disagree*). Example items include, "I feel disconnected from the world around me" and "Even around people I know, I don't feel that I really belong." In the traditional measure, items are summed to create a total scale score and higher scores indicate greater social connectedness. For the purpose of this study, which examines ECTS, all eight items were reverse-scored such that higher scores represent greater relational distress.

Previous research has indicated the SCS scores have strong psychometric properties (Cohen, 1988). A Cronbach's alpha reliability score of .91 has been reported (Lee & Robbins, 1995), and test re-test reliability (i.e., 2-week) has been reported by the scale authors as .96. Cronbach's alpha for scores on SCS in the current sample was .95. The SCS was developed using a college student sample and has since been used with domestic and international college student samples (Lee, Draper, & Lee, 2001; Williams & Galliher, 2006; Yoon, Lee, & Goh, 2008).

Psychache Scale. I used the 13-item Psychache Scale (PS; Holden & Mehta, 1998; Appendix D) to assess participants' degree of perceived psychological distress. The PS measures psychological pain as originally proposed by Shneidman (1993) as internalized emotions such as guilt, shame, angst, fear, and dread rising from unfulfilled psychological needs. In the first 9 items, participants rate how frequently symptoms of psychache occur on a Likert -type scale ranging from 1 (*never*) to 5 (*always*). Example items include, "My pain makes me want to scream" and "I can't understand why I suffer." For the final five items, participants rate their agreement for each item on a Likert - type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items were summed to create a total scale score, with higher scores indicating greater levels of Psychache (i.e., psychological distress).

Previous research has indicated the PS scores have strong psychometric properties (Cohen, 1988). A Cronbach's alpha reliability score of .92 has been reported (Holden & Mehta, 1998); however, test re-test reliability scores have not been reported. Cronbach's alpha for scores on the PS in the current sample was .97. Validity is supported in studies, suggesting that scores on the PS are positively associated with suicidal ideation and can distinguish between persons who have and who have not attempted suicide (Holden & Mehta, 1998). Previous research has established that scores on the PS are distinct from scores on measures of hopelessness and depression (Troister & Holden, 2010). The PS has been used previously in diverse college student samples (e.g., DeLisle & Holden, 2009; Flamembaum & Holden, 2007)

WHOQOL-BREF Physical Health Subscale. I used the physical health subscale of the brief version of the World Health Organization Quality of Life Assessment (i.e.,

WHOQOL-BREF; Skevington, Lofty, & O'Connell, 1998; Appendix E) to measure participants' perceptions of their physical health distress. The WHOQOL-BREF was developed as a cross-culturally valid assessment of four primary domains of quality of life: physical, psychological, social, and environment. The 7-item physical health subscale measures participants' perceptions of their physical health and their ability to live independently. For items 1 and 2, participants used a Likert - type scale ranging from 1 (*not at all*) to 5 (*an extreme amount*) to rate the degree to which physical pain and the need for medical treatment interferes with their daily life. An example item is, "To what extent do you feel that physical pain prevents you from doing what you need to do?" For items 3 and 4, participants used a Likert - type scale ranging from 1 (*not at all*) to 5 (*completely*) to rate the degree to which their physical health interfered with task completion in the past two weeks. An example item is "How well were you able to get around?" For items 5-7, participants used a Likert - type scale ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*) to rate their satisfaction with their physical health in the past two weeks. An example item is, "How satisfied are you with your ability to perform your daily living activities?" For the purpose of this study, which examines the ECTS, items 3-7 (i.e., which are written originally in the positive form) were reverse-scored to indicate higher levels of distress. Then, all items (i.e., items 1 – 7) were summed such that higher scores represent greater physical health distress.

Previous research has indicated the WHOQOL-BREF scores have adequate psychometric properties (Cohen, 1988). The Cronbach's alpha reliability for the physical health subscale has been reported as .82 (Skevington et al., 1998). Cronbach's alpha for scores on the WHOQOL-BREF in the current sample was .80. Confirmatory factor

analysis has demonstrated measurement invariance for the WHOQOL-BREF across sex (i.e., male, female) and cultures (i.e., across 36 countries; Skevington et al., 1998). Predictive validity for the physical health subscale is supported, considering that the subscale differentiates between physically sick and well participants across time (Skevington et al., 2004). The use of this scale in college student samples, specifically, has not been reported. Considering that (a) my review indicates that few scales exist for measuring physical health exclusively (i.e. does not include emotional health items) and (b) the norming samples in the WHOQOL-BREF included adults in the United States and across the world who were of the college age (i.e., ages 18-25), this subscale is likely to adequately capture self-reported physical health in college samples.

MRQ Meaning Reconstruction. I used the Meaning Reconstruction Questionnaire (MRQ; Neimeyer et al., 2006; Appendix F) to assess types of meaning reconstruction. The 4-item meaning reconstruction questionnaire measures the types of meaning constructed in reference to a specific adverse life events (e.g. romantic break-up, academic set-back, death loss). Each item is used separately to assess each type of meaning reconstruction (i.e., sense-making, benefit finding, identity change, direction of identity change). That is, the items on the MRQ assess separate domains of meaning reconstruction; therefore, items are not summed to create a total score. The first item on the MRQ (i.e., MRQ-sense) is, “How much sense would you say you have made of these life events?” Participants rate their agreement with this statement with response categories ranging from 1 (*no sense*) to 4 (*A good deal of sense*). MRQ-sense has an established association with adaptive functioning in the grief literature (e.g., Holland, Currier, & Neimeyer, 2006). The second item on the MRQ (i.e., MRQ-benefit) is “Despite the

stress, have you been able to find benefit from your experience of these impactful life event(s)?" Participants rate their agreement with this statement with response categories ranging from 1 (*no benefit*) to 4 (*great benefit*). MRQ-benefit is generally associated with adaptive functioning in the grief literature; however, the strength of association has varied (Davis, Nolen-Hoeksema, & Larson, 1998; Holland et al., 2006). The third item of the MRQ (i.e., MRQ-identity) measures identity change is, "Do you feel that you are different, or that your sense of identity has changed, as a result of these life events." Participants rate their agreement with this statement with response categories ranging from 1 (*not different*) to 5 (*very different*). Greater levels of identity change is associated with greater distress (Holland et al., 2006); thus, I reverse-scored the MRQ-identity item such that higher scores on this item indicated a greater degree of meaning reconstruction. The fourth MRQ item, which assesses perceived direction of identity change (i.e., for the better, for worse) is considered descriptive of item three, and was not used in this study.

Previous research has indicated MRQ item scores have adequate psychometric properties (Cohen, 1988). Test re-test reliability for scores on each item was demonstrated by $r_s = .50$ across 6 to 13 months after a death loss (Davis et al, 1998). Predictive validity was demonstrated by the fact that scores on MRQ-sense and MRQ-benefit, respectively, distinguished between individuals who exhibited normative versus prolonged grief (Currier et al., 2006). The MRQ items have been used in college student samples (e.g., Holland et al., 2006).

ISLES meaning reconstruction. I used the 16-item Integration of Stressful Life Experiences Scale (ISLES; Holland et al., 2010; Appendix G) to assess levels of participants' meaning reconstruction. The ISLES consists of two subscales: footing in the

world and comprehensibility. The 11-item footing in the world subscale (i.e., ISLES-footing) measures the degree to which individuals feel oriented in the world following a stressful life event. An example item is, “I don’t understand myself anymore since this event.” The 5-item comprehensibility subscale (i.e., ISLES-comprehensibility) measures the degree to which individuals are able to make sense of the stressful life event in the context of their broader life story. An example item is, “I have made sense of this event.”

Participants are instructed in the ISLES to rate each statement “with regard to the most stressful life event you experienced in the past two years.” For the purpose of this study, and to account for the cumulative nature distress associated with adverse life events hypothesized by ECTS (Rogers, 2001), the directions were changed slightly. Participants were asked to rate each statement “with regard to the stressful life *events* you experienced in the past 12 months.” Likewise, individual items were altered to indicate the cumulative nature of stress resulting from more than one life event. As an example, the item, “Since this event, the world seems like a scary and confusing place” was altered to, “Since *these* events, the world seems like a scary and confusing place.” Participants rate all items on a five-point Likert - type scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Higher total scores on each subscale of the ISLES represent greater meaning reconstruction in response to adverse life events.

Previous research has indicated that ISLES scores have good psychometric properties (Cohen, 1988). The Cronbach’s alpha reliability for ISLES-footing subscale has ranged from .80 (Holland et al., 2010) to .92 (Holland et al., 2014) and for the ISLES-comprehensibility subscale from .79 (Currier, Holland, Christy, & Allen, 2011) to .85 (Holland et al., 2010). Cronbach’s alpha for ISLES-footing subscale in the current

sample was .91. Cronbach's alpha for ISLES-comprehensibility subscale in the current sample was .78. Validity is supported in studies, suggesting that scores on the ISLES are negatively associated with psychiatric distress and grief symptoms (Holland et al., 2010). In addition, Holland et al. (2014) found that the footing in the world subscale of the ISLES was negatively and uniquely associated with suicidal ideation in veterans returning to college. Davis et al. (1998) found support for convergent validity between scores on the ISLES and scores on associated measures (e.g., World Assumptions Scale, MRQ-sense). The ISLES has been used in college student samples (e.g., Holland et al., 2010).

Interpersonal Needs Questionnaire. I used the Interpersonal Needs Questionnaire (INQ; Van Orden, Cukrowicz, Witte, & Joiner, 2012; Appendix H) to assess participants' self-perceptions of burdensomeness (i.e., liability to others, self-hate) and thwarted belongingness (i.e., loneliness, absence of reciprocal care). The 18-item INQ is comprised of two subscales, INQ perceived burdensomeness and INQ thwarted belongingness. The 9-item INQ perceived burdensomeness subscale measures the degree to which participants believe they are a burden on loved ones. An example item is, "These days, people in my life would be better off if I were gone." The 9-item INQ thwarted belongingness subscale measures the degree to which participants believe they are isolated from and fail to belong to important social groups. An example item is "I feel disconnected from other people." Participants rated each item according to how they have "felt recently," using a Likert - type scale ranging from 1 (*not at all true for me*) to 7 (*very true for me*).

For the purposes of this study, items on each subscale were parceled according to their respective sub-components suggested by Van Orden (2008) to create separate observed indicators. That is, 4 items of the perceived INQ perceived burdensomeness subscale were parceled to create an observed indicator of liability to others (i.e., INQ-PB-L), and 5 items of the INQ perceived burdensomeness subscale were parceled to create an observed indicator of self-hate (i.e., INQ-PB-SH). In addition, 4 items of the INQ thwarted belongingness subscale were parceled to create an observed indicator of loneliness (i.e., INQ-TB-L), and 5 items of the INQ thwarted belongingness subscale were parceled to create an observed indicator of reciprocal care (i.e., INQ-TB-RC). Items for each parceled observed indicator of were summed such that higher scores represent higher levels of these constructs.

Previous research has indicated that the INQ perceived burdensomeness and INQ thwarted belongingness subscale scores have strong psychometric properties (Cohen, 1988). Cronbach's alpha reliability for the perceived burdensomeness and thwarted belongingness subscale scores have each ranged from .85 (Van Orden et al., 2008) to .95 (Conner et al., 2007). Cronbach's alpha for the parceled subscales of perceived burdensomeness in the current sample were .93 for liability and .74 for self-hate. Cronbach's alpha for the parceled subscales of thwarted belongingness were .89 for loneliness and .82 for reciprocal care. Test re-test reliability for scores has been reported as $r = .75$ for perceived burdensomeness (Conner et al., 2007; Van Orden et al., 2008) and $r = .89$ for thwarted belongingness (Van Orden et al, 2008). Predictive validity has been demonstrated by using odds ratios: Persons reporting higher levels of perceived burdensomeness ($OR = 1.59, p < .05$) and thwarted belongingness ($OR = 2.21, p <$

.01) are more likely to report suicidal ideation one month later (Van Orden et al., 2012). The INQ has been used extensively with college student samples (e.g., Cukrowicz et al, 2012; Van Orden et al., 2008).

General Mattering Scale. I used the General Mattering Scale (GMS; Marcus, 1991; Appendix I) as an additional assessment of participants' levels of perceived burdensomeness. An additional assessment of participants' levels of perceived burdensomeness was needed because latent variables in SEM models benefit from having at least three observed measures (Kline, 2011). Joiner et al. (2009) previously used a mattering to others scale to approximate levels of perceived burdensomeness. The 5-item GMS assesses the degree to which participants feel that they belong in social groups. Participants rate items on a 4-point Likert - type scale ranging from 1 (*not at all*) to 4 (*a lot*). Example items include, "How important do you feel you are to others," and "How much do you feel others would miss you if you went away." Items were summed to create a total scale score. For the purpose of the present study, I reverse-scored all five items such that higher scores indicated higher levels of perceived burdensomeness.

Previous research has indicated that the GMS scores have fair psychometric properties (Cohen, 1988). Cronbach's alpha reliability for the GMS scores have each ranged from .73 (Dixon Rayle & Meyers, 2004) to .80 (Dixon Rayle & Kurpius, 2008). The reported Cronbach's alpha reliability for the GMS scores in college students has been reported as .80 (Dixon & Kurpius, 2008). Cronbach's alpha for scores on GMS in the current sample was .85. The GMS has been used in college student samples (e.g., Dixon & Kurpius, 2008).

Loneliness Scale. I used the 3-item Loneliness Scale (LS; Hues, Waite, Hawkley, & Cacioppo, 2004; Appendix J) as an additional assessment of participants' levels of thwarted belongingness. A third assessment of participants' levels of thwarted belongingness was needed because latent variables in SEM models benefit from having at least three observed measures (Kline, 2011). The 3-item LS assesses the degree to which participants' experience feelings of loneliness, disconnection, and not belonging. An example item is, "How often do you feel that you lack companionship." For each item, participants rate how often they experience loneliness on a 3-point scale ranging from 1 (*hardly ever*) to 3 (*often*). Scores on the three items were summed to create a total scale score. For the present study, higher scores indicated higher levels of thwarted belongingness.

Previous research has indicated the LS scores have acceptable psychometric properties (Cohen, 1988). A Cronbach's alpha reliability score of .72 has been reported (Hues et al., 2004). Cronbach's alpha for scores on the LS in the current sample was .80. Test re-test reliability has not been reported. Validity has been supported in studies, suggesting that scores on the 3-item loneliness scale is positively associated with depression, stress, and other robust loneliness scales (e.g., UCLA 25-item loneliness scale; Hawkley & Cacioppo, 2004). Discriminant validity studies suggest that scores on the 3-item LS are distinct from measures of enjoyment and energy (Hues et al., 2004).

Ostracism Experiences Scale. Upon the suggestion of a committee member, I added the 8-item Ostracism Experiences Scale (OES; Carter-Sowell, 2010; Appendix K) to assess levels of participants' ostracism during their identified "most stressful period within the past 12 months." The OES consists of two subscales: OES-ignored and OES-

excluded. The 4-item OES-ignored subscale measures the degree to which individuals feel ignored by others. An example item is “In general, others treated me as if I was invisible.” The 4-item EOS-excluded subscale measures the degree to which individuals feel excluded by others. An example item is “In general, others leave me out of their group.” Participants are instructed in the OES to “consider their personal feelings” and to “determine how often, in general the following experiences happen to you.” Participants rate all items on a 7-point scale ranging from 1 (*hardly ever*) to 7 (*almost always*). Higher scores on each sub-scale indicate higher levels of ostracism.

Previous research has indicated that the OES scores have good psychometric properties (Carter-Sowell, 2010). In the initial scale development study, Carter-Sowell (2010) reported that alpha reliability for the OES-ignored subscale ranged from .72 to .81 and the alpha reliability for the OES-excluded subscale ranged from .85 to .87. Cronbach’s alpha for the OES-ignored subscale in the current sample was .89. Cronbach’s alpha for the OES-excluded subscale in the current sample was .92. Carter-Sowell (2010) found support for convergent and divergent validity, considering that scores on the OES-ignored and OES-excluded were moderately correlated with scores on similar measures (e.g., loneliness, depression, rejection sensitivity). The OES was developed using diverse college student samples (Carter-Sowell, 2010).

Need-threat Scale: Meaningful Existence. Upon the suggestion of a committee member, I added the 5-item need-threat scale-meaningful existence subscale (NT-meaningful existence; Williams et al., 2009; Appendix L). The NT-meaningful existence subscale measures the degree to which individuals need for meaningful existence is threatened after an ostracism experience. Example items are “I felt invisible” and “I felt

meaningless.” The NT-meaningful existence has been used in previous studies after experiencing ostracism through Cyberball. Participants are instructed to “circle the number that best represented their feelings experience during the Cyberball game on 5-point scales.” For the purpose of my study, which examined ostracism in the context of stressful life events, the directions read “For each question below, indicate the number that best represents the feelings you experienced during the most stressful period in the past 12 months.” Participants rate items on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*extremely*). Three items are reverse-scored, then all items summed to create a total scale score. Higher scores indicate higher levels of meaningful existence. Cronbach’s alpha for the NT-meaningful existence subscale in the current sample was .88.

Suicidal Ideation Scale. I used the Suicidal Ideation Scale (SIS; Rudd, 1989; Appendix M) to measure participants’ self-reported suicidal ideation. The SIS consists of 10 items and includes a 4-item subscale measuring suicidal ideation (e.g., “I just wish my life would end”) and a 6-item subscale measuring resolved suicidal behaviors (e.g., “I have made attempts to kill myself”). For the present study, I used only the SIS suicidal ideation subscale because it measures the desire for suicide (i.e., ideation) without suicide behaviors (e.g., suicide plan). Participants rate each item on a 5-point Likert - type scale ranging from 1 (*Never*) to 5 (*Always*). SIS suicidal ideation items were summed to create a total score, with higher scores indicating greater levels of suicidal ideation.

Previous research has indicated the SIS suicidal ideation scores have good psychometric properties (Cohen, 1988). The Cronbach’s alpha reliability for the suicidal ideation subscale has ranged from .89 (Luxton, Rudd, Reger, & Gahm, 2011) to .90

(Rudd, 1989). Cronbach's alpha for scores on the SIS in the current sample was .89. Construct validity for the SIS scores have been supported in that the SIS is positively associated with measures of depression, emotional lability, and substance abuse (Luxton et al., 2011). The SIS has been used in college student samples (e.g., Rudd, 1989).

Procedure

Before collecting data, I received approval to conduct this study from the Purdue Institutional Review Board. I received approval through expedited IRB application, which is a customary for studies which include questions about suicidal ideation. After receiving IRB approval, I submitted a participant recruitment email (Appendix N) to the Purdue University Office of the Registrar. The recruitment email briefly described the purpose of my study and included a link to the online Qualtrics survey. The Office of the Registrar sent the recruitment email to a random selection of 4,000 college students (i.e., including undergraduate and graduate students aged 18-25 years) on October 14, 2015. Students were sent a reminder recruitment email (Appendix O) one week after the initial recruitment email (October 21, 2015). Both the initial and reminder emails stated that participants in this study were required to be students between the ages of 18-25 years.

Students who elected to participate in the study followed the link provided to read an Information Letter (Appendix P). The information letter thoroughly described the purpose of the study, time required to participate, participant incentives (i.e., a random drawing for one of four \$25 Amazon gift cards), risks and benefits, contact information for IRB Board and research team, and the voluntary nature of participation. Students were prompted to select a consent status for the study by clicking the option which read, "I agree to participate. I understand I can choose to withdraw at any time," or "I DO NOT

agree to participate and will exit the survey.” Students who provided consent to participate in the study were provided the opportunity to complete the on-line Qualtrics survey. Participants completed the measures included in the survey in the following order: Demographic questionnaire, MRQ, ISLES, WHOQOL-BREF, SCS, SWIB, PS, INQ, GMS, LS, SIS. Students were allowed to complete the survey at their own pace, to skip questions at their discretion, and to exit the survey at any time. Students who elected to exit the survey before completing the final question were re-directed to a resource page which provided local (e.g., campus counseling center, outpatient mental health clinic) and national (e.g., national suicide prevention lifeline) resources they could use if they or someone they know were thinking of suicide (Appendix Q). All other students were directed to the resource page after completing the survey. Students who completed the survey were provided the opportunity to send an email to be entered into a gift card drawing for one of four \$25 Amazon gift cards.

The confidentiality of participants’ identities and survey responses were protected through a variety of ways. Participants’ were not asked to provide their names or other identifying information beyond generic demographic indicators (e.g., sex, age, year in school). Survey responses were collected and stored on a secure, password-protected, on-line server. Only my academic advisor, members of the Institutional Review Board (upon request for quality assurance), and I had access to students’ survey responses. To further ensure anonymity of participants’ responses, students were provided a separate set of instructions to participate in the gift card drawing on the last page of the survey. Specifically, I directed students who wished to participate in the drawing to send an email to my Purdue account with the statement “Participated in the study” in the subject line.

This process ensured that participants' identifying information (i.e., name, email address, IP address) were not connected to their electronic survey responses. At the end of the survey, I thanked all participants for their contribution and used an open-ended comments section to invite any additional thoughts about the survey or their experience taking the survey.

CHAPTER IV. RESULTS

In this chapter, I describe the results of the current study. First, I describe the processes I used to screen the data and conduct preliminary analyses. Second, I describe the primary analyses I conducted to examine the research questions and their associated hypotheses. All analyses were completed using IBM SPSS 23.0 and IBM SPSS Amos 23.0.

Data Screening and Preliminary Analyses

Prior to conducting the primary analyses, I completed data screening procedures and preliminary analyses according to recommendations by Tabachnick and Fidell (2013). Of the 4,000 students who were sent my survey by the Purdue office of the registrar, 365 students participated in the survey indicating a response rate of 9%. First, I manually examined a subset of participants in the SPSS data file to ensure that values transferred correctly from the Qualtrics survey platform. In completing the data file comparison, I found no discrepancies in values. I then reviewed participants' age and student status (i.e., full time) to ensure they met the inclusion criteria for the study. Of the 365 students who responded to the survey 10 students did not answer any questions in the survey, and were thus deleted from the study ($n = 355$). Three participants indicated their age was younger than the selection criteria of 18 – 25 years, and their cases were deleted ($n = 352$).

Next, I removed participants who did not complete all of the measures used for the primary analyses of this study. I removed 156 participants who discontinued their participation at the following points in the survey (listed in the order of measure presentation): demographic survey ($n = 2$), selection of stressful life events (SLE-Experienced; $n = 4$), demographic survey stressful life events ranking (SLE – Ranking; $n = 99$), Meaning Reconstruction Questionnaire (MRQ; $n = 14$), Integration of Stressful Life Events Survey (ISLES; $n = 16$), World Health Organization Quality of Life Assessment physical health subscale (WHOQOL-BREF; $n = 5$); Social Connectedness Scale (SCS; $n = 4$); Life Scheme subscale of the Spirituality Index of Wellbeing (SIWB; $n = 4$); Psychache scale (PS; $n = 2$); Interpersonal Needs Questionnaire (INQ; $n = 4$); General Mattering Scale ($n = 1$); Three–Item Loneliness Scale (LS; $n = 1$). The final sample after deleting cases due to participant withdrawal included 196 cases ($n = 196$). Open–ended comments provided by participants indicated that several students experienced technical difficulties completing the stressful life events ranking (SLE-Ranking) on their mobile phones, which may have contributed to attrition rates. All participants who reached the Suicidal Ideation Scale (SIS) completed the measure, indicating that participants did not withdraw due to the primary topic of the survey.

I then conducted procedures to screen for missing data and assessed for patterns of missing data. Of the remaining cases ($n = 196$), no participants were missing more than 5% of the total number of items in the survey. I manually examined the data file to assess for patterns in missing data, and did not notice any clear patterns. I also used IBM SPSS missing value analysis (i.e. MVA) to assess for patterns of missing data. The Little’s MCAR test, which was nonsignificant ($p = .63$), indicated that the data could be

assumed to be missing completely at random (Tabachnick & Fidell, 2013). I then imputed values for the missing data points using the linear trend at point procedure in SPSS 23.0.

I examined the data to detect univariate and multivariate outliers. Specifically, I used boxplots to visually inspect the data for extreme scores on each of the 16 primary variables in my study. Tabachnick and Fidell (2013) suggest that outliers can be detected by examining standardized z -scores, in which values greater than 3.29 may be considered outliers. I examined the standardized z -scores of the 16 primary variables in my study, which indicated that two participants reported extreme scores on the Suicidal Ideation Scale (SIS). I examined item-level scores for the two participants, which indicated that both participants reported the highest value possible (i.e., 5, *Always*) for each of the four items assessing suicidal ideation. Considering that suicide has a low base rate in the population and occurs in individuals experiencing high levels of suicidal ideation (i.e., distress), it is reasonable to assume that two participants in my sample could be experiencing high levels of suicidal ideation. I chose not to remove these two participants from my sample, considering that doing so would decrease the variance in the measure and decrease the degree to which the sample represents the greater population of college students experiencing suicidal ideation. I conducted a Mahalanobis distance test, using $p < .001$ as the critical value of the chi square distribution, to assess for the presence of multivariate outliers. One case yielded a score which was statistically significant ($p < .001$), and I deleted this participant from my sample. Thus, the final sample for my study included 195 participants ($n = 195$).

I then examined the data to ensure the assumptions (i.e., normal distribution, linearity, homoscedasticity, multicollinearity) of the statistical analysis (i.e., SEM) used to answer my research questions were met. To assess the normality of distribution for the 16 primary variables in my study, I used IBM SPSS calculations to examine the skewness and kurtosis values for each variable (Tabachnick & Fidell, 2013). All variables were within the acceptable range of skewness (-3 to +3) and kurtosis (-3 to +3). In addition, I examined normal and detrended normal Q-Q plots, which suggested that the primary independent variables in my study were linearly related to the dependent variable (i.e., suicidal ideation). To examine homoscedasticity, I created a new variable by saving the residual values of my primary variables regressed onto suicidal ideation. I examined the patterns of the plotted residual values, which did not yield any discernable patterns. Lastly, I examined the independent variables for multicollinearity, in which Pearson bivariate correlation values higher than $r = .85$ indicated the presence of multicollinearity. Considering that SEM model fit is dependent upon covariance matrices, screening for multicollinearity is important for SEM models (Kline, 2011). As demonstrated in *Table 6*, the correlations among the 16 primary variables in this study were below .85, indicating a low likelihood of multicollinearity (Tabachnick & Fidell, 2013). The correlations among the 16 primary variables in this study were in the expected directions. Correlations among the 16 primary variables were of expected magnitudes with one exception. The correlation between MRQ-identity and SIS-suicidal ideation was lower than expected and was not statistically significant ($r = .10, p = .16$).

Table 6.
Summary of Bivariate Correlations among Primary Variables for the ECTS and the ITS

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>Observed Measures of the ECTS</i>																
1. Spirituality index of well-being (ED)	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2. Social connectedness scale (ED)	.46**	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3. Psychache scale (ED)	.45**	.63**	1	—	—	—	—	—	—	—	—	—	—	—	—	—
4. WHOQOL-BREF physical health (ED)	.35**	.51**	.56**	1	—	—	—	—	—	—	—	—	—	—	—	—
5. MRQ-sense (MR)	-.34**	-.32**	-.43**	-.26**	1	—	—	—	—	—	—	—	—	—	—	—
6. MRQ-benefit (MR)	-.28**	-.26**	-.34**	-.38**	.44**	1	—	—	—	—	—	—	—	—	—	—
7. MRQ-identity (MR)	-.09**	-.19**	-.17**	-.17*	-.05	-.12	1	—	—	—	—	—	—	—	—	—
8. ISLES-footing (MR)	-.52**	-.63**	-.62**	-.57**	.47**	.46**	.25**	1	—	—	—	—	—	—	—	—
9. ISLES-comprehensibility (MR)	-.39**	-.47**	-.59**	-.46**	.61**	.45**	.20**	.75**	1	—	—	—	—	—	—	—
<i>Observed Measures of the ITS</i>																
10. INQ liability to others (PB)	.38*	.50**	.61**	.38**	-.22**	-.26**	-.11	-.48**	-.39**	1	—	—	—	—	—	—
11. INQ self-hate (PB)	.37**	.47**	.56**	.44**	-.30**	-.28**	-.08	-.49**	-.41**	.79**	1	—	—	—	—	—
12. GMS Mattering to Others (PB)	.37**	.63**	.42**	.51**	-.33*	-.23**	-.06	-.46**	-.33**	.53**	.53**	1	—	—	—	—
13. INQ loneliness (TB)	.42**	.82**	.61**	.51**	-.36**	-.27**	-.20**	-.61**	-.48**	.54**	.51**	.72**	1	—	—	—
14. INQ absence of reciprocal care (TB)	.46**	.73**	.51**	.46**	-.29**	-.25**	-.17*	-.56**	-.41**	.49**	.53**	.71**	.81**	1	—	—
15. 3-Item Loneliness scale (TB)	.41**	.75**	.57**	.47**	-.36**	-.20**	-.14*	-.53**	-.44**	.43**	.44**	.62**	.79**	.67**	1	—
<i>Observed Dependent Variable</i>																
16. Suicidal Ideation Scale	.39**	.49**	.65**	.47**	-.29**	-.27**	.10	-.54**	-.45**	.71**	.63**	.46**	.54**	.50**	.45**	1

Note: Latent Variables measured by each observed variable are noted by (.). (ED) is Existential Distress. (MR) is Meaning Reconstruction. (PB) is Perceived Burdensomeness. (TB) is Thwarted Belongingness.

Note: Items of scales 7, 8, and 10 were reverse-scored such that they indicate higher levels of distress.
 * = $p < .05$; ** = $p < .01$

After completing data screening procedures, I calculated descriptive statistics (i.e., means, modes, standard deviations, minimum scores, maximum scores; *Table 7*) and Cronbach alpha coefficients for the 16 primary variables in my study. The Cronbach alpha coefficients for measures used to assess the ECTS were between .78 and .97 (*Table 7*). The Cronbach alpha coefficients for measures used to assess the ITS were between .74 and .93 (*Table 7*). Cronbach alpha internal consistency scores above .70 are considered in an acceptable range (Tabachnick & Fidell, 2013).

Table 7.
Description of Primary Continuous Variables

Variable	Mean	Median	Standard Deviation	Minimum Score	Maximum Score	Possible Range	Cronbach's Alpha
<i>Observed Measures of the ECTS</i>							
1. Spirituality index of well-being (ED)	16.47	16.00	6.31	6.00	30.00	6 - 30	.90
2. Social connectedness scale (ED)	22.82	21.00	10.91	8.00	47.00	8 - 48	.95
3. Psychache scale (ED)	25.39	21.00	12.76	13.00	65.00	13 - 65	.97
4. WHOQOL-BREF Physical Health Sub-scale (ED)	16.00	16.00	4.89	7.00	32.00	7 - 35	.80
5. MRQ sense (MR)	2.77	3.00	0.89	1.00	4.00	1 - 4	-
6. MRQ-benefit (MR)	2.64	3.00	0.89	1.00	4.00	1 - 4	-
7. MRQ-identity (MR)	2.78	3.00	1.27	1.00	5.00	1 - 5	-
8. ISLES-footing (MR)	39.31	40.00	9.34	15.00	55.00	11 - 55	.91
9. ISLES-comprehensibility (MR)	17.13	17.00	4.03	7.00	25.00	5 - 25	.78
<i>Observed Measures of the ITS</i>							
10. INQ liability to others (PB)	7.84	5.00	5.60	4.00	25.00	4 - 28	.93
11. INQ self-hate (PB)	12.21	11.83	5.62	5.00	30.00	5 - 35	.74
12. Mattering to Others (PB)	10.25	10.00	3.19	5.00	20.00	5 - 20	.85
13. INQ loneliness (TB)	13.79	14.00	6.32	4.00	28.00	4 - 28	.89
14. INQ absence of reciprocal care (TB)	13.27	12.00	6.19	5.00	32.00	5 - 35	.82
15. 3-Item Loneliness scale (TB)	6.08	6.00	1.79	3.00	9.00	3 - 9	.80
<i>Observed Dependent Variable</i>							
16. Suicidal Ideation	6.00	4.00	2.99	4.00	16.00	4 - 20	.89

Note: Latent Variables measured by each observed variable are noted by (). (ED) is Existential Distress. (MR) is Meaning Reconstruction. (PB) is Perceived Burdensomeness. (TB) is Thwarted Belongingness.

I then assessed the degree to which participant demographic variables were significantly associated with the primary variables in this study. More specifically, I conducted correlation analyses to examine the association among participant age and the 16 primary continuous variables of this study. I then conducted a series of one way multivariate analysis of variance (MANOVA) tests to assess the degree to scores on the 16 primary variables varied as a function of the categorical demographic variables (i.e., sex, residency status, race, sexual orientation, year in college). Because (a) the purpose of this study was to compare the model fit of the ECTS to the ITS and (b) moderate correlations among dependent variables decrease statistical power to detect an effect in MANOVAs, I chose to run the series of MANOVAs on the ECTS (i.e., Spiritual index of well-being, social connectedness, psychache, WHOQOL-BREF-physical health, MRQ-sense, MRQ-benefit, MRQ-identity, ISLES-footing, ISLES-comprehensibility, suicidal ideation) and the ITS (i.e., INQ-PB-liability, INQ-PB-self-hate, GMS, INQ-TB-Loneliness, INQ-TB-reciprocal care, 3-Item loneliness scale, suicidal ideation) separately.

With regard to the continuous demographic variable, age was positively associated with MRQ-benefit ($r = .15, p = .04$) and negatively associated with suicidal ideation ($r = -.15, p = .04$). Because correlations between .10 and .29 correspond to a small effect size using Cohen's (1988) criteria, I chose not to control for age in subsequent analyses.

A summary of possible group differences based on the categorical demographic variables and observed measures of the ECTS is provided in *Table 8*.

Table 8.

Multivariate Analysis of Variance (MANOVA) between demographic variables and the ECTS and ITS variables

Variable	ECTS			ITS				
	<i>F</i>	(df1, df2)	<i>P</i>	partial η^2	<i>F</i>	(df1, df2)	<i>p</i>	partial η^2
Sex	1.42	(10, 180)	0.18	0.07	1.01	(7,183)	0.40	0.04
Race	2.86	(10, 184)	0.002**	0.14	0.83	(7,187)	0.57	0.03
Sexual Orientation	1.66	(10, 184)	0.09	0.08	2.52	(7,187)	0.02*	0.09
Year in College	0.89	(40, 654)	0.67	0.05	0.79	(28,632)	0.77	0.03

Regarding sex, I conducted a one-way MANOVA with sex as the independent variable. Four participants self-identified their biological sex as “other,” and were excluded from the analysis due to there not being enough individuals to include as ‘other’ as a separate group (i.e., minimum of 20 observations per cell for each dependent variable; Tabachnick & Fidell, 2013). The omnibus MANOVA using Wilks’ lambda was not significant for sex, $F(10, 180) = 1.42, p = .18, \text{partial } \eta^2 = .07$. I was unable to conduct a MANOVA for residency status due to the fact that only 11 students identified as international students.

Regarding race, fewer than 11 participants self-identified in each racial minority category. Thus, I conducted one MANOVA which included two levels of the independent variable including Caucasian/White and Underrepresented Minority Racial Minority Groups (i.e., including participants identifying as Asian or Asian American, Multiracial, African American, Hispanic/Latino or Latina, Middle Eastern or East Indian). The Wilks’ lambda omnibus effect was significant for race, $F(10, 184) = .2.86, p = .002, \text{partial } \eta^2 = .14$ for the ECTS. Specifically, the spiritual index of well-being ($p = .04$) and WHOQOL-BREF physical health ($p = .02$) scale scores were significant at $p < .05$. Cabin and Mitchell (2000) suggest that researchers should use a bonferroni correction procedure (Holm, 1979) when “two or more tests that cannot be pooled address a common null hypothesis, and the rejection of the null hypothesis is possible only when some of the tests are found to be individually significant” (p. 246). Accordingly, the bonferroni correction procedure reduces the alpha level considered statistically significant in order to protect from Type I error (Holm, 1979; Rice, 1989). The bonferroni correction is calculated by dividing the alpha level of .05 by the number of dependent variables in the

MANOVA. Thus, for this MANOVA in my sample, the adjusted alpha level considered significant per the bonferroni correction was $p = .005$. Using a more conservative alpha level of .005 based upon the Bonferroni adjustment, scores on these scales did not significantly vary as a function of racial group (Holm, 1979; Tabachnick & Fidell, 2013). Thus, I did not control for race in subsequent analyses of the ECTS.

Regarding sexual orientation, between 2 and 12 participants self-identified in each sexual minority sexual orientation category; thus, I conducted one MANOVA which included two levels of the independent variable including heterosexual and underrepresented sexual minority groups (i.e., including asexual, bi-sexual, gay, lesbian, questioning, and other). The Wilks' lambda omnibus effect was not significant for sexual orientation, $F(10, 184) = 1.66$, $p = .09$, partial $\eta^2 = .08$. Regarding year in college, the Wilks' lambda omnibus effect was not significant, $F(40, 654) = .89$, $p = .67$, partial $\eta^2 = .05$.

A summary of possible group differences based on the categorical demographic variables and observed measures of the ITS is provided in *Table 8*. Regarding sex, I conducted a one-way MANOVA with sex as the independent variable. Four participants self-identified their biological sex as "other," and were excluded from the analysis due to there not being enough individuals to include as "other" as a separate group (i.e., minimum of 20 observations per cell for each dependent variable; Tabachnick & Fidell, 2013). The omnibus MANOVA using Wilks' lambda was not significant for sex, $F(7, 183) = 1.01$, $p = .40$, partial $\eta^2 = .04$. I was unable to conduct a MANOVA for residency status due to the fact that only 11 students identified as international students.

Regarding race, fewer than 11 participants self-identified in each racial minority category, which is fewer than the recommended observations per cell (Tabachnick & Fidell, 2013). Thus, I conducted one MANOVA which included two levels of the independent variable including Caucasian/White and Underrepresented Minority Racial Minority Groups (i.e., including participants identifying as Asian or Asian American, Multiracial, African American, Hispanic Lantino or Latina, Middle Eastern or East Indian). The Wilks' lambda omnibus effect was not significant for race, $F(7, 187) = .83$, $p = .57$, partial $\eta^2 = .03$.

Regarding sexual orientation, between 2 and 12 participants self-identified in each sexual minority sexual orientation category; thus, I conducted one MANOVA which included two levels of the independent variable including heterosexual and underrepresented sexual minority groups (i.e., including asexual, bi-sexual, gay, lesbian, questioning, and other). The Wilks' lambda omnibus effect was significant for sexual orientation, $F(7, 187) = 2.52$, $p = .02$, partial $\eta^2 = .09$. Using the more conservative alpha level of .007 based upon the Bonferroni adjustment, univariate analyses were significant for INQ-PB-liability, INQ-PB-self-hate, INQ-TB-loneliness, INQ-TB-reciprocal care, and suicidal ideation (Tabachnick & Fidell, 2013). According to Cohen (1992), for effect sizes (i.e., partial η^2) between .02 and .14 are considered small, between .15 and .34 are considered medium, and .35 and above are considered large. Regarding sexual orientation in my sample, statistically significant effects for sexual orientation ranged from .04 to .06, which are considered small (Cohen, 1992). Therefore, I chose not to control for sexual orientation in subsequent analyses. Regarding year in college, the Wilks' lambda omnibus effect was not significant, $F(28, 632) = .79$, $p = .77$, partial $\eta^2 = .03$.

In summary, I completed data screening and preliminary analyses for this study which yielded a final sample of 195 college students. All assumptions (i.e., normal distribution, linearity, homoscedasticity, multicollinearity) of the statistical analysis (i.e., SEM) used to answer my research questions were met. I examined possible group differences based on the categorical demographic variables and observed measures of the ECTS and ITS, respectively, which did not yield any group differences. Thus, I did not control for any demographic variables in subsequent primary analyses.

Primary Analyses

After I cleaned the data using procedures for data cleaning recommended by Tabachnick and Fidell (2013), I used SEM to answer the primary research questions of this study. SEM is “a statistical methodology that takes a confirmatory approach to the analysis of a structural theory bearing on some phenomenon” (Byrne, 1998, p. 3). That is, SEM constructs a series of equations to represent the predictive relationships among variables according to an existing theory, and then compares the “fit” of the predicted model to observed sample data. Numerous advantages to using SEM for theory testing and development have been offered in the literature. For example, SEM uses a confirmatory approach to data analysis, corrects for measurement error, and allows for the specification and comparison of competing theories of a specific phenomenon (Fornell, 1982). In this study, I hypothesized relationships among variables representing the ECTS and the ITS, respectively.

Sample Size for SEM Models

The final sample used in this study included 195 college students. Although some scholars recommend a minimum sample size of 200 participants for structural equation

modeling, emerging research suggests that the actual sample size needed for sufficient power varies according to several factors such as model complexity and anticipated effect sizes (Kline 2011; Quintana & Maxwell, 1999; Wolf, Harrington, Clark, & Miller, 2013). Alternatively, other scholars suggest considering the ratio of sample size to parameters to be estimated, where 20:1 is ideal, and 10:1 is acceptable (e.g., Jackson, 2003; Kline, 2011). The most complex SEM model I tested included 18 parameters to be estimated; thus, the current sample size ($n = 195$) is considered acceptable.

Model Fit for SEM Models

Model fit is the degree to which the hypothesized measurement (as in CFA) or full structural model (as in SEM) accounts for the variance-covariance matrix reproduced by the sample (Brown, 2015). I evaluated model fit by examining multiple indices of fit including the chi-square statistic (Bollen, 1989), comparative fit index (CFI; Bentler, 1990), the normed fit index (NFI; Bentler & Bonnet, 1980), the root mean square error of approximation (i.e., RMSEA, MacCallum, Browne, & Sugawara, 1996), and the standardized root mean square residual (SRMR; Hu & Bentler, 1999). A summary of model fit statistics I used to evaluate the ECTS and ITS in this study is provided in *Table 9*.

Table 9.

Summary of Model Fit Statistics Used to Evaluate the ECTS and ITS

<i>Indicator of Fit</i>	<i>Range of Scores</i>	<i>Scaling Indicating Better Fit</i>	<i>Good Model Fit</i>	<i>Mediocre/Acceptable Model Fit</i>	<i>Poor Model Fit</i>
Significance of chi square (χ^2)	$p = 0 - 1$	Higher scores of p	$p > .05$	$p < .05$ and normed χ^2 index (NC) ≤ 3.0	$p < .05$ and normed χ^2 index (NC) > 3.0
Comparative fit index (CFI)	0 - 1	Higher scores	$\geq .95$.90 - .94	$< .90$
Normed fit index (NFI)	0 - 1	Higher scores	$\geq .95$.90 - .94	$< .90$
Root mean square error of approximation (RMSEA)	0 - 1	Lower scores	$\leq .08$.081 - .10	$> .10$
Standardized root mean square residual (SRMR)	0 - 1	Lower scores	$\leq .05$.051 - .08	$> .08$

Note: Exact cut-off values for good, mediocre/acceptable, and poor model fit may vary by author. For my study, I used recommendations by Bentler (1990; CFI, NFI), MacCallum, Browne, and Sugawara (1996; RMSEA) and Hu and Bentler (1999; SRMR).

The chi-square statistic tests whether the model is an *exact fit* to the data. A nonsignificant ($p > .05$) chi-square indicates that the model fits the data well (Bollen, 1989; Kline, 2011). However, scholars caution against overreliance on the chi-square statistic as a single indicator of model fit because chi-square values increase (a) as sample size increases (although large samples are required for SEM) and (b) increase as parameters are added to the model (i.e., increasing model complexity). Some researchers have proposed using the relative/normed chi-square (Wheaton, Muthen, Alwin, & Summers, 1977) to evaluate model fit. The normed chi-square reduces the impact of sample size (χ^2/df), and values which are equal to or lower than 3.0 are considered acceptable (Iacobucci, 2010, Kline, 2011). Weston and Gore concluded that for most social science research, “a nonsignificant χ^2 may be unlikely, although the model may be a close fit to the observed data” (p. 742). Considering the complexity of predicting human behavior, Martens (2005) proposed that structural equation models in the social sciences that are approximate fit, but not an exact fit, to the data can still make meaningful contributions. Consistent with scholarly recommendations, I considered a nonsignificant χ^2 to indicate a good model fit. I considered a significant χ^2 value to indicate acceptable fit if the normed chi-square (NC) was equal to or below 3.0 and other fit indices indicated an acceptable model fit (Iacobucci, 2010; Kline, 2011).

Researchers have developed additional SEM fit indices to prevent overreliance on the chi-square statistic as a single indicator of fit. The comparative fit index (CFI; Bentler, 1990) is an incremental model fit index which compares the hypothesized model to a simpler model (i.e., no paths estimated; variables assumed to be unrelated). The CFI is a robust indicator, accounting for sample size and model parsimony. CFI values range

from 0 to 1.0, and higher values indicate better model fit. CFI values $\geq .95$ are considered a good model fit, and CFI values $\geq .90$ are considered acceptable (Bentler, 1990; Hu & Bentler, 1999; Tabachnick & Fidell, 2013). The normed fit index (NFI; Bentler & Bonnet, 1980) is also an incremental model fit index which compares the hypothesized model to a simpler model in which variables are believed to be independent. The NFI has been criticized for underperforming in small samples ($n < 200$), and it is more influenced by model parsimony than the CFI (Ding, Velicer, & Harlow, 1995; Marsh, Balla, & McDonald, 1988). NFI values range from 0 to 1.0, and higher values indicate better model fit. Generally, NFI values $\geq .95$ are considered a good model fit, and NFI values $\geq .90$ are considered acceptable (Bentler, 1990; Hu & Bentler, 1999; Tabachnick & Fidell, 2013).

The root mean square error of approximation (RMSEA; Steiger, 1990, 2000) indicates “how well the model, with unknown but optimally chosen parameter estimates would fit the population covariance matrix” (Hooper, Coughlan, & Mullen, 2008; p. 54). RMSEA has been criticized for underperforming in small sample sizes ($n < 250$; Fan & Sivo, 2005; Hu & Bentler, 1999). Nonetheless, it is considered an important fit index because it corrects for model complexity (Tabachnick & Fidell, 2013). RMSEA values range from 0 to 1.0, and lower values indicate better model fit. MacCallum et al. (1996) suggest that RMSEA values $\leq .08$ indicate good model fit, and RMSEA values between .081 and .10 indicate acceptable model fit.

Lastly, the root mean square residual (SRMR) is the “absolute mean of all differences between the observed and the model- implied correlations” (Weston & Gore, 2006; p. 746). Thus, the SRMR evaluates the degree of difference between the

hypothesized and actual models. SRMR is considered more robust to sample size variation than RMSEA (Hu & Bentler, 1999; Tabachnick & Fidell, 2013). SRMR values range from 0 to 1.0, with lower values indicating better model fit. SRMR values at or below .05 indicate a good model fit. SRMR values below .08 indicate acceptable model fit (Hu and Bentler, 1999).

To summarize, evaluating model fit is complex and requires researchers to examine multiple fit indices. In my study, model fit was considered *good* if the chi-square statistic was nonsignificant, the CFI was at or above .95, the NFI was at or above .95, the RMSEA was at or below .08 and the SRMR was at or below .05. Model fit was considered *acceptable* if the chi-square statistic was nonsignificant ($p > .05$) or if the normed chi-square was below 3.0, the CFI was at or above .90, the NFI was at or above .90, the RMSEA was at or below .10, and the SRMR was at or below .08. As recommended by Tabachnick and Fidell (2013) and Kline (2013), I also evaluated the acceptability of models by reviewing the strength and direction of hypothesized paths in the model and the degree to which these were consistent with theory.

Analysis of the Model Fit of the ECTS

My first three research questions pertained to ECTS and examined the associations among existential distress, meaning reconstruction, and suicidal ideation. My first three research questions and their associated hypotheses are provided below.

Research Question #1. Is cumulative existential distress (i.e. spiritual, relational, psychological, and somatic distress) associated with meaning reconstruction and suicidal ideation?

Hypothesis 1: Cumulative existential distress will be negatively associated with meaning

reconstruction and positively associated with suicidal ideation

Research Question #2. Is meaning reconstruction associated with suicidal ideation?

Hypothesis 2: Meaning reconstruction will be negatively associated with suicidal ideation.

Research Question #3. Is the effect of existential distress on suicidal ideation only through the influence on meaning reconstruction?

Hypothesis 3: The effect of existential distress on suicidal ideation will only occur through its influence on meaning reconstruction (i.e., mediation).

Using SEM procedures suggested by Weston and Gore (2006), I completed the following steps for analyzing the ECTS as it pertains to suicidal ideation in college students: (a) specified the model, (b) identified model parameters, (c) cleaned the data and prepare for analysis, (d) estimated the model, (e) evaluated the model fit (i.e., using the two-step approach), (f) examined modification indices of model fit, and (g) tested alternative models.

Step 1: Model specification for the ECTS. In the first step, I used the existing literature on ECTS to create an a-priori full structural model (Weston & Gore, 2006). The a priori full structural model I developed for the present study is displayed in *Figure 2* (p. 98).

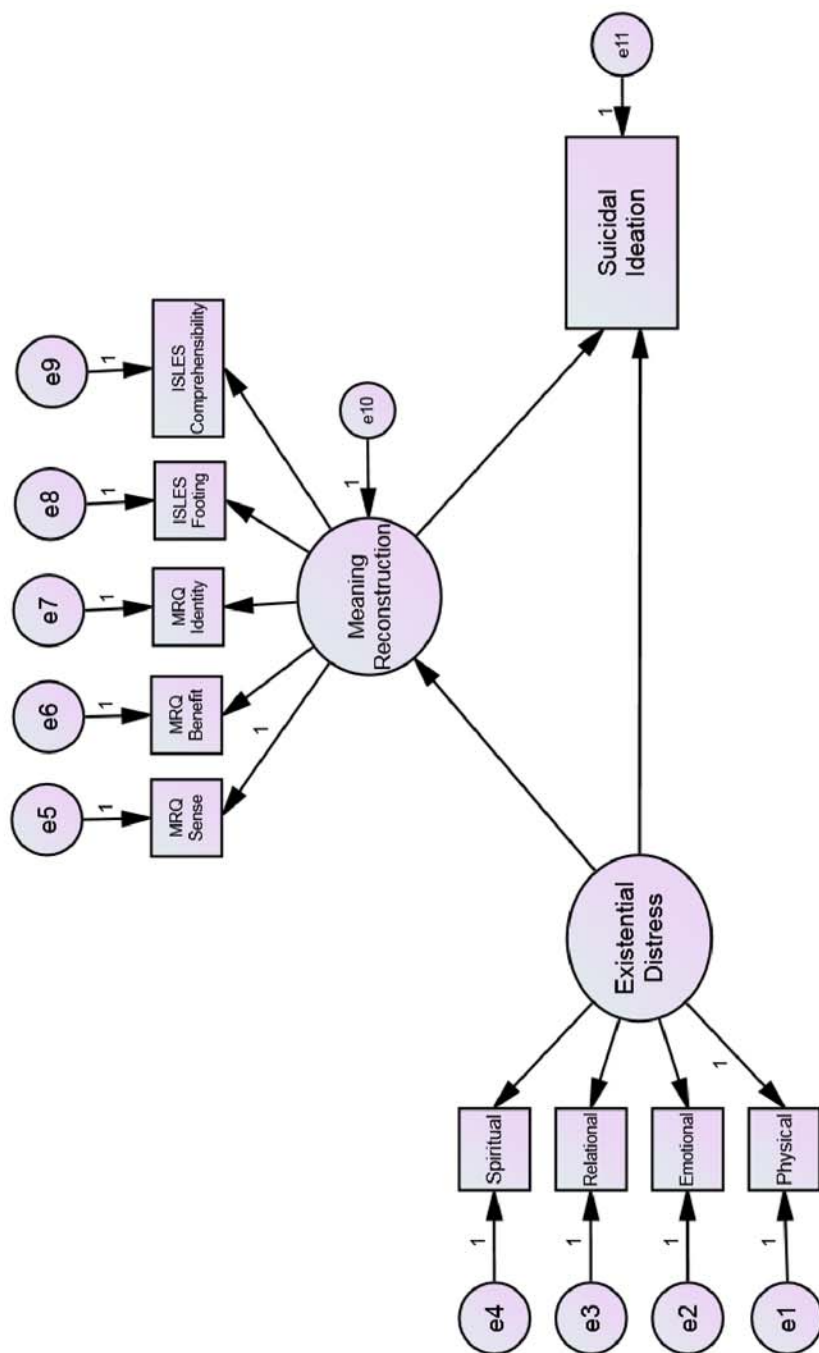


Figure 2. Full Structural Model for Rogers's (2001, 2007) Existential – Constructivist Theory of Suicide

The model represented in *Figure 2* denotes the presence, direction, and hypothesized relationships among variables. According to Weston and Gore (2006), model specification is one of the most important steps of SEM because the analysis assumes that non-specified relationships are equal to zero. In my model, latent variables (i.e., variables measured indirectly by multiple scales, subscales, or parcels) were represented by a circle. Observed variables (i.e., variables measured directly by a scale, subscale, or parcel) were indicated by a square. I also specified hypothesized relationships among the variables. Specifically, I indicated direct effects by a single-headed arrow and indirect effects by a series of single-headed arrows connecting variables. In my ECTS model, I estimated one direct effect (i.e., the association between existential distress and suicidal ideation) and one indirect effect (i.e., the association of existential stress on suicidal ideation through meaning reconstruction). As a metric for the latent variables, I fixed one factor for each latent variable to 1.0. I estimated factor loadings of remaining indicators as free parameters (Kline, 2011).

Step 2: ECTS model identification. In the second step, I examined model identification indices for the measurement model of my study (Weston & Gore, 2006). Model identification is important because the series of simultaneous equations can only be solved if there are more observed indicators than parameters to be estimated. I completed model identification by calculating the degrees of freedom. I calculated the degrees of freedom by subtracting the number of free parameters to be estimated from the total number of observed elements in the model. Specifically, I calculated the number of elements by using the formula $p(p + 1) / 2$ (Kline, 2011; Weston & Gore, 2006). As demonstrated in *Figure 2*, my model contains 10 observed variables. Using the formula p

$(p + 1) / 2$, I calculated that there are $(10 [11] / 2 = 55)$ 55 elements in the model. I also calculated the number of free parameters in the model. Specifically, there are 11 error variances, 9 factor loadings, 1 direct effect, and 2 indirect effects, for a total of 23 parameters to be estimated. By subtracting the free parameters to be estimated (23) from the total number of elements (55), I calculated that there were 32 degrees of freedom in the model. Thus, the model was considered over-identified and could be estimated.

Step 3: ECTS data cleaning and screening. In the third step, I cleaned and screened the data (Weston & Gore, 2006). Specifically, I examined the sample size, sample characteristics, multicollinearity, normality, and missing data. I previously described the procedures I used to examine the sample size, sample characteristics in Chapter 3.

Steps 4 and 5: ECTS model estimation and evaluation of fit. In the fourth and fifth steps, I estimated the SEM model using IBM SPSS AMOS 23 and evaluated the model fit. Weston and Gore (2006) suggest that researchers follow a multi-step approach to model estimation using either a two-step estimation (Anderson & Gerbing, 1988) or four-step estimation (Mulaik & Millsap, 2000) process. Gerbing and Hamilton (1996) suggest that researchers use the four-step approach when theory development is lacking, such that step one (i.e., exploratory factor analysis) can be used to assess the number of possible latent variables in the model. Because I used the ECTS as an established theoretical framework to pre-determine the number and type of latent and observed variables in my model, I used the Anderson and Gerbing's (1988) two-step modeling approach. Specifically, using the two-step modeling approach I (a) tested the ECTS measurement model using confirmatory factor analysis and then (b) tested the

measurement and structural portions of the model simultaneously using SEM. I examined both unstandardized and standardized parameter values in the model. I used Maximum Likelihood (ML) procedures to estimate parameters of the SEM model. I selected ML as the estimation method because it uses an iterative process to draw estimates of parameters that result in the best fitting model to the data (Kline, 2011). That is, ML estimation is considered robust, even to violations of multivariate normality, because it maximizes the likelihood that estimates parameters drawn from the sample represent the greater population (Brown, 2015; Hu & Bentler, 1999).

I used confirmatory factor analysis (i.e., CFA) to test the measurement model I developed a-priori to represent the ECTS. Specifically, I tested the degree to which observed indicators loaded on their expected latent variables. In my measurement model of the ECTS, existential distress was a latent variable with four observed indicators: Spiritual distress, relational distress, psychological distress, and physical health distress. Meaning reconstruction was a latent variable with five observed indicators: MRQ-sense, MRQ-benefit, MRQ-identity, ISLES-footing, and ISLES-comprehensibility. Based on the ECTS, I anticipated a covariance between these two latent variables, which I indicated using a double-headed arrow in my model. Following recommendations by Anderson and Gerbing (1988), I modeled the observed indicators as unidimensional (i.e., load onto one factor), and I represented latent variables using at least three observed variables. I fixed one factor loading for each latent variable to 1.0 and then I estimated the remaining indicators as free parameters. The a-priori ECTS measurement model which I tested in step 1 is provided in *Figure 3 (p. 102)*.

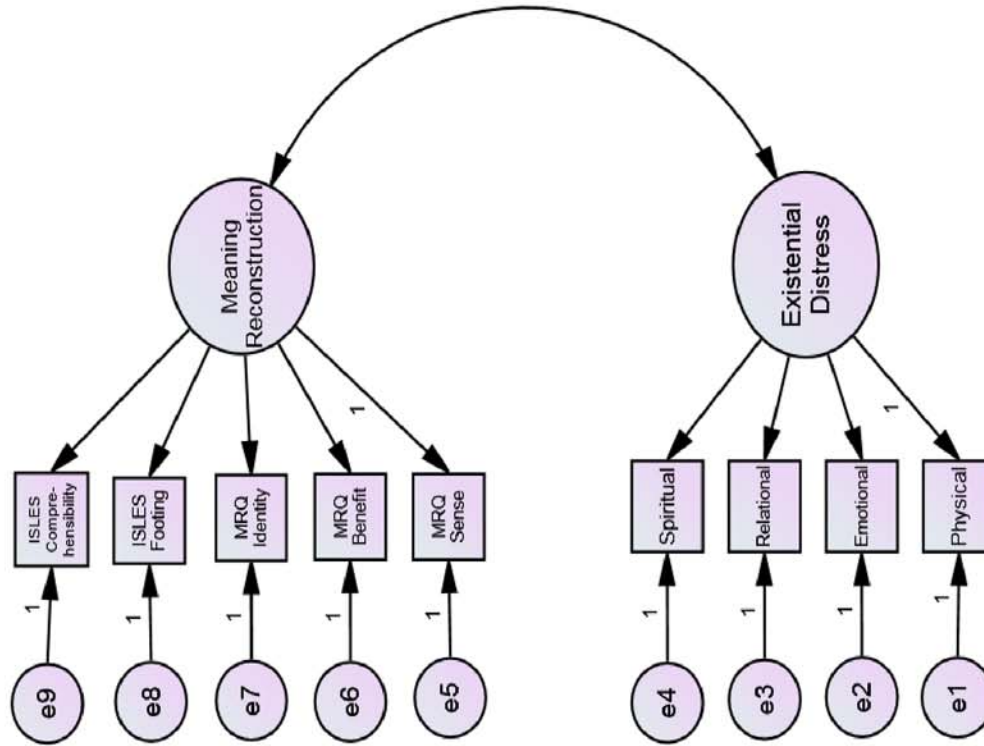


Figure 3. A-priori Measurement Model for Rogers's (2001, 2007) Existential – Constructivist Theory of Suicide

In order to test the ECTS a-priori measurement model using CFA, I began by identifying the measurement model. Model identification is important in CFA because the model cannot be estimated unless the number of freely estimated parameters are fewer than the observed elements in the variance-covariance matrix (Brown, 2015). I completed model identification for the ECTS measurement model by calculating the degrees of freedom. I calculated the degrees of freedom of the measurement model by subtracting the number of free parameters to be estimated from the total number of observed elements in the model. Specifically, I calculated the number of elements by using the formula $p(p + 1) / 2$ (Brown, 2015; Kline, 2011; Weston & Gore, 2006). As demonstrated in *Figure 2*, my ECTS measurement model contained 9 observed variables. Using the formula $p(p + 1) / 2$, I calculated that there are $(9 [10] / 2 = 45)$ 45 elements in the model. I also calculated the number of free parameters in the model. Specifically, there are 9 error variances, 7 factor loadings, and 1 factor covariance, for a total of 17 parameters to be estimated. By subtracting the free parameters to be estimated (17) from the total number of elements (45), I calculated that there are 28 degrees of freedom in the model. Thus, the EFA measurement model was considered over-identified and could be estimated using CFA.

To conduct the CFA, I estimated the parameters of the ECTS measurement model using ML, and then I evaluated the model fit. In my study, model fit was considered *good* if the chi-square statistic was nonsignificant, the CFI was at or above .95, the NFI was at or above .95, the RMSEA was at or below .08 and the SRMR was at or below .05. Model fit was considered *acceptable* if the chi-square statistic was nonsignificant ($p > .05$) or if the normed chi-square was below 3.0, the CFI was at or above .90, the NFI was at or

above .90, the RMSEA was at or below .10, and the SRMR was at or below .08. I have provided the results from estimation of the ECTS measurement model in *Figure 4* (p. 105).

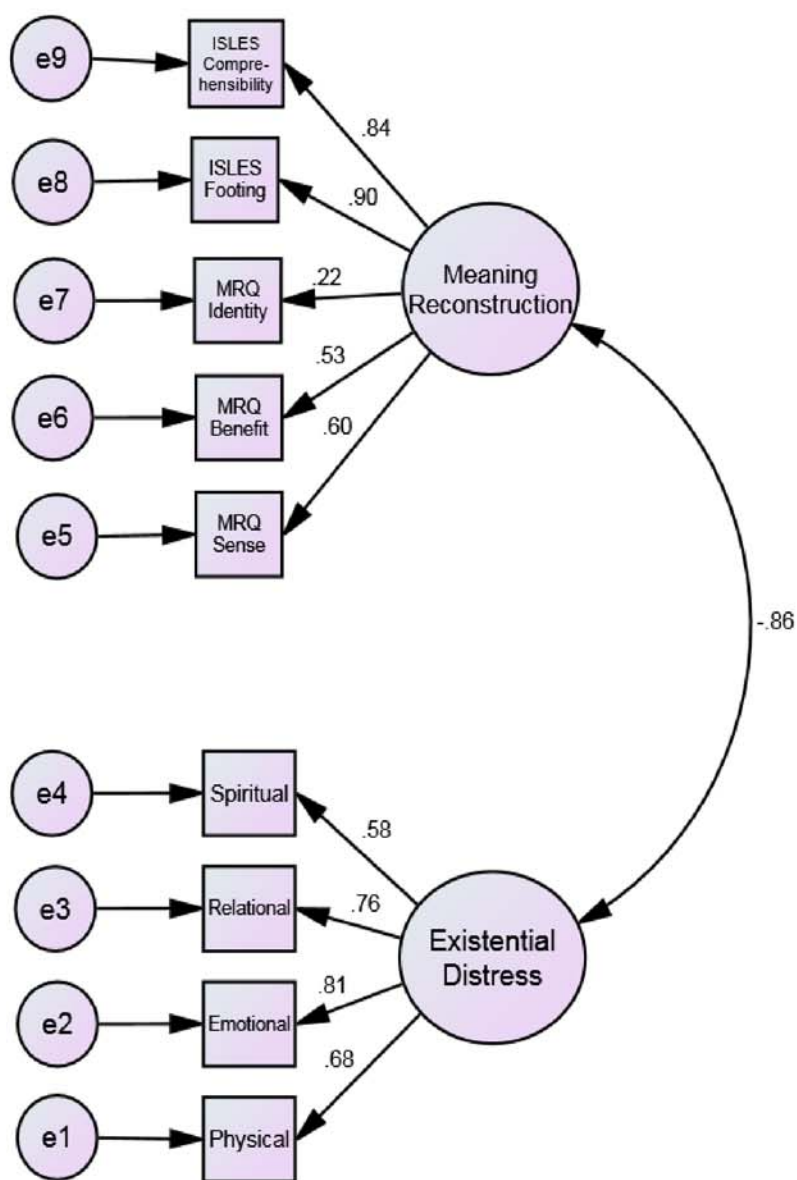


Figure 4: Results from the a-priori measurement model for Rogers's (2001, 2007) Existential – Constructivist Theory of Suicide

Note: $\chi^2 = 83.86$, $p < .001$, CFI = .92, NFI = .88, RMSEA = .11, SRMR = .06

The results indicated that the model was a poor fit to the data, overall. The goodness of fit statistics were as follows: $\chi^2 = 83.86$, $p < .001$, $NC = 2.95$, $CFI = .92$, $NFI = .88$, $RMSEA = .11$, $SRMR = .06$.

To further evaluate the model fit, I examined the factor loadings and modification indices. The factor loading for MRQ identity (.22) was smaller than the recommended value of .30. Thus, I chose to remove this item from my measurement model (Kline, 2011). Evaluation of the modification indices for my model indicated significant error covariances between e5 (MRQ-Sense) and the other meaning reconstruction indicators including e6 (M.I. = 6.86), e7 (M.I. = 10.96), e8 (M.I. = 10.72) and e9 (M.I. = 16.95). Modification indices also suggested a significant covariance between e6 and e7 (M.I. = 14.84). Scholars indicate that modification indices should be examined with caution and that researchers should only make modifications consistent with theory to prevent artificially inflating model fit (Brown, 2015; Iacobucci, 2009; Kline, 2011). Further, scholars suggest that error terms only be allowed to covary when there is a strong theoretical rationale for doing so (Aish & Joreskog, 1990; Byrne, 2010; Gerbing & Anderson, 1984; Joreskog, 1993; Rubio & Gillespie, 1995). Regarding acceptable theoretical rationales for correlating error terms, Byrne (2010) states that a “type of method effect that can trigger error covariances is a high degree of overlap in item content” (p. 110). In my measurement model of the ECTS, MRQ-sense contains significant overlap in item content with ISLES-comprehensibility. For example, the MRQ-sense item states “*How much sense would you say you have made of these impactful life event(s)?*” and ISLES-comprehensibility item two states, “*I have made sense of these events.*” For this reason, I correlated the error covariances between only

two items, MRQ-sense and ISLES-comprehensibility, and re-estimated the measurement model. I did not correlate additional error terms as suggested by the modification indices because I did not have a specific, strong theoretical rationale for doing so. I have provided the results from the respecified measurement model in *Figure 5 (p. 108)*.

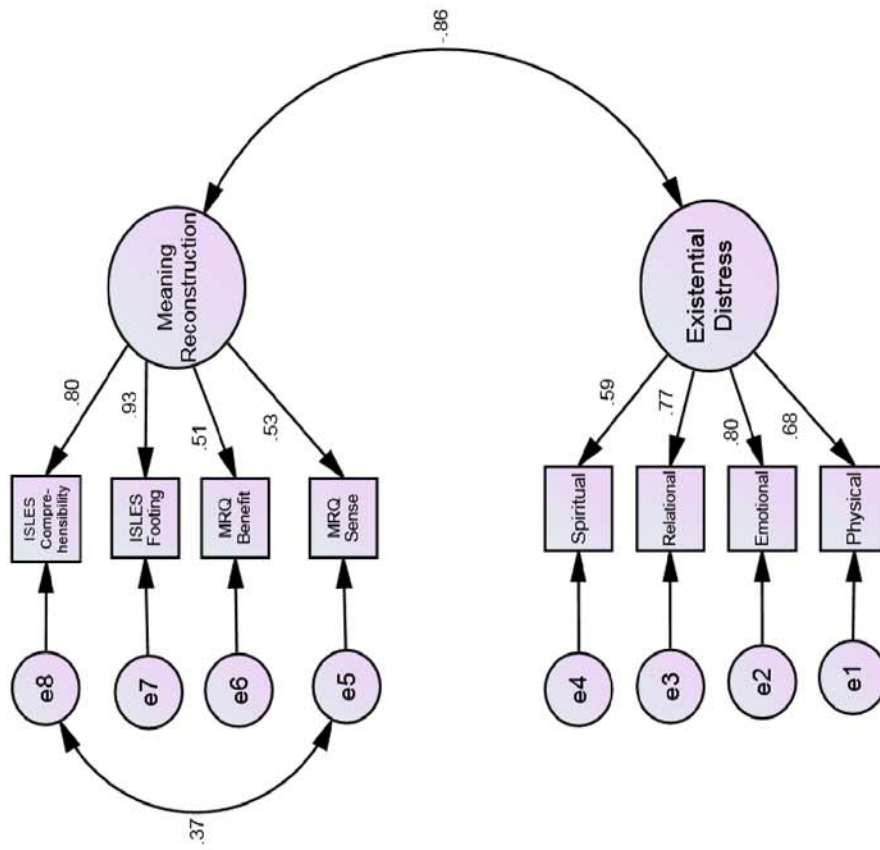


Figure 5: Results from the respecified measurement model for Rogers (2001, 2007) Existential-Constructivist Theory of Suicide

Note: $\chi^2 = 41.87$, $p < .01$, CFI = .97, NFI = .94, RMSEA = .08, SRMR = .04

The results of the respecified ECTS measurement model indicated that deleting the identity change item and covarying e5 with e8 improved the model fit. The goodness of fit statistics were as follows: $\chi^2 = 41.87$, $p = .001$, $NC = 2.32$, $CFI = .97$, $NFI = .94$, $RMSEA = .08$, $SRMR = .04$. I used the respecified measurement model in the ECTS analyses used for this study.

After respecifying the measurement model for my study and reaching an acceptable measurement model-fit, I proceeded to use SEM to test hypotheses 1-3 of this study. As previously described, I used ML to estimate the parameters in the full SEM. Model fit was considered *good* if the chi-square statistic was nonsignificant, the CFI was at or above .95, the NFI was at or above .95, the RMSEA was at or below .08 and the SRMR was at or below .05. Model fit was considered *acceptable* if the chi-square statistic was nonsignificant ($p > .05$) or if the normed chi-square was below 3.0, the CFI was at or above .90, the NFI was at or above .90, the RMSEA was at or below .10, and the SRMR was at or below .08. I have provided the results of the estimation of the SEM model in *Figure 6* (p. 110).

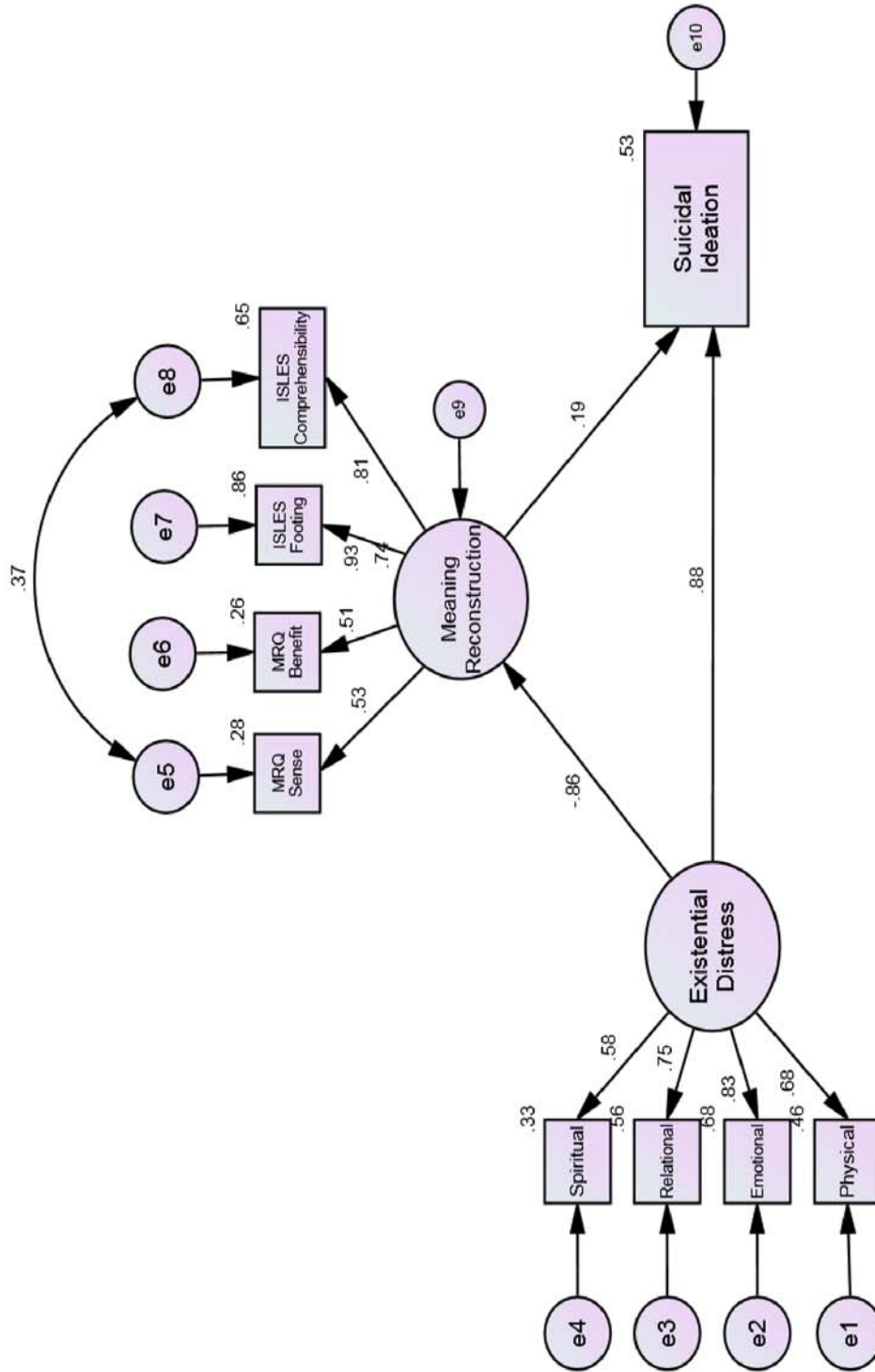


Figure 6. Estimated Full SEM model for Rogers's (2001, 2007) Existential-Constructivist Theory of Suicide
 Note: $\chi^2 = 51.06$, $p = .001$, CFI = .97, NFI = .94, RMSEA = .07, SRMR = .04
 Note: Path coefficients = standardized regression weights

Results from the estimation of the ECTS model indicated that the data fit the model well, overall. The goodness of fit statistics were as follows: $\chi^2 = 51.06$, $p = .001$, $NC = 2.13$, $CFI = .97$, $NFI = .94$, $RMSEA = .07$, $SRMR = .04$. Contrary to expectation, meaning reconstruction was not significantly associated with suicidal ideation ($\beta = .19$, $p = .28$). As expected, existential distress was positively and significantly associated with suicidal ideation ($\beta = .88$, $p < .001$) and existential distress was negatively and significantly associated with meaning reconstruction ($\beta = -.86$, $p < .001$). I did not complete additional tests of mediation for this model, considering the path from meaning reconstruction to suicidal ideation was not significant.

Step 6: Testing the ECTS alternative model. Weston and Gore (2006) describe the sixth and final step of SEM as developing and testing alternative models. Considering that my original ECTS model fit the data reasonably well, but did not conform to expectations regarding Rogers' original theory (i.e., meaning reconstruction did not mediate the relationship between existential distress and suicidal ideation), I proceeded to test an alternative SEM model. I developed the alternative SEM model by considering research suggesting meaning reconstruction is an active process. Specifically, the Alternative ECTS model was modified from the original model by reversing the sequential order of the ECTS variables such that existential distress mediated the association between meaning reconstruction and suicidal ideation.

I developed the Alternative ECTS model based upon theoretical premises of constructivism and research on meaning reconstruction apart from Rogers' ECTS theory (2001, 2007). Rogers (2001) posited that environmental challenges (i.e., stressful life events), themselves, create existential distress which then prompts meaning

reconstruction in order to relieve that distress. However, historical conceptualizations of meaning reconstruction, and recent research, suggest the opposite may be true. That is, an alternative explanation is that individuals are *constantly*, moment-to-moment, interpreting life events according to their core constructions, and it is the *inability to make meaning* (i.e., tension between core constructions and experienced event) that engenders distress regarding those life events (Angus & McLeod, 2004; Parkes, 1988; Neimeyer, 2001). As described by Attig (2002), “[Parkes] urges that we are constantly matching our organized schemas against sensory input in order to orient ourselves, recognize what is happening, and plan our actions” (p. 56). Emerging research suggests that meaning reconstruction is, indeed, an active process. For example, Bucci (2011) asserts that the working memory facilitates the reconstruction of life schemas (i.e., a concept analogous to meaning reconstruction) as an active process. Further, advancements in narrative therapy research suggests that clients’ practice in narrative retrieval of information enhances parietal cortical activity and episodic memory retrieval in the brain, processes which can be tracked in real-time using magnetoencephalography and structured qualitative coding systems (Adenauer et al., 2011; Alves et al., 2014). These findings indicate that Rogers (2001) may have been incorrect. That is, existential distress may not be associated with meaning reconstruction with suicidal ideation through existential distress. Instead, meaning reconstruction may be associated with suicidal ideation through existential distress. Best practices in SEM suggest that it is permissible to modify models (i.e., including sequential order of variable effects), particularly when theories are not well established and there is a strong theoretical rationale (Fritz, Taylor, & MacKinnon, 2012;

Mueller & Hancock, 2008; Tabachnick & Fidell, 2013). I have displayed the results from the examination of the Alternative ECTS Model in *Figure 7* (p. 114).

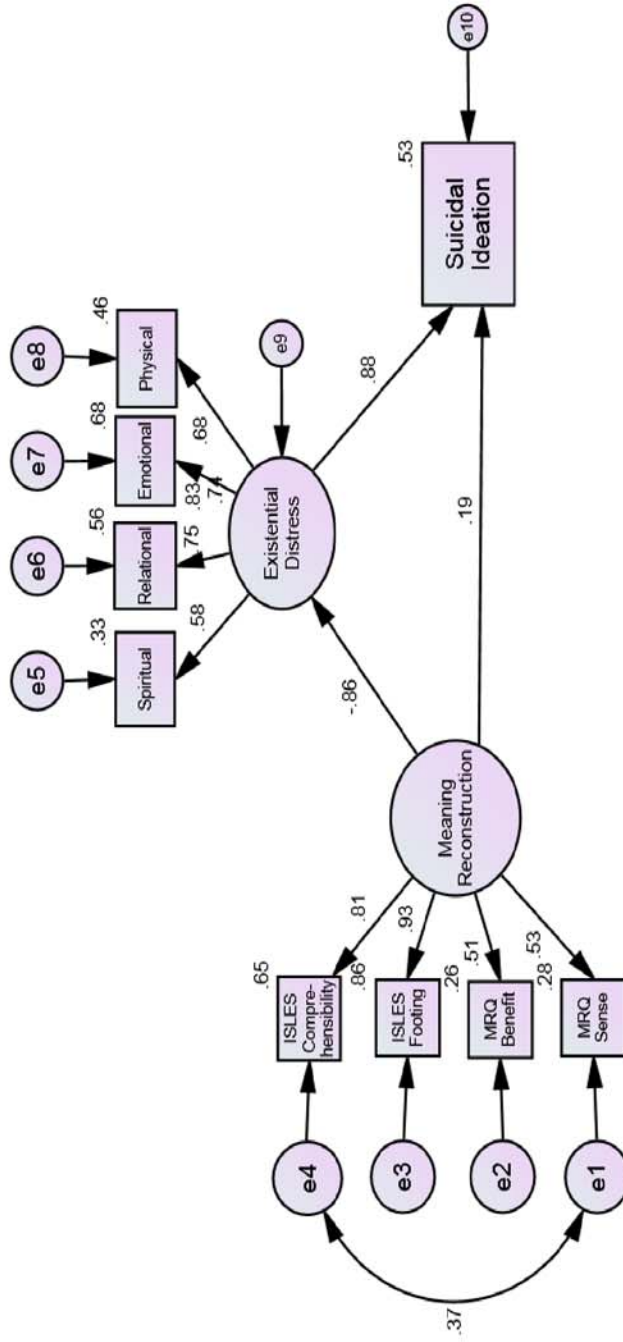


Figure 7. Alternative ECTS Model : Revised Full Structural Equation Model for Rogers's (2001, 2007) ECTS
 Note: $\chi^2 = 51.06$, $p = .001$, CFI = .97, NFI = .94, RMSEA = .07, SRMR = .04
 Note: Path coefficients = standardized regression weights

Results from the estimation of the Alternative ECTS Model indicated that the data fit the model well, overall. The goodness of fit statistics were as follows: $\chi^2 = 51.06$, $p = .001$, $NC = 2.13$, $CFI = .97$, $NFI = .94$, $RMSEA = .07$, $SRMR = .04$. As expected, the model fit of the Alternative ECTS Model was identical to the ECTS model, considering the only difference between these models was the predicted associations among variables (i.e., that the meaning reconstruction would be associated with suicidal ideation through existential distress).

After establishing model fit for the Alternative ECTS Model, I then assessed for mediation using bootstrapping procedures in IBM AMOS 23. I first tested the direct effect between meaning reconstruction and suicidal ideation. With regression weights in the indirect paths in the model constrained to zero, meaning reconstruction, as expected, was negatively and significantly associated with suicidal ideation ($\beta = -.57$, $p < .001$). I then estimated the indirect effects in the model. When all parameters in the model were allowed to load freely, meaning reconstruction was negatively and significantly associated with existential distress ($\beta = -.86$, $p < .001$), existential distress was positively and significantly associated with suicidal ideation ($\beta = .88$, $p < .001$), and the direct effect between meaning reconstruction and suicidal ideation was positive and no longer significant ($\beta = .19$, $p = .28$). Thus, existential distress mediated the association between meaning reconstruction and suicidal ideation. The change in the direction of the association between meaning reconstruction and suicidal ideation, when existential distress was added to the equation, likely indicates that statistical suppression or inconsistent mediation is occurring. Statistical suppression can occur in mediation models, especially when modeling opponent processes (i.e., positive and negative)

simultaneously (Davis, 1985; MacKinnon, Krull, & Lockwood, 2000; MacKinnon, Fairchild, & Fritz, 2007). In this model, inconsistent mediation likely indicates (a) the addition of existential distress to the model mathematically obscures the continued significance of the direct association between meaning reconstruction and suicidal ideation or (b) indicates the presence of other moderator variables not accounted for by the model.

I then evaluated the covariance structures and the variance explained by the Alternative ECTS Model. The estimated Alternative ECTS Model included one error covariance which was statistically significant. That is, MRQ sense-making significantly covaried with ISLES comprehensibility ($\beta = .37, p < .001$). Regarding the variance (R^2) explained by the model, meaning reconstruction explained 74% of the variance in existential distress. In addition, existential distress explained 53% of the variance in suicidal ideation. After accounting for the mediating variable, meaning reconstruction did not explain unique variance in suicidal ideation.

After determining that Alternative ECTS Model was the best fit to the data, with significant paths consistent with emerging research on meaning reconstruction, I proceeded to evaluate the model fit of the ITS. I then compared model fit of the Alternative ECTS Model to the ITS Model.

Comparison of the Alternative ECTS and ITS Related to Suicidal Ideation

My fourth and final research question assessed the model fit of the ITS and then compared the fit of the Alternative ECTS Model to the ITS model. I used SEM to answer this research question. My fourth research question and the associated hypothesis is provided below.

Research Question #4: Which model (i.e., ECTS or ITS) better explains suicidal ideation in college students?

Hypothesis 4: Based on the possible alignment between ECTS and the development experiences of college students, Rogers's (2001) ECTS model will exhibit a better fit to the data than the model representing Joiner's (2005) ITS.

To answer this research question, I followed Weston and Gore's (2006) recommendations to find the best fitting ITS model using the following steps: (a) specified the ITS model, (b) identified model parameters, (c) cleaned the data and prepare for analysis, (d) estimated the model (i.e., using the two-step approach), (e) evaluated the model fit, (f) examined alternate models and model fit. I then compared the model fit of the Alternative ECTS Model to the ITS model using the Akaike information criterion (AIC) and Bayesian information criterion (BIC) of each model.

Step 1: Model specification for the ITS. In the first step, I used the existing literature on the ITS to create an a-priori full structural model (Weston & Gore, 2006). In *Figure 8* (p. 118), I have provided the ITS a priori full structural model I developed for the present study.

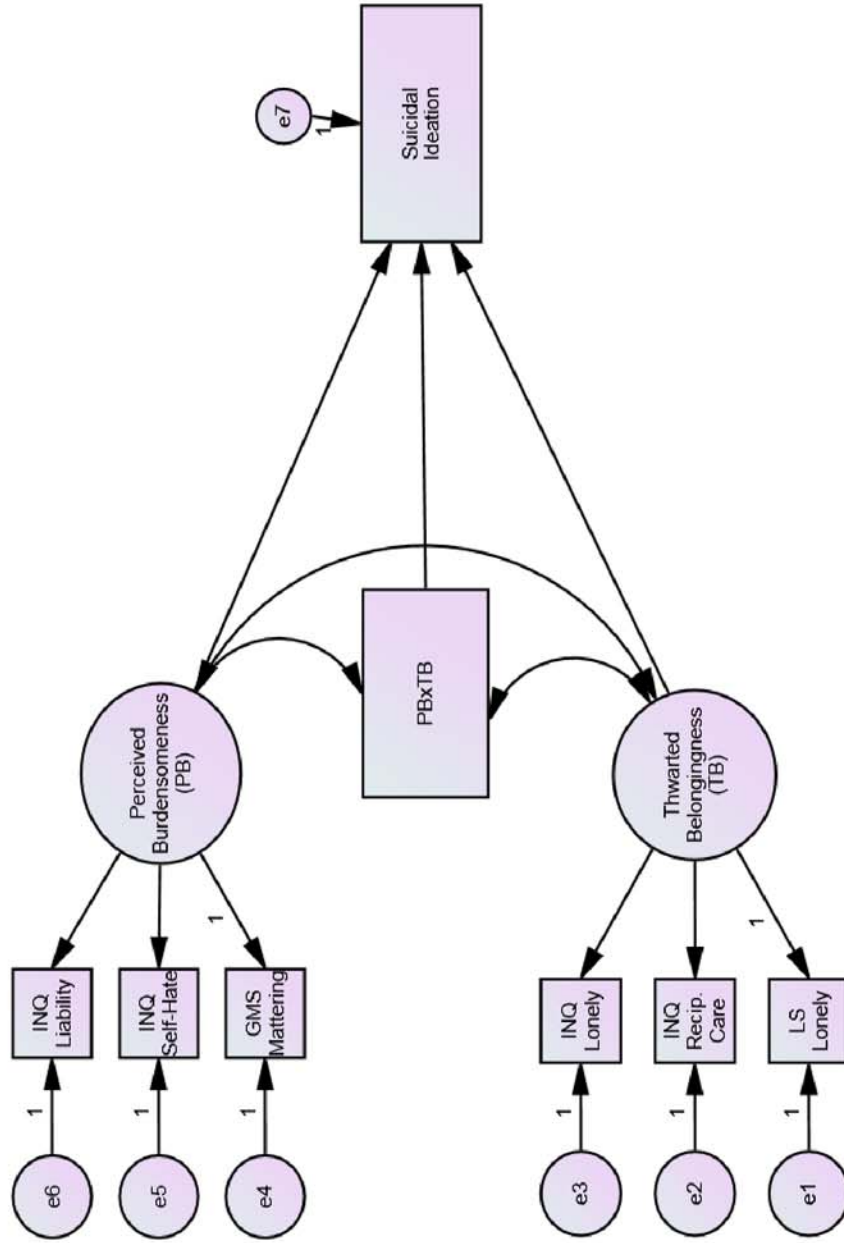


Figure 8. A Priori Full Structural Model for Joiner's (2005) Interpersonal Theory of Suicide

I specified hypothesized relationships among the variables. In my ITS model, I estimated three direct effects (i.e., that perceived burdensomeness, thwarted belongingness, and the PBxTB interaction would each have a direct effect on suicidal ideation. As a metric for the latent variables, I fixed one factor for each latent variable to 1.0. I estimated factor loadings of remaining indicators as free parameters (Kline, 2011). I fixed the value of each error term to 1.0 and then estimated using the variance of that term.

Step 2: ITS model identification. In the second step, I examined model identification indices (Weston & Gore, 2006) for the ITS measurement model of my study. I completed model identification by calculating the degrees of freedom. I calculated the degrees of freedom by subtracting the number of free parameters to be estimated from the total number of observed elements in the model. Specifically, I calculated the number of elements by using the formula $p(p + 1) / 2$ (Kline, 2011; Weston & Gore, 2006). As demonstrated in *Figure 8*, my model contains 8 observed variables. Using the formula $p(p + 1) / 2$, I calculated that there are $(8 [9] / 2 = 36)$ 36 elements in the model. I also calculated the number of free parameters in the model. Specifically, there are 7 error variances, 6 factor loadings, and 3 direct effects, for a total of 16 parameters in my model. By subtracting the free parameters to be estimated (16) from the total number of elements (36), I calculated that there are 20 degrees of freedom in the model. Thus, I determined the model was over identified and could be estimated.

Step 3: ITS data cleaning and screening. In the third step, I cleaned and screened the data (Weston & Gore, 2006). Specifically, I examined the sample size, sample characteristics, multicollinearity, normality, and missing data. I previously

described the procedures I used to examine the sample size, sample characteristics in Chapter 3. In addition, I previously described procedures used to screen the data and prepare for the primary analyses in this chapter (p. 75-85).

Steps 4 and 5: ITS model estimation and evaluation of fit. In the fourth and fifth steps, I estimated the SEM model for the ITS using IBM SPSS AMOS 23 and evaluated the model fit. I used the Anderson and Gerbing's (1988) two-step modeling approach. Specifically, I (a) tested the ITS measurement model using confirmatory factor analysis, making modifications as needed and then (b) tested the measurement and structural portions of the model simultaneously using SEM. I examined both standardized and unstandardized parameter values in the model. I used Maximum Likelihood (ML) procedures to estimate parameters of the SEM model. ML estimation maximizes the likelihood that estimates parameters drawn from the sample represent the greater population (Brown, 2015).

I used confirmatory factor analysis (i.e., CFA) to test the measurement model I developed a-priori to represent the ITS. Specifically, I tested the degree to which observed indicators loaded on their expected latent variables. In my original measurement model of the ITS, perceived burdensomeness was a latent variable with three observed indicators: INQ liability to others, INQ self-hate, GMS mattering. Thwarted belongingness was a latent variable with three observed indicators: INQ-loneliness, INQ-reciprocal care, and the 3-Item loneliness Scale. Based on the ITS, I anticipated a covariance between these two latent variables, which I indicated using a double-headed arrow in my model.

Following the recommendations by Anderson and Gerbing (1988), I presumed the observed indicators to be unidimensional (i.e., load onto one factor). I also represented each latent variable by at least three observed variables. I fixed one factor loading for each latent variable to 1.0. I estimated the remaining indicators as free parameters. I modeled error terms by fixing each error term to 1.0 and then estimating the variance of each term. The a-priori ITS measurement model which I tested using CFA in step 1 is provided in *Figure 9* (p.122).

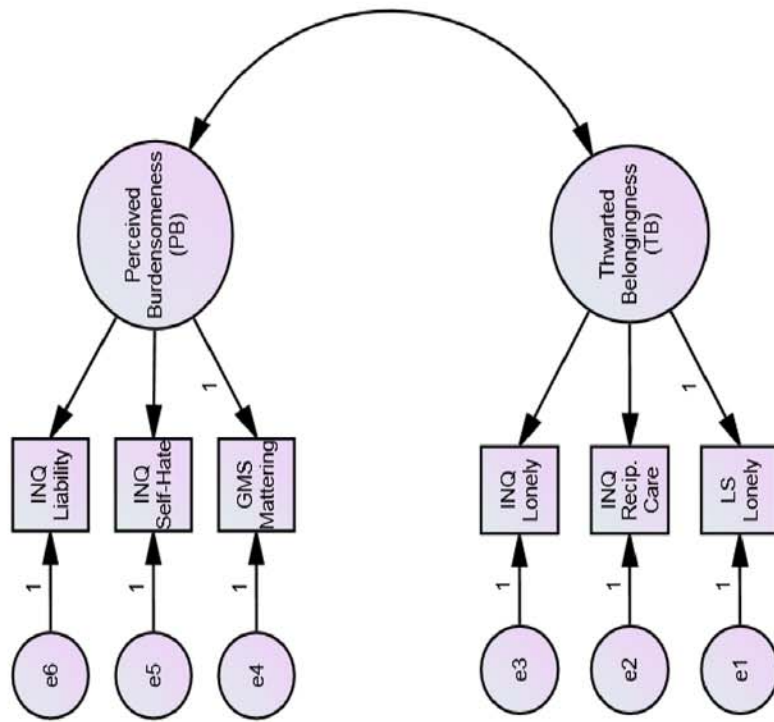


Figure 9. A Priori Measurement Model for Joiner's (2005) Interpersonal Theory of Suicide

To conduct the CFA, I estimated the parameters of the ITS measurement model using ML, and then evaluated the model fit. Model fit is degree to which the hypothesized measurement model accounts for the variance-covariance matrix reproduced by the sample (Brown, 2015). As previously described, model fit was considered *good* if the chi-square statistic was nonsignificant, the CFI was at or above .95, the NFI was at or above .95, the RMSEA was at or below .08 and the SRMR was at or below .05. Model fit was considered *acceptable* if the chi-square statistic was nonsignificant ($p > .05$) or if the normed chi-square was below 3.0, the CFI was at or above .90, the NFI was at or above .90, the RMSEA was at or below .10, and the SRMR was at or below .08. I have provided the results from estimation of the ITS measurement model in *Figure 10* (p. 124).

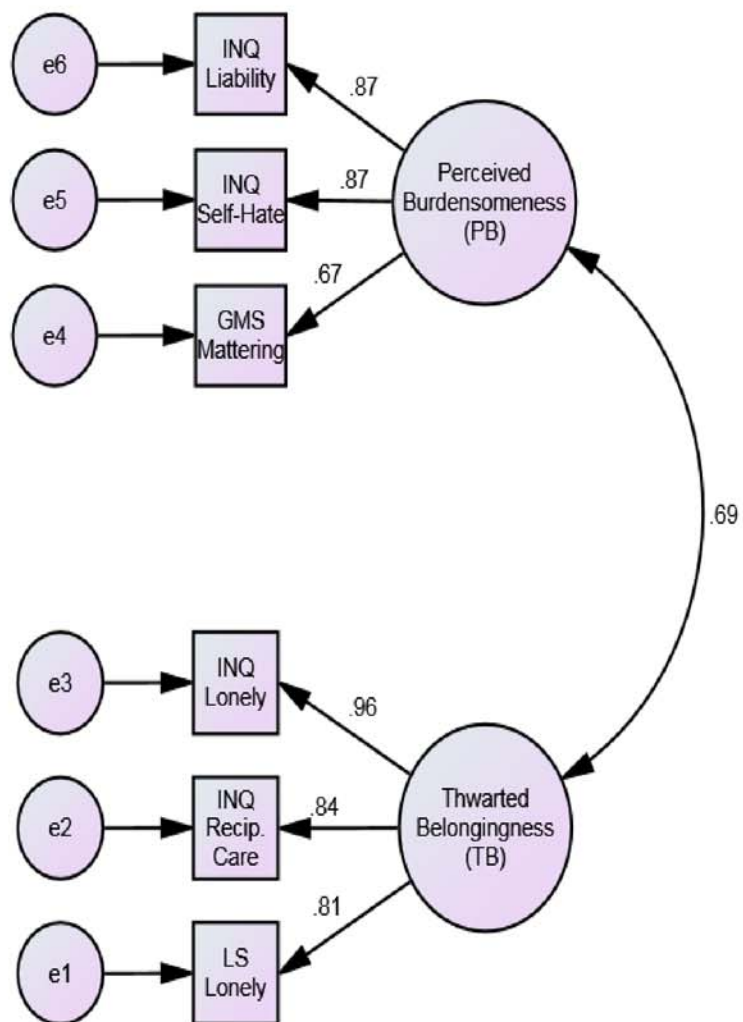


Figure 10: Results from the a priori measurement model for Joiner's (2005) Interpersonal Theory of Suicide

Note: $\chi^2 = 93.49$, $p < .001$, CFI = .90, NFI = .89, RMSEA = .24, SRMR = .11

The results indicated that the model was a poor fit to the data, overall. The goodness of fit statistics were as follows: $\chi^2 = 93.49$, $p < .001$, $NC = 11.68$, $CFI = .90$, $NFI = .89$, $RMSEA = .24$, $SRMR = .11$. To further evaluate the ITS measurement model fit, I examined the factor loadings and modification indices. The factor loadings for all observed indicators in the model were significant ($p < .001$) and greater than .30. Evaluation of the modification indices indicated that GMS mattering loaded significantly on both perceived burdensomeness and thwarted belongingness. More specifically, modification indices indicated a significant error covariances between e4 (GMS Mattering) and LS (MI = 65.1), INQ reciprocal care (MI = 6.75) and INQ lonely (MI = 5.90). Modification indices also indicated significant factor loadings of GMS mattering onto thwarted belongingness (MI = 30.01), INQ loneliness (MI = 30.31), INQ reciprocal care (MI = 33.70) and the LS (i.e., 3-item loneliness scale; MI = 24.09). Because the suggested error covariances and variances were *not* on the factor presumed to be measured by GMS Mattering (i.e., perceived burdensomeness), I did not make these modifications to the a-priori measurement model (Kline 2011). More specifically, I did not make these modifications because they would have gone against best practices for using modification indices in the scholarly literature (Brown, 2015; Kline, 2011). GMS Mattering was not removed from the model because it would have resulted in an unstable factor with fewer than three observed indicators (Brown, 2015; Kline, 2011). There were no other separate measures for perceived burdensomeness in my study which could have replaced GMS Mattering.

Unless the CFA measurement model of an SEM model has adequate model fit, the full structural model will not fit the data (Kline, 2011; Tabachnick & Fidell, 2013).

Thus, I proceeded to develop a new measurement model for the ITS. Specifically, the 18-item INQ used for my study contained items from the 10-item INQ version of the measure. I used individual items from the INQ-10 to re-specify my ITS measurement model. I chose to use individual items from the INQ-10 to re-specify my ITS measurement model because (a) the psychometric properties of the INQ-10 are well established (e.g., Hill et al., 2014; Marty, Segal, Coolidge, & Klebe, 2012) and (b) having five indicators per factor on the ITS preserved model parsimony such that the full SEM model could be compared with the ECTS. In my modified measurement model of the ITS, perceived burdensomeness was a latent variable with five observed indicators (i.e., INQ-18 items 1, 2, 6, 7, 8; Appendix H) and thwarted belongingness was a latent variable with five observed indicators (i.e., INQ-18 items 11, 13, 14, 15, 17; Appendix H). I fixed one factor loading for each latent variable to 1.0. I estimated the remaining indicators as free parameters. I modeled error terms by fixing each error term to 1.0 and then estimating the variance of each term.

I have provided results from the respecified ITS measurement model, which I tested using CFA, in *Figure 11* (p.127).

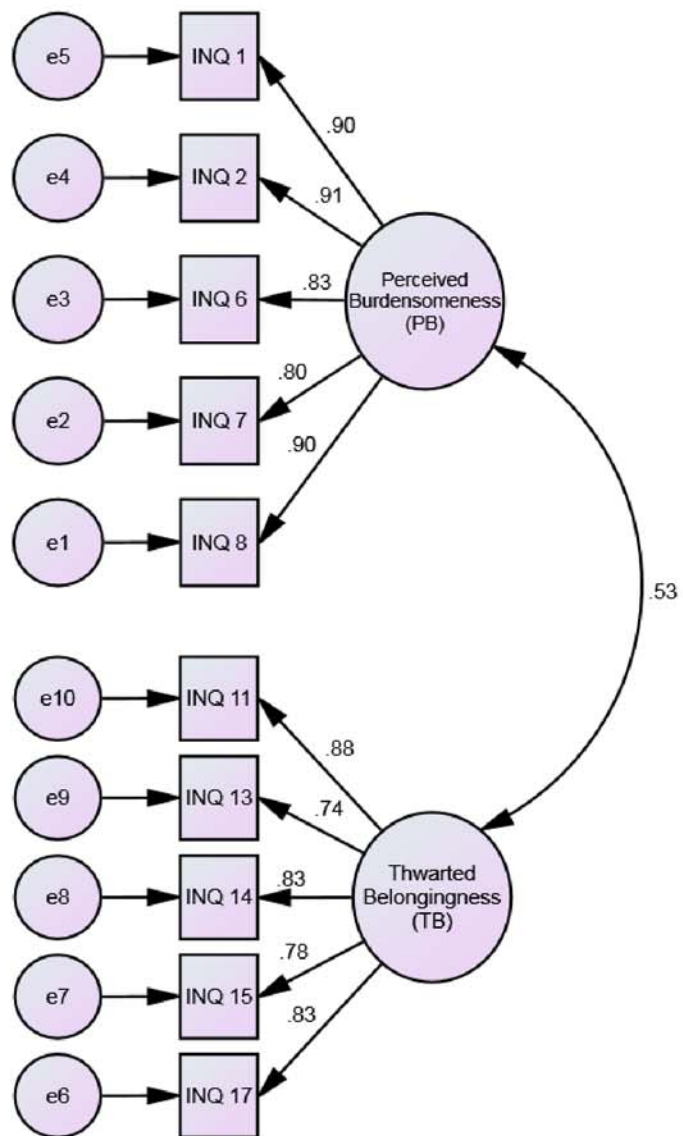


Figure 11. Results from the respecified measurement model for Joiner's (2005) Interpersonal Theory of Suicide

Note: $\chi^2 = 105.5$, $p < .001$, CFI = .95, NFI = .94, RMSEA = .10, SRMR = .05

Overall, the respecified ITS measurement model was an acceptable fit to the data. The goodness of fit statistics were as follows: $\chi^2 = 105.5$, $p < .001$, $NC = 3.12$, $CFI = .95$, $NFI = .94$, $RMSEA = .10$, $SRMR = .05$. I examined the modification indices to assess the degree to which the ITS measurement model could be improved. The two largest modification indices indicated significant error covariances between e7 (INQ TB item 15) and e8 (INQ TB item 14), and between e4 (INQ PB Item 2) and e5 (INQ PB Item 1). I did not make these modifications because (a) multiple psychometric evaluations of these scales do not indicate error covariances between these items and (b) scholars indicate researchers should not use modification indices to make changes unless they are consistent with past research on the scales (e.g., Brown, 2015; Kline, 2011).

After specifying the measurement model for my study and reaching an acceptable measurement model-fit, I proceeded to use SEM to test hypotheses 4 of this study. As previously described, I used ML to estimate the parameters in the full SEM. Model fit was considered *good* if the chi-square statistic was nonsignificant, the CFI was at or above .95, the NFI was at or above .95, the RMSEA was at or below .08 and the SRMR was at or below .05. Model fit was considered *acceptable* if the chi-square statistic was nonsignificant ($p > .05$) or if the normed chi-square was below 3.0, the CFI was at or above .90, the NFI was at or above .90, the RMSEA was at or below .10, and the SRMR was at or below .08. I have provided the results of the estimation of the SEM model in *Figure 12 (p. 129)*.

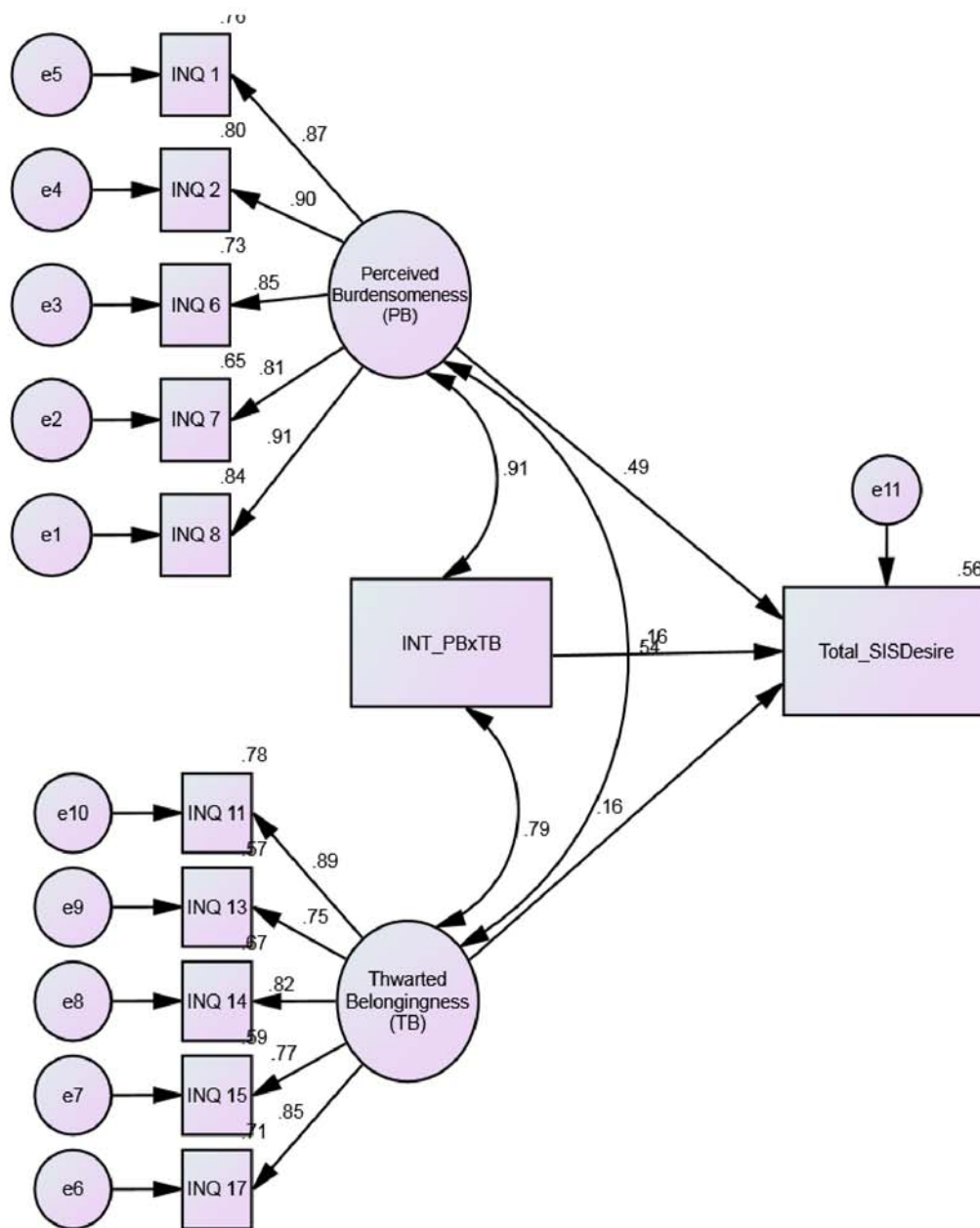


Figure 12. Estimated Full SEM model for Joiner's (2005) Interpersonal Theory of Suicide
 Note: $\chi^2 = 141.95$, $p < .001$, CFI = .96, NFI = .94, RMSEA = .10, SRMR = .04
 Note: Path coefficients = standardized regression weight

Overall, the ITS SEM model was a good fit to the data. The goodness of fit statistics were as follows: $\chi^2 = 141.95$, $p < .001$, $NC = 2.84$, $CFI = .96$, $NFI = .94$, $SRMR = .04$. I examined the modification indices for the ITS SEM model. The modification indices did not suggest any revisions to the paths of the model.

I then examined the strength and direction of hypothesized paths in the ITS SEM model. Perceived burdensomeness was positively and significantly associated with suicidal ideation ($\beta = .49$, $p = .03$). Contrary to expectation, thwarted belongingness was not significantly associated with suicidal ideation ($\beta = .16$, $p = .26$). In addition, the interaction of perceived burdensomeness and thwarted belongingness was not significantly associated with suicidal ideation ($\beta = .15$, $p = .60$). Regarding the variance (R^2) explained by the model, perceived burdensomeness explained 56% of the variance in suicidal ideation.

Step 6: Testing ITS alternative models. I did not test or compare any alternate ITS models for this study, considering that none are implied by theory. In addition, the SEM model for ITS tested in steps one through five was an adequate fit to the data, and could be compared to the ECTS.

In order to fully address research question 4 and to test the associated hypothesis, I compared the model fit of the Alternative ECTS Model to the ITS model. Specifically, I examined the Akaike information criterion (AIC) and Bayesian information criterion (BIC) of each model. The AIC index is frequently used to “select among competing nonhierarchical models estimated with the same data” (Kline, 2011, p. 220). Specifically, the model with the lowest AIC value is considered the most likely to replicate if it were run with future datasets (Bollen, 1989; Kline, 2011). One important aspect of the AIC

index is that it favors model parsimony (Kline, 2011). Whereas model parsimony is useful for statistical modeling, simpler models may not always best represent real-world human behaviors (Kline, 2011). The BIC index is functions similarly to the AIC; however, an important difference is that it expresses the “odds of observing a given set of data under one model versus an alternative model” (Bollen, Harden, Ray, & Zavisca, 2014; Burnham & Anderson, 2004). Lower BIC values indicate better model fit (Bollen, 1989; Kline, 2011). Further, the BIC may be slightly better than AIC (i.e., 70% vs. 60% of the time) in determining the best-fitting model in moderate to large sample sizes (Bollen et al., 2014). AIC and BIC are considered *descriptive* indices of model fit and parsimony, and are not considered a significance test. AIC and BIC values are interpreted in addition to model fit statistics in order to determine which model is the best fit (i.e., limits error and model misspecification) to the sample (Merkle, You, & Preacher, 2016). Whereas a chi square difference test can be used to compare nested SEM models, a significance test to compare non-nested models does not exist (Kline, 2011). Examining AIC and BIC values have been used in other studies to examine which nonhierarchical theoretical model was the best fit to the data (e.g., Bollen et al., 2014; Hyland, Shevlin, Adamson, & Boduszek, 2014; Kline, 2011; Montanaro, Bryan, & Kazak, 2014).

A comparison of model fit statistics (i.e., including AIC and BIC values) for the Alternative ECTS Model and the ITS model is provided in *Table 10*. The AIC (93.06) and BIC (161.80) values for the model representing the Alternative ECTS Model were lower than the AIC (197.95) and BIC (289.59) values for the model representing the ITS model. Thus, in the current sample, the Alternative ECTS Model was a better fit to the data, overall.

Table 10.

Comparison of Goodness of Fit Statistics for best-fitting models of the ECTS and ITS

Model	χ^2	df	CFI	NFI	RMSEA	SRMR	AIC	BIC
Alternative ECTS Model (Rogers, 2001)	51.06 ($p = .001$)	24	.97	.94	.07	.04	93.06	161.80
ITS (Joiner, 2005)	141.95 ($p < .001$)	50	.96	.94	.10	.04	197.95	289.59

Analysis of Associations Among Ostracism, ECTS, and ITS

Following the recommendations of one of my dissertation committee members, I examined associations among ostracism and ECTS variables and ostracism and the ITS variables. Correlations between ostracism and ECTS variables ranged from small to medium in the expected directions (*Table 11*). First, ostracism as OES-ignored was positively associated with spiritual distress ($r = .35; p < .01$), relational distress ($r = .59; p < .01$), emotional distress ($r = .46; p < .01$), and physical health distress ($r = .41; p < .01$). Ostracism as OES-ignored was negatively associated with meaning reconstruction as sense-making ($r = 0.35; p < .01$), benefit finding ($r = .19; p < .01$), identity change ($r = .17; p < .01$), footing in the world ($r = -.43; p < .01$), and comprehensibility ($r = -.37; p < .01$). Ostracism as OES-ignored was positively associated with suicidal ideation ($r = .39; p < .01$). Second, ostracism as OES-excluded was positively associated with spiritual distress ($r = .29; p < .01$), relational distress ($r = .54; p < .01$), emotional distress ($r = .47; p < .01$), and physical health distress ($r = .35; p < .01$). Ostracism as OES-excluded was negatively associated with meaning reconstruction as sense-making ($r = -.24; p < .01$), benefit finding ($r = -.15; p < .01$), identity change ($r = -.23; p < .01$), footing in the world ($r = -.43; p < .01$), and comprehensibility ($r = -.35; p < .01$). Ostracism as OES-excluded was positively associated with suicidal ideation ($r = .44; p < .01$).

Correlations between ostracism and the ITS variables ranged from medium to large in the expected directions (*Table 12*). First, ostracism as OES-ignored was positively associated with ITS perceived burdensomeness ($r = .54; p < .01$), ITS thwarted belongingness ($r = .63; p < .01$), and the interaction of PBxTB ($r = .60; p < .01$). Ostracism as OES-ignored was positively associated with suicidal ideation ($r = .39; p < .01$). Second, ostracism as OES-excluded was positively associated with perceived burdensomeness ($r = .57; p < .01$), ITS

thwarted belongingness ($r = .55; p < .01$), and the interaction of PBxTB ($r = .62; p < .01$). Ostracism as OES-excluded was positively associated with suicidal ideation ($r = .44; p < .01$).

Table 11.

Summary of Bivariate Correlations among Primary Variables for the ECTS and Ostracism

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Spirituality index of well-being (ED)	1												
2. Social connectedness scale (ED)	.46**	1											
3. Psychache scale (ED)	.45**	.62**	1										
4. WHOQOL-BREF Physical Health Sub-scale (ED)	.47**	.53**	.56**	1									
5. MRQ sense-making (MR)	-.35**	-.32**	-.43**	-.26**	1								
6. MRQ-benefit finding (MR)	-.28**	-.26**	-.34**	-.34**	.44**	1							
7. MRQ identity change (MR)	-.09**	-.19**	-.17**	-.17**	-.05	-.11	1						
8. ISLES Footing in the World (MMS)	-.52**	-.63**	-.61**	-.57**	.47**	.46**	.25**	1					
9. ISLES Comprehensibility (MR)	-.38**	-.47**	-.59**	-.46**	.61**	.45**	.20**	.75**	1				
10. OES-Ignored	.35**	.59**	.46**	.41**	-.35**	-.19**	-.17*	-.43**	-.37**	1			
11. OES-Excluded	.29**	.54**	.47**	.35**	-.24**	-.15*	-.23**	-.43**	-.35**	.76**	1		
12. NS-Meaningful Existence	-.41**	-.59**	-.58**	-.42**	.36**	.22**	.20**	.58**	.51**	-.54**	-.50**	1	
13. Suicidal Ideation Scale	.39**	.49**	.65**	.47**	-.30**	-.27**	-.10**	-.54**	-.45**	.39**	.44**	-.49**	1

Note: () = Latent variable. ED = Existential distress; MR = Meaning reconstruction

Note: * = $p < .05$; ** = $p < .01$

Table 12.
Summary of Bivariate Correlations among Primary Variables for the ICTS and Ostracism

Variable	1	2	3	4	5	6	7
1. INQ Perceived Burdensomeness	1						
2. INQ Thwarted Belongingness	.57**	1					
3. INQ PBxTB	.92**	.79**	1				
4. OES Ignored	.54**	.63**	.60**	1			
5. OES Excluded	.57**	.55**	.62**	.76**	1		
6. NS Meaningful Existence	-.55**	-.61**	-.61**	-.50**	-.50**	1	
7. Suicidal Ideation	.71**	.54**	.73**	.40**	.44**	-.49**	1

Note: INQ = Interpersonal needs questionnaire; OES = Ostracism experiences scale; NS = Needs scale
Note: * = $p < .05$; ** = $p < .01$

Summary of Hypotheses Testing Results

In this section, I describe the specific results related to each of the hypotheses.

Hypothesis 1. Hypothesis 1 (H1) was supported. In the ECTS, cumulative existential distress was negatively associated with meaning reconstruction and positively associated with suicidal ideation.

Hypothesis 2. Hypothesis 2 (H2) was supported. In testing the ECTS model, meaning reconstruction was negatively associated with suicidal ideation, and this association was significant.

Hypothesis 3. Hypothesis 3 (H3) was not supported. In testing the a-priori ECTS model, meaning reconstruction did not mediate the relationship between existential distress and suicidal ideation. Thus, the effect of existential distress on meaning reconstruction did not occur through meaning reconstruction. In contrast, subsequent analyses using the Alternative ECTS Model indicated that existential distress mediated the association between meaning reconstruction and suicidal ideation.

Hypothesis 4. Hypothesis 4 (H4) was supported. The Alternative ECTS Model, in which existential distress mediated the association between meaning reconstruction and suicidal ideation was a good fit to the data, and a better fit to the data than the ITS model.

Table 13 provides a complete list of hypotheses and the associated outcome of each hypothesis.

Table 13.

Summary of Hypotheses Testing

# Hypothesis	Hypothesis Statement	Outcome
1	Cumulative existential distress will be negatively associated with meaning reconstruction and positively associated with suicidal ideation	Supported
2	Meaning reconstruction will be negatively associated with suicidal ideation.	Supported
3	The effect of existential distress on suicidal ideation will only occur through its influence on meaning reconstruction (i.e., mediation).	Not Supported
4	The model representing Roger's (2001) ECTS will exhibit a better fit to the data than the model representing Joiner's (2005) ITS.	Supported

CHAPTER V. DISCUSSION

The purpose of this study was to test the predictions of the ECTS and to compare the model fit of the ECTS to the more established ITS. In the past several decades, few theories have been proposed to explain why individuals die by suicide (Joiner, 2005; Lamis & Lester, 2011). Of those theories proposed, few have been tested empirically or have considered the unique aspects of suicidal ideation among college students. Theory development and testing is important, considering that the effectiveness of suicide-related clinical interventions depends upon the degree to which scholars accurately understand the mechanisms which generate suicidal ideation (Prinstein, 2008; Rogers & Benson, 2013). In addition, scholars have proposed that multiple theories of suicidal ideation are needed because theories cannot simultaneously represent the complexity of human behavior while also being parsimonious enough to be studied empirically (Rogers, 2001). Thus, I tested the predictions of the ECTS (and compared the model fit to ITS) while considering how the theory may uniquely explain suicidal ideation among college students.

To achieve my purpose, I analyzed data I collected from 195 college students. Students surveyed reported demographic information, stressful life events experienced within the past 12 months, existential distress (i.e., spiritual, relational, psychological, physical), meaning reconstruction, thwarted belongingness, perceived burdensomeness, and suicidal ideation. I used SEM to answer four research questions associated with the

predictions of the ECTS and ITS and to test their associated hypotheses. Hypotheses 1, 2, and 4 were supported. Hypothesis 3 was not supported; instead, tests of the Alternative ECTS Model indicated that existential distress mediated the association between meaning reconstruction and suicidal ideation.

In this chapter I discuss the results of this study. First, I discuss the primary findings of the study, including outcomes of the hypotheses testing. Second, I provide a summary of the primary, novel contributions of this study to the empirical literature. Third, I offer clinical implications of this study. Fourth, I describe the limitations of this study and offer suggestions for future research. Lastly, I offer a conclusion which summarizes the results and delineates potential future applications of this study.

Primary Study Findings

Evaluation of the Model fit for the ECTS

In this section, I review the outcomes of hypothesized results for the ECTS. Specifically, I review outcomes of each path predicted by the ECTS and I offer rationales for each result based upon existing research literature.

Existential distress and meaning reconstruction. I hypothesized that existential distress would be negatively associated with meaning reconstruction (H1a). H1a was supported; however the direction of variable associations were not as described by Roger's (2001) original theory. Based on principles of existentialism and constructivism, Rogers's ECTS (2001, 2007) proposed that adverse life events engender existential distress, which in turn prompts the need to reconstruct meaning (i.e., in order to resolve the distress). Alternatively, findings from this study suggest that the inability to create meaning (i.e., as sense-making, benefit-finding, comprehensibility, and footing in the

world) prompts existential distress (i.e., Alternative ECTS Model). That is, the ability to reconstruct meaning (i.e. through assimilation or accommodation) may be a determining factor in whether unique individuals experience an adverse life event as existentially distressing (or not). This finding is not surprising and is consistent with emerging research which suggests that meaning reconstruction occurs constantly, moment-to-moment, rather than only being prompted by specific stressful life events. More specifically, constant meaning reconstruction appears necessary in order to sustain a cohesive life narrative (Alves et al., 2014). In addition, research suggests that the inability to make meaning is positively associated with adverse mental health outcomes. For example, the inability to make meaning from a death loss is associated with complicated grief (Neimeyer et al., 2006). I discuss the finding of the direction of variable associations (i.e., including mediation) with hypothesis 3, below (p. 133).

Existential distress and suicidal ideation. I hypothesized that existential distress would be positively associated with suicidal ideation (H1b). H1b was supported and can be understood through the lens of Roger's ECTS theory (2001). Rogers (2001, 2007) proposed that unresolved existential distress engenders suicidal ideation. According to the ECTS, individuals consider suicide as a way to alleviate their existential distress (i.e., as spiritual distress, relational distress, psychological distress, physical distress). Findings from this study suggest that the more college students experience existential distress (i.e. in the domains of spiritual, relational, psychological, physical), the more likely they are to have thoughts of suicide.

Findings from this study are consistent with previous research, which has examined associations among separate domains of existential distress (i.e., spiritual,

relational, psychological, physical health) and suicidal ideation. First, Rogers (2001) theorized that spiritual existential distress occurs when adverse life events challenge core constructions of religious beliefs or values. Past research has supported this premise. For example, Fischer et al. (2016) found that existential distress (as measured by the Spiritual Well-Being Scale; Bufford, Paloutzian & Ellison, 1991) mediates the association between interpersonal violence and suicidal ideation. Second, Rogers (2001) theorized that relational existential distress occurs when interpersonal conflict or relationship dissolution challenges core interpersonal assumptions (e.g., ability to be loved, ability to trust others). Past research supports a positive association between relational distress and suicidal ideation (e.g., Joiner, 2005; Steele et al., 2015). Third, Rogers (2001) theorized that psychological distress occurs when individuals experience mental and emotional anguish associated with unmet intrapersonal needs (i.e., psychache, Schneidman, 1993). Past research supports a positive association between psychological distress and suicidal ideation (e.g., Lamis et al., 2014; Mills et al., 2005; Schneidman 1992, 2005). Fourth, Rogers (2001) theorized that physical health distress occurs when individuals experience adverse life events which challenge core constructions regarding pain, illness, and quality of life. Past research supports a positive association between physical distress and suicidal ideation (e.g., Chen et al., 2012; Igen et al., 2008).

In addition, findings of this study extend previous research by suggesting that (a) existential distress (i.e., as a latent variable comprised of spiritual, relational, psychological, and physical distress) is positively associated with suicidal ideation and (b) existential distress is positively associated with suicidal ideation in college students. Regarding existential distress, findings from this study suggest that multiple risk factors

for suicidal ideation can be adequately captured and measured by the ECTS domains of existential distress. In addition, findings from this study suggest that domains of existential distress are additive in nature and applicable to college students. In addition, findings of this study suggest college students experiencing additive domains of existential distress (i.e., spiritual, relational, psychological, physical health) are more likely to experience suicidal ideation.

Meaning reconstruction and suicidal ideation. I hypothesized that meaning reconstruction would be negatively associated with suicidal ideation (H2). H2 was supported (i.e., Alternative ECTS Model) and is consistent with previous research. Meaning reconstruction is an internal cognitive-affective process in which individuals reconcile challenges to core constructions in order to maintain a coherent life narrative (Neimeyer, 2001). Individuals may reconcile challenges to core constructions through assimilation (i.e., encoding life event into existing core constructions) or accommodation (i.e., creating new or altered core constructions).

Findings from this study add to a nascent, yet growing, body of literature which suggests that meaning reconstruction is a protective factor for suicidal ideation. For example, Rogers (2007) found that suicide notes of persons who died by suicide, compared to persons who attempted suicide with less lethal means, were characterized by a greater number of references to inability to construct meaning. More specific to college students, Holland et al. (2014) found that meaning reconstruction was negatively associated with suicidal ideation after controlling for demographic covariates.

Findings from this study suggest that college students who are able to reconstruct meaning from adverse life event(s) are less likely to experience suicidal thoughts. More

specifically, meaning reconstruction as composed of sense-making, benefit finding, comprehensibility, and footing in the world, is negatively associated with suicidal ideation. It is unclear why the MRQ-identity change element of meaning reconstruction did not share sufficient common variance with the other meaning reconstruction variables in this sample. One possible explanation is that MRQ-identity change is dependent on sufficient time passing since experiencing an adverse life event (Neimeyer, 2001). In my sample, participants responded to meaning made from life events occurring within the past 12 months. For this reason, it is plausible that insufficient time had passed in order for there to be sufficient variation in identity change scores. Lack of variance on this single item could explain the lack of association with other meaning reconstruction variables (e.g., sense-making, benefit finding) in this sample.

Mediating role of meaning reconstruction. I hypothesized that the effect of existential distress on suicidal ideation would only occur through its influence on meaning reconstruction (i.e., mediation; H3). H3 was not supported. In contrast, subsequent analyses suggested that the association between meaning reconstruction and suicidal ideation occurred only through its influence on existential distress (i.e., Alternative ECTS Model).

The finding that meaning reconstruction did not mediate the association between existential distress and suicidal ideation is consistent with emerging research on meaning reconstruction which suggests that (a) meaning reconstruction occurs constantly (i.e. rather than only being prompted by specific stressful life events and (b) the inability to make meaning may prompt existential distress. For example, neurological research suggests that meaning reconstruction is an active process that occurs moment-to-moment

in response to life stimuli (Alves et al., 2014). Further, research on meaning reconstruction in grief suggests that it is the *inability to make meaning* (i.e., tension between core constructions and experienced event) that engenders distress and mental health symptoms regarding those life events (Angus & McLeod, 2004; Neimeyer, 2004; Parkes, 1988). For example, Neimeyer, Baldwin, and Gillies (2006) found that sense-making and identity change were negatively associated with complicated grief following the death of a loved one.

Comparison of the ECTS and ITS Related to Suicidal Ideation

In this section, I review the outcomes of hypothesized results for the ITS. I also review the outcomes of comparing the model fit of the ECTS to the ITS. I offer rationales for each result based upon existing research literature. I hypothesized that the statistical model representing Roger's (2001) ECTS would exhibit a better fit to the data than the model representing Joiner's (2005) ITS (H4). H4 was supported. More specifically, the Alternative ECTS Model and ITS model were both a good fit to the data. However, the Alternative ECTS Model (i.e., as indicated by AIC and BIC values) was more parsimonious and a better fit to the data, overall. In addition, all predicted pathways in the Alternative ECTS Model were statistically significant with moderate to large effect sizes. In contrast, two predicted pathways of the ITS (i.e., thwarted belongingness and PBxTB) were not significantly associated with suicidal ideation.

It is unclear why pathways predicted by the ITS were not statistically significant in this college sample. In select studies of the ITS, thwarted belongingness was not associated with suicidal thoughts (Bryan et al., 2010; Buitron et al., 2016; Hill & Pettit, 2012). For example, Monteith et al. (2013) found that thwarted belongingness only

predicted suicidal ideation at high levels of perceived burdensomeness. Further, Ploskonka and Servaty-Seib (2015) found that only thwarted family belongingness (i.e., as opposed to peer and institution belongingness) was positively associated with suicidal ideation in college students. Because students in this sample represented several areas of majority identity (e.g., mostly Caucasian, heterosexual, ages 18 - 25), it is possible that this reduced variance in scores of thwarted belongingness. Thus, consistent with past research on thwarted belongingness, samples of college students which are more representative of intersections of diversity may yield a positive, significant association between thwarted belongingness and suicidal ideation.

It appears that the current study is the first to compare the model fit of the ECTS to the ITS in the same sample. There are several possible reasons why the Alternative ECTS Model was a better fit to the data than the ITS model. First, the ECTS includes both interpersonal and intrapersonal variables associated with suicidal ideation. That is, the ECTS may better fit the data overall due to the fact that it is more comprehensive. Second, based on Arnett's (2001) research on emerging adulthood, it is possible that the ECTS better describes suicidal ideation in college students, considering that it focuses on the importance of meaning reconstruction. Because college students are developmental novices at constructing meaning and their identities are still forming, the inability to make meaning may be particularly associated with existential distress and suicidal ideation during the college years. Third, the ECTS may be viewed as the better model fit, considering that AIC and BIC indices favor model parsimony. However, scholars have cautioned that more parsimonious statistical models do not necessarily accurately represent the complexity of life, such as contributions to suicidal ideation (Kline, 2011).

Fourth, although the ECTS was a better fit to the data in this sample, it is important to note that the ITS did not fit the data as well as anticipated based on numerous past research studies, particularly considering that TB and the interaction of TBxPB were not significantly associated with suicidal ideation. Thus, it is entirely possible that the “better model” fit statistics observed in this sample may not replicate in future samples, and additional research is needed.

Primary Contributions of this Research

In this section, I briefly provide an overview of the major contributions of this research. First, a major contribution of this research is preliminary evidence supporting the ECTS as a viable theory of suicidal ideation. As previously described, theory development related to suicidal ideation is lacking and few theories propose specific mechanisms associated with preventing suicidal ideation. This study adds to theory development in suicidology by proposing meaning reconstruction as a unique mechanism which may distinguish who among individuals experiencing stressful life events may be most likely to develop suicidal ideation.

Another significant contribution of this study was laying foundations for how the ECTS may be applied in suicide prevention efforts and clinical interventions. That is, because meaning reconstruction likely includes sub-sets of skills (e.g., emotion-identification, identification of core values and constructions) which can be taught, future suicide prevention programs may target meaning reconstruction skills in entire populations (e.g., at college orientation intake) in order to *prevent* suicidal ideation before it occurs. In addition, preliminary evidence supporting the ECTS in this study provides a new pathway for evaluating clinical interventions which include a meaning-

reconstruction component. That is, preliminary support for the ECTS in this study suggests that modifications to existing treatments which include a narrative-retelling component (e.g., Attempted Suicide Short Intervention Program, Narrative Exposure Therapy, Cognitive Processing Therapy) may be particularly effective for suicidal clients who are struggling to reconstruct meaning from adverse life events. Additional research on these interventions could lead to additional evidence-based practices for treating suicidal college students in clinical care.

Lastly, this study provides a foundation for future research on the ECTS, which is perhaps timely in the field of suicidology as a whole. That is, recent developments in suicidology (i.e., since 2014) have focused on (a) incorporating suicide attempt survivors' voice into the AAS professional organization and peer-support interventions (National Action Alliance for Suicide Prevention, 2014), (b) delivering best-practice interventions according to the Zero Suicide in Healthcare framework (Hogan & Grumet, 2016), and (c) a focus on "upstream" public health suicide prevention approaches (Knox, Conwell, & Caine, 2004). Specifically, the ECTS could be used a theoretical framework to understand the unique meanings suicide attempt survivors construct from their attempt experiences, and how these meanings contribute to suicide attempt survivor identity development and readiness for public disclosure/activism. With regard to the Zero Suicide in Healthcare movement, which involves a distinct focus on evidence-based practices, the ECTS could provide a theoretical framework for testing clinical interventions which target suicidal thoughts directly (i.e., through meaning reconstruction). With regard to upstream suicide prevention approaches, the ECTS could be used a theoretical model to develop intervention programs that teach college students

meaning reconstruction skills, such that individuals are more equipped to construct meaning (and reduce suicidal ideation) across the lifespan. That is, this study provides preliminary support for the ECTS, which can be used as a theoretical framework for research in public health prevention and clinical treatment contexts.

Clinical Implications

Considering the lack of empirically tested theories to guide preventative and treatment interventions for suicidal ideation, this study adds to the literature on clinical interventions by offering preliminary support for a modified model of Rogers's ECTS (2001). Further, preliminary support for the modified ECTS model suggests a new mechanism for suicide prevention and clinical treatment—meaning reconstruction following adverse life events. Below, I describe clinical implications for this study. Specifically, I describe how counseling psychologists can apply the ECTS when functioning in preventive, educative/developmental, and remedial roles (Gelso & Fretz, 2001; Jordaan, Myers, Layton, & Morgan, 1968).

Clinical Implications for Prevention

Counseling psychologists can apply the constructs of the Alternative ECTS when working in preventive roles by promoting social messaging and campus culture congruent with (a) anticipating stressful life events in college and (b) normalizing meaning reconstruction as a primary task of the college years. That is, the more counseling psychologists can promote sense-making and benefit finding among college students, the less likely students may be to experience existential distress. Less existential distress could, in turn, prevent suicidal thoughts from forming in the first place.

Counseling psychologists working in a preventative role may provide early interventions and psychoeducation aimed to curtail the development of problems warranting clinical attention. For example, considering previous research which supports the role of social media in suicide prevention (e.g., Lai, Maniam, Chan, & Ravindran, 2014; Robinson et al., 2016), counseling psychologists could use the results of this study to develop online messaging (e.g., university website) and media campaigns to help students anticipate experiencing stressful life events in college and to accurately self-assess when they need to seek help. Such messaging may create a counter-narrative to many students' beliefs about college (e.g., "best time of our lives," "I need to have my life figured out by now"). For example, brief tweets or email messages from the university such as "*Sometimes Life doesn't Make Sense: There's Help When Your Stressed*" may help normalize adverse life events and meaning reconstruction processes as part of the college experience and promote students' seeking early treatment (i.e., before experiencing severe existential distress/suicidal ideation).

Counseling psychologists working in a preventative role may also provide early education programs (e.g., during orientation, first year seminars) aimed to teach students meaning reconstruction skills which students could then use to incorporate adverse life events into their emerging life narratives. Considering college students tend to think dichotomously in early adulthood, engaging students in exercises which help them anticipate adverse life events and possible meanings made from those life events may prevent or reduce suicidal thoughts (Perry, 1999). Such early intervention education programs may also assist students in developing a growth mindset, which includes beliefs that intelligence and attributes are not fixed, but rather grow through learning, failure, and

continued effort (Dweck, 1975; Blackwell, Trzesniewski, & Dweck, 2007). Developing a growth mindset may assist students in being able entertain a variety of possible meanings from adverse life events, rather than fixating on negative self-attributes which may be associated with self-hate and hopelessness, known risk factors for suicide.

Clinical Implications for Education and Development

Counseling psychologists working in educative and developmental roles on college campuses can develop brief interventions and workshops to train college students in meaning reconstruction skills. Counseling psychologists working in educative and developmental roles seek to enhance skills such that counseling-related and crisis interventions are not needed (Gelso & Fretz, 2001). Findings from this study suggest that enhancing students' capacity for meaning reconstruction (i.e., in the forms of sense-making, benefit-finding, footing in the world, and comprehensibility-related skills) is likely to prevent existential distress, and in turn, suicidal ideation. Based on the existing literature, skills which may support meaning reconstruction include the ability to identify central values, articulate core constructions (i.e., about the self, others, world) and anticipate stressful life events that may challenge them, and identify emotions in response to stressful life events (Gillies & Neimeyer, 2006; Gundel, O'Connor, Littrell, Fort, & Lane, 2003; Neimeyer, 2006). Thus, brief interventions and workshops which (a) teach students meaning reconstruction skills, (b) teach students to recognize early warning signs of existential distress and suicidal ideation in themselves and peers, and (c) provide campus resources (e.g., Counseling Center) for support may help decrease suicidal thinking among students. Such brief interventions for students could be included as part of new student orientation programs. In addition, staff who routinely interact with

students (e.g., campus health clinic staff, professors, resident assistants) could be taught specific strategies for helping student reconstruct meaning so they can identify (e.g., recognize language students may use when they are having difficulty reconstructing meaning), support (e.g., model ways of constructing meaning and fitting difficult life events into existent or new life narratives), and refer students at early stages of meaning reconstruction processes. Such brief and supportive interventions may deter students from experiencing acute forms of existential distress and suicidal ideation.

Clinical Implications for Remediation

Counseling psychologists working in remedial roles (i.e., roles which focus on mental health symptom reduction; Gelso & Fretz, 2001) can apply the results of this study by implementing clinical interventions with college students that focus on (a) enhancing meaning reconstruction and (b) reducing cognitions of perceived burdensomeness. Specifically, results of this study suggest that meaning reconstruction is negatively associated with existential distress and existential distress is negatively associated with suicidal ideation. Thus, clinical interventions which prompt college students to reconstruct meaning by making sense of stressful life events, finding benefit in life events, comprehending how the life events “fit” and “don’t fit” into their conceptualizations of self and the world, and regaining footing in the world are likely to reduce suicide risk.

Psychologists providing treatment in college counseling centers, can facilitate meaning reconstruction among their clients using a variety of theoretical orientations. First, considering that meaning reconstruction involves reconciling adverse life events with core beliefs (e.g., ISLES items 4, 6), cognitive behavior therapists could assist

clients by helping them identify and modify schemas associated with the self, world, and others. More specifically, Padesky (1994) suggests that CBT therapists can help clients modify core schema by charting core schema on an adaptive continuum (e.g., “I am 80% unlovable by peers, but only 30% unlovable by family), keeping a positive data log (i.e., evidence for/against schema being true), or engaging clients in psychodrama (i.e., role-playing early childhood experiences in order to reorganize or create new schema).

Second, considering that meaning reconstruction involves the ability to maintain values and goal-directed, purposeful behavior consistent with one’s life narrative (i.e., ISLES items 11, 14), acceptance and commitment therapists can support clients by (a) engaging them in values clarification tasks and (b) teaching mindfulness skills. Mindfulness skills, specifically, may aid clients in pursuing goal-driven behavior despite strong emotions.

Third, considering that meaning reconstruction involves the ability to maintain a coherent sense of self despite adverse life events (e.g., ISLES items 3, 12), object relations therapists can assist clients in meaning-making by using the alliance as a venue to give interpersonal feedback about the clients’ unique strengths and abilities, and how these may help the client persist in goal-directed behavior despite adverse life events.

One evidence-based treatment approach which may be particularly aligned with the tasks of meaning reconstruction is narrative exposure therapy (i.e., NET; Schauer, Shauer, Neuner, & Elbert, 2011). NET was developed as a treatment protocol for posttraumatic stress disorder and depression (e.g., after rape, combat-related PTSD). The treatment protocol could easily be enhanced to focus more specifically on reducing suicidal ideation associated with existential distress. Specifically, NET engages clients by working collaboratively with them to construct a “lifeline” timeline of impactful life

events. Consistent with helping clients examine and modify core schema, NET therapists work collaboratively with clients to re-narrate sensory information (e.g., smell, sight), cognitions, emotions, and physiological experiences associated with specific impactful life events. Consistent with values clarification, NET helps clients articulate and define core values, including how these values may be different since the traumatic or adverse life event. Consistent with helping clients maintain a coherent sense of self, NET allows clients to deeply examine idiosyncratic meanings of life events in the context of their life story. Thus, counseling psychologists could use NET to help clients process impactful life events and memories which are directly associated with existential distress (i.e., spiritual, relational, psychological, physical health) and suicidal ideation.

Considering that findings from this study also support ITS (i.e., perceived burdensomeness), psychologists providing treatment in college counseling centers could also use treatment approaches which focus on reducing perceptions of burdensomeness. For example, Heisel, Talbot, King, Tu, and Duberstein (2015) suggest that interpersonal psychotherapy (i.e., IPT) is an evidence-based treatment approach can be adapted to clinical populations to reduce perceptions of burdensomeness. For example, IPT therapists can listen for themes of perceived burdensomeness associated with IPT problem areas (i.e., grief, role transitions, role disputes, interpersonal deficits). IPT therapists can also work with clients to identify individuals in their interpersonal spheres who *may* and *may not* consider them a burden, in order to reduce cognitive misperceptions and increase social support.

Threats to Validity and Limitations

The present study has several limitations. The limitations of this study can be grouped into four primary categories including (a) research design and statistics, (b) measurement, and (c) sample and generalizability. I discuss specific limitations within each category.

Research Design and Statistics

With regard to the study design, the true nature of associations among variables observed in my study may be obscured due to the cross-sectional design. Cross-sectional designs, unlike experimental designs, cannot determine causal associations among variables (Heppner, Wampold, & Kivlighan, 2008; Johnson, Burke, & Christensen, 2012). In addition, cross-sectional designs represent the single point in time in which data is collected. Therefore, cross-sectional designs cannot determine the causal order of variables or how those associations may change over time (Shadish, Cook, & Campbell, 2002). For this reason, researchers often rely on theory to determine the sequential order of mediating variables in SEM Models (Byrne, 2010; Kline, 2001). With regard to my study, the research design did not account for the fact that meaning reconstruction often occurs over time and is not a linear process. In addition, cross-sectional designs may underestimate the associations among risk factors and adverse health outcomes (i.e., incidence-prevalence bias; Merrill, 2015), which is particularly problematic since suicide has such a low base rate. That is, epidemiological data associated with suicide suggests that suicide risk factors (including adverse life events) which occur repeatedly and across time are associated with higher death rates; however, my study design did not account for effects of inability to make meaning over time or existential distress over time.

Further, this study is limited according to the statistical analysis used. Although SEM is useful for examining the underlying associations among variables, the analysis is limited by pre-determined theoretical assumptions (Bollen, 1989; Byrne, 2010; Kline, 2011). Especially considering the lack of previous research on the ECTS using quantitative methods, my study does not represent temporal associations among variables as they occur in applied contexts. SEM is also limited as modeling tool. As previously described, indices of model fit (e.g., AIC, BIC) depend in part on model parsimony; yet, simple models do not always describe complex human thoughts and behaviors. Further, as in this study, modeling two positive associations and one negative association (as the ECTS in this study) can create a statistical suppression effect mathematically. That is, although these variables may actually have positive and negative associations with one another in real-life, modeling them statistically without knowing all moderating or confounding variables, can obscure the observation of the exact relationship between variables (Cheung & Lau, 2008). Nonetheless, researchers suggest that SEM is a useful tool for exploring associations among variables when theory is lacking or conflicting (Behrens, 1997; Marsh, Morin, Parker, & Kaur, 2014).

Measurement

The present study is limited by measurement limitations. Three of the four measures I used to represent existential distress in the ECTS measurement model were reverse-scored, which may have introduced measurement error. One of the measures chosen to represent constructs of the ECTS (i.e., Spirituality Index of Well-being) had not previously been used in (a) studies examining suicide risk or (b) studies involving college students. In addition, to decrease participant attrition and to reduce the number of items in

this study, I chose to use select subscales of select measures (i.e., Spiritual Index of Well-being life scheme subscale; Suicidal Ideation Subscale) rather than the full scale scores that have more established psychometric properties. I also altered the language used in two of the scales (i.e., ISLES, MRQ) to account for the fact that ECTS proposes that more than one life event may contribute to existential distress and subsequently, to suicidal ideation. Although these measures (i.e., ISLES, MRQ) have previously been used in research assessing suicidal ideation (e.g., Holland et al., 2014; Lockman & Servaty-Seib, 2016), these measures had not been used prior to this study in their modified forms (i.e., asking about more than one stressful life event). Lastly, the suicidal ideation scale (i.e., SIS) used in this study does not differentiate between passive, active, and chronic suicidal ideation, limiting the interpretability of the results of this study.

Sample and Generalizability

The present study is also limited by factors associated with the sample and sampling procedure, and therefore, limited in terms of the generalizability of the findings. My participants were recruited from Purdue University which is a research-focused land grant university. Therefore, my sample does not represent college students who attend other type of institutions (e.g., liberal arts institutions, community colleges). My sample is also limited geographically to the Midwestern United States and may not represent students who self-select to attend college in other regions of the country. In addition, my study does not represent emerging adults who do not attend college, a sub-population with a higher suicide rate than their college-attending peers (Curtin, Warner, & Hedegaard, 2016). Considering that African American and Hispanic students were underrepresented in my sample, this study may not fully represent college students who

identity with these racial and ethnic groups. Further, only 16% of students in my sample identified with one or more sexual-orientation minority statuses (e.g., gay, lesbian, asexual); thus, my study does not fully represent sexual minority students, who have a higher rate of suicide than their heterosexual peers.

The data collected by this study can be generalized to college students and not to other adult populations who are at comparatively higher risk for suicide (e.g., emerging adults not attending college, adults being treated for mental illness, middle-aged adults, older adults; Curtin et al., 2016). The demographic characteristics of my sample included lower representation of African American ($n = 5$; 3%) and Hispanic ($n = 5$; 3%) students compared to the national averages, suggesting that results of this study may not generalize to underrepresented minority college student groups. In addition, the theories examined in this study (i.e., ECTS, ITS) were developed and previously examined in the United States, suggesting that the outcomes of this study may not universally apply to all college students.

Regarding the sampling procedure, I collected data for this study using internet-based recruitment tools. Recruiting participants online may have biased the sample towards students who have ready access to personal computers (Sax, Gilmartin, & Bryant, 2003). Further, because I recruited students via a convenience sample, my sample may be biased due to self-selection. Indeed, the greatest rate of attrition in this study occurred when asking students to rank stressful life events experienced ($n = 99$). Thus, it is possible that students who experienced distress in college were more inclined to participate.

Regarding possible sampling bias, students who participated in this study were recruited via an email invitation entitled *Adverse Life Events and Distress in College*. It is possible that students who did not perceive themselves as distressed did not participate in this study. However, considering the normal distribution of variables representing existential distress and suicidal ideation, effects of the title of the recruitment email appear to be minimal. Comments made by students, although anecdotal in nature, suggest that the sample included both students who perceived themselves in low distress (i.e., questioning whether their data would be helpful to the purpose of the survey) and high distress (i.e., fear of disclosure of suicidal ideation, even anonymously).

Implications for Future Research

Future research is needed to more fully understand the appropriate application of ECTS and ITS with college students, the potential intersections of these theoretical approaches to understanding suicidal ideation, and the degree to which the ECTS, specifically, generalizes to other populations at risk for suicide. Implications for future research include recommendations for (a) research design, (b) measurement, (c) theory development and testing, and (d) sampling. I discuss specific research recommendations within each category below.

Research Design

Regarding research design, future researchers could use longitudinal repeated measures designs to examine the temporal order and associations among ECTS variables. That is, having multiple data collection time-points would allow researchers to better understand temporal fluctuations in state-like ECTS variables and thresholds at which these variables (e.g., inability to create meaning, existential distress) are most associated

with suicidal ideation and behaviors. More specifically, longitudinal designs could assist researchers in understanding the temporal associations among ECTS variables, such as the degree to which the inability to reconstruct meaning engenders existential distress. Longitudinal designs would allow researchers to account for the fact that the tasks of meaning reconstruction (i.e., assimilation, accommodation) occur across time and are rarely a linear process (Neimeyer, 2001; Shadish et al., 2002). As an example, researchers could survey college students at five separate time-points in an academic year, asking them each time to respond to the questionnaire while thinking of the stressful life events(s) indicated during the baseline survey. In addition, cross-sequential research designs could include samples of college students at multiple time-points throughout the lifespan to determine if students' meaning reconstruction skills developed during college are negatively associated with suicidal ideation and behaviors later in life (e.g., middle-adulthood, older adulthood).

More research is needed to understand the processes and mechanisms involved in meaning reconstruction. Thus, qualitative and mixed method research designs could assist in understanding *how* college students reconstruct meaning from adverse life events and covariates (e.g., social support) which may support this process. Because meaning reconstruction involves idiosyncratic re-interpreting of adverse events for each person, qualitative research designs may help researchers understand mechanisms associated with meaning reconstruction in individuals. For example, college students who are suicide attempt survivors could be asked to write a narrative of their experiences leading up to their suicide attempt, and qualitative analysis could be used to understand (a) facilitators and barriers of meaning reconstruction and (b) meanings made from the attempt. Mixed

method designs could be used to triangulate qualitative themes from suicide attempt narratives with suicide prevention outcomes (Creswell & Clark, 2011). For example, a sequential mixed methods design could be used to identify mechanisms of meaning reconstruction in a small sample (i.e., qualitative) and then evaluate the degree to which those mechanisms of meaning reconstruction (and their association with preventing suicidal ideation) applies to the greater population (i.e., Creswell & Clark, 2011; Leech & Onwuegbuzie, 2007).

Research designs could be used to assess the degree to which intervention programs focused on meaning reconstruction prevent suicidal ideation and behaviors. For example, using a nonequivalent comparison group design (Johnson et al., 2012; Shadish et al., 2002), researchers could implement an educational workshop aimed to support college students in meaning reconstruction skills (e.g., insight into core constructions, ability to identify emotions and cognitions associated with adverse life events), and then compare outcomes (e.g., meaning made, existential distress, suicidal ideation) to college students not receiving the workshop. As an alternative, researchers could also use an interrupted time series design to assess meaning made and decreases in suicidal ideation after receiving interventions aimed to support individuals in meaning reconstruction skills.

Researchers could also use experimental designs (e.g., randomized control trials; RCTs) to examine the efficacy of clinical interventions which focus on meaning reconstruction as a primary mechanism of treating suicidal ideation in clients. For example, researchers could use RCTs to compare narrative exposure therapy (NET) vs. treatment as usual) on suicide-specific outcome variables (e.g., PHQ-9 scores, suicidal

ideation, number of attempts within 12 months of treatment). In addition, researchers could examine meaning reconstruction as *a central mechanism of change* in future RCTs involving narrative treatment interventions. As an example, the Applied Suicide Short Intervention Program (i.e., ASSIP) is a three-session short-term intervention for inpatient patients who have attempted suicide (Konrad & Gysin-Maillart, 2015). In ASSIP, there is a central focus on the suicide attempt survivor sharing his or her own suicide attempt narrative from beginning to end, without interruption. Although existing research provides preliminary support for the effectiveness of ASSIP (Gysin-Maillart, Schwab, Sorovia, Megert, & Michel, 2016), the specific mechanisms of change which drive the effectiveness of this intervention are unknown. It is possible that meaning reconstruction is a central mechanism of change which occurs during the process of clients sharing the story of their attempt, and can be examined in future RCTs involving ASSIP and other narrative-focused treatment interventions.

Measurement

Additional measure development is needed to accurately assess ECTS constructs. For example, future researchers could consider developing a single instrument to assess the four component processes of existential distress (i.e., spiritual, relational, emotional, and physical distress) rather than using four separate scales (as in this study). A single instrument assessing the existential distress component of the ECTS would assist research by being (a) more parsimonious, (b) less time consuming to administer, (c) using the same measurement scale for all items (e.g., 1-5 Likert-type scale), and (d) including items that are worded toward distress (i.e., rather than using health-related items and reverse-scoring, as in the present study). Having a single, validated scale to measure the

existential distress component of the ECTS would assist researchers in being able to assess the ECTS in various populations and compare outcomes across those populations.

In addition, future researchers could consider developing additional scales of search for meaning and meaning reconstruction. Regarding searching for meaning, research by Davis et al. (1998, 2000) indicates that not everyone reports searching for meaning, and in fact, prolonged efforts to make sense from adverse life events may contribute to difficulty adjusting to them. Despite emerging evidence that not all individuals report searching for meaning, research on meaning reconstruction often does not assess for the degree to which individuals engage in meaning reconstruction processes. In my study, I used a single, binary item to assess for search for meaning from adverse life events, which is the same item previously used by Davis et al. (2000). However, considering that meaning reconstruction processes likely occur on a continuum, future research could benefit from developing a continuous, multi-item scale that assesses for the degree individuals search for meaning, at least, to the degree they are consciously aware of these processes (Appendix R). A multi-item scale assessing varying degrees searching for meaning may yield more reliable results across studies, making outcomes easier to interpret.

Regarding meaning reconstruction, in order to identify which of the components of meaning reconstruction (i.e., sense-making, benefit-finding, identity change) have the strongest negative association with meaning reconstruction, future scales could expand the MRQ by adding more than one item per factor. That is, a multidimensional MRQ scale (i.e., assessing sense-making, benefit-finding, identity-change) with a greater number of items per factor, would likely have stronger psychometric properties and

increase accurate assessment across samples. In addition, although ISLES includes a distinct focus on sense-making, having a multidimensional scale that focuses equally on benefit-finding and identity change may be useful to researchers. For example, an MRQ or ISLES scale which includes distinct factors for sense-making, benefit-finding, and identity-change, along with a higher-order factor of overarching meaning made would allow researchers to examine both within a single scale. Further, researchers could develop an MRQ or ISLES scale that is specific to the meaning reconstruction processes most associated with suicidal ideation, considering that these factors may be somewhat different than those most associated with grief and bereavement.

In addition, considering that a statistical suppression effect was observed in the ECTS, future research can further examine the nature and implications of this effect. For example, future researchers could reverse-score meaning reconstruction items, such that the latent variable represents the *inability to make meaning*. Reverse-scoring all items would ensure all paths in the mediation model had hypothesized negative associations, which could prevent statistical suppression from occurring. In addition, researchers could examine moderator variables not included in the ECTS model assessed in this study, which may reduce the statistical suppression effect. For example, considering that meaning reconstruction may be facilitated in part through relationships (i.e., others assisting in sense-making, benefit-finding), the effect of meaning reconstruction on suicidal ideation may be moderated by belongingness. Additional research could identify and examine possible moderator variables not included in this ECTS model in order to further understand the relationship between meaning reconstruction and suicidal ideation.

Lastly, the suicidal ideation scale (i.e., SIS) used in this study does not differentiate between passive (i.e., infrequent thoughts, low intensity), active (i.e., frequent thoughts, high intensity), and chronic (i.e., frequent thoughts over months/years; fluctuating intensity) suicidal ideation which limits the interpretability of the findings of this study. Considering that the ratio of suicidal thoughts to behaviors is not 1:1, future researchers should develop and use scales which measure suicidal ideation as a dynamic, multifaceted construct. Such scales may increase the ability for researchers to understand what types and levels of suicidal ideation are most associated with suicide attempts and behaviors in college students.

Theory Development and Testing

The outcomes of this study have direct implications for future research on the ECTS. First, future studies could examine whether additional types of existential distress are salient for specific populations at risk for suicide. For example, in this study college students' endorsed academic major/career indecision and academic setback as their two most impactful stressful life events (*Table 3*, p. 58) experienced in the past 12 months. Thus, future studies could examine the degree to which adding a career-transition variable to the existential distress component of the ECTS increases variance explained in suicidal ideation. Considering that career/work-related transitions are associated with suicidal ideation in other adult populations (e.g., retirement in older adulthood), adding a career-distress component of the ECTS may increase the predictive validity of the theory and the generalizability of the theory across the lifespan.

Second, future research could examine combined models of the ECTS and ITS. For example, considering that in this study ISLES meaning reconstruction was negatively and significantly associated with thwarted belongingness ($r = .61, p < .001$) and perceived burdensomeness ($r = .50, p < .001$), meaning reconstruction may prevent cognitive-affective ITS states (i.e., perceived burdensomeness, thwarted belongingness) that may be more proximally associated with suicidal ideation. Future research could use SEM to further explore directions and associations among ECTS and ITS variables to develop a more comprehensive, combined theory. Future research could also examine how ECTS and ITS variables may interact with mental health disorders (e.g., depression, anorexia nervosa) to produce suicidal thoughts and behaviors. A notable challenge of testing combined theories of ECTS and ITS, is that SEM relies on *existing* theory to determine how variables may be associated with one another and predict outcomes, and no such literature or speculation exists. However, future researchers could conduct multiple studies to understand the associations among ECTS and ITS variables in order to then develop and test an empirically-driven combined model. Considering that ECTS and ITS variables appear to be associated with suicidal thoughts, a combined theory may have greater predictive validity and generalizability across samples.

Third, future research could examine the degree to which each of the theories (ECTS, ITS) may benefit from the inclusion of ostracism. Specific to the ECTS, college students who are ostracized may experience difficulty reconstructing meaning. That is, meaning reconstruction occurs via intrapersonal process (e.g., self-reflection and construction of beliefs about the self, others, world) and via interpersonal processes (e.g., others sharing core beliefs similar to or different from our own). Individuals who are

ostracized may have more difficulty making meaning because they must rely only on internal mechanisms to evaluate and reconstruct meaning. Thus, future studies could examine ostracism as a moderator of meaning reconstruction in the ECTS.

Specific to the ITS, previous research has suggested that individuals are most likely to ostracize others when they are an actual, rather than perceived, burden to others (Wesselmann, Wirth, Reeder, & Williams, 2015). Thus, individuals who are ostracized after being/becoming a burden may be more likely to experience the co-occurrence of perceived burdensomeness and thwarted belongingness. Because ostracism involves being actively shunned by others, in contrast to more passive isolation, individuals who experience ostracism, in addition to higher levels of thwarted belongingness and perceived burdensomeness, may endorse more frequent, intense, or chronic suicidal ideation. Thus, future research could examine the associations among types of burdensomeness (e.g., perceived, actual), ostracism, thwarted belongingness, and suicidal ideation.

Sample and Sampling Procedure

Regarding sample composition, future research examining the ECTS could include college students representing various intersections of multicultural diversity (i.e., age, sex, racial/ethnic identity, sexual orientation, geographic region represented, and type of institution). That is, the sample used in this study does not likely represent all college students and more research is needed to understand the degree to which the findings of this study generalize to college students outside of the Midwestern United States. Collecting data from a larger, more heterogeneous sample would allow for researchers to compare invariance of the ECTS theory across sub-populations represented

on college campuses (e.g., ethnic racial majority vs. underrepresented minority students; heterosexual vs. LGBTQ students).

Regarding sample size, future research examining the ECTS could use additional strategies to recruit a diverse sample of college students. For example, future studies could include more than one method of recruiting students (e.g., phone, flyers, facebook, snowball sampling, more than one campus). Offering additional gift card incentives may also bolster participation. Regarding sample retention, comments offered by participants in this study indicated that (a) some items (e.g., ranking of adverse life events) did not work well via cell or tablet and (b) multiple items asking about distress may have been experienced as “sad” or “dark” to some students. Thus, future researchers could take care to examine all mobile versions of surveys, and pilot test them with students, to ensure they work as anticipated. Further, future researchers could use real or benign items, more likely to evoke positive emotions (e.g., hopefulness, plans for the future) in order to bolster retention of participants through the entire survey. Randomizing the order of the measures may assist with reducing the effect of positively vs. negatively worded measures. Having fewer items, overall, would also likely bolster participation.

Future researchers could examine the ECTS theory with samples other than college students, some of whom are at higher risk for suicide. For example, in this study I assumed, based on existing literature, that the ECTS might explain suicidal ideation in college students because they are developmental novices at interpreting stressful life events which challenge core beliefs (Arnett, 2001). It would be helpful for future research to test the predictions of the ECTS in emerging adults who are not enrolled in college, considering that they have a higher rate of suicide. In addition, it could be beneficial to

compare ECTS outcomes in college students to other populations with a higher suicide rate (e.g., older adults) to determine if the ECTS functions as population-specific or universal theory of suicide. For example, the ECTS may explain suicidal ideation in younger adults because they are developmental novices at meaning reconstruction. In contrast, the ECTS may explain suicidal ideation in older adults considering that core beliefs may be less flexible, and therefore may prevent assimilation or accommodation of adverse life events. Further, the ECTS may explain suicidal ideation in older adults, considering life circumstances (e.g., physical health decline) may be perceived as less amenable to change (and therefore, increased hopelessness associated with existential distress). In addition, future researchers could test the predictions of the ECTS in clinical samples such as adults being treated for a mental illness, or individuals who survived a suicide attempt. Examining the ECTS in populations other than college students would be an important step in determining the degree to which the ECTS should be understood as a population-specific vs. universal theory of suicide.

Conclusion

In this study, I examined the predictions of the ECTS in college students ($n = 195$) and compared the statistical model fit of the ECTS to the more established ITS. Theory development in suicidology is important, considering that few established theories exist to differentiate between who develops suicidal ideation following stressful life events (Prinstein, 2008; Rogers & Benson, 2013). Although the results of this study did not support Roger's original model of the ECTS, results did support an Alternative ECTS Model. More specifically, the results indicated that meaning reconstruction (i.e., as sense-making, benefit-finding, identity-change, footing in the world, comprehensibility)

is negatively and significantly associated with suicidal ideation, and that this association is mediated by existential distress. That is, college students who are able to reconstruct meaning following a stressful life event may be less likely to experience existential distress, and in turn, less likely to experience suicidal ideation. Examination of model fit indicated both models were a good fit to the data; however, the ECTS was a better fit to the data in this sample than the ITS overall.

This study provides preliminary support for the ECTS; however, this study has notable limitations. Specifically, the low response rate to the survey (i.e., only 9% participated, 5% retained in final sample), and sample composition (i.e., predominantly Caucasian, heterosexual) limits the generalizability of this study and the degree to which findings may be replicated in more diverse samples. In addition, although the ECTS exhibited a better model fit to the data than the ITS, this result *may* be more associated with the sample than the constructs included in each model. That is, thwarted belongingness and its interaction with perceived burdensomeness were not associated with suicidal ideation in this sample, which is inconsistent with past studies on the ITS. Future studies which compare the ECTS and ITS may find that the ITS is a better fit to the data when it functions as it has in previous samples. Further, since this study is the first to quantitatively test the assumptions of the ECTS, it is uncertain the degree to which confounding (e.g., need to “escape” existential distress) or moderating variables not accounted for in this study may have obscured study outcomes. Overall, in this study, both models demonstrated a good fit to the data, indicating value for research and practice. Each theory appears to uniquely explain aspects of suicidal ideation.

Additional research is needed to understand the role of meaning reconstruction as a preventative mechanism for suicidal ideation. Future research could use longitudinal designs to examine the degree to which meaning reconstruction changes over time, and whether meaning reconstruction is distally or proximally associated with suicidal ideation. Future research could also examine the efficacy of “upstream” suicide prevention programs designed to teach meaning reconstruction skills to college students, and the degree to which these interventions prevent future suicidal ideation. Future research could also examine the effectiveness of “downstream” clinical treatments for suicidal college students which include a meaning reconstruction component (e.g., ASSIP, Narrative Exposure Therapy). Replications and extensions of this study to other high-risk populations (e.g., emerging adults not in college, middle-aged adults, older adults) would assist in establishing the degree to which ECTS (a) compares to the ITS and (b) can be understood and applied as a universal (vs. college-student specific) theory of suicide. If future research supports the ECTS, counseling psychologists may use the theory in developing suicide prevention programs and clinical treatment interventions for college students.

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APPENDICES

APPENDIX A. DEMOGRAPHIC AND BACKGROUND QUESTIONNAIRE

1. Please provide your age in years: _____

2. How do you identify:
 - Female
 - Male

3. With the understanding that these categories might be limiting, how do you typically describe yourself (select all that apply):
 - African American, of African descent, African, of Caribbean descent, or Black
 - Asian or Asian American
 - Hispanic, Latino, or Latina (e.g., Cuban American, Mexican American, Puerto Rican)
 - Middle Eastern or East Indian (e.g., Pakistani, Iranian, Egyptian)
 - Native American (e.g., Dakota, Cherokee) or Alaskan Native
 - Native Hawaiian or Other Pacific Islander (e.g., Samoan, Papuan, Tahitian)
 - Caucasian, White, of European descent, or European (not of Hispanic origin)
 - Multiracial (Please share which races best represent you): _____
 - Other: (Please describe: _____)

4. Are you an international student?
 - Yes
 - If yes, what is your country of origin?
 - No

5. What is your grade classification?
 - First year undergraduate
 - Sophomore
 - Junior
 - Senior
 - M.S. – Degree seeking student between 18 – 25 years old
 - Ph.D. – Degree seeking student between 18 – 25 years old
 - Non-degree seeking student
 - Other: _____

6. How would you describe your sexual orientation?:
 - Asexual
 - Bisexual
 - Gay
 - Lesbian
 - Heterosexual
 - Questioning
 - Other (Please specify): _____

7. What is your religious or spiritual preference (select all that apply)?

- None
- Agnostic
- Atheist
- Buddhist
- Christian
- Hindu
- Jewish
- Muslim
- Native American Religion
- Unitarian or Universalist
- Other (Please specify): _____

8. How important are your religious or spiritual beliefs to your personal identity?

- | | | | | |
|----------------------|-----|----------------------|-----|----------------|
| (1) | (2) | (3) | (4) | (5) |
| Not at all important | | Moderately Important | | Very Important |

9. To what degree have you questioned or changed your religious or spiritual beliefs since entering college?

- | | | | | |
|------------------------------------------|-----|-----------|-----|------------------------------------------|
| (1) | (2) | (3) | (4) | (5) |
| Significantly less
sure of my beliefs | | No change | | Significantly more sure
of my beliefs |

10. Think of the stressful life events you have **experienced during the past twelve months** (e.g. romantic break-up, death of a parent). Look at the list of adverse life events below. For each event you experienced, use the rating scale provided to indicate how stressful it was for you when it first occurred. Life event items that do not apply to you should be left blank.

- 1=Not at all stressful for me
- 2=Slightly stressful for me
- 3=Moderately stressful for me
- 4=Quite stressful for me
- 5=Extremely stressful for me

- Abortion (self/partner)
- Academic major/career indecision
- Academic setback (e.g. failed course, academic or disciplinary probation)
- Being a victim of crime
- Being a victim of rape
- Conflict with romantic partner/ family member/ close friend
- Death of a family member
- Death of a close friend/other primary relationship
- Drug, alcohol, or gambling problems

13. Thinking about the most impactful life event(s) you have experienced during the past 12 months (just identified on Item 11 on this survey)

a. Have you searched to make sense or find purpose in these impactful life events?

Yes

No

APPENDIX B. SPIRITUALITY INDEX OF WELL-BEING

Which response best describes how you feel about each statement?

- _____ 1. I haven't yet found my life's purpose.
- _____ 2. I don't know who I am, where I came from or where I am going.
- _____ 3. I have a lack of purpose in my life.
- _____ 4. In this world, I don't know where I fit in.
- _____ 5. I am far from understanding the meaning of life.
- _____ 6. There is a great void in my life at this time.

Note: Life Scheme subscale of the SIWB. Item answer options, 1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree

APPENDIX C. THE SOCIAL CONNECTEDNESS SCALE

Please indicate how much you agree or disagree with each of the following statements.

Answer Choices:

1	2	3	4	5	6
Strongly					Strongly
Agree					Disagree

Items:

1. I feel disconnected from the world around me.
2. Even around people I know, I don't feel that I really belong.
3. I feel so distant from people.
4. I have no sense of togetherness with my peers.
5. I don't feel related to anyone.
6. I catch myself losing all sense of connectedness with society.
7. Even among my friends, there is no sense of brother/sisterhood.
8. I don't feel that I participate with anyone or any group.

APPENDIX D. THE PSYCHACHE SCALE

The following statements refer to your psychological pain, NOT your physical pain. By circling the appropriate number, please indicate how frequently each of the following occur.

- _____ 1. I feel psychological pain.
- _____ 2. I seem to ache inside.
- _____ 3. My psychological pain seems worse than any physical pain.
- _____ 4. My pain makes me want to scream.
- _____ 5. My pain makes my life seem dark.
- _____ 6. I can't understand why I suffer.
- _____ 7. Psychologically, I feel terrible.
- _____ 8. I hurt because I feel empty.
- _____ 9. My soul aches.
- _____ 10. I can't take my pain anymore.
- _____ 11. Because of my pain, my situation is impossible.
- _____ 12. My pain is making me fall apart.
- _____ 13. My psychological pain affects everything I do.

Note: Item answer options for items 1-9, 1 = Never; 2 = Sometimes; 3 = Often; 4 = Very often; 5 = Always

Note: Item answer options for items 10-13, 1 = Strongly disagree; 2 = Disagree; 3 = Unsure; 4 = Agree; 5 = Strongly agree

APPENDIX E. WORLD HEALTH ORGANIZATION QUALITY OF LIFE SCALE,
BRIEF PHYSICAL HEALTH SUBSCALE

The following questions ask about how much you have experienced certain things in the last two weeks.

1. To what extent do you feel that physical pain prevents you from doing what you need to do?
1 = Not at all; 2 = A little; 3 = A moderate amount; 4 = Very much; 5 = An extreme amount
2. How much do you need any medical treatment to function in your daily life?
1 = Not at all; 2 = A little; 3 = A moderate amount; 4 = Very much; 5 = An extreme amount

The following question asks about how completely you experience or were able to do certain things in the past two weeks.

3. Do you have enough energy for everyday life?
1 = Not at all; 2 = A little; 3 = Moderately; 4 = Mostly; 5 = Completely
4. How well were you able to get around?
1 = Not at all; 2 = A little; 3 = Moderately; 4 = Mostly; 5 = Completely

The following questions ask about how completely you experience or were able to do certain things in the past two weeks.

5. How well were you satisfied with your sleep?
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither satisfied nor dissatisfied; 4 = Satisfied; 5 = Very Satisfied
6. How satisfied are you with your ability to perform your daily living activities?
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither satisfied nor dissatisfied; 4 = Satisfied; 5 = Very Satisfied
7. How satisfied are you with your capacity for work?
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither satisfied nor dissatisfied; 4 = Satisfied; 5 = Very Satisfied

APPENDIX F. MEANING RECONSTRUCTION QUESTIONNAIRE

When completing the following items, please think of the adverse life event(s) that have impacted you the most in the past two years (identified in Item 11 on this survey).

How much sense would you say you have made of these life events?

1	2	3	4
No sense			A good deal of sense

Despite the stress, have you been able to find benefit from your experience of these impactful life event(s)?"

1	2	3	4
No benefit			Great benefit

Do you feel that you are different, or that your sense of identity has changed, as a result of these life events?

1	2	3	4	5
No different				Very different

In what direction has your identity changed?

0	1	2	3
Not applicable	For the worse	Mixed	For the better

APPENDIX G. INTEGRATION OF STRESSFUL LIFE EXPERIENCES SCALE

Please indicate the extent to which you agree or disagree with the following statements with regard to the most stressful life event(s) you experienced in the past twelve months (identified in item # 11 on this survey). Read each statement carefully and be aware that a response of agreement or disagreement may not have the same meaning across all items.

	Strongly Agree	Disagree	Neither Agree or Disagree	Agree	Strongly Disagree
1. Since these events, the world seems like a confusing and scary place.	1	2	3	4	5
2. I have made sense of these events.	1	2	3	4	5
3. If or when I talk about these events, I believe people see me differently.	1	2	3	4	5
4. I have difficulty integrating these events into my understanding about the world.	1	2	3	4	5
5. Since these events, I feel like I'm in a crisis of faith.	1	2	3	4	5
6. These events are incomprehensible to me.	1	2	3	4	5
7. My previous goals and hopes for the future don't make sense anymore since these events.	1	2	3	4	5
8. I am perplexed by what has happened.	1	2	3	4	5
9. Since these events have happened, I don't know where to go next in my life.	1	2	3	4	5
10. I would have an easier time talking about my life if I left these events out.	1	2	3	4	5
11. My beliefs and values are less clear since these events.	1	2	3	4	5
12. I don't understand myself anymore since these events.	1	2	3	4	5
13. Since these events, I have a harder time feeling like I'm part of something larger than myself.	1	2	3	4	5
14. These events have made me feel less purposeful.	1	2	3	4	5
15. I haven't been able to put the pieces of my life back together since these events.	1	2	3	4	5
16. After these events, life seems more random.	1	2	3	4	5

Note: Original survey text has been modified from the singular to plural (e.g., "this event to "these events").

APPENDIX H . INTERPERSONAL NEEDS QUESTIONNAIRE - 18

The following questions ask you to think about yourself and other people. Please respond to each question by using your own current beliefs and experiences, NOT what you think is true in general or what might be true for other people. Please base your responses on how you've been feeling recently. Use the rating scale to find the number that best matches how you feel and circle that number. There are no right or wrong answers. We are interested in what you think and feel.

1	2	3	4	5	6
Not at all			Somewhat		Very

- _____ 1. These days, the people in my life would be better off if I were gone.
- _____ 2. These days the people in my life would be happier without me.
- _____ 3. These days, I think I have failed the people in my life.
- _____ 4. These days I think I am a burden on society.
- _____ 5. These days I think I contribute to the well-being of people in my life.*
- _____ 6. These days I feel like a burden on the people in my life
- _____ 7. These days I think the people in my life wish they could be rid of me.
- _____ 8. These days I think I make things worse for the people in my life.
- _____ 9. These days I think I matter to the people in my life.*
- _____ 10. These days, other people care about me.*
- _____ 11. These days, I feel like I belong.*
- _____ 12. These days, I rarely interact with people who care about me.
- _____ 13. These days, I am fortunate to have many caring and supportive friends.*
- _____ 14. These days, I feel disconnected from other people.
- _____ 15. These days, I often feel like an outsider in social gatherings.

_____ 16. These days, I feel that there are people I can turn to in times of need.*

_____ 17. These days, I am close to other people.*

_____ 18. These days, I have at least one satisfying interaction every day.*

Note: INQ includes two subscales: Perceived burdensomeness and thwarted belongingness. Items denoted by asterisk are reversed scored.

APPENDIX I. GENERAL MATTERING SCALE

Choose the rating you feel is best for you and select the number provided.

- _____ 1. How important do you feel you are to other people?
- _____ 2. How much do you feel others pay attention to you?
- _____ 3. How much do you feel others would miss you if you went away?
- _____ 4. How interested are people generally in what you have to say?
- _____ 5. How much do other people depend on you?

Note: Item answer options, 1 = Not at all; 2 = A little; 3 = Somewhat; 4 = A lot

APPENDIX J. THREE-ITEM LONELINESS SCALE

The next questions are about how you feel about different aspects of your life. For each one, tell me how often you feel that way.

- _____ 1. How often do you feel that you lack companionship?
- _____ 2. How often do you feel left out?
- _____ 3. How often do you feel isolated from others?

Note: Item answer options: 1 = Hardly ever; 2 = Some of the time; 3 = Often

APPENDIX K. OSTRACISM EXPERIENCES SCALE

Directions: For each of the following statements, please consider your personal feelings. Determine how often, in general, the following experiences happen to you. Just give your gut response.

- _____ 1. In general, others leave me out of their group
- _____ 2. In general, others leave me out of the loop on information that is important to my close relationships.
- _____ 3. In general, others treat me as if I am invisible.
- _____ 4. In general, others give the cold shoulder treatment.
- _____ 5. In general, others physically turn their backs to me when in my presence.
- _____ 6. In general, others treat me as if I'm in solitary confinement.
- _____ 7. In general, others do not look at me when I'm in their presence.
- _____ 8. In general, others ignore me during their conversations.

Note: Item answer options: 1 = Hardly ever; 7 = Almost Always

Note: Directions have been slightly modified from original version.

APPENDIX L. NEED THREAT: MEANINGFUL EXISTENCE SUBSCALE

Directions: For each question below, indicate the number that best represents the feelings you experienced during the most stressful period in the past 12 months (i.e., corresponding to life events you selected on item #11 in this survey).

- _____ 1. I felt invisible
- _____ 2. I felt meaningless
- _____ 3. I felt non-existent
- _____ 4. I felt important
- _____ 5. I felt useful

Note: Item answer options: 1 = Not at all; 5 = Extremely

Note: Directions have been slightly modified from original version.

APPENDIX M. SUICIDAL IDEATION SCALE

For each item, please select the response that best represents the way you have felt within the **past WEEK** (including today). Use a five point scale where: 1= Never; 2= Infrequently; 3= Sometimes; 4=Frequently; 5= Always.

- _____ 1. I just wish my life would end
- _____ 2. I feel life just isn't worth living
- _____ 3. Life is so bad I feel like giving up
- _____ 4. It would be better for everyone involved if I were to die

Note: Response options include: 1 = Never; 2 = Infrequently; 3 = Sometimes; 4 = Frequently; 5 = Always.

APPENDIX N. RECRUITMENT EMAIL

FROM: Jennifer Lockman (jlockma@purdue.edu)
REPLY TO: Jennifer Lockman (jlockma@purdue.edu)
SUBJECT: Survey: Adverse Life Events and Distress in College

Dear Purdue Student,

My name is Jennifer Lockman, and I am a doctoral student in the Counseling Psychology department at Purdue University. I am currently working on a research project with my advisor, Dr. Heather L. Servaty-Seib, that looks at how experiences in college may be related to various forms of existential distress, meaning, and self-harm (including individuals hurting themselves or engaging in self-destructive behaviors). Even if you have never experienced intense distress, your survey answers are still relevant to this study. The outcomes of this survey will help inform college staff of effective ways of supporting college students. If you choose to participate, you will provide all information anonymously (i.e., without your name). Your answers will be kept completely private, and no one will be able to trace your survey responses back to you. This study is approved by the Purdue University IRB Board. This study will be conducted through an on-line survey and should take about 15 - 20 minutes to complete. Participation is voluntary, so you can stop the survey at any time, or skip questions at your discretion.

Four participants will be chosen at random to receive a \$25 gift card to Amazon.com. The odds of winning are dependent on the number of responses received, but are expected to be 1 in 100 or better. To be entered into the drawing for one of four Amazon gift cards, follow the directions provided at the end of the survey. In order to participate in the survey, you **MUST** be an undergraduate or graduate student between 18 and 25 years old. If you would like to participate, please click on the link provided below. (Link Inserted Here)

If you have any questions, please feel free to contact me at jlockma@purdue.edu or my advisor Dr. Heather Servaty-Seib at servaty@purdue.edu.

Thank you for your help,

Jennifer Lockman, M.S.
Doctoral Candidate, Counseling Psychology
Department of Educational Studies
Purdue University

APPENDIX O. REMINDER EMAIL

FROM: Jennifer Lockman (jlockma@purdue.edu)
REPLY TO: Jennifer Lockman (jlockma@purdue.edu)
SUBJECT: Survey: Adverse Life Events and Distress in College

Dear Purdue Student,

One week ago, I invited you to participate in a research study looking at how students experience and make sense of challenging life events, and how their experiences may be related to various forms of distress (including hurting themselves or engaging in self-destructive behaviors). If you responded—thank you!

If you didn't, please consider completing the survey. Even if you have never experienced stressful life events or intense distress, your survey answers are still important and relevant to this study. We know all students are busy, but we hope you will donate about 15-20 minutes of your time to complete this anonymous survey. The outcomes of this survey will help inform faculty and administrators of effective ways of identifying and supporting students experiencing stressful life events. This research study is being conducted by myself and my advisor, Dr. Heather Servaty-Seib, and is approved by the Purdue IRB Board.

Participation is voluntary, so you can stop the survey at any time, or skip questions at your discretion. Four participants will be chosen at random to receive a \$25 gift card to Amazon.com. The odds of winning are dependent on the number of responses received, but are expected to be 1 in 100 or better. To be entered into the drawing for one of four Amazon gift cards, follow the directions provided at the end of the survey.

In order to participate in the survey, you **MUST** be an undergraduate student between 18 and 25 years old. If you would like to participate, please click on the link provided below.

(Link Inserted Here)

If you have any questions, please feel free to contact me at jlockma@purdue.edu or my advisor Dr. Heather Servaty-Seib at servaty@purdue.edu.

Thank you for your help,

Jennifer Lockman, M.S.
Doctoral Candidate, Counseling Psychology
Department of Educational Studies
Purdue University

APPENDIX P. INFORMATION LETTER

RESEARCH PARTICIPANT INFORMATION LETTER
UNDERSTANDING COLLEGE STUDENTS' DISTRESS

Heather L. Servaty-Seib, Ph.D.
Purdue University
Educational Studies

Purpose of Research: The purpose of this study is to learn how experiences in college may be related to various forms of existential distress, meaning, and self-harm (including individuals hurting themselves or engaging in self-destructive behaviors). To participate in this study, you must be an undergraduate or graduate student between the ages of 18 and 25.

Specific Procedures: This on-line survey includes questions focused on background information, existential distress, meaning made of stressful life events, and various forms of self-harm (including thoughts of self-harm, suicide, and/or self-destructive behaviors). Your information is relevant to this study, even if you have not recently experienced stressful life events, or psychological distress. Please complete these forms and click this submit button upon completion. All survey answers will be collected anonymously.

Duration of Participation: This survey will take approximately 15-20 minutes to complete.

Risks: There are no foreseeable risks or adverse effects associated with this study. The risk of participating in this study is considered minimal and no greater than you would encounter in everyday life. Some of the questions in this study ask directly about self-harming thoughts and behaviors such as suicide. It is possible that these questions may be connected with some emotional discomfort for you. If you would like emotional support and related assistance, you can contact a counselor near you by logging on to www.purdue.edu/caps. You may also receive 24-hour assistance by contacting the Lafayette Crisis Center by contacting 1-765-742-0244, the National Suicide Prevention Lifeline by contacting 1-800-273-TALK.

Benefits: There are no obvious personal benefits from participating in this study.

Compensation: By participating in this survey, you will become eligible to participate in a drawing for one of four \$25 Amazon.com gift cards. At the end of this survey, you will be given the opportunity to send an email to jlockma@purdue.edu with the subject line "Participated in Study" and no additional text. If you choose to send this email, you will be entered into a random drawing for this incentive. At the end of this study, four email addresses will be randomly chosen to receive a \$25 gift card. The odds of winning are dependent on the number of responses received, but are expected to be 1 in 100 or better. The persons chosen from this random drawing will receive an email directly from Amazon.com with their gift card information included.

Confidentiality: Your privacy and confidentiality is important to us. You may choose to complete this survey in a private location such that other persons may not view your answers while you complete this survey. The information you submit electronically will be transmitted and stored securely. The online service we use for this survey has SSL encryption for the survey link and survey pages during transmission of information. We will protect your survey responses in multiple ways. We will collect your survey responses anonymously. Your survey answers will not be able to be traced directly to you or your email address. You are not asked to provide your name or any identifying material other than demographic information. All completed forms will be kept in a secure computer database. Only the co-investigators of this study will be able to access the data. Research records in this study may be reviewed by the Institutional Review Board at Purdue University, to ensure that your data is being properly protected. The data from this study will be analyzed collectively, including all responses to this survey. The data collected in this survey will be maintained indefinitely, but any reports, publications, or related documents will be reported on an aggregate (not individual) level.

Voluntary Nature of Participation: Participation in this study is completely voluntary. If you begin participating in this study, you may choose to stop the survey at any time, or skip questions at your discretion, without penalty.

Contact Information: If you have any questions your participation in this study, you may contact Dr. Heather Servaty-Seib (765-494-0837; servaty@purdue.edu) or Jennifer Lockman (615-830-2413; jlockma@purdue.edu). If you have any concerns about your rights as a research participant or participation, you may contact the Purdue University Institutional Review Board using the following information: Purdue University, Ernest C. Young Hall, Room 1032, 155 South Grant St., West Lafayette, IN 47907; 765-494-5942; irb@purdue.edu.

APPENDIX Q. LOG-OUT MESSAGE WITH SUICIDE
PREVENTION/COUNSELING RESOURCES

Thank you for Participating in this Survey!

Please Print this Information Sheet for your Records

Directions for Entering the Amazon.com Gift Card Drawing:

By participating in this survey, you have become eligible to participate in a drawing for one of four \$25 Amazon.com gift cards. If you would like to be entered into the drawing, please send an email to jlockma@purdue.edu with the subject line “Participated in Study” and no additional text. If you choose to send this email, you will be entered into a random drawing for this incentive. At the end of this study, four email addresses will be randomly chosen to receive a \$25 gift card. The odds of winning are dependent on the number of responses received, but are expected to be 1 in 100 or better. The persons chosen from this random drawing will receive an email directly from Amazon.com with their gift card information included.

Distress and Suicide Prevention Resources:

If some of the questions on this survey were stressful for you, or if someone you know is experiencing intense distress or risk for suicide, the following resources may be helpful to you. Trained professionals at each of these organizations can provide a listening ear and/or professional advice. If you feel more comfortable, you may contact these resources anonymously and then provide your identifying information at your discretion. People at these organizations care about assisting you find the resources you need.

A) Purdue University Counseling and Psychological Services (CAPS)

- Located on Campus at Purdue University
- Contacting CAPS is confidential and will not be part of your Academic Record
- Contact Number: 494-6995

B) Office of the Dean of Students (ODOS)

- Provides assistance to students experiencing stress
- Contact Number: 494-1747

C) Counseling Center

- Students or individuals from the community
- Hours of services are 8:00 a.m. – 7:00 p.m.
- \$90 per session (or sliding scale on gross income and number of people in household)
- Contact Number: 742-4848

D) National Suicide Prevention Lifeline

- Call for yourself or someone you are about

- Free and confidential
- A network of more than 140 crisis centers nationwide; Available 24/7
- Contact: 1-800-273-TALK (8255)

E) Lafayette Crisis Center

- Personnel on call 24 hours per day, seven days per week
- Contact: 742-0244

F) Cummins Behavioral Health System, Inc

- Students or individuals from the community
- Hours: M-TH 9a.m. -8 p.m.; Closed Friday
- Sliding scale on gross income and number of individuals in household
- 24 Hour Emergency Line (888-244-6083)
- Contact: 420-0938; 427 N. 6th Street, Lafayette, IN 47901

G) Family Services, Inc.

- Students or individuals from the community
- Hours: MWF 8 a.m. - 5 p.m., T& TH 8 a.m. – 8 p.m.
- \$20-\$100 per session (sliding scale on gross income and number of people in household)
- Contact: 423-5361

H) Wabash Valley Hospital – Outpatient

- Students or individuals from the community
- \$16-\$160 per session (sliding scale on gross income and number of people in the household)
- Hours vary (open Monday – Friday)
- Emergency Walk-Ins accepted
- Contact: 423-2638

APPENDIX R: MANOVA BETWEEN SEARCH FOR MEANING AND THE ECTS AND ITS VARIABLES

Research indicates that not all individuals report searching for meaning after experiencing adverse life events (Davis et al., 1998; 2000). In fact, research by Davis et al. (1998) suggests that prolonged searches for meaning may be maladaptive. In my study, I assessed students' perceptions of searching for meaning from reported adverse life events using the following question: "*Have you searched to make sense or find purpose in these impactful life events?*" Participants responded to this item using a binary scale, including 1 (*yes*) and 0 (*no*). Although a single, binary item may not adequately capture the complexity of the degree to which individuals search for meaning (or levels of conscious awareness of this process), this item has previously been used to assess for search for meaning in other research studies (Davis et al., 2000). In fact, many researchers make the assumption that individuals always search for meaning in adverse life events. Thus, including a single item to assess search for meaning goes beyond what is typically included in studies on meaning reconstruction in the grief literature. In my study ($n = 195$), 151 (77%) students reported they had searched for meaning and 44 (23%) students reported they had not searched for meaning.

In order to assess the degree to which scores on the 16 primary variables varied as a function of search for meaning, I conducted two separate one-way MANOVAs (one for ECTS and ITS, respectively) using search for meaning as the independent variable. As previously described, I used a Bonferroni correction procedure to adjust the alpha level considered statistically significant in order to protect from Type I error (Holm, 1979; Rice, 1989). Specifically, the alpha level considered statistically significant per the

Bonferroni correction was .005 for the ECTS and .007 for the ITS. For the ECTS, the Wilk's lambda omnibus effect was not significant for search for meaning (adjusted alpha value of .005), $F(55, 21249) = 2.22, p = .02$, partial $\eta^2 = .11$. For the ITS, the Wilk's lambda omnibus effect was not significant for search for meaning (adjusted alpha value of .007), $F(36, 21982) = 1.15, p = .33$, partial $\eta^2 = .05$. The lack of difference between scores on meaning reconstruction items is consistent with emerging neurological literature that individuals search for meaning constantly, moment-to-moment, and may have varying levels of conscious awareness of this process (e.g., Angus & McLeod, 2004). In my sample, although 23% of students reported they did not search for meaning, their scores on meaning reconstruction items were not significantly different from students from the 77% of students who reported searching for meaning. Thus, I did not control for search for meaning in my primary analyses.

VITA

VITA

Jennifer D. Lockman
 Doctoral Candidate
 Counseling Psychology Program
 Purdue University

PERSONAL INFORMATION

Office Address:

Purdue University
 Department of Educational Studies
 Beering Hall of Liberal Arts and Education
 100 North University Street
 West Lafayette, IN 47907
 Email: Jlockma@purdue.edu
 Personal Phone: 615-830-2413

RESEARCH INTERESTS

- Lifespan/development and positive psychology approaches to understanding the etiology and treatment of suicidal thoughts/behavior
- Applications of the Interpersonal Theory of Suicide and the Existential – Constructivist Theory of Suicide
- Evaluation of community-based suicide prevention programs
- Translational Science (i.e., translating research to practice)

EDUCATION

- | | |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2016
(Expected) | PhD, Counseling Psychology (APA Accredited)
Purdue University, West Lafayette, IN
Dissertation: <i>Suicidal Ideation in College Students: Testing the Predictions of the Existential-Constructivist Theory of Suicide</i>
Dissertation Committee: Dr. Heather Servaty-Seib (Chair), Dr. Eric Deemer, Dr. Carrie Wachter-Morris, Dr. Kip Williams
Internship: University of Rochester Medical Center (APA-Accredited) |
| 2010 | M.S., Professional Counseling
Lipscomb University, Nashville, TN |
| 2009 | M.S., Psychology
Lipscomb University, Nashville, TN |

2007 **B.S., Psychology**
 Lipscomb University, Nashville, TN
 Degree with Honors Distinction

EMPLOYMENT: RESEARCH AND EVALUATION

2014-Current Program Evaluator
Centerstone Research Institute, Nashville TN
Principal Investigator and Supervisor: Kathryn Mathes, RN, PhD

Principal Investigator: *TLC Target Zero Suicide Grant* [TLC-Target; SM062098; SAMHSA, Awarded to Tennessee Department of Mental Health and Substance Abuse Services, Total Costs = \$3,680,000].

Responsibilities:

- Evaluation included three sub-studies including (a) Experimental design comparing mode of follow-up case management provided to suicidal adults upon hospital discharge, (b) Mixed method design evaluating outcomes of Zero Suicide coalition, and (c) Outcomes evaluation of AMSR and Suicide to Hope trainings for clinicians.
- Led and managed all aspects of the evaluation including the following: Logic model development, research design, measure selection, implementation plan, IRB applications, supervision of research associates on data collection, SAMHSA federal reports and dissemination. Managed evaluation budget and deliverables.
- Collaborated with project director, SAMHSA GPO, and stakeholders.

Principal Investigator: *Tennessee Lives Count Connect Grant* [TLC - Connect; SM601764; SAMHSA, Awarded to Tennessee Department of Mental Health and Substance Abuse Services, Total Costs = \$1,410,000].

Responsibilities:

- Evaluation used (a) experimental design to compare modes of intervention (e.g., phone, face-to-face, technology-assisted) for a case management service for suicidal youth ($n = 6,250$) after hospitalization and (b) examined moderators of outcomes (i.e., including parent/family variables).
- Led and managed all aspects of the evaluation including the following: Logic model development, research design, measure selection, implementation plan, IRB applications, supervision of research associations on data collection, SAMHSA federal reports and dissemination. Managed evaluation budget and deliverables.
- Collaborated with project director, SAMHSA GPO, and stakeholders.

Co- Principal Investigator: *Tennessee Lives Count Youth Suicide Prevention and Early Intervention Grant* [TLC-3; SM606375-01; SAMHSA, Awarded to Tennessee Department of Mental Health and Substance Abuse Services, Total Costs = \$1,380,000].

Responsibilities:

- Evaluation used (a) longitudinal repeated measures design to examine outcomes of a case-management follow-up program for suicidal youth (10 – 17; $n = 250$) and (b) longitudinal repeated measures design to examine moderators (e.g., diversity orientation, organizational support) of QPR Gatekeeper training outcomes for community members ($n = 3,500$).
- Led and managed all aspects of the evaluation including the logic model development, research design, measure selection, implementation plan, data analysis plan. Wrote IRB. Supervised project director and research associates on implementation/ data collection. Led data analysis. Served as lead writer on federal reports and dissemination efforts. Managed evaluation budget and deliverables.
- Collaborated with project director, SAMHSA GPO, and stakeholders to facilitate data use/application.

Co-Principal Investigator: *Renewal House Footprints Project* [90CF0039; The Children’s Bureau; Awarded to Renewal House Residential Family Treatment Program; Total Costs = \$550,000]

Responsibilities:

- Evaluation included five sub-studies to examine effectiveness of residential treatment for children ($n = 175$). Sub studies included (a) Implementation (qualitative), (b) fidelity study, (c) cost study, (d) longitudinal repeated measures design examining evidence-based programs (e.g., DBT, PCIT) and (e) quasi-experimental outcomes study using large data-sets from the Tennessee Department of Children’s Services.
- Managed all aspects of evaluation implementation and dissemination including the following: Facilitated data sharing agreement, supervised staff on data collection, completed statistical analysis, served as lead writer on federal reports and dissemination efforts. Managed evaluation budget and deliverables.
- Collaborated with Project Director, Children’s Bureau Federal Project Officer, and JBA National Evaluation liaison.

Co-Principal Investigator: *Centerstone Crisis Services: Suicide High Risk Follow-up Project* [Blue Cross Blue Shield Tennessee; Awarded to Centerstone, Inc.; Total Costs = \$200,000]

Responsibilities:

- Evaluation examined proximal and distal outcomes of a crisis follow-up program provided to individuals discharged from the Emergency Room after a suicide-related crisis ($n = 2,000$).
- Wrote evaluation section for grant. Constructed evaluation design and selected measures. Facilitated implementation. Wrote IRB. Developed MS Access databases. Completed statistical analyses. Supervised research associates. Managed evaluation budget and deliverables. Completed evaluation reports and presentations to facilitate data use.

Co-Principal Investigator: Evaluation of a Statewide Suicide Prevention Network [University of Rochester Medical Center for the Study and Prevention of Suicide; Travel and Collaboration grant awarded to Tennessee Suicide Prevention Network; Total Costs = \$1,500]

Responsibilities:

- Completed a mixed-method evaluation of the Tennessee Suicide Prevention Network – a large, statewide coalition for suicide prevention.
- Worked with assigned mentors to develop evaluation design, measures, and implementation plan. Supervised research associates on data collection and qualitative analysis.

2011 - 2013

**Evaluation Associate
Centerstone Research Institute, Nashville TN**

Lead Evaluator: *Tennessee Lives Count Youth Suicide Prevention and Early Intervention Grant* [TLC-JJ; SM057400; SAMHSA, Awarded to Tennessee Department of Mental Health and Substance Abuse Services, Total Costs = \$1,500,000].

Responsibilities:

- Examined proximal and distal outcomes of a state-wide suicide prevention to reduce suicide risk among juvenile justice youth (TLC-JJ).
- Evaluation consisted of longitudinal mixed methods evaluations of (a) ASIST gatekeeper program ($n = 650$), (b) QPR gatekeeper program ($n = 4,100$), and (c) Jason Foundation: A Promise for Tomorrow Peer Gatekeeper Program.
- Facilitated all aspects of the evaluation implementation including IB application, maintained oversight of data collection, supervised MS Access database system, completed federal reports, data analysis, and dissemination.
- Facilitated focus groups with Juvenile Justice Staff
- *Worked with community stakeholders and Tennessee Juvenile Justice System to *use* data outcomes to develop a modified 8 – hour gatekeeper training curriculum (i.e., *Shield of Care*).

Co-Project Director: *Actionable Knowledge: Translation Science Synthesis Grant* [Centers for Disease Control and Prevention, Awarded to Centerstone Research Institute. Total Costs = \$25,000].

Responsibilities:

- Co-lead on translational science project aimed to use “lessons learned” from the TLC-JJ grant to develop an application-based product.
- Collaborated on design for a web-based tool-kit to equip systems to create an optimal environment for suicide prevention.
- Tool-kit can be viewed at www.gatekeeperaction.org

Co-Principal Investigator: *Acculturation of Behavioral Health Clinicians to Using Routine Outcome Assessments in Practice*

Responsibilities:

- Examined clinicians' perceptions of using routine outcome assessments (CDOI), using the Theory of Planned Behavior framework.
- Wrote IRB application. Managed data collection. Led qualitative data analysis.

**2008 – 2011 Evaluation Consultant
Family Dynamics Institute, Nashville TN
Evaluation Lead: Independent Contract [Total Costs = \$5,500].**

Responsibilities:

- Used a longitudinal repeated measures design to evaluate the efficacy of an educational program for couples ($n = 768$) in crisis.
- Developed logic model, designed evaluation, selected measures, developed surveys, supervised staff on data collection, moderated focus groups, completed preliminary and final reports.

**2007 - 2011 Research Associate – Levels I and II
Centerstone Research Institute, Nashville TN
Supervisor: James Schut, PhD**

Collaborator: *Tennessee Lives Count Youth Suicide Prevention and Early Intervention Grant* [TLC; SM057400; SAMHSA, Awarded to Tennessee Department of Mental Health and Substance Abuse Services, Total Costs = \$1,500,000].

Responsibilities:

- Evaluation examined proximal and distal outcomes of the QPR gatekeeper training ($n = 9,657$) for suicide prevention. Sub-studies included (a) Pre/Post/6 month follow-up of training, (b) State and Regional Context Impact Study (content analysis of DCS Serious incident reports; $n = 323$), and (c) Matched case control of DCS records ($n = 793$)
- Completed data entry, developed MS ACCES databases, completed phone interviews/surveys. Led the content analysis of child welfare serious incident reports.

ACADEMIC RESEARCH EXPERIENCE

2011 - Present Grief and Loss Research Team Member, Purdue University
Advisor: Dr. Heather Servaty-Seib
Functioned as member of the research team. Completed data analysis and manuscript writing for two separate research projects focused on (a) International students and the Interpersonal Theory of Suicide and (b) College students' coping and bereavement.

- Spring, 2014** **Graduate Research Assistant, Purdue University**
Mentor: Dr. Heather Servaty-Seib
Stressful Life Events and Academic Experiences of High School Students Study
Assisted advisor with selecting measures for the research study. Assisted in writing the IRB applications for Purdue University and the local school system.
- 2009 - 2011** **Research Assistant [Volunteer], Tennessee State University**
Mentor: Dr. Marie Hammond
Assisted in publishing research article on emotional intelligence in African American college students' ($N = 210$) career development. Wrote sections of the introduction and discussion. Assisted in manuscript revisions toward publication.
- 2009 - 2010** **Graduate Master's Thesis Research Project, Lipscomb University**
Mentor: Dr. Paul Turner
Master's thesis entitled *Proximal Outcomes of a Marriage Education Workshop For Couples at Risk for Divorce*.
Collected pre/post/6month data from participants ($n = 768$) who completed a three-day marriage workshop.
- 2007 - 2009** **Graduate Research Assistant, Lipscomb University**
Mentor: Dr. Shanna Ray
Assisted professor with research on emerging adults' cognitive perceptions of religiosity ($n = 272$). Study used a concurrent mixed-methods design with data triangulation and transformation. Collaborated on research design. Assisted in writing vignettes. Created MS ACCESS database. Led content analysis of open-ended responses.
- 2006 - 2007** **Undergraduate Research Assistant [Volunteer], Lipscomb University**
Mentor: Dr. Shanna Ray
Purpose of the research was to determine the effect of perceived religiosity on college students' conceptualizations of adulthood status (Arnett, 2001). Assisted in developing the experimental design and data analysis.
- 2006 - 2007** **Undergraduate Honors Thesis Research Project, Lipscomb University**
Mentor: Dr. Paul Turner
Conducted independent research on the associations among extroversion, intellect, perfectionism, and self-actualization ($n = 135$ undergraduate students).

Spring, 2005 **Undergraduate Research Assistant [Practicum Student], Vanderbilt University**
 Mentors: Wendy Stone, Ph.D., Allison Presmanes, Doctoral Candidate
 Assisted with research project on the intergenerational effects of autism. Coded data by watching taped sessions of participants. Entered research data. Worked to establish inter-rater reliability coding system.

INTERNATIONAL AND NATIONAL COLLABORATIONS: SUICIDE PREVENTION

2014 - Present **International Initiative for Mental Health Leadership (IIMHL)**
 Invited participant of the 2014 and 2015 Leadership Exchanges: University of Oxford (Oxford, UK) and Atlanta, GA. Worked collaboratively with 35 Mental Health leaders and research scholars from diverse communities (i.e., New Zealand, Northern Ireland, Republic of Ireland, the Netherlands, London, United States) to plan strategic international zero suicide initiatives for research and practice. Continuing to participate in this international collaboration through a community of practice.

2014 – Present **International Campaign for Tibet: Collaborative Partnership**
 Collaborative partnership with Kate Saunders, Communication Director for the International Campaign for Tibet. Working on collaborative research initiative to understand the potential association between social justice and self-immolation in Tibet.

2014 - Present **Zero Suicide: An Interpersonal Approach to Suicide Prevention**
 Developing a web-based interactive training curriculum for mental health staff (In progress). Working with several local, national, and international scholars and agencies. Served as the project director for the team.

2013 – Present **National Action Alliance: Zero Suicide Data Panel**
 Invited panel participant. Evaluation Representative, Centerstone Research Institute

CLINICAL EXPERIENCE

2015 – 2016 **University of Rochester Medical Center: Pre-Doctoral Internship (Rochester, NY)**
 Completing pre-doctoral internship at the University of Rochester Medical Center, Department of Psychiatry. Providing therapy and assessment services. Completing rotations at the following sites: Strong Adult Ambulatory Services (Outpatient), Rochester Psychiatric Facility (Inpatient & Forensic Transitional), and Highland Hospital (Integrated Care). Receiving training in Dialectical Behavior Therapy, Interpersonal Therapy, Psychodynamic Psychotherapy, Problem-Solving Therapy, and Group psychotherapy.

Spring, 2014

Four County Acute Care Inpatient Unit (Logansport, IN)

Facilitated SAMHSA Illness Management and Recovery (IMR) therapy groups on reducing relapse. Engaged in individual therapy with patients using *Motivational Interviewing* and *Narrativist-CBT for Psychosis models*. Assessed clients' risk for suicide. Participated in emergency intake assessments. Participated in Grant Rounds with resident psychiatrist and treatment team. Adapted *SAMHSA Family Psychoeducation* Evidence-Based Protocol to work with single families. Developed presentation for inpatient staff on Thomas Joiner's (2005) Interpersonal Theory of Suicide. Participated in weekly group and individual supervision.

Fall, 2013

Indiana University Health: Bariatric and Medical Weight Loss Center (Indianapolis, IN)

Conducted psychological evaluations of patients seeking bariatric surgery (approximately four per week). Administered assessments including MMPI-2-RF, WAIS-IV, MBMD, HRQOL, RAT-IV, BDI, GAD-7, and PHQ-9. Wrote psychological evaluation reports. Wrote integrated psychological assessment reports. Conducted individual therapy with patients seeking assistance after surgery. Was supervised in providing *Acceptance and Commitment Therapy (ACT)* and *Cognitive Behavioral Therapy*. Participated in treatment team with surgeon, psychologist, nurses, and dietitians. Participated in weekly group and individual supervision.

2013 - 2013

Intake Counselor for Purdue BRIDGE Program (West Lafayette, IN)

Conducted intake assessments with community members (i.e., parents and their children) prior to participating in the BRIDGE program. The BRIDGE (i.e., *By Remembering I Develop and Grow*) is community-based support group led by Purdue doctoral students and clinical faculty that assists families who are grieving the death loss of a family member. Participated in weekly group supervision.

2012 - 2013

Wabash Valley Alliance: Community Mental Health Center (Lafayette, IN)

Provided individual psychotherapy to adults and adolescents. Supervised in using *Constructivist Psychotherapy and Cognitive Behavioral Therapy models*. Conducted weekly adolescents group for addictions. Conducted weekly adolescent group for school-based services. Attended weekly treatment team and case consultation meeting with staff. Participated in weekly group and bi-weekly individual supervision.

2011 - 2012

Purdue Counseling and Guidance Center (West Lafayette, IN)

Provided individual psychotherapy in on-campus clinic to college students. Supervised using Interpersonal Process Psychotherapy (Teybor & McClure, 2011) and Emotion-Focused models. Participated in weekly group and individual supervision.

2009 - 2010

Agape: Outpatient Mental Health Center (Nashville, TN)

Provided individual psychotherapy with adults, adolescents, and children. Supervised in using *Cognitive Behavioral Therapy*, *Family Systems Therapy*, and *Play Therapy* models. Administered 1-2-3 Magic curriculum to parents of young children. Conducted intake interviews and assessment and referral consultations with potential clients. Administered, scored, and interpreted psychological assessments including the following: Achenbach Child-Behavior Checklist, MCMI-III, and MMPI-II. Participated in weekly group and individual supervision.

TEACHING EXPERIENCE

Fall 2016

Teaching Fellow, University of Rochester Medical Center

By invitation from URMC Education Committee. Served as a clinical supervisor for second year psychiatry residents during training on clinical interviewing and mental status exam. Supervised clinical interviews and written records during live patient interactions. Student rating data not available.

Spring 2015

Graduate Teaching Assistant, Purdue University

HDFS 34300: Clinical Assessment and Case Management

Served as the graduate teaching assistant. Provided routine feedback to undergraduate students on clinical role plays. Supervised students on acquiring clinical skills. Graded assignments and papers. Taught selected class topics. Student rating data not available.

Fall 2014

Graduate Teaching Assistant, Purdue University

EDPS 31700: Collaborative Leadership and Mentoring

Primary instructor for the course. Assisted in syllabus and curriculum design. Provided weekly lectures and interactive learning activities on the topic of mentoring. Provided weekly group supervision to 11 students engaging in cross-cultural mentoring
Enrollment = 11 Students; Student Rating of Teaching = 5.0/5.0 (Fall 2014)

Fall 2014

Invited Guest Lecturer, Vanderbilt University

HOD 3300: Program Evaluation

Provided guest lecture for Program Evaluation class. Lecture topic was *Qualitative Research in Action: Transforming Public Health Programs through Evaluation*.

- Fall, 2011, 2013, 2014 **Graduate Teaching Assistant, Purdue University**
EDPS 10500: Academic and Career Planning
 Primary instructor for the course. Provided weekly lectures on career-planning topics Facilitated interactive classroom discussions and administered career inventories (i.e., Self-Directed Search, Strengths Quest, Myers-Briggs, and Strong Interest Inventory). Assisted students in developing group presentation skills. *Average Enrollment = 28 Students; Average Student Rating of Teaching = 4.4/5 (Fall 2011); 4.8/5 (Fall, 2013); 4.4/5.0 (Fall 2014)*
- Spring, 2012 - 2015 **Graduate Teaching Assistant, Purdue University**
 Fall, 2012 **HDFS 45500: Field Experience in Human Development and Family Studies**
 Primary instructor for the course. Provided supervision feedback to students on weekly reflection papers. Completed on-site visits with students and their field placement supervisors. Graded resource papers, literature reviews, and poster presentations. Provided individual supervision as needed to support growth. Provision of supervision supervised by HDFS faculty. *Average Enrollment = 17 students. Teacher rating data not available for this course.*
- 2012 **Guest Lecturer, Purdue University**
HDFS 34300: Clinical Assessment and Case Management
 Invited guest lecture in Dr. Natasha Watkins's HDFS 3400 Assessment and Case Management Class. Discussed strategies for suicide risk assessment and management for entry-level case management positions in community mental health.
- 2008-2009 **Graduate Teaching Assistant, Lipscomb University**
PSY 3143 Social Psychology; PSY 2423 Lifespan Development
 Provided guest lectures in select classes. Graded papers and assignments.
- 2011 **Instructor, Centerstone Research Institute**
 Co-Instructor for four-hour course for staff on qualitative research, analysis, and dissemination. Developed course materials. Taught sections on qualitative research design, analysis and qualitative data software.

GRANTS WRITTEN

- 2014 [Funded] Lead Writer [Evaluation Section].** Adult National Strategy for Suicide Prevention Grant Program, Substance Abuse and Mental Health Services Administration.
Total Funds: \$1,410,000
- 2014 [Funded] Co-Lead Writer [Evaluation Section].** State/Tribal Youth Suicide Prevention Grant Program, Substance Abuse and Mental Health Services Administration.
Total Funds: \$3,680,000

- 2014 [Funded] Lead Writer [Evaluation Section].** Blue Cross Blue Shield of Tennessee. Awarded to Centerstone, Inc. Grant collaborators: Becky Stoll (VP, Crisis Services), Jennifer Armstrong (Project Director), Jennifer Lockman (Evaluator). **Total Funds: \$200,000**
- 2014 [Funded] Lead Writer [Full Proposal].** Travel grant to attend Research Training Institute at the University of Rochester Medical Center Injury Prevention Research Center for Suicide Prevention (ICRC-S). Training allowed grant team to collaborate with ICRC-S faculty on research. Have attended monthly learning collaborative calls since the training. Awarded to Scott Ridgeway (Project Director, TSPN), Terrence Love (Department of Health Collaborator, TDH), and Jennifer Lockman (Evaluator, CRI) **Total Funds: \$1500**
- 2014 [Not Funded] Co-Writer [Full Proposal].** PRF research grant submitted under advisorship of Drs. Carrie Wachter Morris and Heather Servaty-Seib to the College of Education at Purdue.
- 2011 [Funded] Assistant Writer [Evaluation Section].** State/Tribal Youth Suicide Prevention Grant Program, Substance Abuse and Mental Health Services Administration, Awarded to Tennessee Department of Mental Health. Grant collaborators: Lygia Williams (PI), Jason Padgett (Project Coordinator), Kathryn Mathes (Evaluation Supervisor), Jennifer Lockman (Evaluator). **Total Funds: \$1,440,000**

HONORS AND AWARDS

- 2015 Dissertation Research Fellowship (Purdue University).** Chosen via rating process by faculty of the Department of Education at Purdue University to receive a dissertation fellowship.
- 2013 Shield of Care: A Systems-Focused Approach to Preventing Suicide.** Training curriculum added to the SPRC/AFSP Best Practices Registry for Suicide Prevention (BPR).
- 2013 State of Tennessee Governor's Award.** Presented by Sejal West, M.S., Assistant Commissioner of Mental Health on behalf of Governor Bill Haslam. Awarded for excellence in translating research to clinical practice for the community (i.e., Shield of Care Suicide Prevention Curriculum).
- 2013, 2015 Purdue College of Education Graduate Student Travel Award.** Funds based on research quality, significance, and authorship.
- 2013 Excellence Hero Award.** Centerstone of Tennessee. Internally nominated for outstanding achievement in translating science to practice in suicide prevention.

- 2007** **Stroop Award for Outstanding Achievement in Psychology.** Awarded by Lipscomb University Psychology Faculty. Award given to one graduating senior each year for demonstrating outstanding accomplishment as an undergraduate psychology major.
- 2007** **Honors Thesis Research Stipend.** Competitive award provided by the Lipscomb University Honors College once annually [\$250].
- 2003 - 2007** **Provost List for Academic Excellence.** Lipscomb University, all semesters enrolled.
- 2004 – 2007** **Alpha Chi National Honors Society**

PUBLICATIONS

Published:

- Lockman, J.D.** & Servaty-Seib, H.L. College Student Suicidal Ideation: Perceived Burdensomeness, Thwarted Belongingness, and Meaning Made of Stress (2015). *Death Studies*. Advance Online Publication. doi: 0.1080/07481187.2015.1105325
- Servaty-Seib, H., **Lockman, J.**, Shemwell, D., & Reid-Marks, L. International College Students, Perceived burdensomeness, Campus and Family Belongingness, and Suicidal Ideation. (2015). *Suicide and Life Threatening Behavior*. doi: 10.1111/sltb.12178
- Cousins, C., Servaty-Sieb, H.L., & **Lockman, J.D.** College Student Adjustment and Coping for Bereaved and Non-Bereaved College Students (2015). *OMEGA*. Advance Online Publication. doi: 10.1177/0030222815598911
- Ray, S. D., **Lockman, J. D.**, Jones, E. J., & Kelly, M. H. (2014). Attributions to God and Satan about Life Altering Events. *Psychology of Religion and Spirituality*, 7, 60 – 69. doi: 10.1037/a0037884
- Hammond, M.S., **Lockman, J.D.**, & Temple, R. A. (2013). Clinical symptoms as a function of client personality in college students: Incorporating the five-factor model of personality. *Journal of College Counseling*, 16, 6-18. doi: 10.1002/j.2161-1882.2013.00023.x
- Wilkins, N., Thigpen, S., **Lockman, J.**, Mackin, J., Madden, M., Perkins, T., . . . Donovan, J. (2012). Putting Program Evaluation to Work: A Framework for Creating Actionable Knowledge for Suicide Prevention Practice. *Translational Behavioral Medicine*, 2, 1-16. doi: 10.1007/s13142-012-0175-y
- Hammond, M. S., Lockman, J. D. & Boling, T. (2010). A Test of Brown & Krane's Tripartite Model of Career Indecision for African Americans: Incorporating Emotional Intelligence And Positive Affect. *Journal of Career Assessment*, 18, 161-176. doi: 10.1177/1069072709354201

Manuscripts Submitted:

Lockman, J.* Shaw, C., Nichols, C., Nolasco, M., Shah, C., Shawahin, L., & Ciftci, A. Social Justice Training: Using Photovoice to Foster Multicultural Awareness and Professional Identity. Under Review *Shared first-authored publication.

Manuscripts in Preparation:

Lockman, J.D., May, A., O'Brien, K, and Liu, R. Psychometric properties of the Interpersonal Needs Questionnaire for Adolescents at Risk for Suicide. Manuscript in Preparation

Lockman, J.D., Banks, B., Sparks, M., & Ridgway, S. Predictors of QPR Gatekeeper Training Effectiveness: Personality Style, Diversity Orientation, Suicide Knowledge, and Organizational Support. Manuscript in Preparation

Lockman, J.D., Puster, D., Sparks, M., & McCarter, A. K. An Evaluation of a Crisis Follow-up Program for Adolescents at Risk for Suicide. Manuscript in Preparation.

NATIONAL CONFERENCE AND GRANTEE MEETING PRESENTATIONS**Plenary Presentations (Invited):**

Schut, L. J. A., & **Lockman, J. D.** (2009). *Tennessee's state-wide gatekeeper training: Preliminary outcomes and lessons learned*. Plenary session presented at the Garrett Lee Smith Suicide Prevention Grantee Meeting, Phoenix, AZ.

Research Symposia (Invited):

Lockman, J.D., Sparks, M., & Padgett, J (2013). Shield of Care: A Systems-Focused Approach to Preventing Youth Suicide In Juvenile Justice Facilities. Invited paper presented at the Combined Garrett Lee Smith Grantee Meeting, Washington D.C.

Jordan – Arthur, Gryglewicz, deMello, & **Lockman** (2013). *The Application of Systems Frameworks in the Examination of Attitudes and Perceptions Contributing to Successful Youth Suicide Prevention Program Implementation: Experiences from Three Garrett Lee Smith Funded States*. Invited Research Symposium presented the American Association of Suicidology Conference in Austin, TX.

Puddy, R., Donovan, J., **Lockman, J. D**, Madden, M., Mackin, J., Schut, L.J.A., Thigpen, S., Wilkins, N. (2011). *Actionable Knowledge and Suicide Prevention: Acting on What We Know and Putting It Into Practice*. Invited Symposium presented at the American Association of Suicidology Conference, Portland, OR. *Authorship order of grantees listed alphabetically.

Puddy, R. McKeon, R., **Lockman, J.D.**, Madden, M., Perkins, T., & Williams, L. (2010). *The Public Health Approach to Suicide Prevention: Lessons Learned from CDC's Enhanced Evaluations*. Panel presentation presented at the Garrett Lee Smith Suicide Prevention Grantee Meeting, Las Vegas, NV. *Authorship order of grantees listed alphabetically.

Langford, L. L., **Lockman, J. D.**, Madden, M., & Jones, K. (2009). *Using Evaluation Data to Refine the Underlying "Program Theories" of Gatekeeper Training Programs*. Invited panel presentation presented at the 42nd Annual Conference of the American Association of Suicidology, San Francisco, CA.

National Paper Presentations (Refereed):

Lockman, J. D., Sparks, M., Puster, D., & McCarter, A. K. (2015, April). *Evaluation of a Follow-Up Program for Suicidal Adolescents: Lessons Learned and Implications for Secondary Suicide Prevention Practice*. Paper presented at the annual convention of the American Association of Suicidology, Atlanta, GA.

Lockman, J., Miller, K.A., Ploskonka, R.A., Shemwell, D.A., & Servaty-Seib, H. L. (2015, April). *Social justice as a motivation for suicide: A qualitative exploration of self-immolation in Tibet*. Paper presented at the annual convention of the Association for Death Education and Counseling, San Antonio, TX.

Servaty-Seib, H. L., **Lockman, J.**, Ploskonka, R., Cousins, C., Shemwell, D., Reid Marks, L. (2014, August). *Importance of family involvement when college students experience crises*. Symposium presented at the annual convention of the American Psychological Association, Washington, DC.

Shawahin, L., Nolasco, M., **Lockman, J.**, Shah, C., Nichols, C., Ciftci, A. (2014). *Social Justice In Action: Using Photo-voice to Foster Multicultural Awareness and Professional Identity*. Roundtable presented at the Counseling Psychology Conference, Atlanta, GA.

Lockman, J.D., Mathes, K., Williams, L., Padgett, J., Schut, L.J.A., & Doub, T. W. (2014). *Training youth as peer gatekeepers: The roles of suicide knowledge, connectedness, and self-efficacy*. Paper presented at the 2014 American Association of Suicidology Conference, Los Angeles, CA.

Lockman, J.D., Nichols, C., Nolasco, M., Shah, C., Shawahin, L., & Ciftci, A. (2014). *Social Justice in Action: Using Photovoice to Foster Multicultural Awareness and Professional identity*. Paper presented at the 2014 Counseling Psychology Conference in Atlanta, GA.
*Authors listed in alphabetical order.

Lockman, J.D., Luellen, J. K., Williams, L., Padgett, J. H., Schut, L.J.A., Banks, B., & Doub, T. W. (2013). *Final Outcomes from the Tennessee Lives Count Juvenile Justice Grant: Understanding Predictors of Gatekeeper Behaviors in Real-World Contexts*. Paper presented at the American Association of Suicidology Conference in Austin, TX.

Lockman, J.D. (2013). *Predictors of Suicidal Ideation in College Students: Perceived Burdensomeness, Thwarted Belongingness, and Meaning Reconstruction from Loss*. Paper presented at the American Association of Death Education and Counseling Conference (ADEC) in Hollywood, CA.

- Lockman, J.D.**, Schut, L.J.A., VanRegenmorter, C., Mathes, K.A., Williams, L. (2012). *Using Actionable Knowledge to Transform Outcomes to Practice: An Example from the Tennessee Lives Count Project*. Paper presented at the American Evaluation Association Conference, Baltimore, MD.
- Brown, C. **Lockman, J.** & Sewell-Martin, K. (2012). *Understanding the Context of Developing a Career Ladder for an Evaluation Unit*. Paper presentation delivered at the American Evaluation Association Conference, Baltimore, MD.
- Lockman, J.D.**, & Wilkins, N. (2012). *Making Evaluation Findings Actionable for Suicide Prevention*. Paper presentation delivered at the 45th Annual Meeting of the American Association of Suicidology, Baltimore, MD.
- Lockman, J.D.**, Wilson, H., Bowen, K. A., Padgett, J., Williams, L., Bean, K., Feix, J., Schut, L.J.A., Banks, B., Luellen, J. Doub, T.W. (2011). *Creating the Shield of Care Suicide Prevention Program for Staff in Juvenile Justice Correctional Settings: Eliciting Values-Based Feedback for Program Improvement*. Paper presented at the American Evaluation Association Conference, Anaheim, CA.
- Lockman, J.D.**, Reiserer, R. S., Bennett, C., Bragg, A., Van Regenmorter, C., Selove, R., Bowen, K., & Doub, T.W. (2011). *Evaluating Metal Health Providers' Perceptions of Using Routine Outcome Surveys to Measure Clients' Progress in Therapy: A Mixed Method's Approach using Ajzen's Theory of Planned Behavior*. Paper presented at the American Evaluation Association Conference, Anaheim, CA.
- Lockman, J.D.**, Padgett, J.H., Williams, L., Bean, K., Feix, J., Wilson, H. , Nevels, M., Pike, D.& Doub, T. W. (2011). *Creating a Tailored Gatekeeper Training Program for Staff in Juvenile Justice Correctional Systems:Using Evaluation Data for Program Development and Improvement*. Paper presented at the American Association of Suicidology Conference, Portland, OR.
- Lockman, J.D.**, Schut, L. James A., Luellen, J. K., Williams, L., Padgett, J. H., & Doub, T. W. (2011). *Translating Gatekeeper Training Knowledge and Skills to Real-World Organizational Contexts: Preliminary Results from the Tennessee Lives Count Juvenile Justice Suicide Prevention Program*. Paper presented at the American Association of \ Suicidology Conference, Portland, OR.
- Schut, L. J. A., Luellen, J. K., **Lockman, J.D.**, Doub, T.W (2011). *Summative Evaluation of a Statewide Suicide Prevention Initiative: Results and Implications for the Next Generation of Gatekeeper Trainings*. Paper presented at the American Association of Suicidology Conference, Portland, OR.
- Schut, L. J. A., **Lockman, J.D.**, VanRegenmorter, C., & Doub, T.W. (2011). *Developing an Actionable Knowledge Product for Tennessee's Statewide Suicide Prevention Initiative: An Innovative Strategy to Transform Research and Practice*. Paper presented at the American Association of Suicidology Conference, Portland, OR.

- Lockman, J. D.**, Bowen, K. A., & Wilson, H. (2010). *Evaluating the Tennessee Lives Count Juvenile Justice Suicide Prevention Project: Strategies for Incorporating System Level Data in Evaluations of Complex Public Health Prevention Programs*. Paper presented at the American Evaluation Association Conference, San Antonio, TX.
- Schut, L. J. A., **Lockman, J. D.**, Luellen, J. K., & Doub, T. W. (2010). *Evaluation of gatekeeper training for suicide prevention in the United States*. Paper presented at the 13th European Symposium on Suicide and Suicidal Behavior, Rome, Italy.
- Lockman, J.D.**, Padgett, J.H., Williams, L., & Schut, L. J. A.. (2010). *Tailoring Gatekeeper Training and Training Evaluation to System Contexts: An Illustration from the Tennessee Lives Count Juvenile Justice Project*. Paper presented at the 43rd Annual Conference of the American Association of Suicidology, Orlando, FL.
- Lockman, J.D.**, and Schut, L. J. A. (2010). *Youth Suicide Behavior and Gatekeeper Helping in the Child Welfare System: Final Results from the Tennessee Lives Count Project*. Paper presented at the Garrett Lee Smith Suicide Prevention Grantee Meeting, Las Vegas, NV.
- Lockman, J. D.**, Schut, L. J. A., & Booton, J. A. (2009). *Classifying Youth Suicide and Gatekeeper Behaviors in a Systems Context: An Illustration from the Child Welfare System in Tennessee*. Paper presented at the 42nd Annual Conference of the American Association of Suicidology, San Francisco, CA.
- Schut, L. J. A., Luellen, J., & **Lockman, J. D.** (2009). *Final Results of Tennessee's Statewide Gatekeeper Training Program*. Paper presented at the 42nd Annual Conference of the American Association of Suicidology, San Francisco, CA.
- Schut, L. J. A., Booton, J.A., & **Lockman, J.D.** (2008). *Statewide Gatekeeper Training: Midstream Results*. Paper presented at the 41st Annual Conference of the American Association of Suicidology, Boston, MA.
- Poster Presentations (Refereed):**
- Lockman, J. D.**, & Cerel, J. (2015, April). Psychometric Properties of the Prolonged Grief Disorder Scale (PG-13). Poster presented at the annual convention of the American Association of Suicidology, Atlanta, GA.
- Drapeau, C. W., **Lockman, J. D.**, Moore, M. M., & Cerel, J. Predicting posttraumatic growth among adults bereaved by suicide. Poster presented at the annual convention of the American Association of Suicidology, Atlanta, GA.
- Ray, S. D., **Lockman, J. D.**, Jones, E. J., and Hawkins, M. S. (2012). *Attributions to God and Satan about Negative Life Events*. Poster presented at the Association for Psychological Science annual meeting, Chicago, IL.
- Booton, J.A., & **Lockman, J.D.** (2008). *Quantifying Suicide Prevention Behaviors of Gatekeepers*. Poster presented at the 41st Annual Conference of the American Association of Suicidology, Boston, MA.

LOCAL/REGIONAL CONFERENCE PRESENTATIONS

Poster Presentations (Refereed):

Lockman, J.D. (2012) *Protecting College Students from Suicide: Examining the Role of Reconstructing Meaning From Loss*. Poster presented March 2012 at the Great Lakes Counseling Psychology Conference, West Lafayette, IN.

Williams, L., **Lockman, J.D.**, Schut, L.J.A., VanRegenmorter, C., & Padgett, J. H. (2011). *The GTISS Web-Based Tool-Kit: Customizing Gatekeeper Trainings for Suicide Prevention in the Black Church*. Presented at the annual Suicide in the Black Church Conference, Memphis, TN.

Ray, S.D., PhD, **Kirby, J.D.**, Smith, J., Williamson, T., Anders, K., Rimmel, J. (2006). *The effect of religiosity on conceptions of adulthood status: Individual piety or social conformation to group expectations?* Poster presented to the Tennessee Psychological Association, Nashville, TN.

Poster Presentations (Non-Refereed):

Nichols, C., **Lockman, J. D.**, Nolesco, M., Shaw, C., & Shawahin, L.* (2013). *Social Justice and Counseling Psychology in Action*. Poster presentation presented at the Civic Engagement Poster Session at Purdue University, West Lafayette, IN. *All but first author listed alphabetically.

WORKSHOPS (INVITED)

Lockman, J.D., Padgett, J.P., & Williams, L., & Schut, L. J. A. (2010). *Program and Evaluation Strategies for Addressing Systemic Gatekeeper Helping*. Workshop presented at the Garrett Lee Smith Suicide Prevention Grantee Meeting, Las Vegas, NV.

TECHNICAL REPORTS

- 2014 **Lockman, J. D.**, Sparks, M., Puster, D., Thorpe, C., & Ridgway, S. *Final Outcomes from the Tennessee Lives Count -3 Grant: Evaluating Crisis Follow-up Services for Adolescents at Risk for Suicide*. Submitted to SAMHSA on 10/15/14 by the Tennessee Department of Mental Health and Substance Abuse Services
- 2013 **Lockman, J.D.**, Padgett, J., Williams, L. *Final Evaluation Outcomes from the Tennessee Lives Count Youth Suicide Prevention and Early Intervention Juvenile Justice Grant*. Submitted to SAMHSA on 6/1/2013 by the Tennessee Department of Mental Health and Substance Abuse Services
- 2012 **Lockman, J.D.** *Perceived effectiveness of the A New Beginning Workshop: Processes of Marital Healing and Recommendations for Workshop Improvement*. Submitted to Family Dynamics Institute on June 16, 2011.

NATIONAL WEBINARS (Invited)

Invited Presenter:

- 2014 **Lockman, J.** *Using Suicide Prevention Theory to Inform Evaluation Practice*. Invited presenter for the webinar. Webinar hosted by the Injury Control Research Center for Suicide Prevention, University of Rochester Medical Center. Scheduled for November, 2014.
- 2014 **Lockman, J.,** Martin, B., & Silva, L.. *Databases to Collect, Analyze, and Report Evaluation Data*. Invited presenter for the webinar. Webinar hosted by James Bell Associates, Inc.
- 2012 Wilkins, N. & **Lockman, J.D.** *Understanding Actionable Knowledge: A Framework for Translating Research to Practice*. Invited presenter for the webinar. Webinar hosted by the American Evaluation Association.

MEDIA CONTRIBUTIONS

- 2014 Knapp, M. *What is suicide prevention? An interview with Jennifer Lockman*. Seven Ponds Professional Advice Column.
[http://blog.sevenponds.com/professional-advice/what-is-centerstone-research-institute-an-interview-with- Jennifer-Lockman-m-s](http://blog.sevenponds.com/professional-advice/what-is-centerstone-research-institute-an-interview-with-Jennifer-Lockman-m-s)
- 2011 Blessing, A. *Tennessee Developing Juvenile Justice Suicide Prevention Program*. OPEN MINDS Weekly News Wire.
<http://www.peterjens.com/marketintelligence/news/122611soc1.htm>
- 2011 Grantham, A. *Talking about suicide, once taboo, now seen as a plus for prevention*. Behavioral healthcare: The practical resource for the field's leaders. March 2011 Issue.
[http://www.behavioral.net/article/talking-about-suicide-once-taboo-now- seen-plus-prevention](http://www.behavioral.net/article/talking-about-suicide-once-taboo-now-seen-plus-prevention).

TRANSLATIONAL RESEARCH PRODUCTS & CURRICULUM DEVELOPMENT

- 2012 Lockman, J.D., Padgett, J.H., Ridgway, & Williams, L.*. *Shield of Care: A Systems-Focused Approach to Protecting Juvenile Justice Youth from Suicide*. Suicide prevention training curriculum for Juvenile Justice staff. Evaluation outcomes of the Tennessee Lives Count project were used to build this curriculum. Curriculum was designed in partnership with the Tennessee Department of Children's Services Juvenile Justice Division, TLC Suicide Prevention Taskforce, Jill Hollingsworth (Columbia Care), Katy Putnam (Kap Art), Richard Wilson (Outreach Arts), and content experts in Juvenile Justice, Mental Health, and Suicide Prevention. The curriculum was accepted to the nation's best practices registry in suicide prevention in March, 2013. Training materials can be viewed at <http://tn.gov/mental/recovery/shieldcare.shtml>. *Authors listed in alphabetical order.

- 2011 Lockman, J.D., Padgett, J.H., Schut, L. J. A., VanRegenmorter, C.V., & Williams, L*. *Gatekeeper Training Implementation Support System Website (GTISS)*. Interactive website includes ten tools to assist organizations in implementing suicide prevention trainings. Web tools were built from evaluation outcomes as a way of translating research to practice. *Authors listed in alphabetical order. Website can be viewed at www.gatekeeperaction.org.

ACADEMIC AND PROFESSIONAL SERVICE

Professional Service (Invited):

- 2015 Ad Hoc Reviewer: *Death Studies*
 2014 Conference Reviewer/Rater: American Association of Suicidology

Appointed Positions:

- 2014 – 2015 Panel Member, National Action Alliance for Suicide Prevention Zero Suicide Data Panel
 2013 – Current Secretary, American Association of Suicidology Student Group

Volunteer Positions:

- 2014 – 2015 Social Justice Chair of Multicultural Committee, Purdue University
 Fall, 2014 New Student Orientation Committee Student Co-Chair, Purdue University
 Spring, 2014 HDFS 45400: Preparing for Graduate School: Panel Member, Purdue University
 Fall, 2013 HDFS 34300 Case Management Class: Role Play Clinical Feedback, Purdue University
 Spring, 2013 Doctoral Student Interview Panel Member, Purdue University
 2011 National Action Alliance for Suicide Prevention: Research Agenda Stakeholder Survey (Participant)

SPECIALIZED TRAINING:

Research Methods and Data Analysis:

- 2014: *EDPS 63200: Multi-level Modeling*. Three-hour credit course on multi-level modeling (audited). Focused on conceptual framework of multilevel models for nested data, data analysis skills using HLM software, and applications to educational research. Course instructed by Dr. Yukiko Maeda. Purdue University, West Lafayette, IN
- 2013: *EDPS 63800: Factor Analysis*. Completed 3-hour credit course on factor analysis. Course focused on conceptual framework for factor analysis, data analysis skills using exploratory and confirmatory factor analysis, skills in LISREL 9.1 software, and applications to education and the social sciences. Instructed by Dr. Chantal Levesque-Bristol. Purdue University, West Lafayette, IN

- 2012: *HDFS 685: Structural Equation Modeling*. Three-hour credit course on structural equation modeling (audited). Class focused on theoretical and mathematical foundations of SEM, data simulations in IBM SPSS AMOS 21, and applications to the social and behavioral sciences. Course instructed by Dr. Sharon Christ. Purdue University, West Lafayette, IN.
- 2010 *Sort & Sift, Think & Shift: A Multidimensional Approach to Qualitative Analysis & Software Use*. Training workshop (16 hours) instructed by Dr. Raymond Maietta. Provided at Research Talk Conference in Long Island, NY.
- 2009 *Introduction to Grounded Theory: A Social Constructionist Approach*. Training workshop (8 hours) instructed by Dr. Kathy Charmaz. Provided at Research Talk Conference in Long Island NY.
- 2009 *Mixed Methods Designs and Procedures*. Training workshop (8 hours) instructed by Dr. John Creswell. Provided at Research Talk Conference in Long Island, NY.
- 2009 *Atlas TI Training Parts I and II*. Training workshop (8 hours) instructed by Dr. Ray Maietta. Provided at Research Talk Conference in Long Island, NY.
- 2009 *Writing Autoethnography and Narrative*. Training workshop (4 hours) presented by Dr. Carolyn Ellis. Provided at Research Talk Conference in Long Island, NY.
- 2009 *Microsoft Access Training: Parts I and II*. Workshop presented by Dr. Harold Albright. Provided at Centerstone Research Institute. Nashville, TN 2009.
- 2009 *Using Mixed Method Designs for Program Improvement*. Training Workshop (8 hours) presented by Dr. Anthony Onweugbuzie. American Evaluation Association Conference, Denver, CO.

Clinical Skills Training:

- 2015: *Dialectical Behavior Therapy* [15]. Training workshop presenting by Lisa Corgliano, NP. University of Rochester Medical Center.
- 2015 *Dialectical Behavior Therapy* [8 hours]. Training workshop presented by Dr. Marsha Linehan at the 48th Convention of the Americal Association of Suicidology
- 2014 *Counseling on Access to Lethal Means (CALM)*. Completed on-line certification on counseling on access to lethal means for suicidal clients. Received training certificate from the Suicide Prevention Resource Center.
- 2012 *The Beck Institute: Training in Cognitive Behavioral Therapy*. Attended a three-day [24 hours] interactive training workshop instructed by Dr. Judith Beck. Dr. Aaron Beck also attended one session of the workshop and provided an instructive role-play.
- 2011 *Unlocking Suicidal Secrets: New Thoughts on Old Problems in Suicide Prevention*. Training Workshop [8 hours] instructed by Dr. Shawn Christopher Shea. Provided at the 44th American Association of Suicidology Conference in Portland, OR.

- 2010 *Why People Die by Suicide and Myths about Suicide*. Training workshop [4 hours] presented by Dr. Thomas Joiner. Provided at the American Association of Suicidology Conference in Orlando, FL.
- 2009 *Collaborative Assessment and Management of Suicide* [CAMS]. Training workshop [8 hours] presented by Dr. David Jobes. Provided at the American Association of Suicidology Conference, San Francisco, CA.

Teaching/Instruction:

- 2014 *GRAD 5900: Preparing Future Faculty*. Completed 2-hour credit course designed to prepare students for faculty jobs in academic institutions. Examples of topics covered include: Teaching/learning, discovery/research, community engagement, networking, mentoring. Course completed Purdue University, West Lafayette, IN.

PROFESSIONAL AFFILIATIONS

2014 – Current	International Association for Suicide Prevention (IASP)
2012 – Current	American Association of Death Education and Counseling (ADEC)
2009 – Current	American Association of Suicidology (AAS)
2008 – Current	American Evaluation Association (AEA)
2007 – Current	American Psychological Association (APA; Student Division 17)

SOFTWARE EXPERTISE

<u>Program:</u>	<u>Proficiency Level:</u>
Microsoft ACCESS	Advanced
Microsoft EXCEL	Advanced
IBM SPSS 21	Advanced
NVIVO 10	Advanced
Atlas Ti 6.1	Intermediate
IBM SPSS AMOS 21	Intermediate
HLM 7	Proficient

COMMUNITY SERVICES

2006	Y.E.S. Inner City Ministry (Counselor)
2004 – 2006	Romania Missions (Volunteer)

References Available Upon Request.