

DISSERTATION

MODELING EFFECTS OF TRAUMA AND STRESS ON DISORDERED EATING AND
SUBSTANCE ABUSE: THE ROLE OF EXPERIENTIAL AVOIDANCE AND MEANING IN
LIFE

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ABSTRACT

MODELING EFFECTS OF TRAUMA AND STRESS ON DISORDERED EATING AND SUBSTANCE ABUSE: THE ROLE OF EXPERIENTIAL AVOIDANCE AND MEANING IN LIFE

Traumatic or stressful life events often compel people to avoid internal experiences such as negative thoughts, emotions, and memories. The process of avoiding painful internal stimuli is commonly referred to as experiential avoidance (Hayes et al., 1996; Hayes et al., 2004). While often effective in the short-term, experiential avoidance has been shown to increase risk for behavioral disorders, including disordered eating and substance abuse. Additionally, individuals with eating disorders frequently struggle to establish a coherent sense of meaning and identity (Fox & Leung), indicating that meaning in life is relevant to the study of disordered eating. Structural equation modeling (SEM) analyses were used to explore relationships between traumatic or stressful life events, experiential avoidance, meaning in life, disordered eating, and substance abuse within a multivariate model. SEM analyses revealed a good fit between the proposed structural model and the data present in two large samples of undergraduate students. Individual regression analyses also explored meaning in life and experiential avoidance as predictors of treatment outcomes in a sample of individuals diagnosed with eating disorders.

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DEDICATION

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CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW

Statement of Research Problem

Avoidance is an understandable reaction to suffering as it provides momentary relief from painful human experiences such as grief, loneliness, vulnerability, and anxiety. The process of avoiding painful internal experiences is known as experiential avoidance (Hayes et al., 1996) and has been implicated in the development of various health-risk behaviors (Hayes et al., 2004), including disordered eating (Hayes, Strosahl, & Wilson, 2012; Juarascio et al., 2014). Specifically, research has begun to explore how abnormal eating behaviors may function as unhealthy attempts to suppress negative thoughts and feelings (Hayes, Strosahl, & Wilson; Juarascio et al., 2014). While often effective in the short-term, chronic patterns of avoidance may deter individuals from experiences that involve contact with potentially painful thoughts and feelings (Hayes et al., 2004). Unfortunately, the majority of experiences that forge a meaningful life involve some level of emotional risk. Close relationships require vulnerability; novel experiences demand courage; finding satisfying work creates the possibility of rejection; and setting goals carries the risk of failure. Thus, choosing experiences based on level of emotional risk diminishes the possibilities in life and generates a safe but meaningless human experience.

In addition to reinforcing patterns of experiential avoidance, the development of disordered eating may also relate to the reconstruction of meaning or purpose after traumatic or stressful life events. The development of weight-related goals offers a distinct sense of purpose comprised of concrete markers of success and failure (Fox & Leung, 2009). Similar to the achievement of any highly valued goal, successfully altering one's weight and shape typically provides a powerful sense of agency. The regulation of food intake based on rigid, self-imposed

rules may also function as a behavioral form of control when life feels “out of control” or meaningless (Fox & Leung, 2009). Individuals may experience their eating disorder as a predictable world characterized by achievement and control despite negative long-term outcomes (Juarascio et al., 2014). Not surprisingly, the sense of purpose experienced within an eating disorder is illusory and short-lived given the fact that chronic disordered eating interferes with vital aspects of a meaningful life including physical, psychological, and relational health as well as educational and occupational success (Fox & Leung, 2009; Hayes et al., 2012).

In addition to distracting individuals from the dangerous consequences of disordered eating, the illusory sense of control experienced by individuals with eating disorders may create resistance to the process of recovery (Juarascio et al., 2014). Resistance to treatment is a commonly cited concern among healthcare providers, family, friends, and partners of individuals with eating disorders (Fox & Leung, 2009; Juarascio et al., 2010). Complying with treatment plans designed for weight restoration and reduction of weight control strategies can be a painful and frustrating process for individuals with eating disorders. Additionally, long-term remission of eating disorder behaviors requires individuals to sacrifice the perceived rewards of maintaining a low weight, such as cultural acceptance and praise for approximating the thin-ideal promoted in Western societies (Fox & Leung, 2009; Juarascio et al., 2014). These challenges often lead to poor treatment outcomes and high relapse rates for individuals with eating disorders. Notably, even the most well-researched eating disorder treatments achieve mediocre effects in randomized controlled trials (Juarascio et al., 2010), demonstrating the need for continued research on factors related to the development of disordered eating.

Overview of the Proposed Study

The following literature review discusses impacts of disordered eating, etiological factors related to disordered eating, and the challenges in conceptualizing and successfully treating eating disorders. The body of research implicating stressful and traumatic life events in the development of eating disorders is also reviewed. Specifically, the literature review provides an overview of how traumatic and stressful life events may indirectly lead to disordered eating by impacting emotion regulation, facilitating experiential avoidance, and disrupting natural meaning-making processes. The direct relation between experiential avoidance and eating disorder pathology is discussed followed by an exploration of research linking disrupted meaning-making processes to disordered eating. Finally, the current study introduces a multivariate model including trauma and stress as predictors of experiential avoidance and meaning, and experiential avoidance and meaning as predictors of disordered eating.

Eating Disorders

Impact of Disordered Eating

Symptoms of eating disorders include chronic overeating or bingeing, compensation for food intake through food restriction, vomiting, or laxative use, and rigid control of type or amount of food intake (APA, 2013; Juarascio et al., 2014). Eating disorders are increasing at alarming rates in Western countries, with approximately 24 million people suffering from anorexia nervosa, bulimia nervosa, binge eating disorder, or unspecified eating disorders in the United States alone (Eating Disorders Coalition, 2014). The number of children under the age of 12 hospitalized for symptoms of eating disorders has risen 119% in less than a decade. These increases are especially concerning due to the high mortality rates associated with eating disorders. Twenty percent of people diagnosed with anorexia nervosa die prematurely from

complications related to their eating disorder, including suicide and heart problems (Eating Disorders Coalition, 2014; Sullivan, 1995). Current prevalence rates are generated from the millions of individuals suffering from a diagnosed eating disorder; however, they do not account for individuals experiencing sub-threshold symptoms of eating disorders.

Sub-threshold symptoms of eating disorders include frequent or constant dieting, dissatisfaction with weight and shape, and unhealthy behaviors intended to suppress appetite or lose weight. These behaviors are increasingly common in children, adolescents, and young adults (Eating Disorders Coalition, 2014). Evidence indicates that preoccupation with weight and size among females begins as early as 1st grade, with nearly 50% of first to third grade girls expressing a desire to be thinner (Collins, 1991). Additionally, over 50% of adolescent females and nearly 35% of adolescent males report using unhealthy weight control behaviors including skipping meals, fasting, smoking cigarettes, vomiting, and taking laxatives to manage weight (Neumark-Sztainer, 2005). These behaviors are often maintained in early adulthood as 25% percent of women on college campuses endorse some form of purging (e.g., laxatives, vomiting) as a weight management strategy (National Eating Disorder Association, 2003).

Compensatory weight management strategies reflect one pattern of pathological eating behaviors; however, chronic dieting also increases risk for the development of an eating disorder. Actively restricting type or amount of food is common among young adults. The vast majority of college-aged women (91%) report current or past dieting, with 22% endorsing frequent or constant dieting (Eating Disorders Coalition, 2014; Shisslak, Crago, & Estes, 1995). The ubiquity of dieting behaviors among young women is concerning as 25% of dieters progress to partial or full-syndrome eating disorders (Shisslak, Crago, & Estes, 1995). The increasing rates of diagnosed eating disorders and the prevalence of disordered eating among children,

adolescents, and adults demonstrate the urgent need for a better understanding of factors related to the development of disordered eating.

Etiology of Eating Disorders

Effective treatment of eating disorders depends on a thorough understanding of etiological factors including genetic, psychological, behavioral, and sociocultural influences (Stice, South, & Shaw, 2012). Twin studies have demonstrated that from 50 to 80 percent of the variance in anorexia and bulimia nervosa can be explained by genetic factors (Frampton, Watkins, Gordon, & Lask, 2011; Klump et al., 2009; Suisman et al., 2014), although research has generated conflicting results with regard to the specific genotypes accounting for this variance. Research has also noted neurobiological influences on the development of eating disorders including differences in hormone levels, the monoamine systems (specifically the serotonergic system), striatal dopamine function, and regulation of appetite (Frampton, Watkins, Gordon, & Lask, 2011; Kaye, 2008; Steiger & Bruce, 2007). However, due to the cross-sectional nature of this research, it is difficult to determine whether these neurobiological differences are a cause or a result of having an eating disorder.

Several longitudinal studies have identified important psychological and behavioral influences on the development of eating disorders. The internalization of the thin-ideal (Fairburn, Cooper, Doll, & Davies, 2005; McKnight Investigators, 2003) and body dissatisfaction (Killen et al., 1996) both have been shown to increase the desire to lose weight quickly. Unhealthy dieting behaviors (e.g., drastically restricting calories or types of food) and fasting have also been found to increase risk for eating disorders in adolescents and young adults (McKnight Investigators, 2003). Finally, perceived stress, negative affect (Stice, Davis, Miller, & Marti, 2008; Stice, Marti, & Durant, 2011), and emotion regulation deficits (Patton, Selzer, Coffey, Carlin, &

Wolfe, 1999; Santonastaso, Friederici, & Favaro, 1999; Streigel-Moore et al., 2007) have been noted among individuals with eating disorders.

Environmental factors including family-of-origin issues, peer influence, and societal pressures have also been implicated in the development of eating disorders. Family of origin concerns including emphasis on rigidity, performance, and perfectionism have been shown to increase risk of disordered eating (Nicholls, 2013). Being bullied has also been shown to increase risk for and severity of disordered eating among adolescents (Nicholls, 2013). Participation in individual judged sports in which low body weight is valued (e.g., gymnastics, figure skating, dance) increases rates of disordered eating when compared to team sport participation (Zucker, Womble, & Williamson, 1999). Finally, media sources consistently reinforcing the thin-ideal, have been shown to intensify the desire to engage in disordered eating as a method of lowering weight (Suisman et al., 2014). The body of evidence linking traumatic life events to the development of disordered eating will be reviewed in the following section.

Trauma and Eating Disorders

Trauma is an important contextual factor involved in the psychological experience of those with mental disorders. Numerous studies have established a link between trauma and the development of eating disorders (e.g., Pratt, 2004). A recent study showed that 25% of women diagnosed with an eating disorder also met criteria for a comorbid diagnosis of Posttraumatic Stress Disorder (PTSD). Both frequency of trauma and severity of PTSD symptoms have been related to the severity of co-morbid eating disorder pathology (Tagay, Schlottbohm, Reyes-Rodriguez, Repic, Senf, 2014). When compared to community samples, individuals with eating disorders endorse higher rates of stress exposure (Schmidt, Tiller, Blanchard, Andrews, &

Treasure, 1997) and report a significantly larger number of traumatic events, repeated traumas, and childhood traumas (Lejonclou, Nilsson, & Holmqvist, 2014).

With regard to prevalence of specific traumas, individuals diagnosed with anorexia nervosa have significantly higher rates of negative sexual experiences and sexual traumas (Rosario, 2009) when compared to healthy controls. Individuals who experienced onset of eating disorder pathology in childhood endorsed higher rates of molestation and PTSD (Brewerton, Rance, Dansky, O'Neil, Kilpatrick, 2014). Intra and inter-personal concerns, including emotional abuse, are frequently cited among those diagnosed with eating disorders (Cerveteri-Garcia et al., 2012; Schmidt et al., 1997). Significant relations between PTSD, sexual trauma, and eating disorders have also been documented among women veterans. Specifically, military sexual trauma was associated with higher levels of disordered eating than childhood sexual trauma (Aoun et al., 2013). The experience of war-related trauma was also associated with increased severity of eating disorder symptoms in a sample of Lebanese veterans (Aoun et al., 2013). The numerous etiological factors related to disordered eating, including the experience of traumatic life events, reveal the need to understand the specific psychological processes that may be compromised among individuals with eating disorders. The following section will review current approaches to the conceptualization of eating disorders and identify challenges inherent in the treatment of eating disorders.

Conceptualization and Treatment of Eating Disorders

Proponents of Cognitive Behavioral Therapy (CBT) identify maladaptive thought patterns, specifically negative cognitions about weight, shape, and controlled food intake, as the core pathology of disordered eating (Murphy et al., 2010). This theory is consistent with research indicating that body-dissatisfaction (Stice, Marti, Rhode, & Shaw, 2011) and dietary restraint are

significant predictors of disordered eating (Fairburn et al., 2005; Patton et al., 1999; Santonastaso et al., 1999). Regarding treatment, CBT approaches typically include challenging negative thoughts around weight, shape, and food intake and addressing maladaptive or irrational thought patterns (Murphy et al., 2010). In addition, CBT therapists often utilize self-monitoring approaches to enhance awareness of abnormal eating behaviors (Murphy et al., 2010).

While CBT is currently considered the most effective treatment for eating disorders (National Institute for Clinical Excellence; NICE, 2004), meta analyses indicate that less than half of individuals receiving CBT make a full and lasting recovery from their eating disorder (Juarascio et al., 2010), with some studies demonstrating success rates as low as 30% (Juarascio et al., 2010; Wilson, Grilo, & Vitousek, 2007). Research factors related to low efficacy rates of CBT include high rates of attrition and small sample sizes, which have prevented conclusive evidence on the effectiveness of CBT for anorexia nervosa (Murphy et al., 2010). Preliminary evidence exists for the effectiveness of enhanced cognitive behavioral therapies for the treatment of anorexia nervosa. Enhanced CBT includes a longer treatment period and emphasizes specific behavioral changes including reduction of dieting behaviors, elimination of compensation methods, and altering maladaptive thoughts and beliefs associated with eating disorders (Juarascio et al., 2010). However, studies of enhanced CBT approaches typically recruit individuals without suicide risk, comorbid psychological disorders, or significant life stressors. This select sample is the exception among individuals with anorexia nervosa, making replication studies necessary to ensure that results are generalizable (Juarascio et al., 2010; Murphy et al., 2010).

In recognition of the challenges of treating eating disorders with traditional cognitive behavioral approaches, proponents of Acceptance and Commitment Therapy (ACT) offer an

alternative to direct modification of eating disordered thoughts (Juarascio et al., 2010). ACT proponents argue that internal experiences including thoughts and emotions are, by their nature, unchangeable (Hayes, 2004). Attempts to alter internal experiences often fail to produce lasting change and may actually increase the frequency of negative thoughts and emotions (e.g., trying not to think about or feel anxiety may increase focus on the anxiety itself; Hayes, 2004; Hayes, Strosahl, & Wilson, 1999). Rather than attempting to change the content of thoughts, ACT focuses on noticing and accepting thoughts related to disordered eating, as these thoughts are often accurate (e.g., “I have an imperfect body,” “I won’t ever be perfect,” or “I receive praise from others for being thin”). Noticing thoughts rather than challenging them may offer an indirect route to reducing eating disorder behaviors and may also introduce less dissonance for individuals entrenched in eating disordered thoughts and goals (Juarascio, Forman, & Herbert, 2010). ACT also prioritizes the clarification of values and the alignment of behaviors with these values (Hayes et al., 1996; Hayes et al., 2014). For example, if relationships are a particularly strong value for a client, an ACT therapist may facilitate a discussion of how eating disorder behaviors are at odds with forming healthy relationships. In this way, ACT seeks to reorient individuals to their core values rather than to restructure or change weight or shape related goals (Hayes, 2004).

Recent randomized control trials revealed that ACT approaches were significantly more effective at reducing problem eating behaviors when compared to standard cognitive behavioral treatment (Juarascio et al., 2010; Juarascio et al., 2014). Another recent study demonstrated that ACT was more effective at reducing eating pathology and also resulted in significantly lower rates of re-hospitalization when compared to CBT approaches (Juarascio et al., 2013). While research on using ACT for eating disorders is still in its nascent stages, exploration of the

concepts within ACT that are salient to the conceptualization and treatment of eating disorders is essential for distinguishing it from other behavioral approaches.

Experiential Avoidance and Disordered Eating

Experiential avoidance, defined in ACT theory as the avoidance of internal private experiences (Hayes et al., 1996), frequently includes behavioral attempts to distract, control, numb, or suppress difficult thoughts and feelings. A wide range of behaviors have the potential to enable and promote patterns of experiential avoidance. Examples of behavioral avoidance include using drugs or alcohol to numb or alter internal experiences, procrastinating as a way of escaping challenging projects, or distracting oneself from thoughts and feelings by watching TV, surfing the internet, or shopping (Hayes et al., 1996; Hayes, Strosahl, & Wilson, 2012). Thus, experiential avoidance can proliferate through a variety of behaviors ranging from benign to potentially destructive. The potential for experiential avoidance to manifest itself through health-risk behaviors such as substance abuse and disordered eating (Hayes et al., 2012) demonstrates the importance of better understanding the relationship between disordered eating and experiential avoidance.

Experiential avoidance has been related to eating disorder pathology in numerous studies (Cusack, 2014; Hayes et al., 1996; Juarascio et al., 2014; Lavender, Jardin & Anderson, 2009; Manlick, Cochran, Jerrod, 2013; Rawal, Park, & Williams, 2010; Schmidt & Treasure, 2006). Specifically, restriction of or compensation for food intake has been conceptualized as behavioral strategies used to avoid painful internal stimuli (Cusack, 2014; Safer, Telch, & Chen, 2009). Behavioral control strategies relate to decreased acceptance of internal experiences are viewed within ACT as demonstrative of psychological inflexibility. Therefore, within ACT

conceptualization, disordered eating is a behavioral by-product of attempts to avoid painful thoughts and emotions (Hayes et al., 2014).

Several empirical studies provide evidence consistent with an ACT conceptualization of experiential avoidance and disordered eating. Research has found a significant relation between experiential avoidance and eating disorder pathology in both student samples and individuals diagnosed with anorexia nervosa (Cowdrey & Park, 2012; Rawal, Park, Williams, 2010; Schmidt & Treasure, 2006). Experiential avoidance also predicted body dissatisfaction in a sample of female undergraduates (Grouse, 2012). Qualitative analyses within this sample revealed the use of both food restriction and overeating as methods of avoiding internal experiences and regulating emotion (Grouse, 2012). Research on specific components of experiential avoidance indicated that thought suppression was significantly related to severity of disordered eating (Lavender, Jardin, & Anderson, 2009) and fully mediated the relationship between acceptance of internal experiences and disordered eating in a large sample of individuals diagnosed with eating disorders (Cusack, 2014). Empirical research establishing the relationship between experiential avoidance and disordered eating illustrates the promise of applying ACT constructs to the conceptualization of eating disorders. The following section will explore the ways in which ACT's concept of values, specifically the identification and clarification of core values, relates to the meaning-making process among individuals with eating disorders.

Meaning in Life and Disordered Eating

Meaning in life captures the degree to which people feel their lives matter in a larger sense and believe their lives to have an overarching purpose (Steger, Oishi, Kaler, & Frazier, 2006; Steger, Merriman, Sheline, & Kashdan, 2013). Life typically feels most meaningful when day-to-day behaviors are congruent with core values (Hayes et al., 2006; Fox & Leung, 2009;

Juarascio et al., 2010; Juarascio et al., 2014). Therefore, natural theoretical links exist between the study of meaning in life and ACT's conception of core values (Hayes et al., 2004; Steger et al., 2013). Core values are defined within ACT theory as individually chosen priorities that drive purposeful or committed action (Hayes, 2006). While core values can be instantiated moment by moment, they are not obtained in the sense of achieving a goal. Rather, values act as guiding forces for behavior in various domains (e.g. a strong value for relationships may influence the amount of time spent with friends; Hayes, 2006).

While many people share a common vision of what constitutes a meaningful life, the process of moving towards this vision is a largely individual pursuit and can be disrupted in a variety of ways (Steger et al., 2013). For example, the identification of core values may be impacted by processes including social compliance (e.g., "I value success because my friends are successful") or experiential avoidance (e.g., "I value leadership, but I fear public speaking"; Hayes, 2006). Other disruptions to the process of meaning-making, including traumatic or stressful life events (Kashdan & Breen, 2011), may instigate a reliance on behavioral avoidance strategies (Bramford & Sly, 2009; Calhoun et al., 2000; Fox & Leung, 2009; Grouse, 2012) and impede the process of identifying core values. An exploration of the ways in which behavioral avoidance strategies, including eating disorder behaviors, are incongruent with core values provides a rationale for studying the relationship between meaning in life and disordered eating.

Eating disorder behaviors are typically incongruent with the majority of commonly espoused core values such as relationships, health, and satisfying work (Juarascio et al., 2014; Manlick, Cochran, & Koon, 2013). Disordered eating often involves secrecy, isolation, and resistance to the justified concerns of loved ones, which can negatively impact close relationships and decrease meaning in life (Manlick et al., 2013; Hicks, Schlegel, & King, 2011).

Chronic restriction of food intake and extreme compensatory strategies can also lead to serious health consequences that may impede important occupational and personal goals (Fox & Leung, 2009; Juarascio et al., 2014; Hayes et al., 2004). Consequently, disordered eating creates multiple obstructions in the process of aligning behaviors with core values. In addition, research has shown that individuals who struggle to articulate identity-related information, including what they value, experience lower levels of meaning in life (Schlegel, Hicks, Arndt, & King, 2009). These studies illuminate the conceptual links between values and meaning in life and demonstrate how the meaning-making process may relate to difficulties with identity formation among individuals with eating disorders (Hicks et al., 2011; Juarascio et al., 2014; Schlegel et al., 2009).

The clarification of core values not only increases a sense of purpose and meaning but also facilitates the process of identity formation (Hayes et al., 2004). Research indicates that people with eating disorders often grapple with identity concerns and feel pressured to establish themselves as significant, unique, and in control. Notably, people with eating disorders frequently describe their disorders as formative aspects of their identity (Fox & Leung, 2009; Manlick, Cochran, & Koon, 2013; Serpell, Treasure, Teasdale, & Sullivan, 1999) and report that their eating disorders provide a sense of security and control (e.g., “I am special if I am thin”, “I am in control of food”, or “My eating disorder makes me feel safe”; Fox & Leung, 2009; Hayes et al., 2004; Juarascio et al., 2014; Manlick, Cochran, & Koon, 2013). Unfortunately, while rigid eating disorder patterns may create the illusion of a world characterized by security and order, continued engagement in disordered eating typically interferes with an authentic process of identity formation, confuses the exploration of core values, and obstructs pathways to a meaningful life.

The importance of understanding risk factors for eating disorders cannot be overstated given the wide-ranging negative impacts of disordered eating. As discussed previously, traumatic life experiences have been established as a major risk factor for the development of disordered eating. Understanding mediating factors between trauma and disordered eating is essential for addressing the clinical needs of individuals with eating disorders. The following section provides a nuanced examination of psychological functioning among trauma survivors and explores potential mediating factors between trauma and disordered eating.

Mediators between Trauma and Disordered Eating

Approximately 61% of men and 51% of women in the United States report experiencing at least one traumatic event during their lives (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Lifetime prevalence rates of Posttraumatic Stress Disorder (PTSD) range from 6 to 9% indicating that most individuals who experience trauma do not go on to develop PTSD (Kashdan & Kane, 2009). While the majority of trauma survivors may not develop PTSD, experiencing trauma at any point in the lifespan has been implicated in the development of a wide range of psychological disorders including depression, substance use disorders, anxiety, schizophrenia, and eating disorders (Brown et al., 2013). The potential for trauma to increase risk for a variety of psychological disorders demonstrates the global negative impact of trauma.

Research has begun to explore the mechanisms by which stressful life events, including trauma, increase risk for psychological distress (Brown et al., 2013). The impacts of trauma include disruption of emotion regulation processes (Burns et al., 2012; Clinton, 2006; Juarascio et al., 2014; Merwin, 2011), challenged meaning systems, and ‘shattered’ assumptions about the self, the world, and others (Janoff-Bulmann, 1992; Park, 2004; Kashdan & Kane, 2009). An

additional effect of trauma includes the development of behavioral avoidance strategies as methods of coping (Hayes et al., 2004; Juarascio et al., 2014).

Remarkably, despite the potential deleterious effects of trauma, many individuals report experiencing personal growth in the aftermath of trauma. The psychological process of benefit finding after traumatic life events is commonly referred to as ‘posttraumatic growth’ in the literature (Feder et al., 2008; Tedeschi & Calhoun, 1996; Frazier et al., 2006). Frequently cited examples of posttraumatic growth include re-prioritization of values and relationships, increased intimacy with loved ones, and an enhanced sense of gratitude (Feder et al., 2008; Tedeschi & Calhoun, 1996; Tedeschi & Calhoun, 2004). Additional examples include spiritual growth, a sense of agency or responsibility for personal outcomes, and empowerment (Feder et al., 2008; Tedeschi & Calhoun, 1996; Tedeschi & Calhoun, 2004).

Heterogeneous reactions to trauma including psychological distress, the development of mental health issues, and posttraumatic growth demonstrate the importance of identifying factors related to the various long-term effects of trauma. In other words, why do some human responses to trauma result in personal growth and benefit finding while other responses facilitate adverse psychological outcomes? In order to address this question, it is necessary to determine mediating factors between trauma and mental health outcomes.

Experiential Avoidance as a Mediator

Identifying potential mediators between trauma and long-term psychological outcomes is a vital step in developing a better understanding of heterogeneous trauma reactions. Existing models of trauma indicate that recovery from trauma and the experience of posttraumatic growth require psychological awareness, openness, and flexibility (Feder et al., 2008; Kashdan & Kane, 2009; Tedeschi & Calhoun, 2004). As experiential avoidance impedes flexible, adaptive

responding (Hayes et al., 2006), it is plausible that experiential avoidance would result in negative outcomes among trauma survivors. Experiential avoidance has been shown to influence the relation between trauma and attenuated well-being in several studies (Kashdan, Barrios, Forsyth, & Steger 2006; Kashdan & Breen, 2008; Kashdan & Kane, 2011). Specifically, a significant inverse relation between experiential avoidance and presence of meaning has been noted among trauma survivors (Kashdan & Kane, 2011), indicating that attempting to avoid painful thoughts and feelings may impede trauma recovery and prevent personal growth.

Mediating factors between trauma and disordered eating include dissociation (Jenkins, Meyer, & Blissett, 2013), emotion dysregulation, (Moulton, Newman, Power, Swanson, & Day, 2014), and experiential avoidance (Collins, Fischer, Stojek, Becker, 2014). A recent study found that experiential avoidance fully mediated the relation between sexual assault and disordered eating among female undergraduates (Collins et al., 2014). In this sample, the experience of sexual assault increased reliance on experiential avoidance, which increased severity of disordered eating. While preliminary, these studies demonstrate that traumatic or stressful life events may increase reliance on experiential avoidance and behavioral control strategies such as disordered eating. Therefore, the current study hypothesized that trauma and stress would predict experiential avoidance and subsequent risk for disordered eating.

Meaning in Life as a Mediator

Research indicates that experiencing trauma at any point during the lifespan relates to a diminished sense of meaning in life (Krause, 2005). Veterans diagnosed with PTSD experienced both a general and a spiritual loss of meaning in life (Fontana & Rosenheck, 2005). Several studies have suggested that presence of meaning in life may partially mediate the relation between trauma history and psychological distress, including symptoms of depression (Krause,

2007; Owens et al., 2009) and symptoms of PTSD (Owens et al., 2009). Individuals with a weak sense of meaning in life have been shown to experience higher levels of depression than those with a strong sense of meaning in life (Krause, 2007). Similar results were found among military veterans exposed to traumatic events, with low levels of meaning predicting high levels of psychological distress (Owens et al., 2009). Additionally, among a sample of undergraduates studied shortly after the September 11th terrorist attacks, those with high levels of meaning in life reported posttraumatic growth while those with low levels of meaning in life experienced posttraumatic distress (Steger, Frazier, & Zacchanini, 2008).

The posttraumatic growth literature indicates that individuals who experience trauma benefit from a flexible interpretation of trauma that allows for reconstruction of meaning systems (Frazier, Conlon, Steger, Tashiro, & Glaser, 2006; Janoff-Bulmann, 1992; Kashdan & Kane, 2011). In order to reconstruct meaning, an individual must incorporate the traumatic event and its implications into a coherent conception of the self, the world, and others (Frazier, Conlon, Steger, Tashiro, & Glaser, 2006; Janoff-Bulmann, 1992; Kashdan & Kane, 2011). Trauma survivors who demonstrate the capacity to reinterpret trauma typically report decreased psychological distress, strong relationships, clarification of purpose and priorities, reliance on personal strengths, and an evolving sense of spirituality (Calhoun et al., 2000, & Calhoun and Tedeschi, 1998). Conversely, individuals who are unable to reconstruct a strong sense of meaning after trauma are at risk for increased psychological distress (Calhoun & Tedeschi, 1998). In summary, numerous studies have indicated that traumatic or stressful life events have the potential to disrupt meaning-making processes, and consequently increase psychological distress. Therefore, the current study hypothesized that traumatic or stressful life events would significantly predict levels of meaning, which in turn would predict severity of disordered eating.

Rationale for Current Study

Various responses to trauma and stress are noted in the literature including disruptions in emotion regulation and meaning-making processes as well as the development of high risk coping behaviors such as substance use and disordered eating. These adverse outcomes demonstrate the need to identify potential mediating factors related to the long-term effects of trauma. While research has established the significance of various individual relationships between trauma, experiential avoidance, meaning in life, and disordered eating, there are no known studies exploring these variables within a theory-driven multivariate model (see Figure 2.1). Equally as important, research demonstrating poor treatment outcomes and high rates of re-hospitalization among those with eating disorders demonstrates the need for continued research on the underlying factors related to the development and treatment of eating disorders.

A series of studies were conducted to address these concerns. The first study (Study 1A) tested a multivariate model including the following variables of interest: trauma, stress, experiential avoidance, search for meaning, presence of meaning, disordered eating, and substance abuse. After modifying the hypothesized model in an initial testing sample, a second study (Study 1B) was conducted to confirm whether the final specified model fit well in an alternate sample. Given that cross-sectional data and convenience sampling were used in the process of testing the multivariate models, a third study (Study 2) was conducted to explore longitudinal relations among trauma, experiential avoidance, meaning in life, and treatment outcomes in a sample of individuals diagnosed with eating disorders.

The results presented in the following chapter were generated from data collected in three different samples. The first and second sample consisted of undergraduate students enrolled in introductory psychology courses at Colorado State University during the spring semester of the

2014-2015 academic year ($N = 308$) and the fall semester of the 2015-2016 academic year ($N = 804$). In order to test the multivariate model and confirm it in an alternate sample, the data collected from the spring and fall semesters were combined and randomly divided into two distinct samples (Kohavi, 1995; Velicer & Fava, 1998). The sample in Study 1A, used to test the initial multivariate model, will be referred to from here on as the testing sample. The sample in Study 1B, used to confirm the fit of the multivariate model, will be referred to from here on as the confirmatory sample. The sample described in Study 2 ($N = 47$) was comprised of individuals completing residential or outpatient treatment for eating disorders and will be referred to from here on as the clinical sample.

CHAPTER 2: THE MULTIVARIATE MODEL

At the time the current project was proposed, disordered eating was the only outcome variable under study (see Figure 2.1). During the data collection process, between the spring and fall semesters, substance abuse was added as an additional outcome variable after consultation with a committee member. At the time of data analysis, rather than using the spring semester as the testing sample and the fall semester as the confirmatory sample, both samples were combined and randomly divided into two equal samples. This allowed for substance abuse data in both the testing and confirmatory samples. Thus, both disordered eating and substance abuse were included as outcome variables assessing behavioral avoidance in the modified hypothesized model (see Figure 2.2). Additionally, when the current project was proposed, a committee member recommended the inclusion of direct paths from trauma and stress to disordered eating and substance abuse. Therefore, these direct paths were also included in the modified hypothesized model (see Figure 2.2).

Study 1A

Study 1A used structural equation modeling (SEM) to test the modified hypothesized multivariate model (see Figure 2.2). The hypotheses for Study 1A were that trauma and stress would predict experiential avoidance, search for meaning, presence of meaning, disordered eating, and substance abuse, and that experiential avoidance, search for meaning, and presence of meaning would predict disordered eating and substance abuse. Trauma, stress, search for meaning, and experiential avoidance were hypothesized to positively predict disordered eating and substance abuse whereas presence of meaning was hypothesized to negatively predict disordered eating and substance abuse.

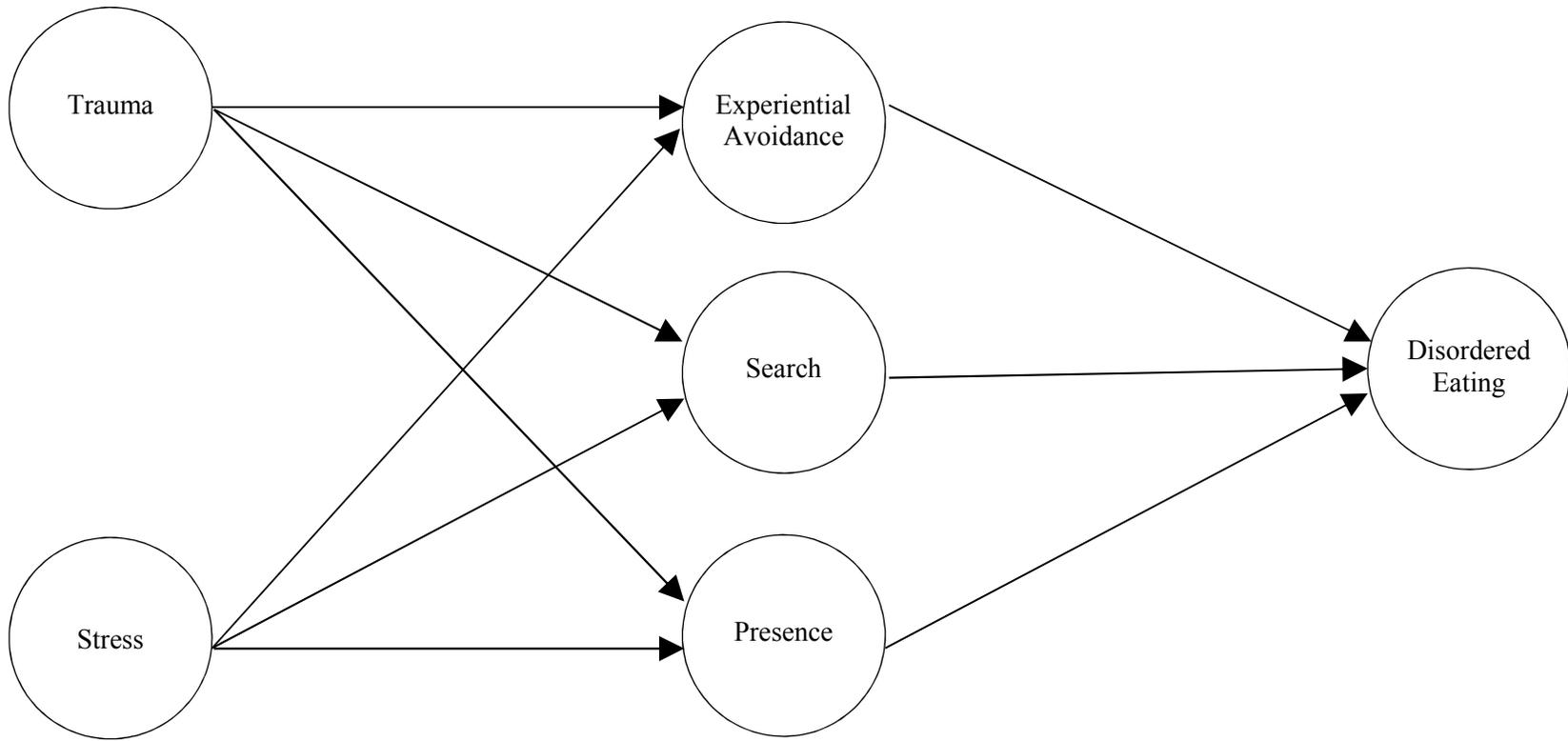


Figure 2.1. *Multivariate model described in literature review.*

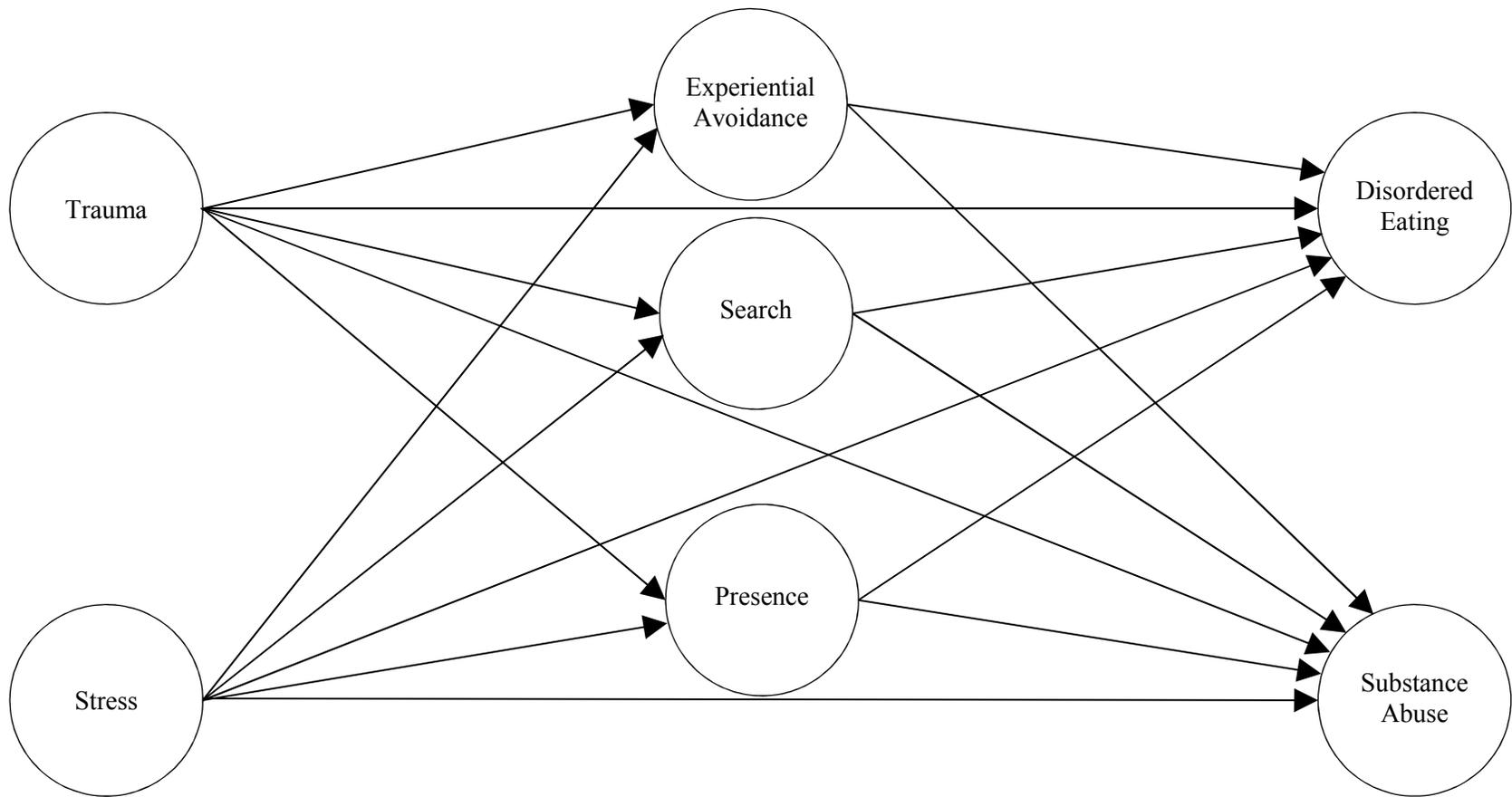


Figure 2.2. *Modified hypothesized multivariate model.*

STUDY 1A METHODS

Participants

The participants in Study 1A included 541 female undergraduate psychology students enrolled at Colorado State University during the spring semester of the 2014-15 academic year and the fall semester of the 2015-16 academic year. Participants ranged in age from 17 to 39 years ($M = 18.93$, $SD = 2.14$). 430 participants (79.5%) identified as Caucasian/White, 52 (9.6%) as Hispanic, 21 (3.9%) as Asian American, 18 (3.3%) as African American/Black, 4 (0.7%) as American Indian/Native American, 3 (0.6%) as Middle Eastern American, and 13 (2.4%) participants self-reported as other. 29 (5.4%) participants reported that they had previously been diagnosed with an eating disorder and 21 (3.9%) reported that they had received treatment for an eating disorder. 97 participants (17.9%) reported a history of eating disorders in their immediate family (i.e., parents, siblings, children), 305 (56.4%) reported a history of substance abuse in their immediate family, and 252 (46.6%) reported a history of other mental health related concerns in their immediate family.

Measures

In addition to describing measures utilized in the current study, the following section will also include information about the items and subscales which served as the indicators of the latent variables included in the hypothesized multivariate model (see Table 1).

Demographic Information

Demographic information about the female undergraduate sample was gathered using a self-report form (see Appendix A). This form included items assessing self-reported age, gender, race, education level, and whether participants had been diagnosed with or received treatment for

an eating disorder. The demographic form also contained items to assess immediate family history of disordered eating, substance abuse, and other mental health related concerns.

Traumatic Life Events Questionnaire (TLEQ)

Three subscales were generated from the Traumatic Life Events Questionnaire (TLEQ; Triplett et al., 2013; see Appendix A) to serve as indicators of the Trauma latent variable. The TLEQ assesses for 10 lifetime experiences of trauma including: 1) the death of a close loved one, 2) a very serious medical problem, 3) a close friend, significant other, or family member experiencing a serious medical condition, 4) an accident that led to serious injury to themselves or someone close to them, 5) their place of residence being damaged by fire or other natural causes, 6) enduring a divorce, 7) being physically assaulted, 8) being sexually assaulted, 9) being victims of a crime such as robbery or mugging, and 10) being stalked. In addition to assessing for the occurrence of these traumatic events, the TLEQ also assesses for the frequency of each traumatic life event, which are summed in order to obtain an overall frequency score of traumatic events. The overall trauma frequency score was used to generate the measured variable TRAMAFQ in the current study. The TLEQ also contains items used to determine the perceived severity of each traumatic event, ranging from 1 (*not at all*) to 5 (*extreme*). The total perceived severity score was used to create the measured variable TRAMASV. Additionally, participants recorded their most recent experience of each traumatic event, which was used to calculate the number of days since the participant had experienced a traumatic event. If participants had never experienced a traumatic event, their score was equivalent to the number of days they had been alive. By calculating scores this way, the date of the traumatic event recorded by participants could be translated into a continuous scale score, which was reflective of how recently a traumatic event had occurred (TRAMARC). The TRAMARC value was then reverse scored to

ensure that the factor loadings for the trauma latent variable could be interpreted. After reverse scoring the TRAMARC variable, a traumatic event that was experienced more recently was reflected in higher values and a traumatic event that occurred further in the past was reflected in lower values.

Student Stress Survey (SSS)

Four subscales from the Student Stress Survey (SSS; Ross, Niebling & Heckert, 1999; see Appendix A) were used as indicators of the Stress latent variable. The SSS is a questionnaire designed to measure major sources of stress among college students. It is comprised of 40 items divided into four areas of stress: interpersonal, intrapersonal, academic, and environmental. Six items represent interpersonal sources of stress, 16 items represent intrapersonal sources of stress, eight items represent academic sources of stress, and 10 items represent environmental sources of stress. Interpersonal sources of stress represent interactions with individuals (e.g., fight with partner, conflict with parents). Intrapersonal sources of stress represent internal conflicts or changes (e.g., changes in sleep patterns). Academic sources of stress result from activities related to school (e.g., poor grades). Finally, environmental stressors result from outside influences or pressures unrelated to academics (e.g., car problems, financial difficulties). Participants were asked to consider how much of a problem each item was over the past 12 months and rate severity on a four-point scale ranging from "no problem at all" to "very much a problem." Higher values reflect greater levels of stress.

Multidimensional Experiential Avoidance Questionnaire (MEAQ)

Six subscales from the Multidimensional Experiential Avoidance Questionnaire (MEAQ; Chmielewski, Kotov, Ruggero, & Watson, 2011; see Appendix A) were used as indicators of the Experiential Avoidance latent variable in the current study. The MEAQ is a self-report measure

of experiential avoidance and contains 62-items divided into six subscales: behavioral avoidance, distress aversion, procrastination, distraction and suppression, repression and denial, and distress endurance. Participants are asked to indicate the extent to which they agree or disagree with statements (e.g., “When negative thoughts come up, I try to fill my head with something else”) on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Total scores on the MEAQ range from 62 to 372, with a higher score indicating higher endorsement of avoidance-related statements. The alpha for the total MEAQ score is excellent (.91–.92). Average inter-item correlation for the MEAQ is in the low to moderate range (.15), which reflects the multidimensional nature of the questionnaire (Dimaro et al., 2014). The multidimensional nature of the questionnaire also enables the MEAQ to assess a broader range of content compared with other measures of experiential avoidance (Dimaro et al., 2014).

Meaning in Life Questionnaire (MLQ)

Ten individual items from the Meaning in Life Questionnaire (MLQ; Steger et al., 2006; see Appendix A) were used as indicators for the Search and Presence latent variables included in the multivariate model. The MLQ is a 10-item self-report questionnaire measuring both perceived presence of meaning and search for meaning. While respondents typically answer questions based on a 7-point scale, ranging from 1 (*absolutely untrue*) to 7 (*absolutely true*), participants in the current study answered questions based on a 5-point scale to be consistent across all samples and a previous version of the MLQ. The 5-point scale in this study ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores on the 7-point version of the MLQ range from 5 to 35; however, due changes in the Likert scale associated with the current study, scores on each scale range from 5 to 25.

Typically, negative correlations between the Presence and Search subscales have been noted (ranging from -.02 to -.30 in American college populations); however, a small positive correlation between Search and Presence subscale scores (.12) was found in a sample diagnosed with psychotic disorders (Schulenburg et al., 2011). Items on the Presence subscale (1, 4, 5, 6 and 9) assess the degree to which respondents perceive their lives as meaningful (e.g., “I understand my life’s meaning”). Items on the Search subscale (2, 3, 7, 8 and 10) assess the degree to which respondents are searching for meaning in their lives (e.g., “I am searching for meaning in my life”).

Internal consistency has been well established for scores on the MLQ. On the Presence and the Search subscales, coefficient alphas range from the low .80’s to the low .90’s (Duffy & Raque-Bogdan, 2010; Kashdan & Breen, 2008; Park et al., 2010; Schulenburg et al., 2011; Steger et al., 2006; Steger & Kashdan, 2007; Steger et al., 2009; Whittington & Scher, 2010). Scores on the MLQ have demonstrated moderate stability over a 13-month period and good test-retest reliability over a 1-month period (Dik et al., 2008; Steger et al., 2006; Steger & Kashdan, 2007).

The Eating Attitudes Test-26 (EAT-26)

Three subscale scores were derived from the Eating Attitudes Test-26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 2001; see Appendix A) to serve as indicators of the Disordered Eating latent variable. The EAT-26 is one of the most widely used measures to screen for disordered eating behaviors among high school and college students (Garner, Rosen, & Barry, 1998). The EAT-26 has also been validated in clinical and non-clinical samples across various cultural backgrounds (Eastern/Western Europe, South America, Middle East, Asia; Garfinkel & Newman, 2001). The scale is comprised of 26 items divided between three subscales: Dieting, Oral Control, and Bulimia/Food Preoccupation. The EAT-26 is rated on a six-point Likert scale

ranging from 1 (*never*) to 6 (*always*) based on how often the individual engages in specific behaviors. Higher scores are reflective of more severe eating disorder pathology. The Dieting subscale consists of questions to determine dieting attitudes and behaviors such as counting calories, fear of gaining weight, feeling guilty after eating, and limited certain food groups (e.g., carbohydrates, sugar). The Bulimia/Food Preoccupation subscale consists of questions to determine the amount of time an individual spends thinking about food as well as behaviors associated with bulimia nervosa including bingeing and purging. The Oral Control subscale assesses level of applied control surrounding food such as the avoidance of eating when hungry, cutting food into very small pieces, and eating very slowly.

The Simple Screening Instrument for Substance Abuse and Mental Illness (SAMISS)

The Substance Abuse latent variable was indicated by scores derived from the Simple Screening Instrument for Substance Abuse and Mental Illness (SAMISS; Whetten et al., 2005; see Appendix A) and from a separate score based on four additional items, which determined reasons for substance abuse. The SAMISS is widely used in mental health settings as a screener for substance abuse issues. The SAMISS contains six items assessing for symptoms of substance abuse and seven items assessing for symptoms of co-occurring mental illness. The current study utilized only the substance abuse screener questions from the SAMISS. The substance abuse items on the SAMISS include two questions from the Alcohol Use Disorders Identification Test (AUDIT) regarding frequency and amount of alcohol use, two items from the Two Item Conjoint Screen for Alcohol and Other Drug Problems, one question regarding use of illicit drugs, and one question about abuse of prescription drugs. Each item determines frequency and amount of substance use and participants respond to questions on a five-point Likert scale ranging from 0 (*Never*) to 4 (*4 or more times per week*). Individual item scores are totaled which provides a

continuous total scale score, with higher values reflecting severity of substance abuse. In addition to the SAMISS screener scale, four additional items (see Appendix H) were included to determine whether substances were used over the past month or past year as a method of emotion regulation (e.g., “In the past month, how often did you drink alcohol to avoid or numb your emotions?”). Participants responded to these four additional items on the same five-point Likert scale ranging from 0 (*Never*) to 4 (*4 or more times per week*). The four additional items were summed to create a total scale score, with higher values reflecting greater reliance on substance abuse as a coping strategy.

Procedure

The testing sample used in this study was based on data collected from female undergraduate students enrolled in introductory psychology courses at Colorado State University. Participants were recruited to participate in this study in return for course credit during the spring semester of the 2014-15 academic year or the fall semester of the 2015-16. Participants electronically signed an online informed consent that described the study, outlined potential risks and benefits of participation, and assured confidentiality and anonymity (see Appendix A). Participants completed a series of online questionnaires, including the Demographic Data form, the TLEQ, the MLQ, the EAT-26, the MEAQ, and the SAMISS. After completing the questionnaires, participants received web-delivered debriefing forms describing the study’s purpose, offering information about available counseling services, and providing contact information for the primary investigator (see Appendix A). Participants’ names were not connected to their online survey responses, and all completed questionnaires were stored in a protected electronic folder. Response rates to the survey are unknown as the exact size of the participant pool is unknown; however, complete data was available for approximately 95% of

individuals who responded to the survey. All procedures and methods employed in this study were approved by the Colorado State University Human Subjects Committee/Institutional Review Board prior to implementation.

STUDY 1A RESULTS

Preliminary Analyses

The maximum likelihood (ML) estimates generated in structural equation modeling (SEM) require that several assumptions about the data be met (McDonald & Ringo Ho, 2002). To test for multivariate normality, each of the variables included in the model were examined for evidence of skew and kurtosis using the SPSS statistical software package (SPSS, 2015). All variables demonstrated suitable normality except for frequency of trauma (TRAMAFQ), which displayed significant positive skew and kurtosis. This was expected, as TRAMAFQ is a count variable, which creates the potential for extreme outliers and the experience of traumatic events is not normally distributed in the population. However, in order to correct for this assumptive violation, extreme outliers on the TRAMAFQ variable were replaced with values indicated by the maximum range statistic. While the TRAMAFQ variable remained slightly skewed and kurtotic even after removing extreme outliers, ML estimation and its associated statistics are fairly robust against minor violations of normality, especially when utilized within large sample sizes (McDonald & Ringo Ho, 2002). Because skew and kurtosis were modest and only present for one of the variables, using alternative, more robust statistics (i.e., Maximum Likelihood Robust; MLR) was unnecessary.

In addition to multivariate normality, ML estimation requires a sufficient sample size, especially when estimating complex models. A minimum of 100-200 participants is required for

most models and a larger sample size is recommended for more complex models (McDonald & Ringo Ho, 2002). This requirement was exceeded with a relatively large number of participants in the testing ($N = 541$) and the confirmatory samples ($N = 571$).

Finally, missing data must also be addressed prior to running SEM analyses. To determine whether any patterns existed with regard to missing data, an MCAR test (Missing Completely at Random; Little, 1988) was conducted on the testing sample. Results of the MCAR test were non-significant, $\chi^2(399, N = 541) = 382.37, p = .72$, indicating that any missing data was unrelated to specific demographic characteristics such as age or race.

Additional preliminary analyses of the descriptive data were completed using t tests, χ^2 tests, and correlations. Descriptive and demographic data were compared across samples to determine if there were significant differences between the testing sample from Study 1A and the confirmatory sample from Study 1B. χ^2 tests revealed one significant demographic difference between the testing and confirmatory samples. While each sample contained approximately the same number of participants who self-reported an eating disorder diagnosis, 21 participants in the testing sample had received treatment for an eating disorder compared with 7 participants in the confirmatory sample. In order to address this concern, the multivariate model was tested after eliminating participants from the testing sample who had received treatment. Removing these cases did not affect the overall fit of the model. Furthermore, removing these cases would have eliminated valuable data from those individuals who had experienced concerns highly related to the variables of interest in the current study. Therefore, participants who received treatment for disordered eating were included in the data analysis.

MPlus statistical software (Múthen & Múthen, 2007) was used to test the measurement model (see Table 2.1) and the modified hypothesized structural equation model (see Figure 2.2)

in which Trauma and Stress latent variables predicted Experiential Avoidance, Search, Presence and Disordered Eating and Substance Abuse latent variables, and Experiential Avoidance, Search, Presence predicted Disordered Eating and Substance Abuse. Using latent variable structural equation modeling has several advantages. By using a system of simultaneous equations to estimate parameters based on observed correlations in the data, structural equation modeling allows for a comparison of the hypothesized or theoretical factor structure to the factor structure present in the data. Additionally, using latent variable SEM modeling makes it possible to examine constructs which are free from error. Data were analyzed using ML estimation. ML is a method of estimation based on the idea that if the true variance-covariance matrix is known within a given population, the probability of obtaining a sample variance-covariance matrix can be estimated. Specifically, maximum likelihood searches for the parameter estimates that will maximize the possibility that the sample matrix was drawn from the implied population matrix.

SEM provides several fit indices to determine overall model fit. Non-significant values of the scaled χ^2 statistic are preferable; however, χ^2 distributions are sensitive to sample size (McDonald & Ringo Ho, 2002). Both the testing and the confirmatory samples in the current study consisted of a large numbers of participants; therefore, additional indicators of goodness-of-fit were utilized, including the Comparative Fit Index (CFI; Hu & Bentler, 1999), the Standardized Root Mean Square Residual (SRMR; Hu & Bentler, 1999), and the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993). The CFI has values that range from 0 to 1. Values of 0.90 and higher are considered evidence of a good-fitting model and indicate that 90% or more of the covariation in the data is reproduced by the hypothesized model. Values of 0.95 and higher are considered evidence of an excellent fitting model (Hu & Bentler, 1999). The SRMR is an absolute measure of fit and is defined as the standardized

difference between the observed correlation and the predicted correlation. A value of zero indicates a perfect fit between the observed and the predicted correlation. An SRMR value of less than 0.08 corresponds to a good fit between the observed correlation and the predicted correlation (Hu & Bentler, 1999). The RMSEA measures the amount of residual between the predicted and the observed covariance structure. RMSEA values range from 0 to 1 and measure fit per degrees of freedom, while controlling for sample size. RMSEA values of less than 0.06 correspond to good fit between the hypothesized model and the observed data (Hu & Bentler, 1999) while values of less than 0.08 correspond to an acceptable model fit (McDonald & Ringo Ho, 2002). The SRMR is more sensitive to misspecifications in the measurement model and the RMSEA is more sensitive to misspecifications in the structural model (Fan & Sivo, 2005). Therefore, the SRMR was used when reporting measurement model fit and the RMSEA was used when reporting structural model fit.

Finally, SEM guidelines advise researchers to give preference to parsimonious models (McDonald & Ringo Ho, 2002). Parsimonious models are achieved by only including paths and variables that are theoretically plausible and hypothesized *a priori*. While including many potentially significant paths or correlations can result in better model fit simply by accounting for more variance in the observed data; the multivariate model erred on the side of parsimony by only including theoretically plausible paths and variables.

The Measurement Model

Results from the initial test of the measurement model indicated that of the six MEAQ subscales, five loaded significantly onto the Experiential Avoidance latent variable. These five subscales included behavioral avoidance, distress aversion, procrastination, distraction/suppression, and repression/denial (BEHAVD, DISAVER, PROCRAST, DISTSUPR,

REPDENY). The Distress Endurance subscale did not load significantly onto the Experiential Avoidance latent variable so it was trimmed from the model. Table 2.1 presents the factor loadings, means, and standard deviations of the variables used to specify the final measurement model. After removing the Distress Endurance subscale, all measured variables loaded significantly onto their hypothesized factors ($p < 0.01$) and the measurement model demonstrated good fit: $\chi^2(303, N = 541) = 764.23, p < 0.01$; CFI = 0.91, SRMR = 0.06. Table 2.2 presents the correlation matrix of the model's latent variables. All of the latent variables were significantly correlated in the expected direction with the exception of two, Trauma was not significantly correlated with Presence or with Experiential Avoidance.

Path Analysis

The final structural model depicting predictive paths among latent variables is presented in Figure 2.3. While indices indicated a good overall fit between the hypothesized multivariate model and the observed data in the testing sample ($\chi^2 [303, N = 541] = 764.23, p < 0.01$; CFI = 0.91, RMSEA = 0.05), several of the hypothesized effects between variables were non-significant. Non-significant paths were trimmed from the model. These paths were: Trauma to Search, Trauma to Presence, Trauma to Experiential Avoidance, and Presence to Disordered Eating. Fit indices indicated a good fit between the final specified model and the data after trimming the non-significant paths: $\chi^2(310, N = 541) = 791.19, p < 0.01$; CFI = 0.91, RMSEA = 0.05. Given that the hypothesized model had good fit, no paths were added. The hypothesized direct paths from Stress to Presence, from Stress to Search, and from Stress to Experiential Avoidance were significant and in the expected direction. The hypothesized direct paths from

Table 2.1. *Testing: Factor loadings, means, and std. deviations for measurement model.*

| LATENT VARIABLE Measured Variable (LABEL) | Factor Loadings | Means (SD) |
|---|------------------------|-------------------|
| TRAUMA | | |
| Severity (TRAMASV) | 0.67 | 10.63 (6.27) |
| Frequency (TRAMAFQ) | 0.90 | 6.70 (8.03) |
| Recency (TRAMARC) | 0.50 | -1560 (2256) |
| STRESS | | |
| Interpersonal (SSINTER) | 0.65 | 8.21 (2.43) |
| Intrapersonal (SSINTRA) | 0.87 | 23.62 (5.77) |
| Academic (SSACAD) | 0.81 | 12.47 (3.59) |
| Environmental (SSENVN) | 0.69 | 8.12 (2.40) |
| EXP. AVOIDANCE | | |
| Behav. Avoidance (BEHAVOD) | 0.53 | 38.51 (8.24) |
| Distress Aversion (DISTAVER) | 0.71 | 45.58 (10.58) |
| Procrastination (PROCRAST) | 0.59 | 25.39 (7.17) |
| Distract/Suppress (DISTSUPR) | 0.41 | 28.70 (5.74) |
| Repress/Deny (REPDENY) | 0.57 | 36.34 (10.97) |
| SEARCH | | |
| MLQ2 | 0.71 | 3.96 (0.92) |
| MLQ3 | 0.70 | 3.82 (0.94) |
| MLQ7 | 0.72 | 3.63 (0.97) |
| MLQ8 | 0.79 | 3.74 (0.94) |
| MLQ10 | 0.74 | 3.52 (1.01) |
| PRESENCE | | |
| MLQ1 | 0.74 | 3.34 (0.98) |
| MLQ4 | 0.82 | 3.21 (1.00) |
| MLQ5 | 0.75 | 3.68 (0.95) |
| MLQ6 | 0.83 | 3.26 (1.02) |
| MLQ9 | 0.64 | 3.68 (1.12) |
| DISORDERED EATING | | |
| Dieting (EATDIET) | 0.77 | 6.85 (6.90) |
| Bulimia (EATBULIM) | 0.71 | 1.26 (2.45) |
| Oral Control (ORCON) | 0.30 | 2.12 (2.44) |
| SUBSTANCE ABUSE | | |
| Exp. Avd Sub Use (SAEXPAVD) | 0.84 | 4.29 (4.17) |
| Total Sub Use (SATOTAL) | 0.85 | 1.56 (2.68) |

All factor loadings significant, $p < 0.001$

When item descriptions not available, the measured variables are represented by subscale names

Table 2.2. *Latent variable correlation matrix for testing sample.*

| | TRAUMA | STRESS | EXPAVD | DISEAT | SEARCH | PRESEN | SBABUS |
|--------|--------|--------|--------|--------|--------|--------|--------|
| TRAUMA | -- | | | | | | |
| STRESS | .30** | -- | | | | | |
| EXPAVD | .07 | .41** | -- | | | | |
| DISEAT | .25** | .41** | .26** | -- | | | |
| SEARCH | .10* | .26** | .30** | .25** | -- | | |
| PRESEN | .01 | -.27** | -.37** | -.17** | -.32** | -- | |
| SBABUS | .34** | .33** | .41** | .30** | .13** | -.32** | -- |

** Correlation significant at the $p < 0.001$ level

* Correlation significant at the $p < 0.05$ level

Search to Disordered Eating and from Experiential Avoidance to Disordered Eating were also significant and in the expected direction. As hypothesized, Stress had a significant indirect effect on Disordered Eating and Substance Abuse through Experiential Avoidance. Finally, Stress also had a significant indirect effect on Substance Abuse through Presence.

Study 1B

Data analysis from Study 1A, while supporting that the hypothesized model fit the data, involved trimming a number of the hypothesized paths from the model. The purpose of Study 1B was to test the final modified multivariate model defined in Study 1A (see Figure 2.3) in an alternate sample.

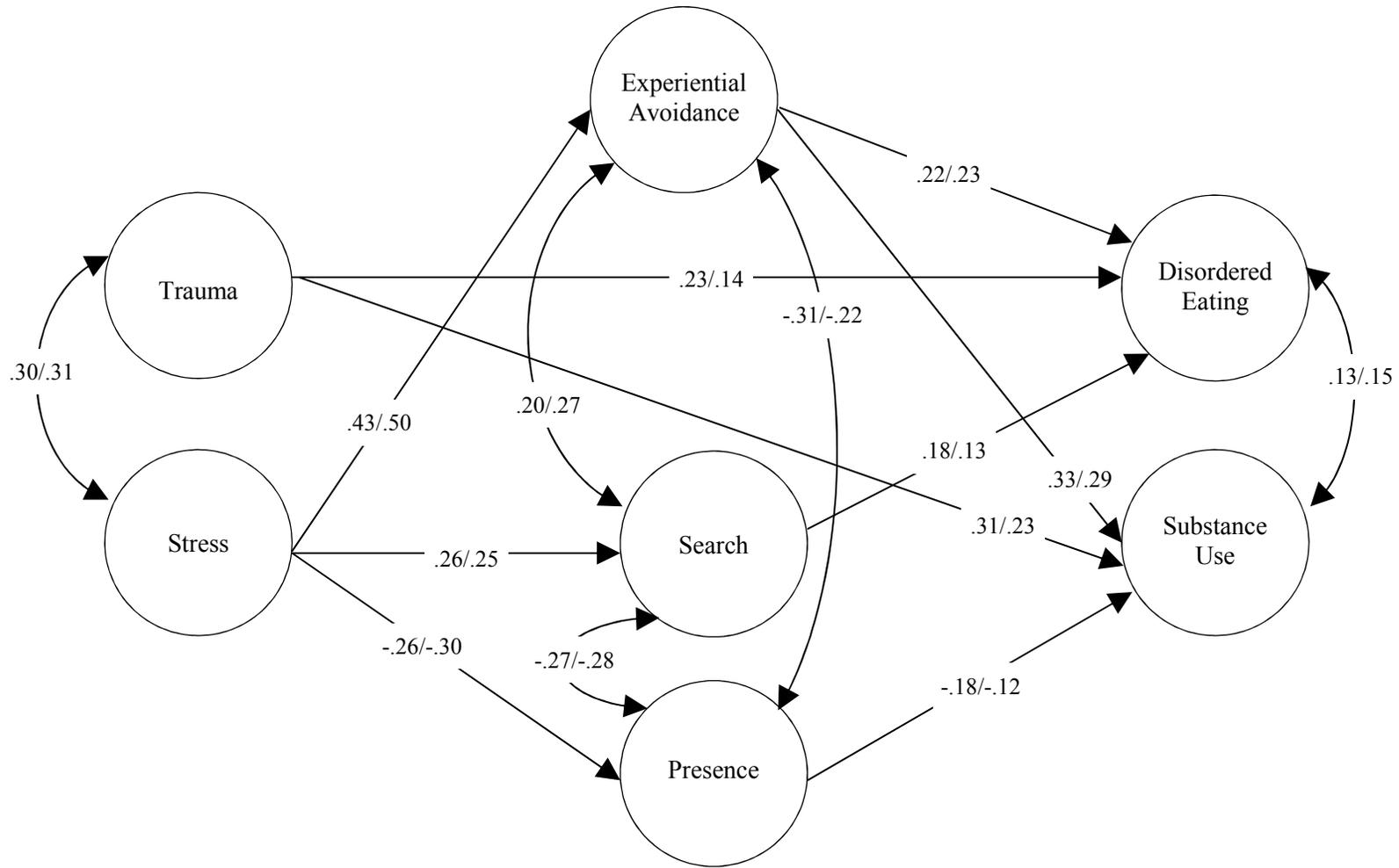


Figure 2.3. Final structural model specified in Study 1A and confirmed in Study 1B.

The first number presented on each regression path is the coefficient for the testing sample and the second number is the coefficient for the confirmatory sample. Circles are latent variables, straight arrows are regression paths, and curved arrows are correlations. Values before the diagonal are from the testing sample, values behind the diagonal are from the confirmatory sample.

STUDY 1B METHODS

Participants

The confirmatory sample consisted of 571 female undergraduate students ranging from ages 17 to 58 ($M = 18.99$, $SD = 2.37$). As described in Study 1A, all participants included in the testing and confirmatory samples were enrolled in introductory psychology courses at Colorado State University and completed the study during the spring semester of the 2014-15 academic year and the fall semester of the 2015-16 academic year. 461 (80.7%) participants identified as Caucasian/White, 44 (7.7%) as Hispanic, 28 (4.7%) as Asian American, 18 (3.2%) as African American/Black, 5 (0.9%) as American Indian/Native American, 1 (0.2%) as Middle Eastern American, and 14 (2.5%) participants self-reported as other. 24 participants (5.4%) reported that they had previously received a diagnosis of an eating disorder and 7 participants (1.2%) reported that they had received treatment for an eating disorder. 96 participants (17.9%) reported a history of eating disorders in their immediate family (i.e., parents, siblings, children), 323 (56.4%) reported a history of substance abuse related issues in their immediate family, and 266 (46.6%) reported a history of other mental health related concerns in their immediate family.

Measures

Participants in Study 1B completed the same measures described in Study 1A including a demographic survey, the TLEQ, SSS, MLQ, MEAQ, EAT-26, and SAMISS.

Procedure

The same procedures outlined in Study 1A were utilized for the data collection process of participants included in Study 1B.

STUDY 1B RESULTS

Preliminary Analyses

The same steps described in Study 1A were taken to ensure that all of the ML assumptions were met with regard to the observed data in the confirmatory sample. Each of the variables included in the model were examined for evidence of skew and kurtosis using SPSS. Similar to the testing sample, all variables demonstrated suitable normality except for TRAMAFQ, which displayed significant positive skew and kurtosis. The same procedures described in Study 1A were used to address the non-normal trauma frequency data noted in the confirmatory sample. The confirmatory sample also had a sufficient amount of participants ($N = 571$) to account for the complexity of the multivariate model. Results of the MCAR were non-significant, $\chi^2(108, N = 571) = 101.97, p = .65$, indicating that any missing data were unrelated to specific demographic characteristics of participants such as age or race.

The Measurement Model

Table 2.3 presents the factor loadings, means, and standard deviations for the measurement model tested in the confirmatory sample. All measured variables loaded significantly onto their hypothesized factors ($p < 0.01$) and the measurement model demonstrated good fit: $\chi^2(310, N = 571) = 699.44, p < 0.01$; CFI = 0.93, SRMR = 0.05. Table 2.4 presents the latent variable correlation matrix for the confirmatory sample. All of the latent variables were significantly correlated in the expected direction with the exception of one hypothesized relation between Trauma and Experiential Avoidance.

Table 2.3. *Confirmatory: Factor loadings, means, and std. deviations for measurement model.*

| LATENT VARIABLE Measured Variable (LABEL) | Factor Loadings | Means (SD) |
|---|------------------------|-------------------|
| TRAUMA | | |
| Severity (TRAMASV) | 0.72 | 10.28 (5.99) |
| Frequency (TRAMAFQ) | 0.87 | 6.29 (7.10) |
| Recency (TRAMARC) | 0.52 | -1516 (2337) |
| STRESS | | |
| Interpersonal (SSINTER) | 0.63 | 7.87 (2.21) |
| Intrapersonal (SSINTRA) | 0.85 | 23.47 (5.38) |
| Academic (SSACAD) | 0.75 | 12.15 (3.36) |
| Environmental (SSENVN) | 0.70 | 7.97 (2.27) |
| EXP. AVOIDANCE | | |
| Behav. Avoidance (BEHAVOD) | 0.59 | 38.69 (7.94) |
| Distress Aversion (DISTAVER) | 0.70 | 45.49 (10.28) |
| Procrastination (PROCRAST) | 0.56 | 25.24 (7.18) |
| Distract/Suppress (DISTSUPR) | 0.46 | 28.84 (5.71) |
| Repress/Deny (REPDENY) | 0.58 | 37.13 (11.29) |
| SEARCH | | |
| MLQ2 | 0.67 | 3.95 (0.96) |
| MLQ3 | 0.67 | 3.80 (0.93) |
| MLQ7 | 0.77 | 3.63 (0.99) |
| MLQ8 | 0.76 | 3.77 (0.95) |
| MLQ10 | 0.70 | 3.52 (1.01) |
| PRESENCE | | |
| MLQ1 | 0.77 | 3.33 (1.06) |
| MLQ4 | 0.84 | 3.24 (1.08) |
| MLQ5 | 0.78 | 3.67 (0.97) |
| MLQ6 | 0.82 | 3.29 (1.06) |
| MLQ9 | 0.72 | 3.59 (1.11) |
| DISORDERED EATING | | |
| Dieting (EATDIET) | 0.96 | 6.97 (7.17) |
| Bulimia (EATBULIM) | 0.64 | 1.28 (2.44) |
| Oral Control (ORCON) | 0.26 | 1.99 (2.30) |
| SUBSTANCE ABUSE | | |
| Exp. Avd Sub Use (SAEXPAVD) | 0.84 | 4.26 (4.18) |
| Total Sub Use (SATOTAL) | 0.87 | 1.59 (2.80) |

All factor loadings significant, $p < 0.001$

When item descriptions not available, the measured variables are represented by subscale names

Table 2.4. *Latent variable correlation matrix for the confirmatory sample*

| | TRAUMA | STRESS | EXPAVD | DISEAT | SEARCH | PRESEN | SUBABS |
|--------|--------|--------|--------|--------|--------|--------|--------|
| TRAUMA | -- | | | | | | |
| STRESS | .30** | -- | | | | | |
| EXPAVD | .06 | .48** | -- | | | | |
| DISEAT | .18** | .40** | .26** | -- | | | |
| SEARCH | .15** | .24** | .34** | .24** | -- | | |
| PRESEN | -.10** | -.30** | -.38** | -.19** | -.28** | -- | |
| SUBABS | .26** | .38** | .33** | .29** | .21** | -.27** | -- |

** Correlation significant at the $p < 0.01$ level

* Correlation significant at the $p < 0.05$ level

The Structural Model

The multivariate model specified in Study 1A (see Figure 2.3) was tested again in Study 1B to determine whether the model also had a good fit to the data in the confirmatory sample without further modification. All paths were significant and in the expected direction (see Figure 2.3). No model modifications were needed as the model specified in Study 1A fit the data well in the confirmatory sample, $\chi^2(310, N = 571) = 738.95, p < 0.01$; CFI = 0.92, RMSEA = 0.05.

STUDIES 1A AND 1B DISCUSSION

Overall, results of Study 1A supported the hypothesized measurement and structural models. Results of Study 1B confirmed the measurement and structural models identified in Study 1A. Confirming a good model fit in an alternate sample makes it less likely that results are reflective of spurious relations between variables in a specific data set. Additionally, no model

modifications were needed in order to achieve a good fit in the confirmatory sample, making the specified paths between variables more generalizable (McDonald & Ringo Ho, 2002).

Several of the hypothesized direct and indirect effects between the predictor variables (Trauma, Stress, Experiential Avoidance, Search, Presence) and the outcome variables (Disordered Eating, Substance Abuse) were significant. Trauma predicted severity of Disordered Eating and Substance Abuse. Additionally, Stress predicted increased Search, decreased Presence, and increased Experiential Avoidance. While numerous studies have established the deleterious effects of trauma and stress, the significant indirect effects revealed in Study 1A contribute to an increased understanding of the relation between stress and high risk coping behaviors such as disordered eating and substance abuse. Namely, Stress predicted higher levels of Experiential Avoidance, which, in turn, predicted severity of Disordered Eating and Substance Abuse. Stress also predicted lower levels of Presence, which, in turn, predicted higher levels of Substance Abuse. Notably, the direct paths from Stress to Substance Abuse and from Stress to Disordered Eating were non-significant. Thus, the effect of Stress on Substance Abuse was fully mediated through the indirect paths through Presence and Experiential Avoidance. The effect of Stress on Disordered Eating was also fully mediated through the indirect effect through Experiential Avoidance. Findings suggest that engaging in experiential avoidance during periods of stress increases reliance on maladaptive coping strategies such as disordered eating and substance abuse. Additionally, experiencing low presence of meaning during periods of stress confers risk for increased substance abuse. However, the indirect effects from stress to disordered eating through meaning were non-significant, suggesting that the effect of stress on meaning may only increase risk for certain types of maladaptive coping behaviors, such as substance abuse.

While the multivariate model demonstrated good fit in both the testing and confirmatory samples, several of the hypothesized factor loadings and paths were non-significant. The distress endurance subscale did not load significantly onto the Experiential Avoidance latent variable in the testing sample. Distress endurance measures the degree to which an individual is willing to withstand suffering and persist towards valued goals in spite of setbacks and difficulties (i.e., “I am willing to suffer for the things that matter to me”; Gamez et al., 2011). While this subscale demonstrates good discriminant and convergent validity, MEAQ scale development results indicated that distress endurance measured a broad content area as evidenced by a relatively low Akaike Information Criterion (AIC) score. Scale development results also indicated that distress endurance shared a significant positive relationship with measures of purpose, meaning, and positive affect. Therefore, it is possible that multicollinearity between distress endurance and presence of meaning was related to the non-significant factor loading for distress endurance.

While the direct effects from Trauma to Substance Abuse and Disordered Eating were significant, the hypothesized paths from Trauma to Presence, from Trauma to Search, and from Trauma to Experiential Avoidance were non-significant. These results suggest that trauma confers risk for disordered eating and substance abuse regardless of levels of meaning or experiential avoidance. This interpretation is consistent with research demonstrating the severe and long lasting emotional, biological, and neurodevelopmental impacts of trauma. Thus, experiencing trauma may be so biologically and psychologically disruptive that engaging in avoidant behaviors is likely to occur regardless of mediating factors, such as meaning or experiential avoidance. As stress is considered less disruptive than trauma, the effects of stress may be more dependent on mediating factors such as meaning and experiential avoidance.

There are several limitations associated with Study 1A and Study 1B. While unidirectional paths between latent variables in SEM are required for parameter estimation, the use of cross-sectional data does not allow for inferences of causality. Rather, SEM relies on a parsimonious, theory driven approach. The predictor variables were included in the current study as predictors based on several longitudinal studies documenting the deleterious effects of trauma and stress. However, the theoretical rationale for including experiential avoidance and meaning as predictors of the outcome variables was derived from a less comprehensive literature base. Therefore, it is especially important that the significant effects involving experiential avoidance and meaning are not interpreted as causal in nature. Rather, a good-fitting model is reflective of approximations to reality (McDonald & Ringo Ho, 2002). The use of convenience samples is an additional limitation of Studies 1A and 1B, as it decreases the likelihood that results are generalizable to populations with higher levels of pathology.

CHAPTER 3: TREATMENT OUTCOMES WITHIN A CLINICAL SAMPLE

Studies 1A and 1B utilized a convenience sample, which limited the ability to generalize results to individuals with higher levels of psychopathology. Additional limitations of Studies 1A and 1B included the use of cross-sectional data, which prevents inferences of causality. To address these limitations, Study 2 utilized longitudinal data to determine whether trauma history, experiential avoidance, and meaning in life related to treatment outcomes in a small sample of individuals completing residential treatment for eating disorders. If hypotheses in Study 2 were confirmed, results would establish the therapeutic relevance of both experiential avoidance and meaning in life as significant determinants of treatment outcomes. The following section provides a brief review of research related to the hypothesized relationships between trauma, experiential avoidance, meaning in life, and treatment outcomes.

STUDY 2 LITERATURE REVIEW

Rapidly increasing rates of disordered eating coupled with poor prognosis and treatment outcomes demonstrate the need for continued exploration of factors related to the etiology and maintenance of eating disorders (Eating Disorders Coalition, 2014). High prevalence rates of trauma and treatment resistance among individuals with eating disorders contribute to the complexity of conceptualizing and treating disordered eating. While research has begun to explore relations between trauma history, emotion regulation, meaning, and disordered eating, the majority of this research has been conducted on college populations, which limits the ability to generalize to populations with higher levels of pathology. Finally, even the most well-

researched and established eating disorder treatments achieve mediocre effects, demonstrating the need for continued exploration of factors relating to eating disorder treatment outcomes.

DSM-5 criteria for eating disorders highlight the behavioral components of eating disorders as well as the overvaluation of weight and shape (APA, 2013). However, for most people struggling with disordered eating, the overvaluation of weight and shape is only one factor related to the development of disordered eating. Individuals with eating disorders also frequently present with emotion regulation deficits, indicating that DSM-5 criteria may be based on an incomplete conceptualization of eating disorders. Preliminary research has suggested that individuals may rely on disordered eating as a maladaptive form of emotion regulation (Juarascio et al., 2014). Those with anorexia nervosa often report feeling “numb” when they severely restrict caloric intake and people with bulimia nervosa or binge eating disorder indicate that bingeing provides short-term relief from negative emotions (Fox & Leung, 2009; Juarascio et al., 2014). Thus, for some individuals, disordered eating may be conceptualized as a high risk coping behavior, similar to substance abuse. High-risk coping behaviors are conceptualized within ACT theory as methods of experiential avoidance (Hayes et al., 2006). Research demonstrates a positive correlation between experiential avoidance and eating disorder symptom severity (Juarascio et al., Hayes et al., 2006), indicating the relevance of experiential avoidance in relation to treatment outcomes.

Preliminary research has also suggested that individuals with eating disorders often associate low caloric intake and weight-loss with a sense of accomplishment and purpose (Fox & Leung, 2009). As individuals become entrenched in eating disorder thoughts, attitudes, and weight-related goals, they may be less willing to engage in treatment approaches that will impede or reverse weight-loss. Unfortunately, as eating disorder pathology becomes more

severe, the sense of purpose associated with weight control may crowd out other sources of meaning, such as valued relationships or career goals. Developing more functional sources of meaning is often an essential component of eating disorder treatment. Therefore, it is plausible that decreases in symptom severity may relate to the recovery of meaning.

Research questions from Study 2 were tested using Multiple Linear Regression (MLR) analyses. It was hypothesized that:

Hypothesis 1: Index scores on the Traumatic Life Events Questionnaire (TLEQ) would share a significant positive relation with symptom severity scores, as measured by the Eating Disorders Inventory – Third Edition (EDI-3).

Hypothesis 2: Experiential avoidance, as measured by the MEAQ, would significantly predict treatment outcomes, such that higher levels of experiential avoidance would relate to smaller decreases in symptom severity scores between admission and discharge.

Hypothesis 3: Presence of meaning, as measured by the MLQ - Presence subscale, would significantly predict treatment outcomes, such that higher levels of meaning would relate to larger decreases in symptom severity scores between admission and discharge.

STUDY 2 METHODS

Participants

While the clinical sample initially included 47 participants, discharge and/or admission scores were missing for 13 participants. Computing the treatment outcome variable (EDICHANGE) required the availability of EDI-3 scores for admission and discharge so the 13 incomplete cases were eliminated from the data set. After eliminating these cases, the clinical sample included 8 males and 26 females ranging from ages 18 to 41 ($M = 21.71$, $SD = 4.53$).

Participants were recruited from residential and intensive outpatient units at a large psychiatric hospital in the Midwestern United States. Primary diagnoses of participants in the clinical sample included anorexia nervosa, bulimia nervosa, binge eating disorder, and unspecified eating disorders. 32 participants (94.1%) in the clinical sample identified as Caucasian/White, one participant (2.9%) identified as Hispanic, and one participant (2.9%) identified as ‘Other’. With regard to education, 10 participants (29.4%) had obtained a high school degree, 20 participants (58.8%) had completed some college, and 4 participants (11.8%) had obtained a Bachelor’s degree.

Measures

Participants in the clinical sample completed several of the same questionnaires used in Studies 1A and 1B including: the Traumatic Life Events Questionnaire (TLEQ), the Multidimensional Experiential Avoidance Questionnaire (MEAQ), and the Meaning in Life Questionnaire (MLQ). Participants in the clinical sample also completed a demographic form and the Eating Disorders Inventory - 3rd edition (EDI-3). Descriptions of the TLEQ, MEAQ, and MLQ were provided in Study 1A. Descriptions of the demographic form and the EDI-3 are included below.

Demographic Information

The demographic form used in Study 2 (see Appendix A) included items to determine age, gender, race, education level, current diagnoses, and the age when participants were diagnosed with an eating disorder.

Eating Disorder Inventory-3 (EDI-3)

EDI-3 admission and discharge scores were obtained through an electronic database at the data collection site. The EDI-3 (Garner, 2004) is the most recent revision of a widely used

self-report measure of presence and severity of eating disorder thoughts, behaviors, and attitudes. The EDI-3 contains 91 items organized into 12 primary scales. Test-retest reliability for this scale is very high (.98) across clinical samples. Reliability across diagnostic groups is also high and ranges from .90 to .97. Correlation between conceptually related scales (i.e. Drive for Thinness and Body Dissatisfaction scales) from the EDI-3 ranges from .96 to .97. Finally, scores on the EDI-3 are highly correlated with other measures of eating disorder symptoms severity (Cumella, 2006).

Procedure

Participants in the clinical sample were recruited through in-person, individual, verbal contact from the principal investigator and a research assistant between June 2012 and March 2013. Permission to do so was obtained from the clinical director and board of directors of the hospital where data collection took place. Participation in the study was voluntary for each resident at the treatment facility and no incentive or compensation was provided. Verbal explanation of the study was provided and participants also received a written informed consent (see Appendix A). Upon completion of the informed consent process, participants in the clinical sample were asked to complete a paper and pencil survey packet including the TLEQ, MLQ, and MEAQ. EDI-3 admission and discharge scores were obtained through the hospital's electronic database between September 2013 and April 2015.

STUDY 2 RESULTS

Statistical Analysis

MLR analyses were used to test whether experiential avoidance (EXPAVD) and presence of meaning (PRESENCE) would significantly predict change in EDI-3 score from admission to

discharge (EDICHANGE). To properly conduct MLR analyses, several assumptions about the data must be met. To test for violations of normality, each of the independent and dependent variables included in regression analyses were examined for evidence of skew and kurtosis using SPSS. All variables demonstrated suitable normality. Statistical tests of normality as well as the histogram and Q-Q plot for residuals indicated that residuals were also normally distributed. MLR assumes linearity and homogeneity of variance across levels of the predictor variables. Visual inspection of scatter plots for all variables and their residuals confirmed that the assumptions of linearity and homoscedasticity were met. Variance inflation factors (VIF) were less than 4 indicating that the assumption of non-multicollinearity was also met (Cohen & Cohen, 1983).

Finally, MLR techniques are particularly sensitive to outliers, making it critical to identify extreme scores that may exert undue influence on the relations between predictor and outcome variables. Outliers were located through a variety of methods. Graphic depictions of the data were generated using box-plot graphs, which are helpful for visual detection of extreme scores. Analyses of studentized residuals, which provide a statistical representation of each case's residual error and its resulting influence on the overall model, were used to supplement visual inspection of the data (Cook, 1982). Cases were identified as potentially problematic when resulting in studentized residuals exceeding ± 2 (Belsey et al., 1980). One outlier on the frequency of trauma variable (TRAUMA) was eliminated.

Preliminary Analyses

A change variable (EDICHANGE) was computed to reflect the amount of decrease between EDI-3 admission and discharge scores. Means and standard deviations are presented in Table 3.1. A correlation matrix for all variables is presented in Table 3.2. Trauma was not

significantly related to EDI-3 admission, discharge, or change scores. Presence shared a moderate negative relationship with EDI-3 discharge scores, $r(37) = -.36, p < .05$; however, presence was not significantly correlated with EDI-3 admission or change scores. Experiential avoidance shared a moderate positive relationship with EDI-3 admission scores, $r(43) = -.33, p < .05$; however, experiential avoidance was not significantly related to EDI-3 discharge or change scores. Experiential avoidance shared a moderate positive relationship with EDI-3 admission scores, $r(43) = -.33, p < .05$; however, experiential avoidance was not significantly related to EDI-3 discharge or change scores.

Table 3.1. *Study 2 variable means and standard deviations.*

| Variable | Means (SD) |
|-------------------------------|-------------------|
| Age | 22.02 (4.94) |
| Diagnosis Age | 16.84 (4.50) |
| Length of Treatment (in days) | 60.54 (38.56) |
| EDI-3 Admission | 467.81 (68.34) |
| EDI-3 Discharge | 407.11 (67.82) |
| EDI-3 Change | 67.12 (53.46) |
| Trauma Frequency | 6.96 (8.06) |
| Presence | 8.36 (4.23) |
| Search | 19.62 (3.90) |
| Total Experiential Avoidance | 210.21 (39.55) |
| Behavioral Avoidance | 41.40 (11.09) |
| Distress Aversion | 47.53 (12.90) |
| Procrastination | 20.60 (5.72) |
| Distract Suppress | 27.94 (5.87) |
| Repress/Deny | 39.83 (9.25) |

Determination of Control Variables

Analyses revealed no significant correlations between age, gender, race, or education and EDI-3 change scores; therefore, these variables were not controlled for in analyses.

Table 3.2. *Correlation matrix for the clinical sample.*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-------------------------|-------|--------|------|-------|-------|------|------|------|-----|-------|-------|-------|------|------|----|
| 1. Age | -- | | | | | | | | | | | | | | |
| 2. Diagnosis Age | .31* | -- | | | | | | | | | | | | | |
| 3. Length of Stay | .17 | -.45** | -- | | | | | | | | | | | | |
| 4. EDI-3 Admission | -.07 | .02 | .05 | -- | | | | | | | | | | | |
| 5. EDI-3 Discharge | -.05 | -.13 | .21 | .70** | -- | | | | | | | | | | |
| 6. EDI-3 Change | -.06 | -.09 | -.09 | .36** | -.42* | -- | | | | | | | | | |
| 7. Trauma Frequency | .48** | .18 | .07 | .13 | .13 | .07 | -- | | | | | | | | |
| 8. Presence | .20 | .42** | -.17 | -.28 | -.36 | .18 | .09 | -- | | | | | | | |
| 9. Search | -.14 | -.06 | -.04 | -.02 | -.06 | -.06 | -.01 | -.25 | -- | | | | | | |
| 10. Total Exp. Avoid | .01 | -.10 | -.10 | .33* | .30 | .01 | .11 | -.15 | .21 | -- | | | | | |
| 11. Behav. Avoid | .01 | -.17 | .02 | .49** | .44** | -.04 | .12 | -.26 | .15 | .90** | -- | | | | |
| 12. Distress Aversion | .08 | -.09 | -.08 | .03 | -.01 | .08 | .10 | -.02 | .17 | .80** | .55** | -- | | | |
| 13. Procrastination | -.18 | -.03 | -.10 | .17 | .18 | .07 | -.09 | -.09 | .17 | .70** | .39** | .50** | -- | | |
| 14. Distract - Suppress | .12 | -.16 | .07 | .08 | .01 | .07 | .11 | .05 | .08 | .50** | .47** | .30* | .29* | -- | |
| 15. Repress - Deny | -.06 | .08 | -.25 | .45** | .49** | .09 | .11 | -.20 | .20 | .70** | .64** | .32* | .44* | .35* | -- |

** Correlation significant at the $p < 0.01$ level

* Correlation significant at the $p < 0.05$ level

Multiple Linear Regression Results

Two MLR models were tested to determine whether presence and experiential avoidance were significant predictors of EDI-3 admission, discharge, or EDI-3 change scores. EDI-3 change scores were not significantly predicted by presence of meaning ($b = .18, p > .05$) or by experiential avoidance ($b = .03, p > .05$). The predictors in model 1 (see Table 3.3) accounted for approximately 3% of the variance in EDI-3 score change between admission and discharge ($R^2 = .03, p > .05$).

Table 3.3. Multiple regression analyses to determine predictors of EDI-3 Change scores

| Predictors of EDI-3 Change | <i>B</i> | <i>SE (B)</i> | <i>t</i> | <i>p</i> |
|----------------------------|----------|---------------|----------|----------|
| Presence | 2.28 | 2.18 | 1.05 | .30 |
| Experiential Avoidance | .04 | .26 | .16 | .88 |

$R = .19, R^2 = .03, SE\ of\ Estimate = 54.21, F(2) = .55, p > .05$

After controlling for EDI-3 admission scores, presence of meaning approached significance as a predictor of EDI-3 discharge scores ($b = -.23, p = .07$). Experiential avoidance was not a significant predictor of EDI-3 discharge scores ($b = .10, p > .05$). The predictors in model 2 (see Table 3.4) accounted for approximately 54% of the variance in EDI-3 discharge scores ($R^2 = .54, p < .01$).

Table 3.4. Multiple regression analyses to determine predictors of EDI-3 Discharge scores

| Predictors of EDI-3 Discharge Scores | <i>B</i> | <i>SE (B)</i> | <i>t</i> | <i>p</i> |
|--------------------------------------|----------|---------------|----------|----------|
| Presence | -3.75 | 2.05 | -1.83 | .07 |
| Experiential Avoidance | .19 | .25 | .76 | .46 |
| EDI-Admission Score | .62 | .14 | 4.37 | .00 |

$R = .74, R^2 = .54, SE\ of\ Estimate = 49.30, F(3) = 11.83, p < .00$

STUDY 2 DISCUSSION

Study 2 explored relations between trauma, meaning, experiential avoidance, symptom severity, and treatment outcomes within a sample of individuals diagnosed with eating disorders. Several correlations between variables of interest were significant and in the expected direction. However, regression analyses did not support meaning and experiential avoidance as significant predictors of treatment outcomes. Several major methodological limitations are likely related to the mixed results found in Study 2. Therefore, this discussion will focus on the limitations of Study 2 prior to providing a brief interpretation of the correlation and regression analyses.

Measurement timing is the most concerning limitation of Study 2. The outcomes research department at the data collection site provided EDI-3 admission and discharge scores following each participant's completion of the Study 2 survey packet (i.e., measures of meaning, experiential avoidance, and trauma frequency). While some participants completed the Study 2 surveys within days of their admission, other participants completed the Study 2 surveys weeks or months after they began treatment. The amount of intensive treatment participants received prior to completing Study 2 surveys likely impacted ratings of experiential avoidance and meaning in life. Therefore, temporal variability between the administration of the EDI-3 and the Study 2 surveys likely impacted relations between symptom severity, experiential avoidance, and meaning scores. In order to determine whether meaning and experiential avoidance were predictive of treatment outcomes, Study 2 surveys should have been administered directly upon admission (along with the EDI-3) and again directly prior to discharge (along with the EDI-3). However, several factors prevented the administration of Study 2 surveys at admission and discharge. Logistical obstacles included the sporadic admission and discharge of patients and the requirement that the researcher be physically present to administer the informed consent and

surveys (e.g., hospital staff were not able to administer Study 2 surveys in the event of a sudden admission or discharge). Additionally, as insurance coverage often dictates length of hospital stay, some participants discharged from residential care unexpectedly, indicating that discharge scores are not always reflective of significant decreases in eating disorder symptom severity. For example, insurance companies at the data collection site often mandate less intensive treatment as soon as patients reach a certain BMI, despite the continued presence of eating disorder thoughts and attitudes.

Additional limitations of Study 2 include measurement concerns and a relatively small, homogenous sample. The data collection site was able to provide total raw scores for the EDI-3; however, they were not able to provide scaled subscale scores, which would have allowed for a more nuanced examination of treatment outcomes. Study 2 also utilized an outdated version of the Traumatic Life Events Questionnaire (TLEQ), which did not include subjective severity ratings for traumatic events. Therefore, another limitation of Study 2 was the lack of a multi-faceted measure of trauma. While higher rates of trauma have been noted among individuals with eating disorders, eating disorder symptom severity may relate to the psychological distress caused by trauma as opposed to the lifetime frequency of traumatic life events. Finally, the clinical sample was small ($N = 47$) and racially homogenous which limits the generalizability of results.

Results of correlation and regression analyses should be interpreted with the aforementioned limitations in mind. The hypothesized relation between trauma frequency and eating disorder symptom severity was not confirmed in the clinical sample. However, experiential avoidance and EDI-3 admission scores were significantly positively correlated and presence and EDI-3 discharge scores were significantly negatively correlated. These results

suggest that experiential avoidance and meaning may relate to disordered eating in qualitatively different ways or at different points in treatment. Results also indicate that certain aspects of experiential avoidance (i.e., behavioral avoidance and repression/denial) may be more applicable to the study of disordered eating than others (i.e., procrastination, distract/suppress, distress aversion).

Regression results indicated that presence of meaning and experiential avoidance were not significant predictors of treatment outcomes. However, an alternate model indicated that presence of meaning approached significance as a predictor of EDI-3 discharge scores after controlling for baseline admission scores. While non-significant regression results were likely related to the limitations of Study 2, results of the alternate model were also likely impacted by the small sample size noted in Study 2. With regard to the results of model 2 (see Table 3.4), a power analysis indicated that 76 participants would have been required to detect a moderate effect size and 36 participants would have been needed to detect a large effect size. Future research should replicate Study 2 in a larger sample to determine whether presence of meaning is significantly related to symptom severity at discharge, after controlling for symptom severity at admission.

CHAPTER 4: GENERAL DISCUSSION

Traumatic or stressful life events have long been associated with severe and long-lasting effects on psychological functioning (Brown et al., 2013). The last 20 years of trauma research has been influenced by the study of posttraumatic growth, an area of research nested within the positive psychology movement (Feder et al., 2008; Tedeschi & Calhoun, 1996; Frazier et al., 2006). The potential for personal growth after trauma is naturally at odds with the well-established deleterious effects of trauma, leading to recent research on mediating factors between trauma and negative mental health outcomes. While experiential avoidance and meaning-making have been explored as mediators between trauma and general psychological distress, very few studies have explored the role of experiential avoidance and meaning in the development of specific behavioral disorders, such as disordered eating and substance abuse. Additionally, high mortality rates and poor treatment outcomes associated with eating disorders demonstrate the need for continued research on the etiology and treatment of disordered eating (Eating Disorders Coalition, 2014). A series of studies were conducted in order to address the concerns noted in the literature base. The first and second studies tested a multivariate model in order to better understand the direct and indirect effects of trauma and stress on meaning-making, experiential avoidance, substance abuse, and disordered eating. The third study examined the relationship between trauma and eating disorder symptom severity in a clinical sample and explored experiential avoidance and meaning as predictors of treatment outcomes.

Modeling Effects of Trauma and Stress

Results of the structural model are consistent with previous research indicating that trauma and stress are predictive of disordered eating and substance abuse; however, findings also

build on previous research by offering a nuanced understanding of the differential effects of stress and trauma in college populations. Results of the current study reveal distinct pathways from trauma and stress to disordered eating and substance abuse. While trauma predicted higher levels of disordered eating and substance abuse, only stress was predictive of search for meaning, presence of meaning, and experiential avoidance in the current study. A conservative interpretation of these results requires a discussion of confounding variables that may relate to the non-significant effect of trauma on meaning and experiential avoidance. Several factors may have influenced the relation among trauma, meaning, and experiential avoidance, including the current study's operational definition of trauma, convenience sampling, and the age of participants in the testing and confirmatory samples.

Results of Studies 1A and 1B are not consistent with research demonstrating a significant positive relation between trauma and experiential avoidance, which may relate to how trauma was operationally defined in the current study. The Traumatic Life Events Questionnaire (TLEQ) assesses life events commonly associated with PTSD (i.e., sexual and physical assault) as well as events that infrequently relate to post-traumatic stress (i.e., illness, divorce). The broad definition of trauma used in the current study could relate to the non-significant relation between trauma and experiential avoidance. Research has found that experiential avoidance is predicted by hyperarousal, a PTSD specific experience characterized by psychological and physiological tension, anxiety, and extreme reactivity (Kendall-Tackett, 2000; Litz, 1992; Tull & Roemer, 2003). Hyperarousal is commonly associated with traumatic experiences that involve threats to safety such as childhood abuse, physical or sexual assault, and combat-related traumas. Therefore, it is possible that the Trauma latent variable used in the current study did not

accurately reflect those events that are most likely to lead to PTSD specific symptoms such as hyperarousal and emotional numbing.

Another factor to consider when interpreting the effects of trauma and stress in the current study is the use of convenience sampling, which resulted in a relatively young, homogenous sample. It is possible that the effect of trauma on meaning and experiential avoidance is not accurately reflected in college populations. For example, processes associated with particular stages of development may impact the effects of trauma on experiential avoidance and meaning. Additionally, frequency of trauma shares a significant positive relationship to age (Khoury et al., 2010); therefore, it is possible that the effects of trauma on experiential avoidance and meaning become stronger with age. This interpretation is consistent with research demonstrating the cumulative effects of trauma (Khoury et al., 2010) and indicates that age may be an important factor to consider when interpreting the results of the current study.

While the differential effects of stress and trauma may be attributed to the unique factors and limitations associated with Studies 1A and 1B, it is also possible that recent exposure to stress predicts levels of experiential avoidance and meaning independent of trauma. One factor to consider when interpreting the differential effects of trauma and stress is the relation between stress and negative affect. It is widely held that humans are motivated to avoid negative affect induced by momentary or recent experiences of stress (Chawla & Ostafin, 2007). Negative affect is thought to motivate experiential avoidance (Penley, Tomaka, & Wiebe, 2002) and also relates to self-reported levels of meaning (Steger et al., 2006). Therefore, it is possible that recent stress exposure accounted for more of the variance in participants' mood than lifetime exposure to trauma, which could have affected estimates for the regression paths between trauma,

experiential avoidance, and meaning. However, as Studies 1A and 1B did not include a latent variable for negative affect, this interpretation is hypothetical in nature.

Modeling Indirect Effects of Experiential Avoidance and Meaning

Although research has identified that exposure to stress and trauma increases risk for the development of disordered eating and substance abuse, the psychological mechanisms by which risk is conferred are poorly understood. The results of Studies 1A and 1B address this concern by elucidating indirect paths from stress to disordered eating and substance abuse. The multivariate model indicates that stress exposure predicts experiential avoidance, which, in turn, predicts levels of disordered eating and substance abuse. These findings are consistent with research indicating that substance abuse may function as an attempt to suppress or dampen mood symptoms associated with a dysregulated stress response (Sinha, 2008). Results of the model also provide support for theories indicating that avoidance-based coping responses to stress exacerbate disordered eating (Juarascio et al., 2014). In summary, findings suggest that stress may increase reliance on experiential avoidance and that chronic patterns of experiential avoidance may exacerbate suffering in the long-term by increasing risk for behavioral disorders.

Results of the structural model indicate that the meaning-making process may relate to disordered eating and substance abuse in distinct ways. Findings indicate that search for meaning predicts levels of disordered eating and presence of meaning predicts levels of substance abuse. Searching for meaning is often a confusing process; therefore, channeling the search into concrete weight-related goals may ameliorate uncomfortable feelings of uncertainty. This interpretation is consistent with several studies indicating that disordered eating relates to an illusory sense of control (Fox & Leung, 2009; Juarascio et al., 2014). Results imply that disordered eating may be a control-based response to the uncertainty of searching for meaning

whereas substance abuse may function as a way to suppress or numb the sense that life lacks meaning.

Significant indirect effects indicate that stress predicts low presence of meaning, which, in turn, predicts substance abuse. These findings suggest that individuals prone to substance abuse may be especially triggered by the combination of high stress and low meaning. Stress is a well-established trigger for substance abuse (Sinha, 2008) and low presence of meaning often relates to experiencing a sense of apathy or indifference (Fahlman et al., 2009). Research on personality factors related to substance abuse demonstrates that people described as ‘risk seekers’ often note boredom or apathy as a trigger for substance abuse (Joseph et al., 2008; Wegner & Flisher, 2009). Therefore, individuals prone to substance abuse may be more reactive to the boredom or apathy associated with a diminished sense of meaning, which could exacerbate substance use issues.

Exploring Predictors of Treatment Outcomes

The practical utility of results found in Studies 1A and 1B was limited due to the use of a convenience sample. Study 2 sought to address this concern by studying variables of interest within a clinical population. Results of Study 2 did not suggest that experiential avoidance and presence are predictive of treatment outcomes. Therefore, continued research is needed to determine how results of the multivariate model apply to clinical populations. Preliminary correlational analyses reveal that experiential avoidance and eating disorder symptom severity may increase together prior to engaging in residential or outpatient treatment. This correlation could suggest that reliance on experiential avoidance is predictive of increased symptom severity. Alternatively, as severity of disordered eating increases, individuals may rely on experiential avoidance as a way to cope with the adverse effects of eating disorders. However,

measurement limitations and the use of correlational analyses make it difficult to interpret the nature of the relationship between experiential avoidance and EDI-3 admission scores. Although the weight of the literature would suggest that experiential avoidance is predictive of disordered eating, continued research is needed to determine whether experiential avoidance is predictive of treatment outcomes.

Study 2 regression analyses indicate that presence of meaning approaches significance as a predictor of EDI-3 discharge scores after controlling for EDI-3 admission scores. Furthermore, correlational results of the current study demonstrate a significant negative relationship between presence of meaning and eating disorder symptom severity at discharge. As most participants in Study 2 completed measures of meaning weeks or months prior to completing treatment, it is plausible that levels of meaning may be an early indicator of treatment progress. This interpretation is consistent with research, which consistently demonstrates an inverse relationship between meaning and psychological distress (Steger et al., 2013). However, it is also possible that the relation between meaning and EDI-3 discharge scores is reflective of major life transitions that occur when completing residential treatment. Aside from intensive therapy, completing residential treatment requires separation from friends and loved ones, suspension of employment, formation of new relationships with fellow residents and staff members, and implementation of a new and highly structured routine. Therefore, the relationship between presence of meaning and eating disorder symptom severity at discharge could be affected by confounding variables associated with the transition to residential care. Continued research is needed on community and outpatient samples in order to confidently state that presence of meaning is related to treatment outcomes.

Implications and Future Directions

The main inquiry in the current study is intrinsically related to questions asked by researchers in the area of posttraumatic growth, namely: Are there specific factors which increase or decrease the likelihood of poor mental health outcomes after exposure to traumatic or stressful life events? If so, how can mental health professionals most effectively address these concerns to minimize psychological distress and improve well-being? Results of the current study contribute to the growing body of literature on adverse mental health outcomes associated with trauma and stress exposure. The first goal of the current study was to better understand the mechanisms by which trauma and stress confer risk for disordered eating and substance abuse. A second goal of the current study was to determine whether experiential avoidance and meaning predict treatment outcomes for individuals with eating disorders. These goals were partially met as many of the hypothesized direct and indirect paths from trauma and stress to experiential avoidance, meaning, disordered eating, and substance abuse were significant. In addition to contributing to the literature base on disordered eating, the current study also supports research recognizing the common etiological factors associated with disordered eating and substance abuse (Grilo, Sinha, & O'Malley, 2000). Continued research on the psychological mechanisms underlying disordered eating and substance abuse would benefit the conceptualization and treatment of both disorders.

While substance abuse is commonly understood as an attempt to numb or avoid pain (Juarascio et al., 2014), results of Studies 1A and 1B imply that disordered eating may also function as a behavioral form of avoidance among individuals with a significant history of traumatic or stressful life events. The central role of experiential avoidance in eating disorder pathology is widely accepted among proponents of ACT theory (Hayes et al., 2006). However,

DSM-5 diagnostic criteria for eating disorders rests almost entirely on theories indicating that eating disorders are primarily related to the overvaluation of weight and shape (APA, 2013). Therefore, predominant theories and diagnostic criteria promote a fairly superficial understanding of disordered eating, which contributes to the public misunderstanding and trivialization of eating disorders. As eating disorders are associated with higher mortality rates than any mental disorder (Arcelus et al., 2011), it is concerning that they are often not treated as serious and debilitating diseases. The fact that insurance companies are often reticent to provide intensive care for eating disorders is frequently cited as evidence of the trivialization of eating disorders (NEDA, 2016). Results of the current study provide support for theories that widen the scope with regard to the conceptualization of disordered eating and identify search for meaning and experiential avoidance as particularly relevant factors to consider when treating eating disorders.

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APPENDIX A: MEASURES

Studies 1A & 1B - Demographic Data Form

1) What is your age?

_____ years old

2) What is your gender? (please choose one)

Male

Female

Transgender

I prefer not to answer

3) What race/ethnicity do you identify with the most? (please choose one)

African American/Black

Alaska Native

American Indian/Native American

Asian American

Caucasian/White

Hawaiian/Pacific Islander

Latino or Hispanic

Middle Eastern American

Other (Please specify: _____)

4) Have you ever been diagnosed with an eating disorder? (Please choose one)

Yes

No

I prefer not to answer

5) Have you ever received treatment for an eating disorder? (Please choose one)

Yes

No

I prefer not to answer

Traumatic Life Events Questionnaire (TLEQ)

Have you ever experienced any of the following events? (Check all that apply)

1) Death of a close loved one _____

- If yes, rate the severity of this event in terms of personal distress (circle number).

1 – *Not at all* 2– *Very small* 3 – *Small* 4 – *Moderate* 5- *Extreme*

- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

2) Very serious medical problem _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

1 – *Not at all* 2– *Very small* 3 – *Small* 4 – *Moderate* 5- *Extreme*

- If yes, how many times have you experienced this? _____
- When was the most recent experience of this event (month/year)? _____

3) Close friend, significant other, or family member experienced a serious medical condition _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

1 – *Not at all* 2– *Very small* 3 – *Small* 4 – *Moderate* 5- *Extreme*

- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

4) Accident that led to serious injury to yourself or someone close to you _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

1 – *Not at all* 2– *Very small* 3 – *Small* 4 – *Moderate* 5- *Extreme*

- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

5) Place of residence being damaged by fire or other natural causes _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

1 – *Not at all* 2– *Very small* 3 – *Small* 4 – *Moderate* 5- *Extreme*

- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

6) Endured a divorce _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).
1 – Not at all 2– Very small 3 – Small 4 – Moderate 5- Extreme
- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

7) Physically assaulted _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).
1 – Not at all 2– Very small 3 – Small 4 – Moderate 5- Extreme
- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

8) Sexually assaulted _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).
1 – Not at all 2– Very small 3 – Small 4 – Moderate 5- Extreme
- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

9) Victim of a crime such as robbery or mugging _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).
1 – Not at all 2– Very small 3 – Small 4 – Moderate 5- Extreme
- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

10) Being stalked _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).
1 – Not at all 2– Very small 3 – Small 4 – Moderate 5- Extreme
- If yes, how many times have you experienced this? _____
- When was your most recent experience of this event (month/year)? _____

Student Stress Survey (SSS)

Indicate the degree to which the following events have been problematic in the last 12 months.

Interpersonal

Rate the degree to which these events have been problematic in the last 12 months (circle number).

Change in social activities

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Roommate conflict

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Work with people you don't know

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Fight with boyfriend/girlfriend

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

New boyfriend/girlfriend

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Trouble with parents

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Intrapersonal

Rate the degree to which these events have been problematic in the last 12 months (circle number).

Change in sleeping habits

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Change in eating habits

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

New responsibilities

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Financial difficulties

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Held a job

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Spoke in public

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Change in use of alcohol or drugs

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Outstanding personal achievement

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Started college

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Decline in personal health

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Minor law violation

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Change in religious beliefs

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Death of a family member

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Death of a friend

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Severe injury

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Engagement/Marriage

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Academic

Rate the degree to which these events have been problematic in the last 12 months (circle number).

Increased class workload

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Lower grade than anticipated

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Change of Major

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Search for graduate school/job

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Missed too many classes

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Anticipation of graduation

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Serious argument with instructor

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Transferred schools

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Environmental

Rate the degree to which these events have been problematic in the last 12 months (circle number).

Vacations/breaks

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Difficult living conditions

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Change in living environment

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Car trouble

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Quit job

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Divorce between parents

1 – *Not a problem at all* 2– *Somewhat problematic* 3 – *Problematic* 4 – *Very much a problem*

Multidimensional Experiential Avoidance Questionnaire (MEAQ)

Please indicate the extent to which you agree or disagree with the following statements according to the following scale:

1.....2.....3.....4.....5.....6
Strongly *Moderately* *Slightly* *Slightly* *Moderately* *Strongly*
Disagree *Disagree* *Disagree* *Agree* *Agree* *Agree*

1. I won't do something if I think it will make me uncomfortable
2. If I could magically remove all of my painful memories, I would
3. When something upsetting comes up, I try very hard to stop thinking about it
4. I sometimes have difficulty identifying how I feel
5. I tend to put off unpleasant things that need to get done
6. People should face their
7. Happiness means never feeling any pain or disappointment
8. I avoid activities if there is even a small possibility of getting hurt
9. When negative thoughts come up, I try to fill my head with something else
10. At times, people have told me I'm in denial
11. I sometimes procrastinate to avoid facing challenges
12. Even when I feel uncomfortable, I don't give up working toward things I value
13. When I am hurting, I would do anything to feel better
14. I rarely do something if there is a chance that it will upset me
15. I usually try to distract myself when I feel something painful
16. I am able to "turn off" my emotions when I don't want to feel
17. When I have something important to do I find myself doing a lot of other things instead
18. I am willing to put up with pain and discomfort to get what I want

19. Happiness involves getting rid of negative thoughts
20. I work hard to avoid situations that might bring up unpleasant thoughts and feelings in me
21. I don't realize I'm anxious until other people tell me
22. When upsetting memories come up, I try to focus on other things
23. I am in touch with my emotions
24. I am willing to suffer for the things that matter to me
25. One of my big goals is to be free from painful emotions
26. I prefer to stick to what I am comfortable with, rather than try new activities
27. I work hard to keep out upsetting feelings
28. People have said that I don't own up to my problems
29. Fear or anxiety won't stop me from doing something important
30. I try to deal with problems right away
31. I'd do anything to feel less stressed
32. If I have any doubts about doing something, I just won't do it
33. When unpleasant memories come to me, I try to put them out of my mind
34. In this day and age people should not have to suffer
35. Others have told me that I suppress my feelings
36. I try to put off unpleasant tasks for as long as possible
37. When I am hurting, I still do what needs to be done
38. My life would be great if I never felt anxious
39. If I am starting to feel trapped, I leave the situation immediately
40. When a negative thought comes up, I immediately try to think of something else

41. It's hard for me to know what I'm feeling
42. I won't do something until I absolutely have to
43. I don't let pain and discomfort stop me from getting what I want
44. I would give up a lot not to feel bad
45. I go out of my way to avoid uncomfortable situations
46. I can numb my feelings when they are too intense
47. Why do today what you can put off until tomorrow
48. I am willing to put up with sadness to get what I want
49. Some people have told me that I "hide my head in the sand"
50. Pain always leads to suffering
51. If I am in a slightly uncomfortable situation, I try to leave right away
52. It takes me awhile to realize when I'm feeling bad
53. I continue working toward my goals even if I have doubts
54. I wish I could get rid of all of my negative emotions
55. I avoid situations if there is a chance that I'll feel nervous
56. I feel disconnected from my emotions
57. I don't let gloomy thoughts stop me from doing what I want
58. The key to a good life is never feeling any pain
59. I'm quick to leave any situation that makes me feel uneasy
60. People have told me that I'm not aware of my problems
61. I hope to live without any sadness and disappointment
62. When working on something important, I won't quit even if things get difficult

Meaning in Life Questionnaire (MLQ)

MLQ - Please take a moment to think about what makes your life feel important to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

| | | | | |
|------------------------------|-----------------|----------------|--------------|---------------------------|
| Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
| 1 | 2 | 3 | 4 | |

1. _____ I understand my life's meaning.
2. _____ I am looking for something that makes my life feel meaningful.
3. _____ I am always looking to find my life's purpose.
4. _____ My life has a clear sense of purpose.
5. _____ I have a good sense of what makes my life meaningful.
6. _____ I have discovered a satisfying life purpose.
7. _____ I am always searching for something that makes my life feel significant.
8. _____ I am seeking a purpose or mission for my life.
9. _____ My life has no clear purpose.
10. _____ I am searching for meaning in my life.

The Eating Attitudes Test – 26 (EAT-26)

Instructions: Please fill out the below form as accurately, honestly and completely as possible. There are no right or wrong answers.

Part A: Complete the following questions:

What is your birth date? _____

What is your gender? _____

What is your height (in feet and inches)? _____

What is your current weight (in pounds)? _____

What is your highest weight (in pounds)? (excluding pregnancy) _____

What is your lowest adult weight (in pounds)? _____

What do you consider to be your ideal weight (in pounds)? _____

Part B: Please respond to each of the following statements:

1. Am terrified about being overweight.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

2. Avoid eating when I am hungry.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

3. Find myself preoccupied with food.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

4. Have gone on eating binges where I feel that I may not be able to stop.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

5. Cut my food into small pieces.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

6. Aware of the calorie content of foods that I eat.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

7. Particularly avoid foods with a high carbohydrate content (i.e., bread, rice, potatoes, etc.)

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

8. Feel that others would prefer if I ate more.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

9. Vomit after I have eaten.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

10. Feel extremely guilty after eating.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

11. Am preoccupied with a desire to be thinner.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

12. Think about burning up calories when I exercise.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

13. Other people think that I am too thin.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

14. Am preoccupied with the thought of having fat on my body.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

15. Take longer than others to eat my meals.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

16. Avoid foods with sugar in them.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

17. Eat diet foods.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

18. Feel that food controls my life.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

19. Display self-control around food.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

20. Feel that others pressure me to eat.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

21. Give too much time and thought to food.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

22. Feel uncomfortable after eating sweets.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

23. Engage in dieting behavior.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

24. Like my stomach to be empty.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

25. Have the impulse to vomit after meals.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

26. Enjoy trying new rich foods.

1) *Always* 2) *Usually* 3) *Often* 4) *Sometimes* 5) *Rarely* 6) *Never*

Part C: In the past 6 months have you:

- Gone on eating binges where you feel that you may not be able to stop? (Binge = eating much more than most people would under the same circumstances and feeling that eating is out of control)

1) *Never* 2) *1/month or less* 3) *2-3/month* 4) *1/week* 5) *2-6/week* 6) *1/day or more*

- Ever made yourself sick (vomited) to control your weight or shape?

1) *Never* 2) *1/month or less* 3) *2-3/month* 4) *1/week* 5) *2-6/week* 6) *1/day or more*

- Exercised more than 60 minutes a day to lose or to control your weight?

1) *Never* 2) *1/month or less* 3) *2-3/month* 4) *1/week* 5) *2-6/week* 6) *1/day or more*

- Lost 20 pounds or more in the past 6 months

1) *Never* 2) *1/month or less* 3) *2-3/month* 4) *1/week* 5) *2-6/week* 6) *1/day or more*

The Simple Screening Instrument for Substance Abuse and Mental Illness (SAMISS)

1. How many drinks do you have on a typical day when you are drinking?

- 0 – 1 or 2
- 1– 3 or 4
- 2–5 or 6
- 3 – 7 to 9
- 4 – 10 or more

2. How often do you have four or more drinks on one occasion?

- 0 – Never
- 1– Monthly or less
- 2 –2-4 times a month
- 3 – 2-3 times a week
- 4 – 4 or more times a week

3. In the past year, how often did you use nonprescription drugs to get high to change the way you feel?

- 0 – Never
- 1– Monthly or less
- 2 –2-4 times a month
- 3 – 2-3 times a week
- 4 – 4 or more times a week

4. In the past year, how often did you use drugs prescribed to you or to someone else to get high or change the way you feel?

- 0 – Never
- 1– Monthly or less
- 2 –2-4 times a month
- 3 – 2-3 times a week
- 4 – 4 or more times a week

5. In the last year, how often did you drink or use drugs more than you meant to?

- 0 – Never
- 1– Monthly or less
- 2 –2-4 times a month
- 3 – 2-3 times a week
- 4 – 4 or more times a week

6. How often did you feel you wanted or needed to cut down on your drinking or drug use in the last year, and not been able to?

- 0 – Never
- 1– Monthly or less
- 2 –2-4 times a month
- 3 – 2-3 times a week
- 4 – 4 or more times a week

Substance Abuse Related to Experiential Avoidance

1. In the past year, how often did you drink alcohol to avoid or numb your emotions?

- 0 – 1 or 2
- 1– 3 or 4
- 2–5 or 6
- 3 – 7 to 9
- 4 – 10 or more

2. In the past year, how often did you use drugs to avoid or numb your emotions?

- 0 – *Never*
- 1– *Monthly or less*
- 2 –*2-4 times a month*
- 3 – *2-3 times a week*
- 4 – *4 or more times a week*

3. In the past month, how often did you drink alcohol to avoid or numb your emotions?

- 0 – *Never*
- 1– *Monthly or less*
- 2 –*2-4 times a month*
- 3 – *2-3 times a week*
- 4 – *4 or more times a week*

4. In the past month, how often did you use drugs to avoid or numb your emotions?

- 0 – *Never*
- 1– *Monthly or less*
- 2 –*2-4 times a month*
- 3 – *2-3 times a week*
- 4 – *4 or more times a week*

Studies 1A & 1B - Consent to Participate in a Research Study

Colorado State University

TITLE OF STUDY

Stress, Trauma, and Health-Relevant Behaviors

PRINCIPAL INVESTIGATOR:

Dr. Michael F. Steger, Department of Psychology, PhD in Counseling and Personality Psychology, Contact Information: michael.f.steger@colostate.edu

CO-PRINCIPAL INVESTIGATOR:

Jennifer D. Barenz, Department of Psychology, 4th year student in Counseling Psychology PhD program at Colorado State University, Contact Information: jennifer.barenz@gmail.com

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?

We are interested in learning more about how individuals cope after a negative life event. Since we are interested in college students, we would appreciate your help.

WHO IS DOING THE STUDY?

The study is being conducted by doctoral student, Jennifer Barenz, under the guidance of her advisor, Michael Steger, Ph.D.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of the study is to better understand the potential impacts of stressful life events. Specifically, we want to understand how challenging life events relate to health-related behaviors.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

You will be asked to complete the study on-line at a time and place that is convenient for you. Participation will take approximately 45 minutes of your time.

WHAT WILL I BE ASKED TO DO? You will be asked to complete a few questionnaires regarding demographic information, your experience with negative life events and adjustment to college, your sense of meaning or purpose in life, emotion regulation strategies, and health-related behaviors. The surveys include some questions that may seem sensitive or personal. You are free to skip any question or item for any reason.

ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY?

Participation requires that you are at least 18 years of age and currently enrolled in college courses.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

Due to the sensitive nature of some of the questionnaires, there is a slight risk of emotional distress associated with this study. If any of the questions cause you emotional distress, please feel free to contact Jennifer Barenz, M.S. at the Psychological Services Center at (970) 235-1639 or call (970) 491-6053 to speak to a CSU-Health Network counselor.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?

There are no direct benefits from your participation in this study, although it will help us to better understand impacts of negative life events.

DO I HAVE TO TAKE PART IN THE STUDY?

Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHO WILL SEE THE INFORMATION THAT I GIVE?

We will keep private all research records that identify you, to the extent allowed by law.

This study is anonymous. We are not obtaining your name or other identifiable data from you, so no one, not even members of the research team, will be able to identify you or your data. Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?

You will receive 1 experimental credit for your participation today.

WHAT HAPPENS IF I AM INJURED BECAUSE OF THE RESEARCH?

The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

WHAT IF I HAVE QUESTIONS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Dr. Michael Steger at michael.f.steger@colostate.edu or Jennifer Barenz at jennifer.barenz@gmail.com. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator at 970-491-1655. You are free to print out a copy of this consent form to take with you for your records.

This consent form was approved by the CSU Institutional Review Board for the protection of human subjects in research on _____.

If you have read and understood the above information and consent to participating in the study, please click the "I consent" button to indicate your consent to participate in the study.

Studies 1A & 1B - Debriefing Information

Objective of Research

This study is concerned with the interaction between exposure to negative life events, emotion regulation strategies, meaning in life and health-related behaviors including eating patterns.

General Information

Your participation is greatly appreciated and will help psychologists to better understand the relationship between traumatic experiences, emotion regulation, meaning in life, and psychological functioning. If you would like to receive a report of this research when it is completed (or a summary of the findings), please contact Jennifer Barenz at jennifer.barenz@gmail.com or Michael Steger, Ph.D. at michael.f.steger@colostate.edu

Safety

If your participation in this study has contributed to any emotional distress or significant discomfort, you may contact Dr. Susan MacQuiddy, Director of Counseling Services at CSU-Health Network at 970-491-6496. In case of emergency or crisis, on-call counselors are also available 24/7 and can be reached at [970-491-7111](tel:970-491-7111). For a nationwide crisis hotline, please call [1-800-273-8255](tel:1-800-273-8255). Finally, please contact the research investigators directly for assistance and additional debriefing if you experience any distress as a result of this study. Jennifer Barenz can be reached at [\(970\) 235-1639](tel:970-235-1639) or jennifer.barenz@gmail.com. To contact Dr. Michael Steger, send an email to michael.f.steger@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator, at [970-491-1655](tel:970-491-1655).

Confidentiality

All information collected in today's study will be confidential, and there will be no way of identifying your responses in the data archive. Identifying the responses of individual participants is not important. Instead, this research will be focused on examining general patterns that emerge when the data are aggregated together.

Please do not disclose research procedures and hypotheses to anyone who might participate in this study between now and the end of data collection, as this could affect the results of the study.

Thank you for your participation!

Study 2 – Demographic Information Form

- 1) **What is your age?** ___ years old
- 2) **What is your gender?** (please choose one)
 Male
 Female
- 3) **What race/ethnicity do you identify with the most?** (please choose one)
 African American/Black
 Alaska Native
 American Indian/Native American
 Asian American
 Caucasian/White
 Hawaiian/Pacific Islander
 Latino or Hispanic
 Middle Eastern American
 Other (Please specify: _____)
- 4) **What is the highest level of education you have obtained?**
 Grade school
 High school
 Some college
 Bachelor's degree
 Master's degree
 PhD
- 5) **If known, please report all current diagnoses of clinical disorders.** (Please skip this question if you do not wish to respond).

Diagnoses:

- 6) **At what age were you first diagnosed with an eating disorder?** _____ years old

Study 2 - Consent to Participate in a Research Study

Colorado State University

Treatment Outcomes

PRINCIPAL INVESTIGATOR: Dr. Michael F. Steger, Department of Psychology, PhD in Counseling and Personality Psychology, Contact Information: michael.f.steger@colostate.edu

CO-PRINCIPAL INVESTIGATOR: Jennifer D. Barenz, Department of Psychology, 4th year student in Counseling Psychology PhD program at Colorado State University, Contact Information: jennifer.barenz@gmail.com

RESEARCH ASSISTANT: Olivia Bruss, Employee at Rogers Memorial Hospital, 2nd year student in the Social Work Master's program at UW Milwaukee

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH? You are being invited to take part in this research due to your completion of residential or outpatient treatment for eating disorders at Rogers Memorial Hospital

WHO IS DOING THE STUDY? Dr. Michael Steger and I are completing this study as part of my dissertation conducted at Colorado State University. Olivia Bruss is serving as our research assistant for this project.

WHAT IS THE PURPOSE OF THIS STUDY? The purpose of this study is to discover factors which might influence treatment outcomes among those with eating disorders.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST? The study will occur at the place you are receiving psychological care (on sight at Rogers Memorial Hospital). It should only take you between 20 and 30 minutes to fill out the surveys.

WHAT WILL I BE ASKED TO DO? You will be asked to fill out several surveys as part of this study: a meaning in life survey, a survey to obtain general information about you as a person (i.e. age, gender, ect...), a survey determining whether you have ever experienced a traumatic or life-changing event, and two surveys regarding emotion regulation. You will also be asked to answer one question regarding how you feel having a disorder has shaped your sense of meaning in life. Finally, researchers at Rogers Memorial Hospital will release your intake and discharge scores on the Eating Disorder Inventory-3 as part of your participation in this study.

ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY? You should not take this study if you are under the age of 18 years old.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

- There are no known potential physical or psychological risks associated with participating in this study.

- It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY? Completing this study may help you discover more about your own levels of meaning and your use of emotion regulation strategies. This study may also benefit individuals in the future. Once we know more about factors impacting treatment outcomes among those with eating disorders, we can better understand how to improve treatments for disordered eating.

DO I HAVE TO TAKE PART IN THE STUDY? Please note that your participation in this study is not required as part of your treatment at Rogers Memorial Hospital. You are in no way expected to complete this study. Therefore, your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHO WILL SEE THE INFORMATION THAT I GIVE? We will keep private all research records that identify you, to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. For example, your name will be kept separate from your research records and these two things will be stored in different places under lock and key. Once we link your survey data to your most recent symptom severity score (recorded at Rogers Memorial Hospital), we will delete your name.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY? You will not receive any compensation for taking part in this study.

WHAT IF I HAVE QUESTIONS? Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Jennifer D. Barenz at jennifer.barenz@gmail.com. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator at 970-491-1655. We will give you a copy of this consent form to take with you.

This consent form was approved by the CSU Institutional Review Board for the protection of human subjects in research on June 5, 2012.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing two pages.

Signature of person agreeing to take part in the study

Date

Printed name of person agreeing to take part in the study

Name of person providing information to participant

Date

Signature of Research Staff