

CHILDHOOD EMOTIONAL MALTREATMENT, DEPRESSION, AND EATING
DISORDER SYMPTOMATOLOGY: EXAMINING THE ROLE OF EARLY MALADAPTIVE
SCHEMAS

by

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(Under the Direction of Joan L. Jackson)

ABSTRACT

The present study examined the role of early maladaptive schemas in the development of depressive and eating disorder (ED) symptoms among college women with a history of emotional maltreatment. Participants were 996 predominately Caucasian female students who completed a questionnaire packet pertaining to the constructs of interest. Structural equation modeling analyses support a model where the relationship between emotional maltreatment and ED symptoms is indirect through the influence of schemas and depression. Although women endorsing a history of emotional maltreatment reported significant associations with multiple schema domains, the strongest association was observed between the *Disconnection & Rejection* domain. Although preliminary, results support the use of schema therapy with individuals endorsing a history of emotional maltreatment in an effort to ameliorate depressive and ED symptoms. Findings contribute to efforts to understand the sequelae of emotional maltreatment, arguably the most prevalent, yet understudied form of child maltreatment.

INDEX WORDS: Emotional maltreatment, Early Maladaptive Schemas, Depression, Eating Disorders

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DEDICATION

To my parents, Anna and Edward Burns, whose wisdom, generosity, and enduring support made this achievement possible. Thank you for planting the seeds not once, but countless times.

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CHAPTER 1

INTRODUCTION

Overview

A history of child maltreatment (e.g., child sexual, physical, and emotional abuse, and neglect) has been associated with increased rates of a variety of psychological and physical difficulties. Efforts to dissect the multifinality associated with abuse outcomes have initiated a wave of research focused on examining the underlying mechanisms driving the association between abuse and subsequent psychopathology. For example, there is evidence that several factors mediate the relationship between child maltreatment and adult maladjustment, including negative cognitive style (Gibb et al., 2001; Hankin, 2005), insecure attachment (Hankin, 2005), emotion dysregulation (Gratz, Bornovaalova, Delany-Brumsey, Nick, & Lejeuz, 2007; Burns, Jackson, Harding, 2010; Tull, Barrett, McMillan, & Roemer, 2007), and experiential avoidance (Tull, Jakupcak, Paulson, & Gratz, 2007). Consistent with this research, the current study investigated the role of early maladaptive schemas (EMS; Young, 1994, 1999; Young, Klosko, Weishar, 2003) in the development of depressive and eating disorder (ED) symptoms among college women with a history of emotional maltreatment.

The second objective of the current study was to examine the unique contribution of emotional maltreatment as it relates to the development of eating disorder (ED) symptoms. Efforts to elucidate pathways linking early adversity to psychopathology are consistent with Beck's content-specificity hypothesis. According to this hypothesis, psychological disorders and states ought to be "differentiated by the content of their cognitive associates" (Beck, 1976).

Given that recent research has provided preliminary evidence for the association between childhood emotional abuse (CEA) and eating disorder (ED) behavior (Fischer & Hartzell, 2008; Grilo, Masheb, Brody, Burke-Martindale, & Rothschild, 2005; Kent & Waller, 2000; Kent, Waller, & Dagnan, 1999; Mazzeo & Espelage, 2002; Messman-Moore & Garrigus, 2007) the current investigation sought to extend previous findings by investigating the collective impact of emotional abuse and neglect.

In addition to examining the relationship between emotional maltreatment and ED symptoms, depressive symptoms were included in the overall model for several reasons. First, several studies suggest that emotional maltreatment is strongly related to depression, with recent evidence indicating that emotional maltreatment prospectively predicts the onset of depressive symptoms (Liu, Alloy, Abramson, Iacoviello, & Whitehouse, 2009). Second, clinical and epidemiological studies reveal substantial comorbidity across eating and depressive disorders (Hudson, Hiripi, Pope, & Kessler, 2007). Third, negative affect, also referred to as “associated mood changes” is included in cognitive behavioral models of bulimia and binge eating as potential factors that increase propensity for ED behavior (Fairburn, 2008). Lastly, initial research supports the association between EMS and depressive symptomatology (Lumley & Harkness, 2007; O’Dougherty Wright, Crawford, & Del Castillo, 2009).

Finally, by examining the predictive value of EMS on the development of ED behaviors, this study aimed to examine how experiences of emotional maltreatment initiate the development of *specific* maladaptive schemas, which perpetuated throughout young adulthood, give rise to *specific* maladaptive coping strategies in the form of ED behaviors. Ultimately, by identifying particular schemas predictive of ED behavior, then efforts to target specific schemas in cognitive therapy may facilitate treatment with abuse survivors. Finally, a brief literature review of

childhood emotional abuse, early maladaptive schemas as they relate to the development of psychopathology, and of the ED and depression literature particularly as they relate to childhood maltreatment is included.

Childhood Emotional Maltreatment

Initial research on the enduring effects of child maltreatment has focused almost exclusively on outcomes associated with child sexual and physical abuse. However, recent research has responded to the call for studies examining the impact of other forms of abuse, particularly emotional maltreatment, a term which has been referred to synonymously with labels such as emotional abuse and/or neglect, psychological battering, verbal abuse, and most frequently psychological abuse (Glaser, 2002; Hart, Binggeli, & Brassard, 1997; Hart & Brassard, 1987; Kent & Waller, 2000; O'Hagan, 1995). Although the use of variable terminology has caused some to argue that using the terms interchangeably may increase measurement error by falsely presuming that we are examining the same construct (O'Hagan, 1995), deliberate efforts to define study variables appears to have mostly negated this dilemma. Furthermore, increased reliance on certain measures or "gold standards," including the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998) and the Lifetime Experiences Questionnaire (LEQ; Rose, Abramson & Kaupie, 2000) has allowed for increased generalizability across studies.

While an extensive discussion of the different ways in which emotional maltreatment is defined within the child abuse literature as well across disciplines is beyond the focus of the current review, some of the more frequently used definitions are worth mentioning. Emotional abuse has been described as "soul murder" (Garbarino, Guttman, & Seely, 1986), consisting of

recurrent parental attacks that serve to devalue, reject, ignore, and undermine a child's development and emerging identity. More recent conceptualizations have suggested that emotional abuse exists on a continuum, highlighting the repetitive nature of the emotional pain inflicted on the child (e.g. despair, distress, fear, humiliation, dehumanization) as a crucial component of the definition (Kent & Waller, 2000; O'Hagan, 1995). For the purposes of this study, emotional maltreatment encompassed both emotional abuse and emotional neglect. Emotional abuse is defined as "verbal assaults on a child's sense of worth and well-being, or any humiliating, demeaning, or threatening behavior directed toward a child by an adult or older person" (CTQ; Bernstein & Fink, 1998, p.2). Given that this definition refers to acts of commission or "active" abuse without accounting for emotional damage resulting from the absence of parental support and responsiveness (i.e., more "passive" maltreatment), this study also considered the effects of what Bernstein and Fink (1998) refer to as emotional neglect. Defined as "failure of caretakers to provide a child's basic psychological and emotional needs, including love, encouragement, and belonging, and support" (CTQ; Bernstein & Fink, 1998, p.3), emotional neglect has received increasing attention among researchers (Yates & Wekerle, 2009). Similarly the LEQ (Rose, Abramson & Kaupie, 2000) considers belittling, ridicule, humiliation, rejection, extortion, and terrorizing as evidence of emotional abuse, while emotional neglect is conceptualized as instances where the child is ignored, parentified, isolated, or when caregivers withhold praise, affection, or are psychologically unavailable to the child.

Although studies investigating the enduring impact of emotional maltreatment lag behind research on childhood sexual and physical abuse (Behl, Conyngham, & May, 2003), compelling evidence suggests that emotional maltreatment is associated with negative outcomes in early childhood (Binggeli, Hart, Brassard, & Karlson, 2005; Egeland, 2009), as well as later childhood

and adolescence (Hart, Binggeli, & Brassard, 1998; Lumley & Harkness, 2007; Shaffer, Yates, & Egeland, 2009). In addition to the impact of emotional maltreatment on child and adolescent development, recent research has confirmed the enduring effect of emotional maltreatment. Specifically, a history of emotional maltreatment has been associated with a range of adult psychological difficulties including increased depression (Gibb et al., 2001; Hankin, 2005; Maciejewski & Mazure, 2006), anxiety (Spertus, Yehuda, Halligan, & Seremetis, 2003), posttraumatic stress (Burns, Harding, & Jackson, 2010; Spertus et al, 2003), loneliness and social isolation (Loos & Alexander, 1997), low self-esteem (Briere & Runtz, 1990; Finzi-Dottan & Karu, 2006; Mullen et al., 1995), substance use severity (Hyman, Garcia, Sinha; 2006), eating psychopathology (Gerke, Mazzeo, Kliewer, 2006; Mazzeo & Espelage, 2002; Kent & Waller, 2000), and personality disorders (Carr & Francis, 2009; Grilo & Masheb, 2002) as well as physical health outcomes such as lower self-rated health (Irving & Ferraro, 2006), increased healthcare utilization (Spertus et al., 2003), and subsequent victimization (Messman-Moore & Brown, 2004; Rich, Gidycz, Warkentin, Loh., & Weiland, 2005).

Although there are certainly benefits of examining the impact of multiple forms of maltreatment simultaneously, understanding the association between specific forms of abuse and the etiology and development of specific psychological disorders is warranted, particularly as it relates to prevention and treatment. This may be particularly relevant for understanding the sequelae of emotional maltreatment given a considerable portion of adults engaging in various maladaptive behaviors endorse experiences of emotional maltreatment at the exclusion of other forms of abuse. For example, in a recent study investigating the association of child abuse and ED symptomatology, 54% of women who endorsed a history of emotional abuse denied a history of sexual or physical abuse (Messman-Moore & Garrigus, 2007). Similarly, studies investigating

the impact of adult retrospective reports of emotional maltreatment suggest that this form of abuse is alarmingly common, with prevalence rates ranging from 5.6% to 34.8%, depending on the sample (Messman-Moore & Garrigus, 2007; Mullen, Martin, Anderson, Romans, & Heribson, 1996; Spertus et al., 2003). In community samples, rates of emotional maltreatment were approximately 14% for women and 10% for men (Scher, Forde, McQuaid, & Stein, 2004), while reported prevalence rates among college women from two recent studies ranged from 12.1% to 24.6% (Burns, Jackson, & Harding, 2010; Messman-Moore & Garrigus). A recent review of empirical studies that exclusively relied on the CTQ to measure emotional abuse and neglect reported rates as high as 42.2% for emotional abuse and 44.7% (when using a minimum cut-off of 9 for the emotional abuse subscale and 10 for the emotional neglect subscale) in community samples (which included several undergraduate samples) (Baker & Maiorino, 2010). Moreover, rates of emotional maltreatment were significantly higher in the clinical samples than in the community samples (Baker & Maiorino, 2010). Further evidence of the pervasiveness of emotional abuse is supported by findings from a study by Mazzeo and Espelage (2002) which indicated that, in both the validation and cross-validation samples, emotional abuse was the most frequently endorsed maltreatment experience with nearly two thirds of both samples reporting at least one item on the CTQ emotional abuse and neglect subscale. Finally, as previously discussed, our theoretical and empirical understanding of the influence of emotional maltreatment on the development of maladaptive coping behavior and subsequent psychological distress is less understood in comparison to sexual and physical abuse.

Emotional Maltreatment and Depression

Empirical research investigating the enduring impact of emotional maltreatment has certainly dispelled the myth that this is an innocuous form of abuse unworthy of attention. Following the initial wave of research that related emotional maltreatment to a variety of problematic adult behaviors, several researchers have theorized that emotional maltreatment may be more strongly associated with depressive symptomatology than sexual and physical abuse (Gibb et al., 2001; Hankin, 2005; Liu et al., 2009). For example, emotional maltreatment has been linked to increased rates of depression among college students (O'Dougherty Wright, Crawford, & Del Castillo, 2009), in a community sample of over 9,000 adult HMO members (Chapman et al., 2004), as well as in a clinical sample (Kaplan & Klinetob, 2000). Notably, significantly greater levels of CEA have also been shown to distinguish patients with treatment-resistant depression and chronic PTSD from patients with treatment responsive depression (Kaplan & Klinetob, 2000).

According to Rose and Abramson (1992), emotional maltreatment, unlike other forms of abuse, is characterized by repetitive verbal statements regarding a child's self-worth and abilities. These insults often become internalized, subsequently serving as the foundation for the child's negative cognitions that contribute to the onset of depression. Although there is evidence that CSA and CPA are also risk factors for adult depression, it has been hypothesized that the cognitive schemas that may result from these forms of abuse are less likely to be structured by explicit, destructive messages directly supplied by the abuser (Rose & Abramson, 1992). Empirical support for Rose and Abramson's (1992) theory comes from a study where participants with high or low cognitive risk for depression (based on the presence or absence of a negative cognitive style) were followed longitudinally for 2.5 years. Results suggested that

childhood emotional, as opposed to physical or sexual, abuse was associated with increased levels of hopelessness and nonendogenous major depression (NE-MD) as well as hopelessness depression (HD) at prospective follow-up. Participants who were categorized as evidencing a high cognitive risk for depression also reported more childhood emotional maltreatment than individuals with low cognitive risk for depression. Furthermore, results indicated that cognitive risk fully mediated the relationship between CEA and NE-MD and the relation between CEA and HD (Gibb et al., 2001).

A recent prospective study explored whether experiences of current emotional maltreatment predicted the emergence of depression, including major (MD), minor (MiD), and the subtype of hopelessness depression (HD) in undergraduates (Liu et al., 2009). Findings revealed that greater emotional maltreatment predicted earlier onset of MD, MiD, and HD episodes. Furthermore, the authors examined emotional maltreatment perpetrated by peers and authority figures separately and found that both types predicted shorter time to onset of HD episodes specifically. In addition to being the first study to provide evidence that *current* emotional maltreatment predicts the onset of clinically significant depressive episodes using a fully prospective design, the authors highlight the importance of targeting experiences of emotional maltreatment and its appraisal in therapeutic intervention (Liu et al., 2009).

Depression and Eating Disorder Symptomatology

Extensive comorbidity exists between eating disorders (EDs) and depression as individuals with an ED often report a current or lifetime history of depression (Herzog, Keller, Sacks, Yeh, & Lavori, 1992; Polivy & Herman, 2002; Wilksch & Wade, 2004). Lifetime prevalence rates of major depression in ED diagnoses range from 36% to 73% (Halmi, 1995;

Hudson, Pope, Jonas, & Yurgelun-Todd, 1983) for bulimia nervosa (BN) with rates as high as 86% for anorexia nervosa (AN) in one study (Rastam, 1992). Increased rates of depression have also been found in subclinical levels of ED (Cowen, Anderson, & Fairburn, 1992).

Although there are a number of explanations for the link between EDs and depression, one potential pathway that has received recent empirical support involves brain serotonin levels. Decreased serotonin levels have been implicated in depression and recent studies suggest that individuals with bulimia may have lower serotonin levels than normal controls. Although carbohydrate dense binges tend to alleviate this deficit, the effects are temporary and may reinforce similar behavior in an effort to experience the “high” associated with increased serotonin levels (Agras & Apple, 2008). Therefore one function of binge-eating behavior, a component of the binge-purge subtype of AN, as well as BN and Binge-Eating Disorder (BED), may be to initially distract from depressive symptoms. Notably, women who are obese as well as of normal weight report significantly more symptoms of depression than those who do not endorse binge-eating behavior (Marcus et al., 1990; Webber, 1994). Unfortunately, the very symptoms that bingeing distracts from are often exacerbated with each subsequent binge as ED sufferers report feeling powerless against both the ED behavior and the recurrence of negative mood states (Agras & Apple, 2008, Fairburn, 2008). As a result of the theoretical and empirical link between depression and disordered eating behaviors, current cognitive models used to explain this association, including Fairburn’s Cognitive Behavioral Therapy (CBT) model for bulimia and binge eating (Agras & Apple, 2008; Fairburn, 2008; Fairburn, Marcus, & Wilson, 1993) include negative affect and low self-esteem (two hallmark symptoms of Major Depression), in addition to loss of control, dieting, and weight and shape concerns as factors believed to maintain binge eating and purging behavior.

Conversely, it is equally important to acknowledge that the relationship between EDs and depression observed throughout the literature may be the result of common psychological correlates of both disorders. For example, in a recent study designed to investigate the comorbid relationship between EDs and unipolar depression, findings revealed that in a regression model explaining 72.2% of the variance in ED behaviors, depression scores contributed a minimal 1% of the variance after controlling for self-esteem, social comparison, and body dissatisfaction (Green et al., 2009). However, before discussing theoretical models linking a history of emotional maltreatment with the development of EDs, a brief review of the ED literature as it relates to child maltreatment is necessary.

Child Maltreatment & Eating Disorder Symptomatology

Child abuse was first considered a distal risk factor for eating psychopathology as a result of research examining the impact of childhood sexual abuse (CSA) specifically. Results of a recent meta-analysis investigating prevalence rates of sexual abuse among ED samples suggested that individuals with BN endorsed higher rates of sexual abuse than those without bulimia (Smolak & Murnen, 2002). Gentile and researchers (2007) included childhood physical abuse (CPA) in their investigation and found that among ethnically diverse college students, both physical and sexual abuse independently contributed to increased risk for EDs among women. Although estimates of prevalence rates of CSA victims with EDs are limited, Johnson and researchers (2002) reported that 6.6% (or 52 youths) met diagnostic criteria for an ED in their community-based prospective longitudinal study comprised of 780 mothers and their offspring with and without an abuse history. Although studies examining this link are limited, initial research provides preliminary evidence for an association between abuse and EDs, with some

researchers proposing that CSA, in particular, may serve as a non-specific risk factor for the development of eating psychopathology (Smolak & Murnen, 2002).

More recent research has begun to consider the influence of emotional maltreatment in ED research, with initial findings suggesting that emotional maltreatment may be more strongly associated with ED behavior than other forms of abuse (Gerke, Mazzeo, Kliewer, 2006; Mazzeo & Espelage, 2002; Kent & Waller, 2000). For example, Humphrey, Apple, and Kirschenbaum (1986) found that bulimic and anorexic women report their families as being more belittling and attacking than non-eating disordered controls. Although this study did not include a specific measure of emotional maltreatment, a “belittling and attacking” family environment may be conceptualized as part of the continuum of emotional maltreatment (Kent & Waller, 2000).

In the mid-1990s in response to increased attention to the sequelae of emotional maltreatment within the extant literature, ED researchers began assessing emotional maltreatment more directly. Results indicated higher rates of emotional (termed psychological), physical, and multiple abuse among individuals with bulimia compared to the control group (Rorty, Yager, & Rossotto, 1994). In only the second study to examine the relationship between ED symptoms and a range of child abuse experiences including childhood emotional abuse (CEA), Kent and colleagues (1999) reported that although all forms of child abuse were related to dysfunctional eating attitudes, CEA emerged as the only form of childhood trauma that predicted unhealthy adult eating attitudes once covariance between the different forms of abuse was controlled. Furthermore, results indicated that the association between CEA and unhealthy adult eating attitudes was perfectly mediated by the women’s level of anxiety and dissociation (Kent, Waller, & Dagnan, 1999).

Shortly thereafter, a review of empirical support for the relationship between CEA and eating psychopathology, in addition to a proposed theoretical model outlining the potential role of emotional abuse as a risk factor in the development of eating psychopathology, was published by the same authors (Kent & Waller, 2000). The model identified several moderating variables, including age of onset of abuse and gender of the perpetrator, in addition to proposing cognitive-affective processes (e.g. dissociation, shame, anxiety, and self-esteem) that might act as mediators. Notably, the author clearly conceptualized CEA as a risk factor for the development of more general symptomatology, common to both bulimia and anorexia, such as low self-esteem, body dissatisfaction, and restrictive eating (Briere & Runtz, 1990, Gross & Keller, 1992, Kent & Waller, 2000), rather than suggesting that emotional maltreatment was uniquely related to one particular eating disorder. This represented a change from previous literature linking CSA and CPA to EDs, suggesting that the authors conceptualized the impact of emotional abuse as having a more generalized impact on disordered eating behavior. Certainly, past research provides support for this notion, as CSA and CPA appear to better predict bulimic rather than restrictive symptomatology (e.g. Bushnell, Wells, & Oakley-Browne, 1992, Schmidt, Slone, Tiller, & Treasure, 1993).

Mazzeo and Espelage (2002) attempted to expand our understanding of the relationship between emotional abuse and disordered eating by using structural equation modeling (SEM) to test alexithymia and depression as mediating variables. Results revealed that CPA, CEA, and physical and emotional neglect were not directly related to disordered eating. Rather, alexithymia and depression emerged as significant mediators between physical and emotional abuse history and disordered eating. Although previous research did not find that depression mediated the relationship between emotional abuse and disordered eating (Kent, Waller, & Dagnan, 1999), it

was hypothesized that this may be a result of different statistical analyses, since multiple regression, unlike SEM, does not identify measurement problems that may influence results (Mazzeo & Espelage, 2002).

In response to evidence from cross-sectional research linking emotional maltreatment and eating psychopathology, Johnson and colleagues (2002) conducted a community-based prospective longitudinal study to examine whether child maltreatment predicts eating and weight-related problems during adolescence and early adulthood (Johnson, Cohen, Kasen, & Brook, 2002). Results indicated that a range of childhood adversities were related to increased risk for disordered eating and weight problems during adolescence and adulthood, even after statistically controlling for the effects of several confounding variables (e.g. age, challenging childhood temperaments, childhood eating problems, parental psychopathology, and co-occurring childhood adversities). Furthermore findings suggest that maladaptive paternal behavior (e.g. low paternal affection, communication, and time spent with child), a construct that may be subsumed under the more passive forms of emotional abuse and neglect, was uniquely associated with risk for eating disorders in offspring (Johnson et al., 2002).

While Johnson and researchers (2002) provide additional support for the relationship between CEA and disordered eating by examining the relationship in a community sample, Grilo and colleagues (2005) sought to investigate this relationship in more clinically relevant population. By examining rates of self-reported childhood maltreatment in extremely obese bariatric surgery candidates, analyses indicated that CEA was uniquely associated with increased body dissatisfaction, while emotional abuse and neglect were both related to stronger eating concerns, elevated depression, and decreased self-esteem after Bonferonni corrections (Grilo, Masheb, Brody, Toth, Burke-Martindale, & Rothschild, 2005). Although results indicated that

child maltreatment in general was not significantly associated with current BMI, binge-eating, or eating disorder features, bariatric surgery patients reported rates of child maltreatment two to three times more than those reported in normative samples. In a more recent study from the same lab, individuals with binge eating disorder (BED) and night eating syndrome (NES) endorsed increased rates of emotional abuse, but not sexual or physical abuse, when compared to overweight individuals without an eating disorder diagnosis (Allison, Grilo, Masheb, & Stunkard, 2007). Again, BMI was not found to relate to abuse, but results provided further support for the unique association between emotional abuse and depression.

A more recent study continued to investigate these relationships in a sample of treatment seeking overweight adults who met DSM-IV criteria for Binge Eating Disorder (BED). Researchers examined the mediating role of self-criticism in the relation between childhood maltreatment and both depressive symptoms and body dissatisfaction (a variable suspected to lead to a variety of maladaptive ED behaviors). Path analyses demonstrated that self-criticism fully mediated the relationship between emotional abuse and depressive symptoms and body dissatisfaction. The authors highlighted that emotional abuse, unlike sexual abuse, was associated with greater depressive affect in BED patients providing further support for the potentially unique association between emotional abuse and depression (Dunkley, Masheb, & Grilo, 2010).

Impact of Mediating Variables

Although the above studies provide support for the relationship between emotional maltreatment and eating psychopathology, previous theoretical work in combination with recent empirical findings propose that this link is not direct (Fischer & Hartzell, 2009; Hund &

Espelage, 2006; Mazzeo & Espelage, 2002; Kent & Waller, 2000). Instead, there are likely a number of psychological and physiological mediators that more fully explain the distal relationship between emotional maltreatment and the development of ED symptomatology (Kent & Waller, 2000). Far less research has examined mediators and moderators as they relate to emotional maltreatment and adult maladjustment (O'Dougherty Wright, Crawford, & Del Castillo, 2007), let alone examined subsequent eating psychopathology. Two recent studies have attempted to address this gap in the literature. Hund and Espelage (2006) used structural equation modeling to test conceptual models relating CEA to disordered eating among undergraduate females. Results revealed a weak, but significant complex relationship between CEA and disordered eating that was mediated by alexithymia and general distress (a composite measure of anxiety and depression) (Hund & Espelage, 2006). In a similar study, Gerke and colleagues (2006) examined the role of depression and dissociation as possible mediators between childhood trauma and bulimic symptomatology in a sample of ethnically diverse female undergraduates. Results indicated that only CEA was correlated with bulimic symptoms and therefore other forms of trauma were excluded from further analyses. Furthermore, dissociation was no longer associated with CEA after controlling for depression. Consequently, the final model indicated that depression mediated the relationship between CEA and bulimic symptoms (Gerke, Mazzeo, & Kliewer, 2006).

Efforts to increase both our theoretical and empirical understanding of how emotional maltreatment results in ED behavior has led researchers to propose a number of potential mechanisms that may impact this relationship. For example, Fischer and Hartzell (2008) discussed several hypothesized pathways from CEA to the development of subsequent ED disturbances, including the mediating role of poor interoceptive awareness, dieting, and emotion

regulation. Bruch (1973) first identified poor interoceptive awareness, or difficulties with hunger and satiety cues, resulting from an environment in which a child's needs are not sufficiently addressed, as a potential risk factor for disordered eating. Dieting has also been proposed as a factor that increases binge eating behavior, although the specific way in which restrictive eating leads to increased binge behavior is still being debated (Fairburn, Marcus, & Wilson, 1993). Similarly, the way in which emotional abuse may lead to dieting has not been studied, although low self-esteem (potentially resulting from repetitive emotionally abusive statements) may be one pathway in which emotional maltreatment initiates attempts to modify weight and shape and subsequent binge eating (Fischer & Hartzell, 2008).

Finally, recent research has examined what has been referred to as the emotion regulation hypothesis of binge behavior. Specifically, Heatherton and Baumeister (1991) speculate that the function of binge eating is to distract from an abstract stimulus (negative thoughts about self; painful emotions) with a concrete stimulus (food). As previously discussed, binge eating as an attempt to regulate negative affect has received empirical support within the literature (Fischer, Smith, Annus, & Hendricks, 2007; Kell, Klump, & Fulkerson, 1997; Stice, 2002) and may be extended to incorporate emotional maltreatment in that CEA may serve as a risk factor for low self-esteem. Poor self-esteem may elicit negative affect, which in turn may initiate disordered eating behavior as an attempt to cope with overwhelming affective states.

In addition to the above mediators, researchers have also considered the role of negative cognitions or core beliefs in understanding and treating EDs, particularly bulimia (Cooper, 1997; Fairburn, 1997; Kennedy, 1997; Waller, Ohanian, Meyer, Osman, 2000). Given that emotional maltreatment encompasses both active and passive attempts to undermine a child's self-efficacy, it seems plausible that a child may internalize their abuse experience fostering negative

cognitions. While ED researchers have investigated disturbances in cognitions regarding eating, weight, and shape among women endorsing ED behavior, researchers agree that eating related cognitions are not sufficient explanatory constructs (Fairburn, Cooper, & Shafran, 2003; Kennerley, 1996; Waller, Kennerley, & Ohanian, 2007; Waller et al., 2000). Therefore, core beliefs and subsequent affective experiences (e.g., early maladaptive schemas) that are more generalized, pervasive, and deeply seated about the self and others may explain more variance in the development of ED behavior as an effort to manage distress associated with negative intrusive thoughts.

Early Maladaptive Schemas

Definition

In an effort to further articulate the potential mediating role of core beliefs in the development of eating disturbances among individuals with a history of emotional maltreatment, it is necessary to discuss the construct of early maladaptive schemas (EMS) as conceptualized by Young (see Young, 1994, 1999; Young, Klosko, & Weishar, 2003), in further detail. Young and colleagues developed schema therapy in response to clinical observations that patients with longstanding difficulties and what he described as “chronic characterological problems” were not responding to traditional CBT. Dating back to ancient Greek philosophy, the term “schema” refers to a structure, framework, or outline. Young has expanded the traditional definition to describe “a broad pervasive theme or pattern comprised of memories, emotions, cognitions, and bodily sensations” (Young, 1994, 1999; Young, Klosko, & Weishaar, 2003). Young further explained that schemas incorporate cognitions and emotions of an intrapersonal and interpersonal nature, that they originate in early childhood or adolescence, and that often they

become increasingly elaborate with time and experience. Although positive schemas certainly exist, Young was most interested in the dysfunctional, self-defeating, and impairing schemas that he suspected underlie psychopathology and subsequently labeled them *early maladaptive schemas* (EMS). Furthermore, EMS are distinguished from the maladaptive behaviors that often result as a consequence of the distress associated with schema activation. In other words, behaviors such as substance abuse, inappropriate sexual behavior, and disordered eating are driven by schemas, but are not part of the schema itself (Young, Klosko, & Weishaar, 2003). Young suggests that schemas are entrenched, fighting for survival at significant cost to the individual. In fact, he surmises that individuals are often drawn to situations or people that trigger their schemas in part due to human nature's tendency to favor familiarity over change. Moreover, the more severe or debilitating the schema, the greater the frequency of activation and the more likely the individual will be to enact various, often maladaptive, coping behaviors.

In an effort to measure the impact of EMS, Young developed the Young Schema Questionnaire (YSQ: Long Form) comprised of 18 theoretically derived schemas. More recently, a shorter version yielding 15 schemas has been created (YSQ-SF; Young, 1994) and will be used in the current study to measure five proposed schema domains (See Table 1). The first domain, referred to as *Disconnection & Rejection*, assesses expectations that individual needs for security, stability, emotional validation, and respect will not be reliably met and includes the following five schemas: *Abandonment/Instability*, *Mistrust/Abuse*, *Emotional Deprivation*, *Defectiveness/Shame*, and *Social Isolation/Alienation*. Individuals with elevations in this domain tend to experience coldness, rejection, loneliness, and invalidation in their family of origin, with more extreme cases reporting abuse experiences. The second domain labeled *Impaired Autonomy & Performance*, characterizes people whose expectations about their self and others interferes

with their ability to function independently or successfully. This domain includes four schemas: *Dependence/Incompetence*, *Vulnerability to Harm or Illness*, *Enmeshment/Undeveloped Self*, and *Failure*. The third domain measures deficits in internal and external boundary setting, including inability to honor responsibility to others, in addition to difficulty achieving long-term goals and is labeled *Impaired Limits*. The *Impaired Limits* domain includes two schemas: *Entitlement/Grandiosity* and *Insufficient Self-Control/Self-Discipline*. The fourth domain referred to as *Other-Directedness*, includes two schemas: *Subjugation* and *Self-Sacrifice*. These schemas measure an individual's tendency to focus excessively on the needs and approval of others at the expense of their own desires. The final schema domain is labeled *Overvigilance & Inhibition* and is also comprised of two schemas: *Emotional Inhibition* and *Unrelenting Standards/Hypercriticalness*. Individuals with schema elevations in this domain reportedly restrict emotion expression and related communication in an effort to avoid disapproval of others or overwhelming feelings of shame. Additionally, individuals endorse exaggerated expectations for themselves across a wide range of areas (Young, Klosko, & Weishaar, 2003).

Childhood Maltreatment & Early Maladaptive Schemas

Young proposes that EMS originate primarily from toxic childhood environments, specifically the child's nuclear family, although he suggests that they can result from negative peer or extra-familial relationships. The latter negative experiences, however, are posited to be less powerful especially if the family environment is a source of strength (Young, Klosko, & Weishaar, 2003). Young further describes four types of early life experiences that facilitate schema development. The first is referred to as *toxic frustration of needs* and results when the child experiences deficits in basic needs including positive emotions and secure attachment.

EMS such as *Emotional Deprivation* or *Abandonment* often develop. The second environment is characterized by traumatic experiences, including exposure to abuse, neglect, or other adverse child experiences (e.g., loss of a parent or caregiver, physical injury resulting from motor-vehicle accident or other environmental disaster). Resulting schemas include *Mistrust/Abuse*, *Defectiveness/Shame*, or *Vulnerability to Harm*. In the third type of family environment, a child is overindulged and develops schemas such as *Dependence/Incompetence* or *Entitlement/Grandiosity* as a consequence of not learning to appropriately separate from the familial environment and develop an autonomous self. The fourth environment results when a child selectively identifies with significant others and internalizes that parent or caregiver's thoughts, feelings, and behaviors as their own. The specific schemas that arise from this environment depend on the type of experiences the child internalizes.

Recent studies have provided empirical support for Young's primarily theory driven early environmental typology. EMS have shown associations with childhood adversity and subsequent maladjustment in adolescents (Lumley & Harkness, 2007) and adults (Harris & Curtin, 2002; McGinn, Cukor, & Sanderson, 2005; O'Dougherty Wright, Crawford, & Del Castillo, 2009; Schmidt, Joiner, Young, & Telch, 1995). For example, the EMS of *Defectiveness*, *Insufficient Self-Control*, *Incompetence*, and *Vulnerability* were found to partially mediate the association between maladaptive parenting styles (e.g., low parental care and high parental overprotection) as measured by the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979) and depression severity (Harris & Curtin, 2002). Recently, a significant association was found between child maltreatment, with the exclusion of childhood physical neglect as measured by the CTQ, and the *Disconnection & Rejection* schema domain (apart from the *Abandonment* subscale). Contrary to expectations and previous research linking emotional maltreatment to

symptoms of Avoidant Personality Disorder (AVPD), the current study did not find support for a potential mediating pathway from childhood maltreatment and AVPD through the *Disconnection & Rejection* domain due to the non significant pathways between child maltreatment and AVPD as well as between the schema domain and AVPD (Carr & Francis, 2010). EMS have also been found to distinguish between adolescent perpetrators of sexual abuse and those without a perpetration history. Richardson (2005) found that the *Emotional Inhibition, Social Isolation/Alienation, and Mistrust/Abuse* schemas were most elevated among adolescent perpetrators and reliably distinguished between adolescent perpetrators with and without a CSA history. Furthermore, among perpetrators, schema scores were found to differentiate between adolescents who victimized children versus those who reported acts against peer-aged or adult females (Richardson, 2005).

In another study of adolescents, Lumley and Harkness (2007) examined the role of specific EMS in predicting negative mood symptoms among participants with a maltreatment history. More specifically, they predicted that EMS with themes of danger, (e.g., *Mistrust/Abuse* and *Vulnerability*), which they distinguished based on the content of schemas, would predict anxious symptomatology among physically maltreated adolescents. Conversely, it was hypothesized that schemas with themes of loss/worthlessness (e.g., *Emotional Deprivation, Dependency, Defectiveness, Failure, and Social Isolation*) would predict anhedonic depression symptoms among adolescents exposed to emotional maltreatment. Results from the first study to empirically examine the specificity of Young's EMS reported mixed support for their hypotheses. More specifically, the authors did not find specificity in the relationship between emotional maltreatment and anhedonic depressive symptoms, nor between physical abuse and anxiety. Instead, both forms of maltreatment predicted anxious and anhedonic symptoms.

However, results provided support for schema specificity in predicting subsequent symptoms in that danger schemas mediated the relationship between general child maltreatment and anxious symptoms, while loss/worthlessness schemas preferentially mediated the association between maltreatment and anhedonic symptoms. Notably, specificity emerged exclusively in the mediational analyses (Lumley & Harkness, 2007).

In addition to providing additional support for Beck's content- specificity hypothesis (Beck, 1976), Lumley and Harkness (2007) are some of the first researchers to examine emotional maltreatment in relation to EMS. Although results did not suggest that emotional maltreatment preferentially predicted certain schema elevations, the finding that emotional maltreatment was significantly related to schema elevations provides support for including emotionally abusive experiences in Young's conceptualization of the toxic environment that results in schema development. This is an important development because much of the research previously relating abuse experiences to schema development and subsequent pathology has been done exclusively with survivors of sexual and physical abuse.

Early Maladaptive Schemas & Psychopathology

Recent evidence has provided support for Young's theory that psychological disorders can be explained by EMS and the problematic ways in which individuals learn to manage them. Using both long and short versions of the YSQ, results suggest EMS predict adolescent and adult depression (Harris & Curtin, 2002; Lumley & Harkness, 2007; O'Dougherty Wright, Crawford, & Del Castillo, 2009; Wang, Halvorsen, Eisemann, & Waterloo, 2010), anxiety (O'Dougherty Wright, Crawford, & Del Castillo, 2009), social phobia (Pinto-Gouveia, Castilho, Galhardo, & Cunha, 2006), PTSD (Cockran, Drummond, & Lee, 2010; Price, 2007), ED symptomatology

(Dingemans, Spinhoven, & van Furth, 2006; Leung, Waller, & Glyn, 1999; Unoka, Tolgyes, & Czobor, 2007; Unoka, Tolgyes, Czobor, & Simon, 2010; Waller, Ohanian, Meyer, & Osman, 1999; Waller et al., 2001) personality disorders and subtypes (Carr & Francis, 2010; Petrocelli, Glaser, Calhoun, & Campbell, 2001; Thimm, 2010), self-harm behaviors (Castille et al., 2007), attachment difficulties (Mason, Platts, & Tyson, 2005), interpersonal conflict (Messman-Moore & Coates, 2007) and general psychological (Schmidt & Joiner, 2004) and occupational distress (Bamber & McMahon, 2008).

In addition to evidence that individuals endorsing a variety of psychological symptoms, including those who meet full diagnostic criteria for clinical disorders, evidence elevated schema profiles when compared to normal controls (Carine, 1997), recent studies suggest that particular schemas may be more predictive of specific symptom presentations (Lumley & Harkness, 2007; Messman-Moore & Coates, 2007; O'Dougherty Wright, Crawford, & Del Castillo, 2009; Waller et al., 2000). Although evidence supporting the latter conclusion is preliminary, the findings lend support to Beck's content-specificity hypothesis, which indicates that psychological disorders and states ought to be "differentiated by the content of their cognitive associates" (Beck, 1976). For example, patients with social phobia evidenced higher levels of EMS in the *Disconnection/Rejection* domain compared to patients with other anxiety disorder diagnoses (Pinto-Gouveia et al., 2006). Further analyses specified that EMS of *Mistrust/Abuse*, *Entitlement*, *Emotional Deprivation*, *Unrelenting Standards*, and *Social Undesirability/Defectiveness* (the *Social Isolation* and *Defectiveness* schemas formed one factor in this study) contributed the most variance in reported anxiety as it related to social situations and fear of negative evaluation (Pinto-Gouveia et al., 2006). Lastly, the EMS of *Mistrust/Abuse*, *Emotional Deprivation*, *Social Isolation/Alienation*, and *Insufficient Self-Control/Self-Discipline* reliably differentiated

individuals engaging in self-harm from those not engaging in self-harm behavior (Castille et al., 2007). Schema elevations were also able to distinguish between repetitive self-harm and individuals reporting only one episode of self-harm.

Early Maladaptive Schemas and Depression

As previously described, Lumley and Harkness (2007) found that schemas reflecting loss/worthlessness (i.e., *Emotional Deprivation*, *Dependency*, *Defectiveness*, *Failure*, and *Social Isolation*) preferentially mediated the association between maltreatment and depressive symptoms (referred to as anhedonic symptoms) among a sample of 76 depressed adolescent boys and girls. Similarly, *Defectiveness/Shame* and *Failure (Incompetence/Inferiority)* schemas, in addition to *Vulnerability and Insufficient Self-Control/Self-Discipline*, were found to partially mediate the relationship between perceptions of parenting behavior and depressive symptoms among undergraduates (Harris & Curtin, 2002). In a confirmatory factor analytic study designed to test the structure of the YSQ domains, the *Disconnection & Rejection* and *Impaired Autonomy* schema domains explained up to 53% of the variance in depression severity in a sample of clinically depressed (CD), previously depressed (PD), and never depressed (ND) individuals (Hoffart et al., 2005). In a similar design, CD and PD individuals differed significantly on EMS profiles compared with ND (Halvorsen et al., 2009). More specifically, YSQ domain scales of *Disconnection & Rejection* and *Impaired Autonomy* emerged as significant predictors of depression severity replicating previous findings (e.g., Hoffart et al., 2005), in addition to the *Impaired Limits* (i.e., *Entitlement* and *Insufficient Self-Control*) and *Restricted Self-Expression* (*Emotional Inhibition*, *Self-Sacrifice*, and *Unrelenting Standards*). Notably, the *Insufficient Self-*

Control schema was also found to significantly relate to depression in a previous study (e.g., Harris & Curtin, 2002).

More recently, efforts to examine the stability of early maladaptive schemas characterizing individuals vulnerable to depression suggested moderate significant relative stability for the *Disconnection & Rejection* and *Impaired Limits* schema domains, even after controlling for depression severity in a nine-year follow-up study of depressed patients. Findings not only highlight the stability of the EMS over time, but underscore the predictive utility of EMS scales as vulnerability markers for depression (Wang et al., 2010).

In one of the few studies to examine the relationship between emotional maltreatment, EMS, and depression, hierarchical regression analyses revealed that after controlling for the effects of gender, income, parental alcohol, and other child abuse experiences, both emotional abuse and neglect were associated with symptoms of anxiety and depression. Notably, this association was partially mediated by schemas of *Vulnerability to Harm*, *Shame*, and *Self-Sacrifice* (O'Dougherty Wright, Crawford, & Del Castillo, 2009).

Early Maladaptive Schemas and Eating Psychopathology

Although researchers have long considered the role of negative cognitions (Kennerley, 1997) in the understanding and treating ED behaviors, empirical work examining the role of cognitions has been relatively limited. For example, Dobmeyer and Stein (2003) investigated the role of maladaptive cognitions, in addition to drive for thinness, depressed mood, and low self-esteem/self-efficacy, in the development of ED symptoms in a 4-year prospective study of female undergraduates. Findings suggested that initial maladaptive cognitions and drive for thinness scores were more predictive of later eating pathology than the other factors.

More recently ED researchers have begun to investigate more entrenched core beliefs, that are not related to food, weight, or shape, using Young's measure of EMS. In the first study to investigate the relation of EMS to ED behaviors, the authors reported that both anorexic and bulimic women endorsed significantly higher levels of EMS than control participants. Moreover, results revealed that the ED groups differed on only one schema, *Entitlement*, with restrictive anorexics scoring significantly lower than the bulimic women on this scale (Leung, Waller, & Thomas, 1999). In another study, examining EMS among women reporting symptoms of bulimia, results indicated that three schemas (*Defectiveness/Shame*, *Insufficient Self-Control*, and *Failure*) differentiated women endorsing a history of bulimic behaviors from those without (Waller et al., 2000). Furthermore, there was evidence that among bulimic women, beliefs regarding emotional restraint, as measured by the *Emotional Inhibition* EMS, predicted their severity of binge behavior, whereas their *Defectiveness/Shame* beliefs predicted severity of vomiting.

In the most recent study to examine EMS among ED samples, the authors examined whether three ED subgroups (i.e., restrictive AN, binge-purging AN, and BN) as defined by the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR), exhibited specific profiles of EMS. Additionally, the relationship between body mass index (BMI) and EMS was examined in each of the ED subgroups. Principle component factor analysis extracted four EMS factors, which explained 72% of the variance in eating pathology. Findings indicated that the three ED subgroups differed on EMS factors, and that elevation on Factor 2 (i.e., *Defectiveness, Failure, Dependence, Enmeshment, Subjugation, Approval Seeking*) was related to lower BMI scores (Unoka, Tolgyes, & Czobor, 2007). Additionally, both subgroups of AN evidenced higher factor loadings on Factor 3 (i.e., *Self-Sacrifice, Unrelenting Standards, and Punitiveness*). In

other words, individuals with AN often prefer to meet the needs of others at the expense of their own fulfillment, unlike participants diagnosed with BN. Additionally, the anorexic subgroups endorsed internalized perfectionist standards and beliefs that they should be punished if they do not achieve their goals according to their endorsement of high levels of the EMS of *Unrelenting Standards* and *Punitiveness*. These results are in accordance with previously held beliefs that individuals with AN are more perfectionist and rigid than individuals diagnosed with BN (Keel et al., 2004; Unoka, Tolgyes, & Czobor, 2007). Moreover, findings are consistent with the notion that maladaptive cognitions play an integral role in the development and maintenance of ED as well as support the specification of additional ED subtypes. Finally, further support is provided for the relation of EMS to ED symptomatology, with preliminary evidence for the association between specific EMS and particular dysfunctional eating behaviors.

Child Maltreatment, Early Maladaptive Schemas, & Eating Psychopathology

Although no studies to date have investigated how EMS may explain the relationship between emotional maltreatment and disordered eating behaviors, one study has investigated the mediating role of schemas among bulimic women endorsing a CSA history (Waller, Meyer, Ohanian, Elliott, Dickson, & Sellings, 2001). Results of regression analyses supported a model where bulimics' EMS levels mediate the relationship between CSA and increased ED behaviors, with evidence that different schemas serve as mediators depending on the symptom under investigation, thus providing additional support for schema specificity as it relates to ED symptoms. For example, *Abandonment* and *Mistrust/Abuse* EMS acted as a primary mediator, with depression serving as a secondary mediator in the model depicting the relation between CSA and frequency of binge behavior. Conversely, *Defectiveness/Shame* was the primary

mediator, and dissociation and depression served as secondary mediators in the model associating CSA to frequency of vomiting (Waller et al., 2001).

In the only other study to date to examine the role of EMS as mediators in the relationship between adversity in childhood and eating psychopathology, researchers investigated the impact of paternal overprotection (as measured by the PBI) on bulimic psychopathology. Results revealed that the *Mistrust/Abuse* and *Unrelenting Standards* schemas were the only schemas to significantly predict the presence and severity of bulimic behaviors (as measured by the BITE; Bulimic Investigatory Test, Edinburgh). Further analysis revealed that only the *Mistrust/Abuse* schema significantly related to paternal overprotection and therefore the *Unrelenting Standards* schema was not included in mediational analyses. Findings indicated that the *Mistrust/Abuse* schema served as a partial mediator, reducing the predictive power of the BITE severity to 4.8% from 11% of the variance when included in the model (Meyer & Waller, 2004).

Summary

Recent theoretical and empirical research has provided preliminary evidence for the impact of emotional maltreatment on the development and etiology of eating psychopathology, conceptualized as a psychological disorder, but with potentially devastating physical consequences, including death (Fischer & Hartzell, 2008; Gerke, Mazzeo, Kliewer, 2006; Kent & Waller, 2000). Further research is necessary to provide additional support for this relationship, as well as test potential mediating variables that more fully explain the association between emotional maltreatment and eating psychopathology. Pervasive and dysfunctional core beliefs about the self and others that develop secondary to abusive environments, conceptualized by

Young as EMS, may explain significant variance in this relationship and are therefore worth investigating given preliminary evidence relating maltreatment to schema development.

Furthermore, EMS represent a modifiable target for treatment and prevention of EDs. Finally, examining the impact of depression remains important given theoretical and empirical links between depression and the other constructs of interest in the current study.

Table 1: Description of the Young Schema Questionnaire- Short Form (YSQ-SF; Young 1994)

Domains & Schemas	Description of Early Maladaptive Schemas
DISCONNECTION & REJECTION	<i>Expectation that one's needs for security, safety, stability, empathy, acceptance, and respect will not be met in a predictable manner. Family origin is often cold, invalidating, detached, and potentially abusive.</i>
1. Abandonment/Instability 2. Mistrust/Abuse 3. Emotional Deprivation 4. Defectiveness/Shame 5. Social Isolation/Alienation	1. The belief that it is only a matter of time until close people will leave or fail to protect me. 2. The expectation that others will hurt, abuse, humiliate, cheat, lie, manipulate, or take advantage of me. 3. The belief that others will not provide adequate emotional support or nurturance for me. 4. The belief that one is defective or fundamentally flawed. 5. The belief that one is fundamentally different from others and does not belong.
IMPAIRED AUTONOMY & PERFORMANCE	<i>Expectations for the environment and self interfere with perceived ability to function independently or perform successfully. Family origin is often enmeshed, overprotective, undermining of child abilities.</i>
6. Dependence/Incompetence 7. Vulnerability to Harm/Illness 8. Enmeshment/Undeveloped Self 9. Failure	6. The belief that one cannot handle everyday responsibilities competently, without considerable help from others. 7. The belief that catastrophe is imminent and not preventable. 8. A tendency for one's identity to fused with significant others, including excessive emotional involvement. 9. The belief that one is inadequate and unsuccessful and therefore unable to meet important goals.
IMPAIRED LIMITS	<i>Difficulties in personal boundaries, responsibilities to others, or goal orientation often leads to difficulty respecting others, maintaining commitments, or achieving realistic goals. Family origin is often overindulgent, permissive, or lacking discipline or direction.</i>
10. Entitlement/Grandiosity 11. Insufficient Self-Control/ Self-Discipline	10. The belief that one is better than others and is entitled to different rights and privileges. 11. The belief that one is unable to control one's impulses
OTHE -DIRECTEDNESS	<i>Excessive focus on the desires, feelings, and behaviors of others, at the expense of one's own needs to gain approval and avoid interpersonal conflict. Family origin is often based on conditional acceptance and social status is valued over child's unique needs.</i>
12. Subjugation 13. Self-Sacrifice	12. The belief that others desires take precedent over one's own desires 13. A tendency to be focused on meeting the needs of others
Overvigilance & Inhibition	<i>Excessive emphasis on suppressing one's feelings and impulses or adhering to rigid, internalized rules. Family origin is often, perfectionist, demanding, and punitive.</i>
14. Emotional Inhibition 15. Unrelenting Standards	14. The tendency to be emotionally restrictive and reluctance to share emotions. 15. The belief that one should strive to meet unattainable levels of achievement and perfection.

CHAPTER 2

RATIONALE AND HYPOTHESES

The purpose of the current study was to investigate the relationships among emotional maltreatment, maladaptive schemas, depression, and disordered eating behaviors in a sample of women at high risk for disordered eating behavior. Ultimately, by investigating these relationships, the study sought to identify specific EMS that serve to mediate the relationship between early experiences of emotional maltreatment and the development of ED behaviors. By including a measure of depression in the model, this study aimed to provide further support for existing theoretical and empirical evidence that, childhood emotional maltreatment is strongly related to the emergence of depressive symptoms (Liu, et al., 2005, Rose & Abramson, 1992). Additionally, cognitive behavior models of bulimia and binge eating include the presence of negative mood symptoms as a potential precursor to engaging in maladaptive eating behaviors (Agras & Apple, 2008; Fairburn, 2008). Therefore, it was hypothesized that depressive symptoms would act as a mediator in the current study between emotional maltreatment and ED symptoms, as in previous studies (see Kong & Bernstein, 2009). Finally, given previous research suggesting specific EMS predict depressive symptomatology, it was hypothesized that the current study would find similar associations. Ultimately, by identifying specific schemas impacting the emergence and maintenance of depression and eating psychopathology among maltreatment survivors, we move beyond simply recognizing the distal outcomes of emotional maltreatment and begin to increase our understanding of *how* emotional maltreatment affects development.

Significance

Considerable research indicates that a history of child maltreatment is associated with a range of immediate and long-term consequences. Although previous studies have focused almost exclusively on the outcomes of sexual and physical abuse, efforts to expand and refine our understanding of childhood emotional maltreatment and its consequences support the association between emotionally abusive experiences and a variety of negative outcomes. For example, a history of CEA has been associated with numerous psychological and health-related problems including increased anxiety, depression, posttraumatic stress, eating psychopathology, personality disorders, substance abuse, low self-esteem, suicidality, and subsequent victimization (Briere & Runtz, 1990; Finzi-Dottan & Karu, 2006; Gibb et al., 2001; Glaser, 2002; Hart, Binggeli, & Brassard, 1998; Kent & Waller, 2000; Messman-Moore & Brown, 2004; Rodgers et al., 2004; Rich et al., 2005; Sebre et al., 2004; Spertus et al., 2003). Although investigating the impact of multiple abuse experiences is important, research examining the unique impact of emotional maltreatment is useful, given that a considerable number of individuals endorse this form of abuse at the exclusion of other abuse types. For example there is evidence that patients exclusively endorsing emotional abuse display similar levels of depression, symptomatic distress, and borderline personality features compared to clients reporting CSA or multiple forms of abuse (Braver, Bumberry, Green, & Rawson, 1992).

As previously reviewed, there are several studies to date relating emotional maltreatment and depressive symptomatology. However, of these studies, few have examined potential mediators that may more fully explain this relationship. Given the pervasiveness of depression and the myriad consequences including increased mortality (Penninx et al., 2001), decreased physical health (for reviews see Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002), and given

that depression remains the leading cause of disability in the US (The World Health Report, 2004), identification of EMS may serve as modifiable targets for prevention and treatment of depression.

Conversely, research examining emotional maltreatment and ED symptoms is limited compared to studies investigating depression as an outcome. Still, understanding the development and maintenance of EDs is particularly relevant given the frequency of these behaviors in college women. In a longitudinal incidence study of EDs, results revealed a continuous linear increase in eating disorder pathology for 15- to 24-year-old females (Lucas, Crowson, O'Fallon, & Melton, 1999). It is estimated that 1-4% of female college students meet the full DSM-IV (APA, 1994) criteria for AN or BN, with an additional 35-70% of women reporting direct and indirect symptoms of disordered eating including loss of appetite control, periodic use of laxatives, purging or excessive exercise to inhibit weight gain, body image dissatisfaction and distortion, obsessive monitoring of caloric and fat content, unhealthy weight fluctuations, excessive weight monitoring, moderate depression, and low self-esteem (Edwards-Hewitt & Gray, 1993; Heatherton, Nichols, Mahamedi, & Keel, 1995; Nelson, Hughes, Katz, & Searight, 1999;). Many of the women endorsing subclinical ED symptoms likely fall into the EDNOS subtype, the most commonly diagnosed subtype with prevalence rates ranging as high as 50% to 70% of all individuals with eating disorders (Ricca et al., 2001). Although there is limited research on women with this diagnosis (Fairburn & Bohn, 2005) in part due to the heterogeneity of this group, ED researchers suggest that in addition to being a common diagnosis, the distress associated with these ED behaviors may be severe and persistent (Walsh & Sysko, 2009). Given that a substantial portion of individuals exhibiting maladaptive ED symptoms do not fit into the current DSM-IV diagnostic categories, as well as the high

prevalence of college women endorsing these symptoms, the current study attempted to extend previous research to address these gaps by investigating ED symptoms (e.g., bingeing, purging, restricting, and ED related cognitions including eating, weight, and shape concerns) separately, as they relate to emotional maltreatment.

In addition to providing evidence for the relationship between child maltreatment and eating psychopathology, particularly the influence of emotional maltreatment, it is important to increase our understanding of the mechanisms that may more fully explain this distal relationship. Recently, ED researchers have suggested that although disturbances in cognition regarding eating, weight, and shape are necessary for understanding EDs, they are not sufficient explanatory constructs (Fairburn, Cooper, & Shafran, 2003; Waller & Kennerley, 2003; Waller, 2006). Data from a recent study examining maladaptive core beliefs and ED symptoms supports the idea that distorted cognitions not related to eating disorder psychopathology are present in ED patients, especially those patients engaging in purging and restricting behaviors (Dingemans, Spinhoven, van Furth, 2006). Efforts to replicate these results in a larger population of maltreatment survivors is important. Furthermore, identifying particular schemas that mediate the association between emotional maltreatment and ED behaviors not only provides additional support for Young's EMS taxonomy, but also specific schemata represent potentially modifiable treatment targets. Effective treatment interventions are particularly necessary given that ED are widely believed to be one of the most difficult psychological conditions to treat, not to mention have the highest rate of mortality among mental disorders (Agras, 2001).

The Hypothesized Model

The current study proposed a model (see Figure 1) wherein the role of emotional maltreatment and EMS were examined as they relate to subsequent depressive and ED symptomatology. The model hypothesized that the presence and severity of emotional maltreatment in a woman's childhood and adolescence (i.e., before age 18) would result in maladaptive schema elevations and subsequent increases in depressive and ED symptomatology. Based on theoretical and empirical rationale, it was hypothesized that the domains of *Disconnection & Rejection* and *Impaired Autonomy* would be most strongly related to emotional maltreatment experiences. Although given preliminary findings supporting associations between schemas in the domains of *Other-Directedness* and *Overvigilance & Inhibition*, significant associations between these domains and emotional maltreatment were also hypothesized. Similarly, previous studies have suggested that the domains of *Disconnection & Rejection*, *Impaired Autonomy*, and *Overvigilance & Inhibition* are related to increased symptoms of depression. Therefore, the current study hypothesized significant relations between these schema domains and depression. Based on theory and limited empirical research, direct associations between schemas comprising the *Disconnection & Rejection* domain, particularly *Mistrust/Abuse* and *Defectiveness/Shame* and binge/purge behavior associated with BN were hypothesized. Additionally, it was hypothesized that the *Overvigilance & Inhibition* domain, particularly the *Unrelenting Standards* schema, would be related to ED cognitions and restricting behavior (i.e., *Global Eating Psychopathology* construct measured by the EDE-Q). Lastly, besides the final hypothesis that the *Impaired Limits* schema domain would evidence the strongest correlation with ED behaviors, particularly binge eating and purging behavior, additional hypotheses

regarding the relationship between EMS and ED symptoms were not made as these analyses were more exploratory in nature.

In summary, specific direct and indirect effects were hypothesized and modeled in Figure 1. Overall, the current study was designed to test whether the relationship between emotional maltreatment and depression was indirect through the influence of EMS. In turn, depressive symptoms were expected to be related to ED symptomatology. Although the model depicts indirect paths from EMS to ED behaviors via depression, it is certainly plausible that direct relationships between emotional maltreatment and ED symptoms, as well as between EMS and ED symptoms exist, although, ultimately, it was hypothesized that including depression would improve the overall fit of the model

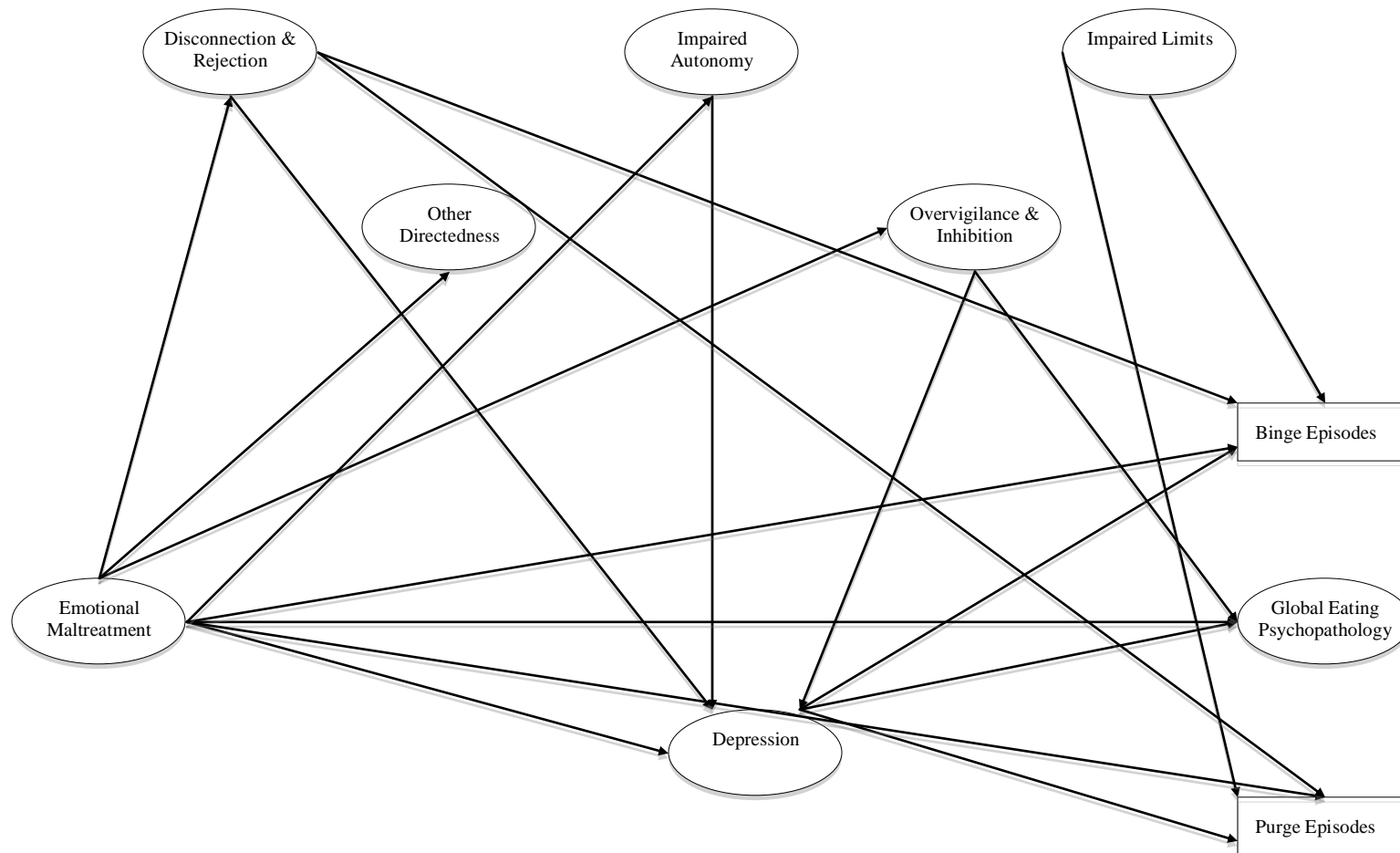


Figure 1. *Hypothesized Structural Model* relating emotional maltreatment, EMS, depressive, and ED symptoms. Latent variables are indicated by ellipses, measured variables by rectangles.

CHAPTER 3

METHOD

Participants

Participants were 996 female students recruited from introductory psychology classes through the research pool during the 2007-2008 academic year. Participation in the current study fulfilled a research requirement; however, students were also given the opportunity to participate in library research to fulfill their research requirement.

Measures

Emotional Maltreatment

The Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998) is a 28-item retrospective self-report questionnaire designed to assess five types of childhood maltreatment occurring before age 18 including sexual abuse, physical abuse, physical neglect, emotional abuse, and emotional neglect. For the purposes of this study, only the emotional abuse and neglect subscales each comprised of five items were used to measure experiences of emotional maltreatment. Each item begins with the phrase, “When I was growing up,” and is rated on a five-point Likert scale ranging from “Never true” to “Very often true.” The CTQ has demonstrated reliability including moderate to high internal consistency reliability coefficients ranging from $\alpha = .66$ to $\alpha = .92$ across a range of samples, and test-retest reliability coefficients ranging from .79 to .86 over an average of 4 months (Bernstein et al., 2003; Scher, Stein,

Asmundson, McCreary, & Forde, 2001). Alpha's for the emotional abuse scale have been reported between .84 and .89 and for the emotional neglect scale between .85 and .91 across both community and clinical samples (Bernstein et al., 2003). In the present sample, Cronbach's alpha was .83 for the emotional abuse subscale and .84 for the emotional neglect subscale. The CTQ's validity has been supported by demonstrating convergent validity with ratings of childhood maltreatment of both clinicians and therapists, and a consistent five-factor structure (Bernstein & Fink, 1998; Bernstein et al., 2003; Fink et al., 1995; Scher Stein, Asmundson, McCreary, & Forde, 2001). Clinical cut-off scores offered by the measure's creator (Bernstein & Fink, 1998) were used to report descriptive information about the current sample (≥ 9 and 10 for low to moderate emotional abuse and neglect respectively; ≥ 13 and 15 for moderate to severe emotional abuse and neglect).

Adverse Child Experiences Study Questionnaire (ACE). Seven additional questions were used to assess emotional maltreatment. Questions were drawn from a larger questionnaire used in the Adverse Childhood Experiences (ACE) Study based at Kaiser Permanente's San Diego Health Appraisal Clinic and approved by institutional review boards of Kaiser Permanente and the Office of Protection from Research Risks at the National Institutes of Health. The ACE Study assessed retrospectively and prospectively, the long-term impact of abuse and household dysfunction during childhood on a variety of outcomes. Questions were adapted from the Conflicts Tactics Scale (CTS; Straus, 1990), a commonly used measure in the field of family violence to assess psychological abuse in childhood. All questions referred to the respondents' first 18 years of life and assessed both the frequency and perpetrator of the experiences of emotional abuse and neglect. Sample questions included, "Were you treated in a cold, uncaring

way or made to feel like you were not loved,” and “Were you often put down or ridiculed.”

Cronbach’s alpha was .77 in the current sample.

Early Maladaptive Schemas

The Young Schema Questionnaire—short form (YSQ; Young, 1994) contains 75 items rated on a 6-point scale, ranging from 1 (*completely untrue of me*) to 6, (*describes me perfectly*). These items belong to one of 15 rationally derived categories of EMS (see Table 1). The first psychometric evaluation of the YSQ (in undergraduate and adult samples) demonstrated adequate test–retest reliability, (coefficients ranging from .50 to .82) and internal consistency (alpha coefficients ranging from .83 to .96) (Schmidt et al., 1995). Cronbach’s alpha for the current sample was .96. A longitudinal psychometric evaluation of the YSQ in a large sample of adolescents suggests good test–retest reliability for EMS over a 1-year period (retest correlations from .48 to .69).

Depressive Symptoms

The Beck Depression Inventory-II (BDI-II; Beck, Brown, & Steer, 1988) is a 21-item self-report measure of the cognitive, affective, motivational, and somatic symptoms of depression. For each item, participants are asked to rate how they felt during the past week with higher scores indicating greater severity of current depressive symptoms. Beck and colleagues (1996) reported a coefficient alpha of .92 for an outpatient sample ($n = 500$) and a coefficient alpha of .93 for a college student sample ($n = 120$). Cronbach’s alpha for the current sample was .92. Regarding concurrent validity, BDI-II scores are positively correlated with the Scale for Suicide Ideation ($r = .37$), the Beck Hopelessness Scale ($r = .68$), the Hamilton Psychiatric Rating Scale for Depression ($r = .71$), and the Hamilton Rating Scale for Anxiety ($r = .47$).

Trauma Symptom Inventory- Depression Subscale (TSI; Briere, 1995). The 13-item depression subscale of the larger 100-item self-report inventory was used to measure depressive symptoms. Participants rate the presence of each symptom according to its frequency of occurrence over the prior six months, using a four-point scale ranging from 0 (*never*) to 3 (*often*). Although the TSI does not generate DSM-IV diagnoses, it is designed to evaluate the severity of posttraumatic distress, including the presence of depressive symptomatology, both in terms of mood state and depressive cognitive distortions. The TSI has demonstrated good internal consistency with mean α ranging from 0.84 to 0.87 in a variety of both clinical and nonclinical samples. Cronbach's alpha for the depression subscale was .90 in the present sample. The TSI has been shown to exhibit good convergent, predictive, and incremental validity.

Eating Disorder Symptomatology.

Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) is a 41-item self-report measure adapted from the Eating Disorder Examination, a structured interview to assess eating disorder symptoms (Fairburn, 1993). Although this questionnaire may be used to make preliminary diagnoses of anorexia nervosa or bulimia nervosa, this measure was not used for this purpose in the current study. Instead, in an effort to examine a variety of ED behavior, the four major subscales of the EDE-Q (e.g., *Dietary Restraint (DR)*, *Eating Concern (EC)*, *Weight Concern (WC)*, and *Shape Concern (SC)*) are averaged to yield a Global Score, which in the current study represented the latent construct entitled *Global Eating Pathology*. Frequencies of binge eating and compensatory strategies (e.g., self-induced vomiting, laxative and diuretic misuse) were also assessed in terms of the number of episodes occurring during the past four weeks and are not included in the Global Score. The four major subscales have demonstrated excellent internal consistency and test-retest reliability over a two-week time period (Luce &

Crowther, 1999). More recently, normative data for undergraduate women indicated internal consistencies range from .78 for *EC* to .93 for *SC*, which was similar to the present sample which had a Cronbach's alpha of .93. Test-retest correlations range from .81 to .94 for the four subscales and from .57 to .70 for the frequency of key behavioral features, including binge eating, self-induced vomiting, and laxative misuse (Luce, Crowther, & Pole, 2008). Although the binge and compensatory behaviors appear less reliable, this may be explained by lower frequencies of these behaviors among non-clinical populations, or potentially a represent a true change in onset and remission of these behaviors (Luce & Crowther, 1999).

Procedure

As previously indicated, participants were recruited through the research pool. The researcher began each data collection session with a thorough review of the consent form. In an effort to maximize honest disclosure regarding sensitive information, students were guaranteed anonymity. After obtaining informed consent and reinforcing participants' anonymity and right to withdraw from the study at any time without penalty, the researcher provided an opportunity for students to ask any additional questions. After all remaining questions were adequately answered, surveys were administered.

Once the questionnaire packet was returned to the researcher, the participants were asked to read a debriefing form explaining the purpose of the study in more detail. Any additional questions or concerns were addressed at this time. Participants were also given a list of referrals in the event of future difficulties or distress associated with participation in the current study. Participants were also encouraged to contact the researcher with additional questions should they arise.

To ensure anonymity, signed consent forms were separated from completed surveys upon collection and stored in a separate room. The completed surveys did not contain any identifying information. Lastly, students were granted research credit using the information provided on the consent form regardless of survey completion.

Data Analytic Plan

Structural equation modeling (SEM) was performed using Analysis of Momentary Structure 17.0 (AMOS 17.0; Arbuckle, 2009) to examine the proposed model and mediational hypotheses. SEM was selected because of its several advantages over regression modeling: (1) use of confirmatory factor analysis to reduce measurement error by utilizing multiple indicators per latent variable, (2) increased flexibility regarding assumptions (in particular allowing interpretation in the presence of multicollinearity), (3) the ability to test models with multiple dependent variables, (4) the ability to compare alternative models to assess relative model fit with fit indices offered as a measure of how accurately the hypothesized model(s) fit the data (Kline, 2005).

Sample Size and Power

Several recommendations regarding sample size are provided within the literature in an effort to ensure adequate power. For example, Mitchell (1993) suggests that there be 10 to 20 times as many cases as variable. Another rule of thumb, based on Stevens (2002), is to have at least 15 cases per measured variable or indicator. For the current study, which has 41 indicators, a sample size range of 615 women (based on 15 cases per indicator) to 820 women (based on 20 cases per indicator) are recommended. Notably, a minimum of 861 women is required to compute the covariance matrix (based on the formula $k(k+1)/2$ observations, where k is the

number of variables). Furthermore, it is recommended that the researcher exceed the minimum sample size recommendations particularly when data are non-normal (Kline, 2005). Therefore, the current sample size of over 900 participants appears to exceed current suggestions with regard to obtaining a modal power level of .8 (Cohen, 1988).

Missing Data

In order to account for missing data, the maximum likelihood (ML) missing data imputation procedure was used. This method is robust against moderate violations of normality, however, skewness and kurtosis may lead to an overestimation of the chi-square fit index, making model rejection more likely (West, Finch, & Curran, 1995). Compared to other methods available, (e.g., pairwise and listwise deletion), ML estimates are unbiased and have a reduced likelihood of convergence failure (Enders & Bandalos, 2001; Gold & Bentler, 2000). Notably, less than 5% of all items were missing and analyses indicated that the data was missing at random.

Latent Constructs and Corresponding Indicators

A parceling technique was used to create indicators for many of the latent constructs investigated (See Figure 2). For example, items from the emotional abuse and emotion neglect subscales of the CTQ were used to create three emotional maltreatment parcels. Items comprising each scale were assigned randomly to one of the parcels, and item scores were averaged to compute parcel scores. In addition to the three parcels, the emotional maltreatment construct was indicated by a frequency count of items endorsed on the ACE questionnaire. Each of the five schema domains (i.e., *Disconnection & Rejection*, *Impaired Autonomy & Performance*, *Impaired Limits*, *Other Directedness*, and *Overvigilance & Inhibition*) were

indicated by five parcels created by randomly assigning individual items from the subscales that comprise the larger domain (see Table 1 for specific subscale names and descriptions). The latent construct entitled *Global Eating Pathology* is indicated by four parcels comprised of items from the *Weight Concern*, *Shape Concern*, and *Eating Concern* subscales of the EDE-Q as well as the *Dietary Restraint* subscale of the EDE-Q. The frequency of *Binge Episodes* and *Purge Episodes* were modeled separately as measured variables because they represent frequency counts of ED behaviors which are not captured in the EDE-Q Global Score. Finally, depressive symptomatology is indicated by three parcels of items from the BDI as well as by the depression subscale of the TSI.

Parceling was used often to increase reliability. The reliability of a parcel of items is greater than that of a single item, so parcels can serve as more stable indicators of a latent construct. Additionally, the risk of spurious correlations is reduced, both because fewer correlations are being estimated and because each estimate is based on more stable indicators. Finally, parcels have been shown to provide more efficient estimates of latent parameters than do items (Kline, 2005)

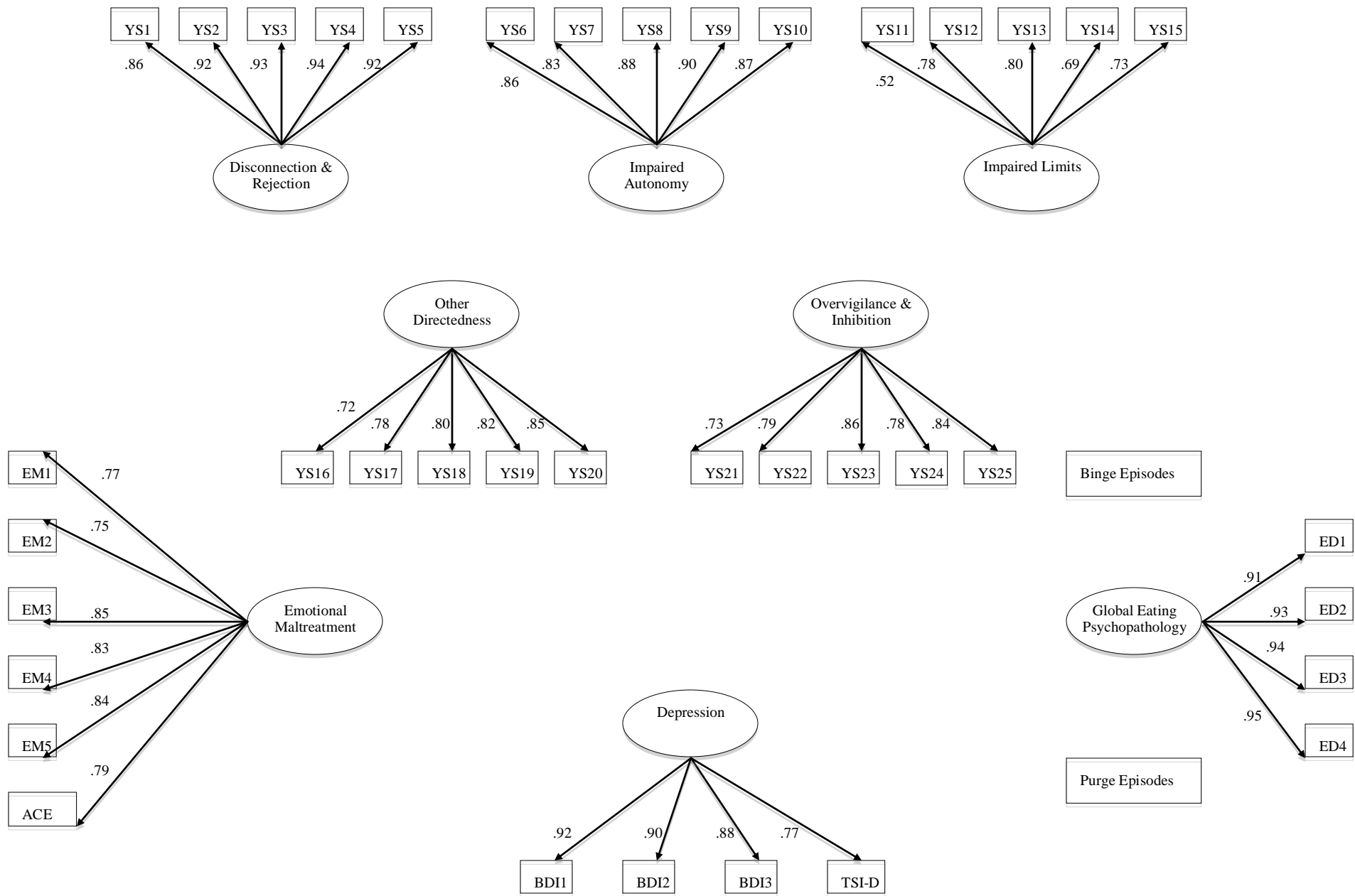


Figure 2. *Measurement model*. All parameter estimates are standardized and significant at $p < .01$.

Measurement model

Several researchers have argued for a two-step approach to structural equation modeling where the measurement model is initially tested and, if necessary, respecified before testing the structural model (See Anderson & Gebing, 1988; Kline, 2005). Confirmatory factor analysis (CFA) was used to determine if the measurement model (see Figure 2) adequately fit the data by assessing the relationships between the latent constructs and observed indicators. Of interest is the factor loading of the observed indicator on the construct of interest, as well as overall model fit. The proposed measurement model consisted of eight latent variables (i.e., Emotional Maltreatment, Early Maladaptive Schema Domains, Depression, and Global Eating Psychopathology), each with four or more indicators, and two measured variables (Binge Episodes and Purge Episodes).

Specification of CFA model. CFA models must meet necessary standards in order to be identified. Standard guidelines suggest that CFA models are identified if they contain two or more factors with at least two indicators, referred to by Bollen (1989) as the *two-indicator rule*. Although some researchers suggest that this rule is oversimplified and that models containing factors with only two indicators are more prone to estimation problems, this appears to be only in situations where the sample size is small (i.e., less than 200) (See Kline, 2005). As is common practice in path modeling, measurement errors in the proposed CFA model were assigned a scale through a unit loading identification (UCI) constraint. Specifically, the unstandardized residual path coefficient for the direct effect of a measurement error on the corresponding indicator was fixed to 1.0 (Kline, 2005). Although it was generally expected that indicators would be correlated with several factors, it is hypothesized that they would demonstrate higher estimated

correlations with the factors they are believed to measure (see Graham, Guthrie, & Thompson, 2003; Kline, 2005). Finally, it was anticipated that the proposed CFA model would adequately fit the data; however, re-specification efforts were utilized as necessary. For example, sometimes indicators demonstrate poor loadings on the factors to which they were originally assigned. Inspection of residuals can help identify another factor to which the indicator may be switched. Similarly, an indicator may have relatively high loadings on multiple factors suggesting the indicator in question measures more than one construct. This may be dealt with by either allowing the indicator to load onto multiple factors or by allowing the measurement errors to covary, as was done in the current study (Kline, 2005).

Consistent with recommendations (See Kline, 2005) multiple fit indices were utilized to determine if the measurement model effectively accounted for the underlying latent data structure by converging to adequately reproduce the covariance matrix. First, the chi-square statistic, the traditional fit index, which reflects the amount of discrepancy between the implied and observed covariance matrices was computed. A statistically non-significant chi-square fit index should suggest a well-fitting model and rejection of a model would result from a statistically significant chi-square. Given that this method is considered stringent and heavily dependent on sample size resulting in the rejection of adequate fitting models (Bentler & Bonett, 1980), the chi-square statistic was supplemented with additional indexes of fit. The following indices and cutoffs were used to determine model fit in this study (Marsh, Hau, & Wen, 2004; Vandenberg & Lance, 2000): root mean square error of approximation (RMSEA; .08 or less represents acceptable fit; Steiger, 1990), non-normed fit index (NNFI; .90 or higher indicates that the model cannot likely be significantly improved upon; Bentler & Bonett, 1980) (same as Tucker-Lewis Index), and the comparative fit index (CFI; .90 or higher represents acceptable fit;

Bentler, 1990). These indices differentiate between well-fitting and poor-fitting models by considering degrees of freedom, model complexity, model misspecifications, sample size, and potential for replication (see review by Vandenberg & Lance, 2000).

Structural model

Upon specifying the appropriate measurement model, the proposed structural model was evaluated in order to examine indirect and direct relationships among latent constructs as well as determine the fit of the model. As indicated above, SEM was used to test the hypothesized relations between emotional maltreatment, EMS domains, depression, and ED behaviors. The proposed hypothesized structural model shown in Figure 1 was tested and compared to four alternative models in an effort to test mediational hypotheses. More specifically, Model 1 (see Figure 1) depicts the full model with hypothesized paths based on previous theoretical and empirical findings depicted by arrows. Structural Model 2 and 3 constrained to zero the direct paths from emotional maltreatment to depression and ED symptoms, respectively. With respect to emotional maltreatment, these models assessed the mediating role of EMS separately for depressive and ED symptoms. Structural Model 4 deleted the direct path from EMS to ED symptoms in order to examine whether the association between maladaptive schemas and eating psychopathology was mediated by symptoms of depression. In an effort to further examine the mediating role of depression, pathways to and from the mediator (i.e., from emotional maltreatment to depression and from depression to ED symptoms) were removed in Structural Model 5. Finally, Structural Model 6 was tested in which all paths that did not significantly contribute to the fit of the hypothesized model were removed.

CHAPTER 4

RESULTS

Sample Characteristics

Mean age of the 996 participants was 18.98 years ($SD = 1.52$). Participants were predominately Caucasian (79.7%; $n=794$), while 9.43% ($n=94$) identified as African American, 8.03% ($n=80$) as Asian, and 2.51% ($n=25$) as Latina. Over half the sample reported a gross family income of over \$60,000, with 40% of participants ($n=352$) reporting family income of over \$80,000. With regard to maltreatment history, 240 (24.1%) women endorsed experiences of emotional abuse, of which 92 (9.2%) women reported moderate to severe emotional abuse. Experiences of emotional neglect were reported by 204 (20.5%) women, with 46 (4.6%) women endorsing moderate to severe emotional neglect. See Table 3 for mean, standard deviation, and bivariate correlations for study variables. Regarding ED symptoms, a potential concern in a nonclinical, undergraduate sample is the possibility for restricted range in EDE-Q scores. Previous research has, however, demonstrated that undergraduate women endorse moderate to high levels of ED pathology (Green et al., 2009), and the current sample appears to be no exception. Descriptive statistics indicate scores on the EDE-Q ranged from .00 to 5.76, with 25% of women in the sample obtaining scores above 3.00. These scores are consistent with studies including undergraduate samples, as well as with larger epidemiological studies (see Green et al., 2009; Mond, Hay, Rogers, & Owen, 2006) and alleviate EDE-Q restricted range concerns in this nonclinical sample.

Intercorrelations between study variables indicated that emotional abuse and neglect were significantly correlated with all study variables except frequency of purging. All schema domains were significantly associated with emotional maltreatment. As hypothesized, the schema domain of *Disconnection & Rejection* was more strongly related to indicators of emotional maltreatment than were other domains. Although the *Impaired Autonomy* schema domain was significantly associated with emotional maltreatment, the strength of the association was to a lesser degree than hypothesized. Schema domains were significantly correlated with each other, as well as with depression, global ED symptoms, and binge behavior, but not with frequency of purging. With regard to specific hypotheses, results confirmed that the schema domains of *Disconnection & Rejection* and *Impaired Autonomy* evidenced the strongest associations to depression. Contrary to expectations, the domain of *Impaired Limits* showed a stronger association with depression (as measured by the BDI) than did *Overvigilance & Inhibition*. The *Disconnection & Rejection* domain was most strongly associated with both global ED symptoms and binge behavior. Meanwhile the *Impaired Limits* domain, although significantly correlated to global ED symptoms and binge episodes, did not evidence the strength of association to ED symptoms predicted, particularly given a non-significant association to purge behavior. As hypothesized, depressive symptoms as measured by the BDI and TSI depression subscale were significantly associated with all eating disorder variables.

Table 2
Means, Standard Deviations, and Bivariate Correlations of Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. CEA	--	.672**	.601**	.489**	.336**	.196**	.347**	.233**	.341**	.374**	.230**	.140**	.027
2. CEN		--	.450**	.548**	.363**	.197**	.301**	.223**	.344**	.352**	.137**	.148**	.065*
3. ACE			--	.362**	.258**	.173**	.231**	.190**	.294**	.261**	.178**	.051	.000
4. D1				--	.718**	.464**	.558**	.510**	.615**	.644**	.315**	.196**	.050
5. D2					--	.472**	.552**	.392**	.609**	.564**	.340**	.132**	.020
6. D3						--	.343**	.385**	.405**	.297**	.225**	.190**	.026
7. D4							--	.453**	.471**	.558**	.282**	.152**	.060
8. D5								--	.352**	.310**	.205**	.122**	.007
9. BDI									--	.734**	.448**	.214**	.104**
10. TSI-Dep										--	.357**	.150**	.069*
11. Global ED											--	.272**	.192**
12. Binge												--	.231**
13. Purge													--
<i>M</i>	7.39	7.41	.20	43.7	31.3	21.3	23.4	26.8	10.1	6.48	2.05	1.45	.297
<i>SD</i>	3.50	3.20	.40	19.7	12.0	8.13	8.33	8.64	8.66	5.01	1.33	2.97	2.05

Note. D1 = Disconnection Rejection Schema Domain; D2 = Impaired Autonomy & Performance Schema Domain; D3 = Impaired Limits Schema Domain; D4 = Other Directedness Schema Domain; D5 = Overvigilance & Inhibition Schema Domain. * $p < .05$; ** $p < .01$

Structural Equation Modeling

A measurement model was first tested for an acceptable fit to the data using confirmatory factor analysis (Anderson & Gerbing, 1988). Once a measurement model was estimated, a structural model was tested using the maximum likelihood method in AMOS (version 17.0). Criteria for acceptable model fit were a comparative fit index (CFI) greater than or equal to .90, and a root mean square error of approximation (RMSEA) of .08 or less (Hu & Bentler, 1999; Kline, 2011). See Table 3 for additional fit indices. The chi-square (χ^2) difference test was used to compare nested models (Steiger, Shapiro, & Browne, 1985).

Measurement Model

As previously described, many of the latent variables were indicated by parcels of items in an effort to more closely approximate continuous measurement of the latent construct. Initially, the measurement model (see Figure 2) was tested without allowing the schema domains and ED variables to correlate (i.e., without allowing schema domain to correlate with other schemas and binge, purge, and global eating constructs to correlate with each other). This resulted in a poor fitting model ($\chi^2 = 6214.8$, $df = 781$; CFI = .843, RMSEA = .084). The second measurement model, which allowed for the correlation of error terms among variables theoretically and empirically linked, adequately fit the data ($\chi^2 = 3980.6$, $df = 769$; CFI = .907, RMSEA = .065). Fit indices for both measurement models are presented in Table 3. All of the loadings of the latent and measured variables were significant ($p < .001$). Hence, all the latent variables were adequately measured by their respective indicators (See Figure 2). Consequently, this measurement model was used in subsequent analyses.

Table 3
Summary of Model Fit Indices

Model	χ^2	df	RMSEA	NFI	CFI
1. Measurement Model 1	6214.80	781	.084	.825	.843
2. Measurement Model 2	3980.62	769	.065	.888	.907
3. Structural Model 1: <i>Full Model</i>	2678.10	750	.051	.924	.944
4. Structural Model 2: <i>Minus direct path from EM to Depression</i>	2681.58	751	.051	.924	.944
5. Structural Model 3: <i>Minus direct paths from EM to ED</i>	2679.40	753	.051	.924	.944
6. Structural Model 4: <i>Minus direct paths from EMS to ED</i>	2694.11	755	.051	.924	.944
7. Structural Model 5: <i>Minus direct paths from Depression to ED</i>	2823.54	754	.053	.920	.940
8. Structural Model 6: <i>Minus non-significant paths</i>	2684.01	758	.051	.924	.944

Structural Models

Structural Model 1: Target model including all hypothesized paths. The first structural model analyzed was the full model (presented in Figure 3). This model depicts the hypothesized relationships between emotional maltreatment, schema domains, depression, and ED symptoms based on previous theoretical and empirical findings. Results indicated that this model provided a good fit for the data (CFI = .944, RMSEA = .051). See Table 3 for additional fit statistics.

Emotional maltreatment was significantly related to all schema domains hypothesized (i.e., *Disconnection & Rejection*, *Impaired Autonomy*, *Other Directedness*, and *Overvigilance & Inhibition*). Similarly, *Disconnection & Rejection* and *Impaired Autonomy* schema domains were significantly associated to depression as predicted; however, contrary to expectations, the *Overvigilance & Inhibition* schema domain was not significantly related to depression or to global ED symptoms. In fact, the only significant, hypothesized link between schema domains and ED symptoms existed between *Impaired Limits* and Binge Episodes ($\beta = .12$, $p < .05$). All other relationships between schema domains and ED symptoms were indirect through depression, which was significantly related to all three ED variables but most strongly with global ED psychopathology ($\beta = .45$, $p < .05$). Although emotional maltreatment was predicted to be distally related to ED symptomatology, results confirmed that this relationship is not direct, as emotional maltreatment did not significantly predict global ED symptoms, binge, or purge behavior.

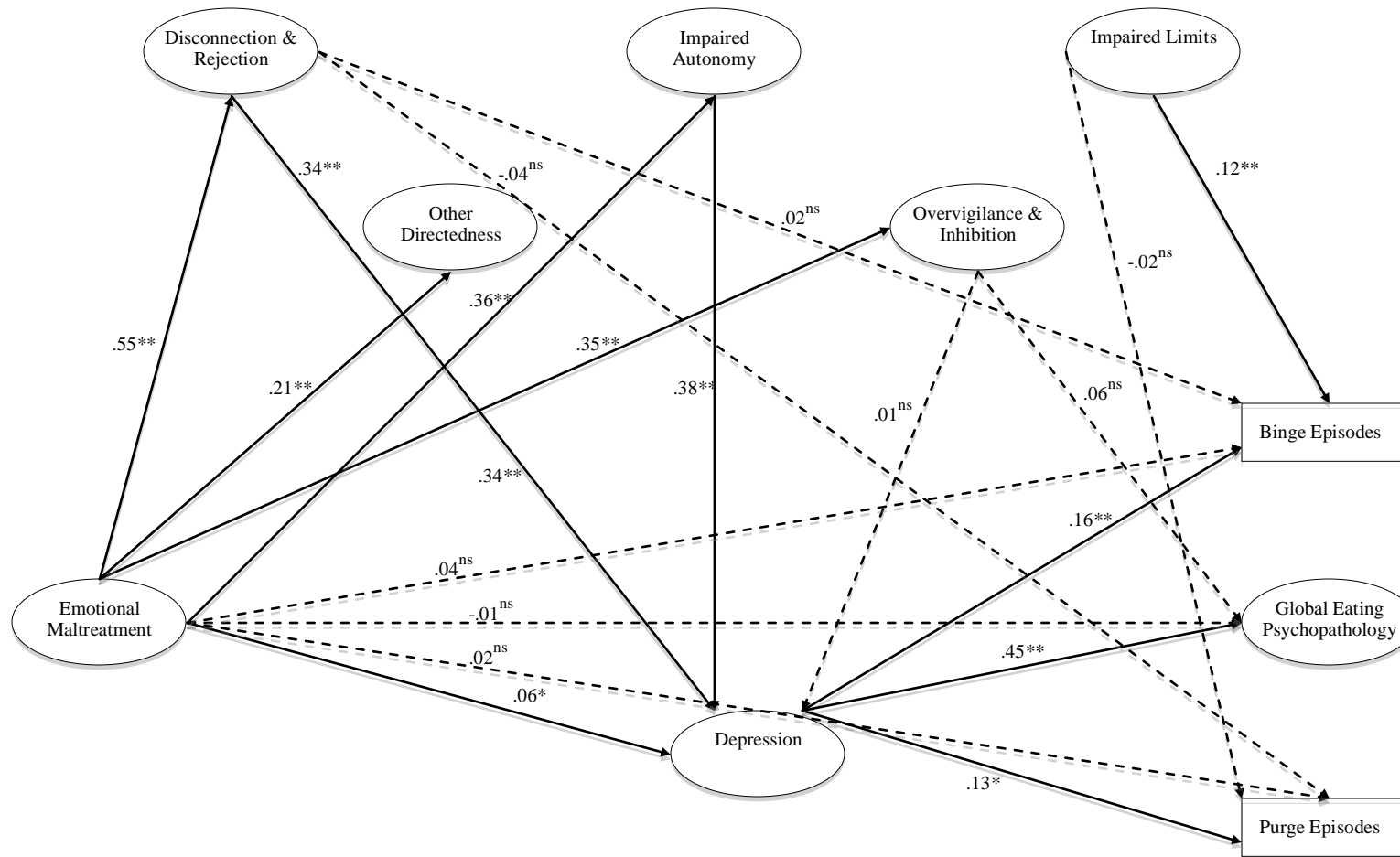


Figure 3. *Structural Model 1: Target model including all hypothesized paths.* Standardized regression weights are presented for the direct paths and indirect paths hypothesized. Note. * $p < .05$; ** $p < .01$.

Structural Model 2: Test of mediating role of schema domains in the emotional maltreatment-depression relationship. This model is identical to Structural Model 1, except that the path from emotional maltreatment to depression was deleted in an effort to test the mediating role of specific schema domains. The model fit the data well, evidencing identical CFI and RMSEA values as Structural Model 1 (See Table 3 for additional fit indices). The *Overvigilance & Inhibition* schema domain remained a non-significant predictor of depression in this model as it was in Structural Model 1. The fit of this nested model was compared with the fit of the full model using the chi-square difference test. Results indicated that the more parsimonious model, Structural Model 2, was roughly equivalent to Structural Model 1 ($\chi^2_{\text{diff}} = 3.47, df = 1, p > .05$). Given the non significant χ^2 difference value, the direct path from emotional maltreatment to depressive symptoms does not contribute significantly to model fit. Therefore, findings support the mediating role of *Disconnection & Rejection* and *Impaired Autonomy* schema domains.

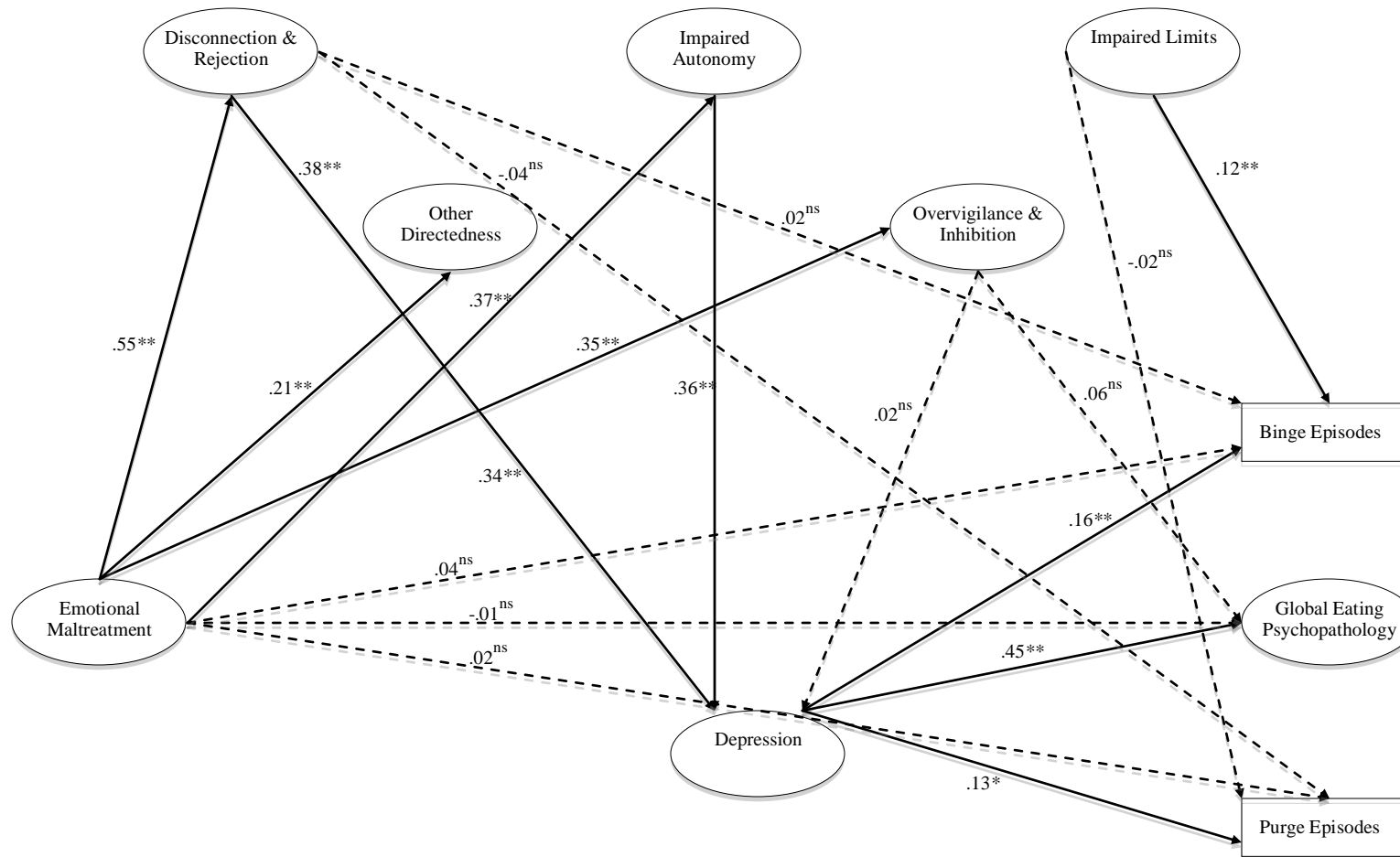


Figure 4. *Structural Model 2: Test of the mediating role of schema domains in the emotional maltreatment-depression relationship.* Standardized regression weights are presented for the direct paths and indirect paths hypothesized. Note. * $p < .05$; ** $p < .01$.

Structural Model 3: Test of mediating role of schema domains in the emotional maltreatment-eating symptomatology relationship. Just as the path from emotional maltreatment to depression was deleted in Structural Model 2, in Structural Model 3, the paths from emotional maltreatment to ED symptomatology were constrained to zero to test the mediating role of EMS in the relationship between emotional maltreatment and eating symptomatology. This model fit the data well, evidencing similar fit indices as the two previous models (CFI = .944, RMSEA = .051). A non significant χ^2 difference value ($\chi^2_{\text{diff}} = 1.30$, $df = 3$, $p > .05$) suggests that the direct paths from emotional maltreatment to ED symptoms do not contribute significantly to model fit. Given that the paths from emotional maltreatment to *Global Eating Psychopathology*, *Binge Episodes*, and *Purge Episodes* were non-significant in Structural Model 1, it is not surprising that the impact of constraining these paths to zero was negligible. Findings suggest that the *Disconnection & Rejection* schema domain plays a mediating role in the relationship between emotional maltreatment and both frequency of *Binge Episodes* and *Purge Episodes*. Given that the association between *Overvigilance & Inhibition* and *Global Eating Psychopathology* remained non-significant in this model, mediation was no longer considered.

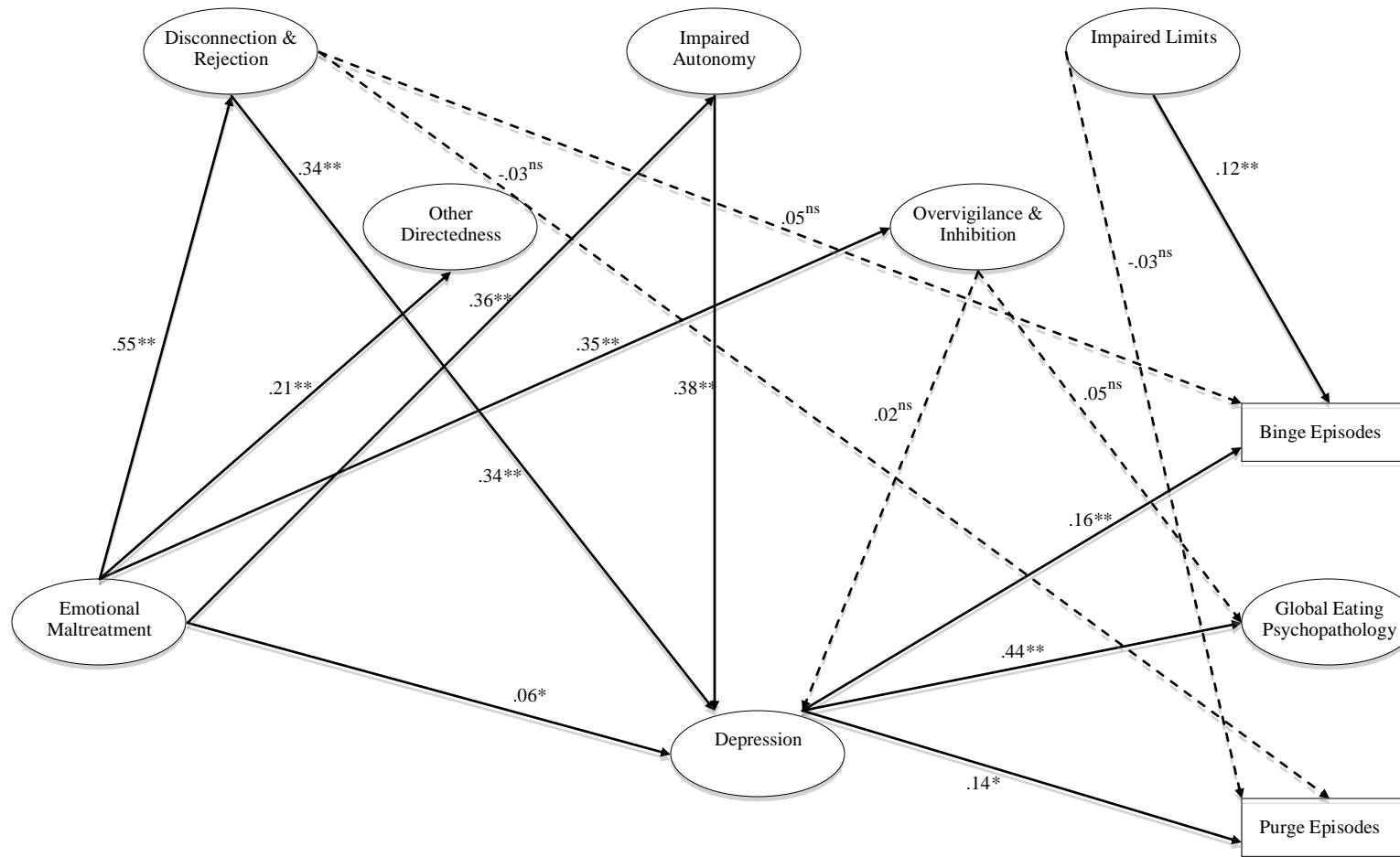


Figure 5. *Structural Model 3: Test of the mediating role of schema domains in the emotional maltreatment-eating symptomatology relationship.* Standardized regression weights are presented for the direct paths and indirect paths hypothesized. Note. * $p < .05$; ** $p < .01$.

Structural Model 4: Test of mediating role of depression in relationships between schema domains and eating symptomatology. This model is identical to Structural Model 1 except that the paths from the schema domains (i.e., *Disconnection & Rejection* and *Overvigilance & Inhibition*) to ED symptomatology were removed to test the mediating role of depression in the relationships between schema domains and eating symptomatology. This model fit the data well and demonstrated similar fit indices to Structural Model 1 (See Table 3). Results from the chi-square difference test ($\chi^2_{\text{diff}} = 3.30, df = 3, p > .05$) indicated the nested model is equally acceptable when compared to the full model, albeit more parsimonious. Further, results provide support for the mediating role of depression. In other words, the relation between schemas and ED symptomatology appears to be indirect through depression.

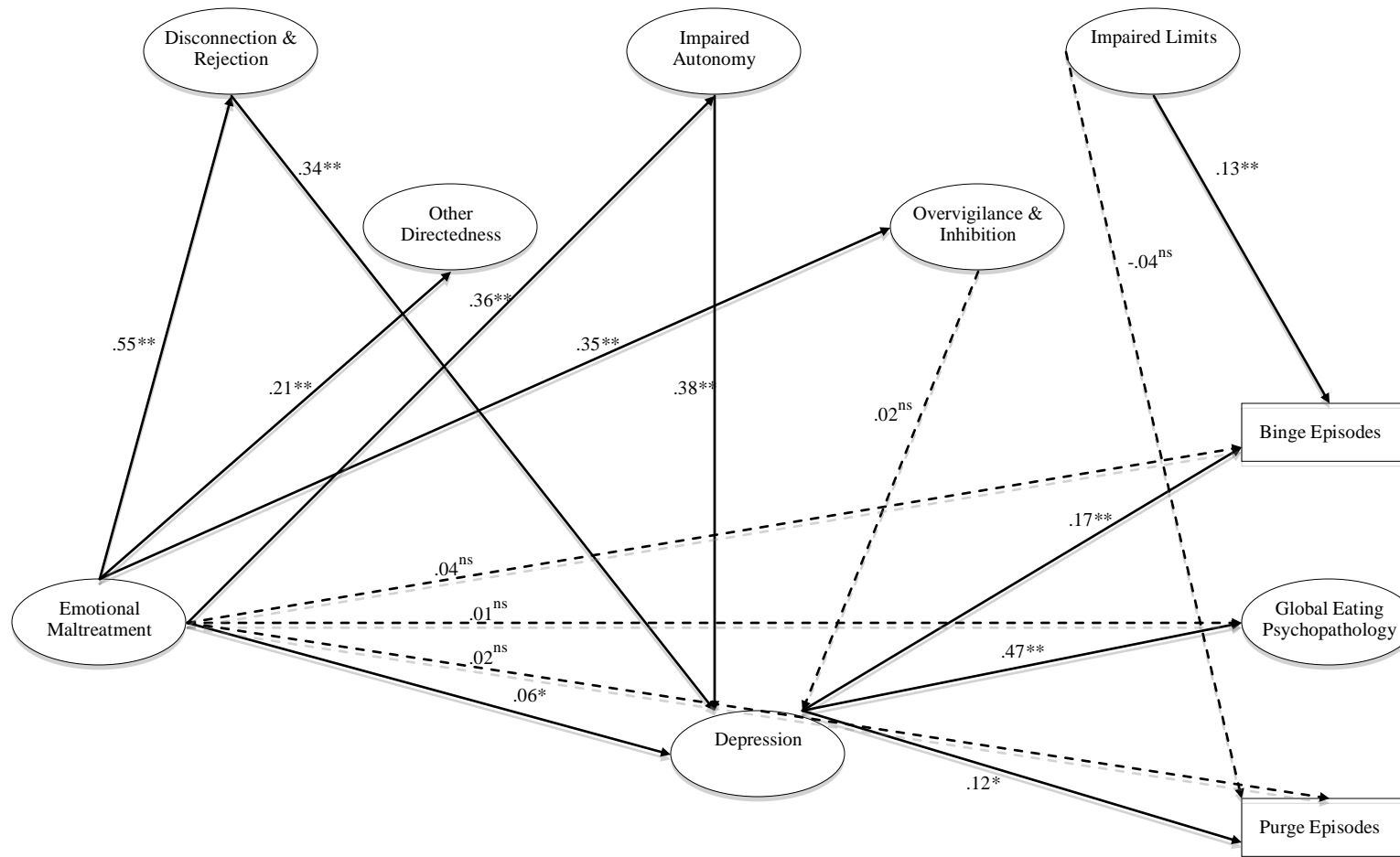


Figure 6. *Structural Model 4: Test of mediating role of depression in relationships between schema domains and ED symptomatology.* Standardized regression weights are presented for the direct paths and indirect paths hypothesized. Note. * $p < .05$; ** $p < .01$.

Structural Model 5: Further assessment of the mediating role of depression. In this model, the pathways to and from the mediator (i.e., from emotional maltreatment to depression and from depression to ED symptoms) were deleted, as recommended by Holmbeck (1997). This model was tested in an effort to determine if the removal of these pathways affected the direct relationship between emotional maltreatment and ED symptoms, which to this point had remained non-significant in all previous models. Although the relationship between emotional maltreatment and global ED symptoms was significant in this model ($\beta = .13, p < .05$), the chi-square difference test indicated that the full model, Structural Model 1, was a better fit to the data ($\chi^2_{\text{diff}} = 145.4, df = 4, p < .001$). The significant chi-square difference test provides further support for the mediating influence of depression.

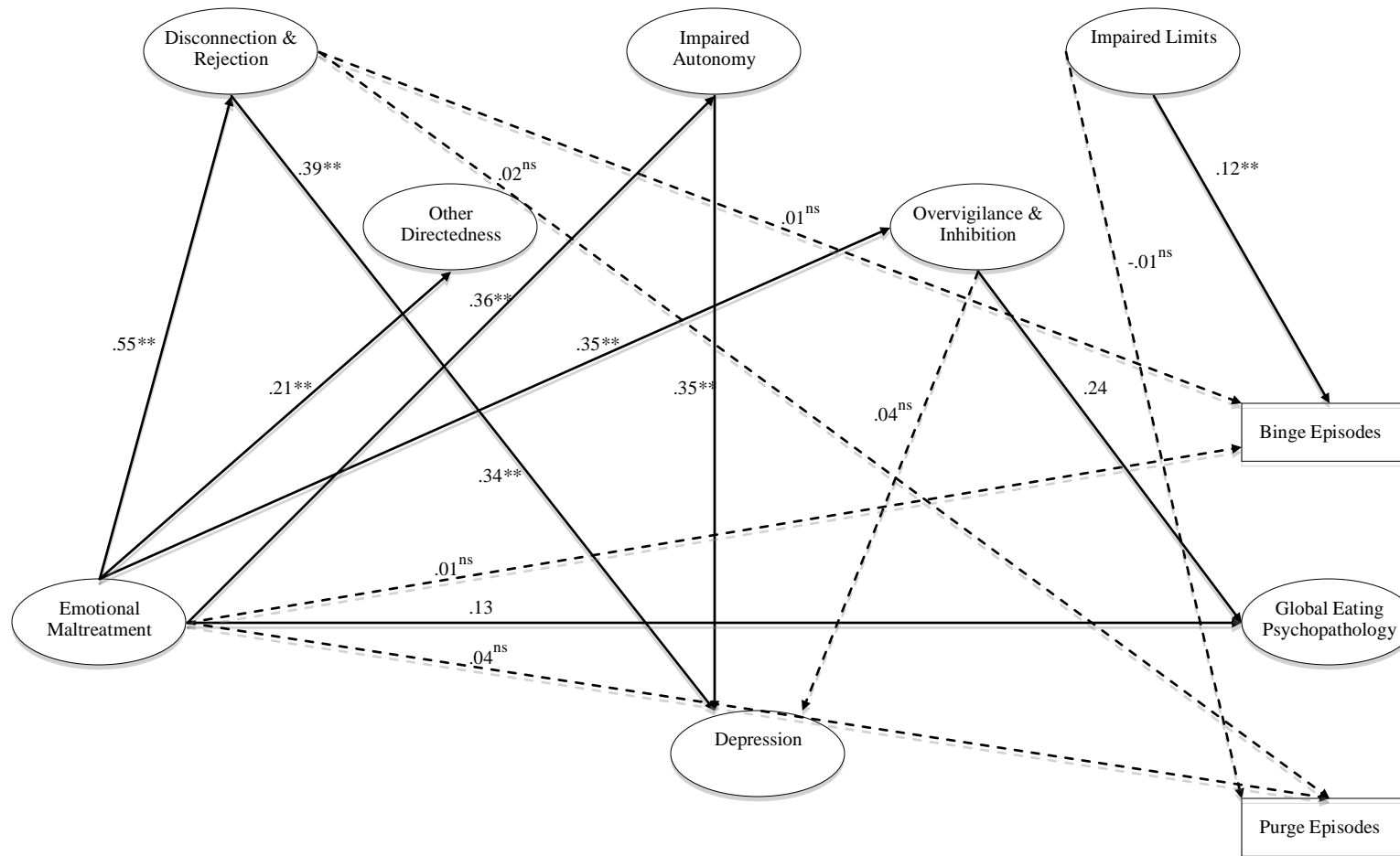


Figure 7. *Structural Model 5: Further assessment of the mediating role of depression.* Standardized regression weights are presented for the direct paths and indirect paths hypothesized. Note. * $p < .05$; ** $p < .01$.

Structural Model 6: Final model with non-significant paths deleted. The final model tested removed all non-significant pathways present in the full model (See Figure 4). This model fit the data well (CFI = .944, RMSEA = .051) and when compared to Structural Model 1, a non-significant chi-square difference test ($\chi^2_{\text{diff}} = 5.90$, $df = 8$, $p > .05$), suggests that this model is an equally good fit to the data statistically. All paths significant in the full model, Structural Model 1, remained significant in this model and the magnitude of the path coefficients changed minimally.

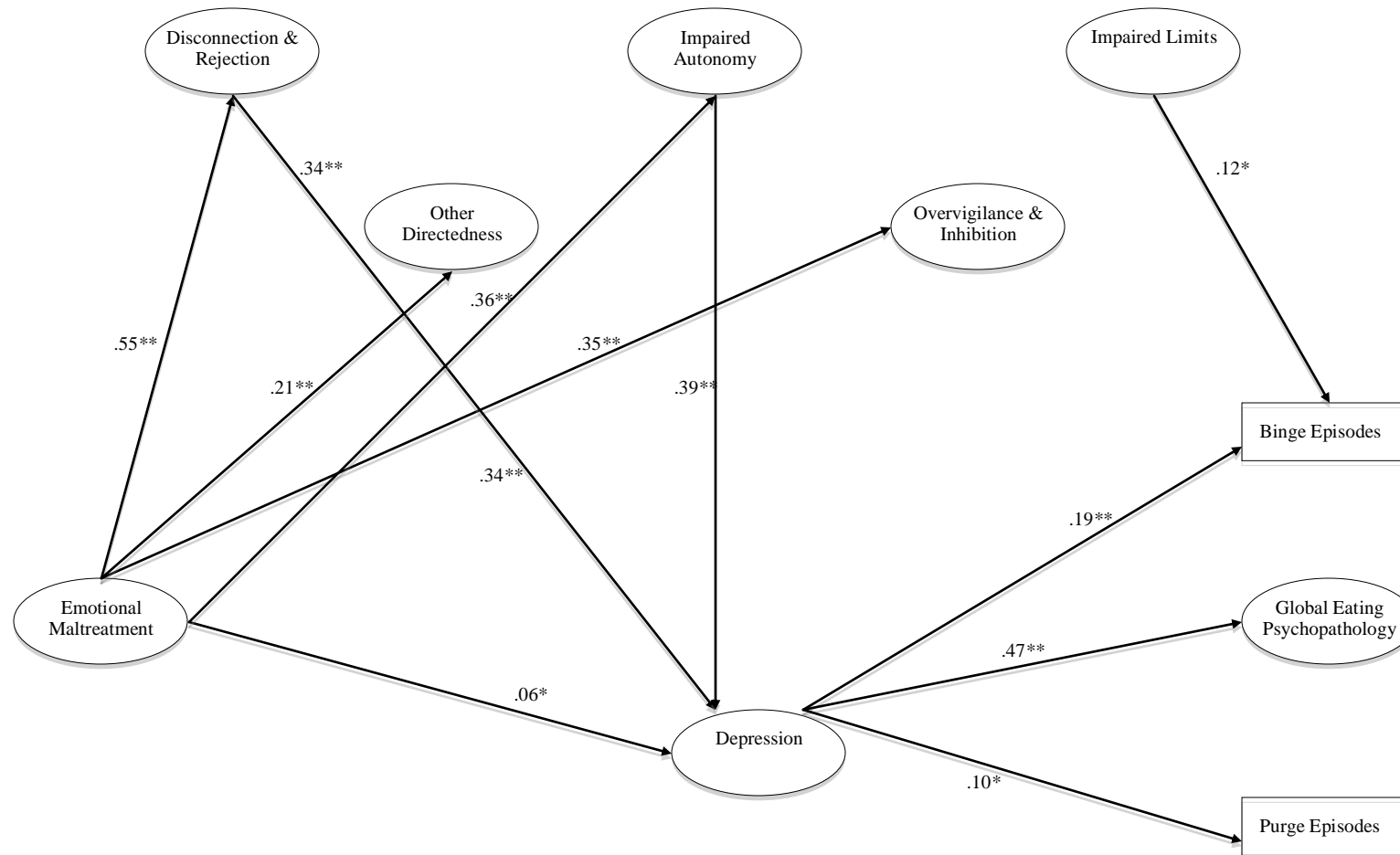


Figure 8. *Structural Model 6: Final model with non-significant paths deleted.* Standardized regression weights are presented for the direct paths and indirect paths hypothesized. Note. * $p < .05$; ** $p < .01$.

CHAPTER 5

DISCUSSION

The results of the present study supplement an emerging literature providing evidence for the enduring effects of emotional maltreatment. In the first study to investigate the relationships among emotional maltreatment, maladaptive schemas, depression, and disordered eating behaviors in a sample of women at high risk for ED behavior, results support a model where the relationship between emotional maltreatment and disordered eating behaviors is indirect through the influence of schemas and depression. These results, although preliminary, integrate and expand on previous studies investigating the distal relationship between emotional abuse and neglect in childhood and adult psychopathology.

Notably, emotional maltreatment did not evidence a *direct* relationship with any of the ED outcome variables, except when depression was removed entirely from the model as seen in *Structural Model 5*, where a small association was seen between emotional maltreatment and *Global Eating Psychopathology*. This finding was consistent with hypotheses regarding the indirect nature of this potentially distal relationship between emotional maltreatment and ED symptomatology. Although Kennedy and colleagues (2007) found a direct and unmediated relationship between emotional abuse and disordered eating, other studies have found not found support for a direct link (Kent et al., 1999; Mazzeo & Espelage, 2002). Notably, the study that found a direct link, did so in a sample comprised of both men and women. Results from studies that have examined the association between emotional maltreatment and ED symptomatology, in addition to various mediators (e.g., depression, anxiety, dissociation), among women generally

point to a weak, but significant indirect relationship. Therefore, it appears that further research is necessary to better understand the nature of this relationship.

It appears that both explicit statements about a child's worth in addition to indirect forms of invalidation become internalized, subsequently serving as the foundation for negative cognitions that contribute to the onset of depression (Rose & Abramson, 1992). Depressive symptoms, particularly negative affect and low self-esteem, are then posited to lead to maladaptive cognitions and behaviors that serve to elicit or maintain weight and shape concerns as well as drive binge/purge behaviors. Although the link between depression and ED has been established (Agras & Apple, 2008; Fairburn, 2008; Herzog, Keller, Sacks, Yeh, & Lavori, 1992; Polivy & Herman, 2002; Wilksch & Wade, 2004), few studies have provided support for the mediating influence of depression in the relationship between emotional maltreatment and ED symptoms (Hund & Espelage, 2006; Mazzeo & Espelage, 2002).

Equally noteworthy was the strength of the association between emotional maltreatment and *Disconnection & Rejection*. This direct path remained the strongest path across all models examined. This is important because, although Young theorizes that this domain reflects individuals where the family of origin is often cold, invalidating, and potentially abusive, limited empirical evidence exists. To date, only a handful of studies have investigated the relationship between emotional maltreatment and early maladaptive schemas, of which the majority included only specific schema subscales such as *Mistrust/Abuse*, *Defectiveness/Shame*, and *Emotional Deprivation*. Consistent with hypotheses, women endorsing a history of emotional maltreatment reported significant associations with the schema domains of *Impaired Autonomy*, *Other-Directedness*, and *Overvigilance*. The finding that emotional maltreatment was significantly associated with multiple schema domains may suggest that early abuse experiences initiate more

pervasive dysfunctional thoughts and emotions represented by multiple schema domains, rather than demonstrating schema specificity. However, this finding may also be explained by the high correlations observed between schema domains. Although the majority of research has examined the influence of particular schema subscales rather than associations present at the domain level, YSQ validation studies, in addition to a recent study (Roemmele & Messman-Moore, 2011), report similar intercorrelations between schemas domains as were found in the current study (Hoffart et al., 2006; Roemmele & Messman-Moore, 2011).

In addition to support for the mediating role of depression, results also suggest that schemas serve a mediating role in the emotional maltreatment-depression relationship. More specifically, an indirect relationship through the schema domains of *Disconnection & Rejection* and *Impaired Autonomy* was observed. It is certainly plausible that experiences of emotional maltreatment would activate the belief that others are not reliable sources of support and emotional validation, let alone potentially dangerous, leading to further thoughts of one's own inadequacy and defectiveness as reflected by the various schema subscales that comprise both of these domains (e.g., *Emotional Deprivation*, *Defectiveness/Shame*, *Mistrust/Abuse*, *Failure*, *Vulnerability to Harm*). Theoretically, these negative internal attributions and cognitions trigger symptoms of depressions, as observed in this study as well as in previous research (Harris & Curtin, 2002; Lumley & Harkness, 2007; O'Dougherty Wright, Crawford, & Del Castillo, 2009). The association between the schema domains of *Disconnection & Rejection* and *Impaired Autonomy* and depression replicate findings from previous research, particularly a recent study that examined links between depression and domain-level EMS (see Halvorsen et al., 2009). However, this is the only study to date to support these domain associations with depression in a child maltreatment sample.

The only significant relationship between any schema domain and ED symptoms was observed between the *Impaired Limits* schema domain and *Binge Episodes*, and it was a small relationship at that. This was certainly contrary to hypotheses, although it is important to recognize that only a couple of paths were modeled based on previous literature (i.e., paths were hypothesized between *Disconnection & Rejection* and *Impaired Limits* to both *Binge and Purge Episodes*, and from *Overvigilance & Inhibition* to *Global Eating Psychopathology*). More recently, additional support for the relationship between subscales in domains not tested in this study (i.e., *Impaired Autonomy*) and ED subgroups has been shown (Unoka, Tolgyes, Czobor, & Simon, 2010). Although the present sample was not a clinical sample, one-fourth of the sample endorsed significant eating pathology and was similar to undergraduate samples utilized in previous studies as indicated above. Still, it is certainly possible that the lack of significant relationships observed is in part due to the sub-threshold symptoms exhibited by a large portion of the sample. Furthermore, in addition to using clinical samples, recent studies have examined the utility of schemas in differentiating between specific ED subtypes (i.e., Anorexia Nervosa-restricting subtype, Anorexia Nervosa-binge/purge subtype, Bulimia Nervosa), rather than looking at specific ED behaviors or general cognitions as was done in this study (See Unoka, Tolgyes, & Czobor, 2007; Unoka et al., 2010). Although these studies extend research investigating the relation between EMS and eating psychopathology, a recent study provides evidence that the clinical utility of the DSM-IV Anorexia Nervosa and Bulimia Nervosa subtypes is questionable given both infrequent subtype use and adequate inter-rater agreement (Thomas et al., 2010). This finding, coupled with previous research suggesting that emotional maltreatment may be a risk factor for the development of more general ED symptomatology (Kent & Waller, 2000), and limited empirical research examining the relationship between EMS

and ED behaviors, the current study's emphasis on ED behaviors rather than diagnostic subtypes remains a logical first step.

Several limitations of the current study should be noted. First, although the models examined in this study provided an adequate fit to the data, these findings are preliminary, require further replication, and do not imply that the model has been “proven” (Kline, 2005). Given recent evidence that particular schema subscales predict subgroups of ED, further examination of the schema-ED relationship is necessary, particularly at the schema subscale level. Given that this was the first study to examine emotional maltreatment, early maladaptive schemas, depression, and ED symptomatology simultaneously using SEM, specific hypotheses regarding the influence of specific schema subscales was beyond the scope of the current study. Although the structural equation modeling results imply the possibility of causality, the design was cross-sectional and correlational in nature. Therefore, without longitudinal designs, definitive conclusions about the temporal sequence of variables in the models presented in this study and the causality of ED behaviors cannot be determined. Additionally, exclusive reliance on self-report measures, particularly regarding potentially distal events, results in mono-method and recall bias. Furthermore, given that respondents were asked to report about potentially difficult experiences and the subsequent use of maladaptive behaviors, it is certainly plausible that maltreatment and psychological symptoms were underreported. More recently, it has been suggested that the YSQ-SF measures only the schemas an individual is aware of and therefore schema avoidance or the coping responses activated by particular schemas may influence responses (Thimm, 2010). Finally, the multi-collinearity present among the schema domains in particular, may limit the predictive value of individual variables.

In addition to methodological limitations, the external validity of the findings is limited due to the homogeneity of the present sample. Although it is important to examine these relationships in a non-clinical sample given the limited empirical support within the literature, results may not be generalizable to clinical populations, men, or more economically and ethnically diverse samples.

Despite limitations, the present study attempted to provide a relatively parsimonious integration of variables that have yet to be examined by previous researchers. Findings provide preliminary support for the use of schema therapy with individuals endorsing an emotional maltreatment history in an effort to prevent or reduce depressive and ED symptoms. Waller and colleagues (2007) have initiated efforts to incorporate schema therapy into existing ED treatment programs by providing recommendations for addressing the core beliefs that have developed in response to emotional abuse. Suggestions include focusing on the *Mistrust/Abuse* and *Abandonment* schemas that they theorize result from experiences of emotional maltreatment (Waller, Corstorphine, & Mountford, 2007). Only one known study to date has attempted to empirically investigate the use of schema therapy in ED treatment. Findings revealed that at the end of a 6-month treatment program for individuals with a chronic history of Anorexia, no significant changes on schemas were observed. Given the sample was limited to eight women, further research is warranted. Notably, the authors suggested that patients' ability to identify with particular schemas (e.g., *Unrelenting Standards*, *Defectiveness/Shame*, *Emotional Deprivation*, *Emotional Inhibition*, and *Social Isolation*) appeared useful in increasing their readiness to commit to behavioral changes (George, Thornton, Touyz, Waller, & Beumont, 2004). Ultimately, future research is needed to further clarify the relationship between emotional maltreatment and ED symptoms in an effort to better examine the utility of incorporating schema therapy into

existing ED treatments. Given the chronic nature of eating psychopathology, particularly Anorexia Nervosa, efforts to develop effective interventions are necessary given the treatment resistance and relapse inherent in ED populations.

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