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## Parental Emotion Socialization and Self-Criticism in Emerging Adulthood: The Roles of Emotion Regulation and Mindfulness

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Parental Emotion Socialization and Self-Criticism in Emerging Adulthood: The Roles of  
Emotion Regulation and Mindfulness

by

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Under the Direction of Laura G. McKee, PhD

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

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## ABSTRACT

Parental emotion socialization (ES) facilitates emotion regulation (ER) in youth, and in turn, impacts risk for psychopathology from childhood through adulthood. While these links are well-documented, self-criticism has received limited attention in relation to ES or ER, despite its transdiagnostic nature. Moreover, no studies have examined how mindfulness may serve to moderate the association between unsupportive ES and ER. Structural equation modeling was used to explore relationships among recalled ES (happiness and sadness) and current ER, self-criticism, and mindfulness in a sample of emerging adults. Final model fit was good across all four models. Supportive ES (happiness and sadness) and unsupportive ES (sadness) predicted self-criticism in the expected directions. ES predicted ER in happiness and sadness models. Specifically, supportive and unsupportive ES predicted expressive suppression, and supportive ES predicted cognitive reappraisal. ES was indirectly associated with self-criticism through ER. Mindfulness did not moderate the link between unsupportive ES and ER.

**INDEX WORDS:** Emotion socialization, Emerging adulthood, Self-criticism, Mindfulness, Emotion regulation, Parenting

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Emotion Regulation and Mindfulness

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## 1 INTRODUCTION

### 1.1 Mental Health in Emerging Adulthood

Self-criticism is a transdiagnostic construct implicated in many psychiatric disorders, influencing both symptom severity and course of mental illness (Werner et al., 2019). Despite its influence and presence in a multitude of disorders, attempts to understand self-criticism in the developmental period of emerging adulthood (EA) have been limited. Emerging adults (EAs), typically considered to include 18- to 29-year-olds, evidence alarmingly high rates of psychopathology compared to individuals in other developmental periods, with some estimates suggesting that as high as 40% of EAs meet criteria for a psychiatric disorder, most commonly anxiety, mood, and substance use disorders (Kessler et al., 2005). One study indicates that the total incidence rate of major depressive disorder (MDD) among EAs is 28%, greater than any other developmental period (Rohde et al., 2013). Among university students, specifically, the mean prevalence rate of depression is 30.6% (Ibrahim et al., 2013). Given the significant levels of psychopathology in EAs, understanding and elucidating factors that cut across the boundaries of multiple disorders is increasingly important. In fact, initiatives and frameworks such as the Research Domain Criteria (RDoC; Insel et al., 2010) and unified treatment protocols (i.e., Barlow et al., 2016) underscore how critical it is to examine and address factors found across disorders, such as self-criticism. Unfortunately, self-criticism has been the focus of few investigations in EAs despite the 1) disproportionate rates of psychopathology in individuals in this developmental period, 2) strong links between self-criticism and various forms of psychopathology and maladaptive behaviors (Werner et al., 2019), and 3) features of EA that relate to self-doubt, which may bring rise to self-criticism (Peer & McAuslan, 2016).

## 1.2 Self-Criticism

Self-criticism is a construct that serves as both a vulnerability and maintenance factor for the development of psychopathology. It has also been identified as a transdiagnostic construct implicated in a multitude of mental disorders such as depression, anxiety, social phobia, post-traumatic stress disorder, and eating disorders (Cox et al., 2000; Cox et al., 2004; Duarte et al., 2016; Zerkowitz & Cole, 2019), as well as potentially life-threatening cognitions and behaviors such as negative self-evaluation, nonsuicidal self-injury, and suicidality (Campos et al., 2012; Gilbert et al., 2010; Glassman et al., 2007; Thompson & Zuroff, 2004; Zerkowitz & Cole, 2019). Blatt's (1974) seminal theoretical writing on self-criticism defines it as a personality trait involving the evaluation that one is not living up to an internal standard and, thus, involves directing critical thoughts toward oneself. Further, Blatt's foundational theoretical framework for depression describes self-criticism as one of two trait vulnerability factors for depression along with dependency, in which one has a high need for approval and love.

Blatt's theoretical work spurred the empirical study of self-criticism, and eventually, two additional conceptual models of self-criticism emerged. One of those, the Axis of Criticism Model (Shahar & Henrich, 2013), which focuses specifically on the developmental period of adolescence, considers the interplay between self-critical personality vulnerability *and* interpersonal exchanges (e.g., parental criticism) that increase risk for psychopathology. It suggests that vulnerability to self-criticism and associated behaviors can generate negative life events and stress, thereby increasing the likelihood of experiencing criticism from others (e.g., parents, peers, teachers). This, in turn, increases self-criticism, creating a vicious cycle in which negative events increase, social support decreases, and criticism from others continues. A second model, the Cognitive-Evolutionary Model (Gilbert, 2010, 2014), posits that self-criticism has

evolutionary roots within the social motivational system in which competition with others and social ranking function to increase the likelihood of securing resources. As such, self-criticism is a part of a primitive emotion regulation system responsible for identifying and responding to threats. Taken together, these models conceptualize self-criticism through its evolutionary and developmental origins, considering its relation to securing resources, regulating emotions, and adopting self-schemas consistent with early caregiving experiences. The proposed study draws from both Shahar and Henrich's (2013) and Gilbert's (2010, 2014) models in considering the role of emotion regulation (ER) in the association between parental practices (e.g., punishing youth expression of sadness) and self-criticism in EA.

### ***1.2.1 Relevance of Self-Criticism***

As noted, self-criticism appears to be a central feature across a number of diagnoses. Among them, the link between self-criticism and depression is perhaps the most well-documented. Specifically, studies have shown that self-criticism can predispose individuals to depression, predict depression onset, and predict increases in depressive symptoms over time (McIntyre et al., 2018). Further, self-criticism interacts with life stress, can change during a depressive episode but return to prior levels, and can predict differences in symptom presentation during an episode. In addition, Blatt et al. (1982) suggested that two independent types of depression could be identified, one of which highlights self-criticism. Importantly, treatments have been developed and modified to target the specific trait of self-criticism (Gilbert & Irons, 2005; Gilbert & Procter, 2006; Neff & Germer, 2013; Shahar et al., 2012; Shahar et al., 2015), given that self-criticism can impede treatment progress. For example, in a randomized trial among individuals with MDD, self-criticism at pretreatment predicted greater depressive symptom severity at posttreatment for those receiving interpersonal therapy (Marshall et al.,

2008). Noting the negative role of self-criticism underscores the importance of identifying factors, especially factors at critical development stages, that may predispose individuals to experiencing self-criticism.

Individuals in EA, perhaps more than any other developmental period, may be particularly susceptible to self-criticism's deleterious effects, given their higher levels of self-focus and self-doubt, as well as the increased pressures and stress they experience as they navigate relational, academic, and job arenas (Arnett, 2000; Peer & McAuslan, 2016). Studies show that self-criticism is associated with EAs setting fewer academic goals, making less progress on goals, and experiencing more difficulties in goal pursuit over time (Dickson & Shulman, 2016; Harvey et al., 2015; Powers et al., 2011, 2012). Regarding academic goals in university students, those high in levels of self-criticism are less likely to pursue goals for internal reasons and more likely to pursue goals for external reasons to avoid negative feelings associated with not pursuing the goals, or because of a feeling that they "ought" to pursue them (Harvey et al., 2015). Additional research tracking college students' affect and stressors reveals that those with high levels of self-critical perfectionism are more emotionally reactive to daily life stressors and demonstrate higher levels of negative affect in response to perceived threats (i.e., academic hassles, perceived criticism from others, low confidence in coping abilities) (Dunkley et al., 2003). Regarding relationships, undergraduate students with high levels of self-criticism are less likely to spend time with others to regulate their mood (Fichman et al., 1999). In sum, EAs face unique stressors in various domains, and these stressors appear to be amplified among those with high levels of self-criticism.

Despite the negative impact of self-criticism among clinical and community populations, studies addressing the *development* of self-criticism are limited. A recent systematic review of

self-criticism and its relation to psychopathology (Werner et al., 2019) revealed little data exploring how self-criticism develops over the life course, despite theoretical models positing that early experiences with caregivers influence the development of this trait (i.e., Blatt & Homann, 1992; Shahar & Henrich, 2013). As noted, the Axis of Criticism Model (Shahar & Henrich, 2013) suggests that the self-critical personality interacts with interpersonal exchanges, such as criticism from parents, and increases risk for psychopathology. This interaction purportedly creates a vicious cycle, generates life stress, decreases social support, and in turn, maintains self-criticism. Further study of specific pathways (i.e., parental emotion socialization behaviors) to the development of this vulnerability factor for psychological disorders is warranted.

### ***1.2.2 Self-Criticism and Parenting Behaviors***

Extant data lend credence to Blatt's (1974, 1995) and Shahar and Henrich's (2013) models wherein parenting style and behaviors are implicated in the development and maintenance of self-criticism in youth. For example, parent-adolescent relationships characterized by maternal power assertion (e.g., yelling at youth for bad behavior) and lack of emotional support (i.e., unable or unwilling to help when youth is upset) have been associated with greater adolescent self-criticism (Baetens et al., 2015; Yu & Gamble, 2009). Longitudinal data indicate that mothers' restrictiveness and rejection toward her child at age five were related to self-criticism at age 12, which remained stable into young adulthood for women (Koestner et al., 1991).

Retrospective reports also indicate that quality of caregiving is related to self-criticism in adulthood. Namely, adult recollections of parental rejection have been positively associated with self-criticism, which in turn, have been associated with negative outcomes ranging from general

psychological distress to depressive symptoms and suicidality (Campos et al., 2013; Irons et al., 2006; Özdemir & Sağkal, 2018). Similarly, adults reporting high levels of current self-criticism are more likely to have experienced (1) neglect or an absent parent or (2) a mother with antisocial behaviors, relative to adults with moderate to low levels of self-criticism (Pagura et al., 2006). Other retrospective findings indicate that maternal emphasis on achievement, paternal control, and paternal demands for conformity (for males only) are predictive of self-criticism in adulthood (Whiffen & Sasseville, 1991). In addition, retrospective reports of parenting behaviors and attitudes in childhood indicate that low levels of care and high levels of overprotection were positively associated with self-criticism in late adolescence and EA (Campos et al., 2010; Cheng & Furnham, 2004; Irons et al., 2006; Özdemir & Sağkal, 2018).

On the flip side, positive parenting behaviors and styles, while understudied in relation to self-criticism, also appear to be associated with youth and adult self-criticism. For example, parental warmth has been negatively associated with self-criticism in adolescents and undergraduate students (Irons et al., 2006; Özdemir & Sağkal, 2018; Yu & Gamble, 2009). Additionally, longitudinal data indicate that higher levels of parental social support at age 23-24 predicted reductions in self-criticism from ages 24-26 (Dickson & Shulman, 2016). Taken together, extant research suggests that negative parenting practices may serve as pathways to the development of self-criticism, while positive parenting practices are associated with less self-criticism. Furthermore, the effects of childhood experiences with parents persist into adulthood.

Despite this body of work linking general parenting practices to self-criticism, no studies, to our knowledge, have examined the link between the *specific* parenting practice of emotion socialization (ES) (i.e., parental expression and discussion of emotions, reactions to child emotions; Eisenberg et al., 1998) and self-criticism. This is particularly surprising given Shahar

and Henrich's (2013) model, which theorizes that experiencing "critically expressed emotions" from parents shapes one's schema and relationship with the self, contributing to the development of self-criticism. Moreover, several findings in the literature suggest that ES and self-criticism are likely related. First, ES has been consistently and strongly associated with depression. It stands to reason that self-criticism, which constitutes a component of depression in some models and measures, may also be associated with ES. Second, as briefly mentioned, general parenting practices have been associated with self-criticism. In so much as ES practices are correlated with, but distinct from, a "web" of parenting behaviors, we would anticipate an association between ES and self-criticism. Finally, both ES and self-criticism have been linked to youth and adult emotion regulation (ER). As described further below, extant data link ES with ER and ER with self-criticism; as such, we make the case for examining the indirect effect of ER on the relation between retrospective reports of ES and self-criticism.

### **1.3 Emotion Socialization**

Broadly, ES is conceptualized as consisting of the factors that shape the development of youth emotion understanding, expression, and regulation (Eisenberg et al., 1998). Although socialization forces include numerous individuals such as teachers, peers, and siblings in many different contexts (i.e., home, school, religious settings, neighborhoods), research has demonstrated that parental ES behaviors make particularly significant contributions to social and emotional development in childhood and adulthood (Denham et al., 1997; Eisenberg et al., 1996, 1998; Garside & Klimes-Dougan, 2002; O'Neal & Magai, 2005).

Parental ES behaviors include parent modeling of emotions, family expressivity, niche picking, and response to youth emotional displays, among others (Eisenberg et al., 1998). Much recent research has focused on parental responses to youth emotion. Although there are some

important and meaningful variations rooted in cultural and racial/ethnic differences (i.e., Brown et al., 2015; Guo et al., 2017; Leerkes et al., 2015; Nelson et al., 2012, 2013), an overall pattern has emerged regarding which parent ES responses tend to facilitate healthy social and emotional development in youth and EAs and which practices may thwart it. On average, supportive ES responses to youth emotion involve the provision of comfort, empathy, and validation; encourage emotion expression; and include both problem- and emotion-focused responses, whereas unsupportive ES responses include dismissing, minimizing, punitive, distress, and discomfort reactions to youth emotion expression (Fabes et al., 1990; Magai, 1996; Yap et al., 2008). Parents' supportive ES responses to emotion displays tend to promote child emotion expression, understanding, and adaptive regulation (Magai, 1996; McElwain et al., 2007). On the other hand, unsupportive responses are more likely to discourage child emotion expression and understanding and may amplify children's arousal. This, in turn, may limit a child's opportunities to regulate distressing emotions adaptively (Cole et al., 2009).

Youth ES experiences have been linked to mood states and psychopathology, both in childhood and extending into adulthood. In third to sixth graders, for example, maternal use of supportive, problem-focused ES strategies was associated with higher levels of social competence and constructive coping (i.e., seeking support, problem-solving, physical avoidance, cognitive restructuring) and lower levels of youth negative emotionality, whereas maternal unsupportive (i.e., minimizing, punitive) ES responses were associated higher levels of youth negative emotionality and avoidant coping and lower levels of social competence (Eisenberg et al., 1996). Among young adults, retrospective reports indicate that unsupportive ES responses (e.g., ignoring, threatening to punish) to negative emotions during childhood were associated

with negative affect, while supportive ES responses (e.g., comforting, reassuring) were associated with positive affect (Guo et al., 2017; Magai et al., 2004).

### ***1.3.1 Emotion Socialization and Depression***

Although studies linking ES and self-criticism do not, to our knowledge, exist, a large body of literature has substantiated links between parental ES practices and depression in childhood, adolescence, and adulthood. As such, we build a case for a direct relationship between ES and self-criticism, specifically, by drawing from the literature that links ES and depression, more broadly. Research consistently suggests that socialization of both positive and negative emotions is associated with depression in youth and EA. For example, the parental ES practices of minimization and punishment of sadness with very young children have been associated with concurrent depressive symptoms as well as symptoms one year later (Luebke et al., 2011). Among children aged 8-11, parental unsupportive ES responses to sadness were associated with depressive symptoms (Sanders et al., 2015). Parental ES in early stages of development appears to be associated with symptoms reported in adulthood as well. For example, university students' retrospective reports of unsupportive ES responses (i.e., indifference, hostility, distress, lack of emotional communication) to negative emotions predicted current levels of depressive symptoms (Boucher et al., 2013; O'Leary et al., 2019). Additional retrospectively-recalled unsupportive maternal ES behaviors such as punishing, minimizing, and reacting with distress to displays of negative emotions have been linked to elevated depressive symptoms among young adult women (Leerkes et al., 2015). In studies using the current data, EAs who recalled higher levels of neglectful and punitive responses from childhood reported elevated depressive symptoms, whereas supportive strategies such as reward were associated with fewer depressive symptoms (McKee et al., 2019; O'Leary et al., 2019).

Regarding the socialization of positive emotions, observational data coded during dyadic interactions shows that young adolescents whose mothers dampened their positive behaviors *or* invalidated their positive affect reported greater levels of depressive symptomatology (Yap et al., 2008). Other studies using observational and self-report data suggest that parents of adolescents with depression are more likely to minimize, react negatively, and fail to accept adolescent positive affect and less likely to enhance it, relative to parents of adolescents without depression (Katz et al., 2014). Finally, in the current sample, fathers' supportive ES in response to EA positive emotions was significantly associated with fewer internalizing symptoms through mindfulness and ER (McKee et al., 2019). In sum, there is a consistent and strong link between parental ES and depressive symptoms.

As we know from Blatt's (1974, 1995) seminal work, self-criticism and depression are often linked not only conceptually, but also psychometrically, with regard to how depression is operationalized and measured. To note, two items on the Beck Depression Inventory – II reference self-dislike and self-criticism. Additionally, Blatt's Depressive Experiences Questionnaire (Blatt et al., 1976) measures depression through experiences associated with personality vulnerabilities to depression, such as self-criticism. Finally, from an empirical perspective, a systematic review of self-criticism among college students revealed moderate to strong effect sizes for the association between self-criticism and subsequent depression (McIntyre et al., 2018). Given that 1) self-criticism is related to, predictive of, and considered a component of depression (Klein et al., 2011), and that 2) the link between ES and depression is well-identified, we hypothesize that parental ES will be associated with self-criticism in EA.

### ***1.3.2 Emotion Socialization and a “Web” of Unsupportive Parenting Behaviors***

Parenting behaviors of an unsupportive nature such as restrictiveness, rejection, neglect, control, overprotection, and emphasis on achievement and conformity have been linked to self-criticism in children and young adults (Campos et al., 2010; Koestner et al., 1991; Pagura et al., 2006; Whiffen & Sasseville, 1991). These parenting behaviors can be construed as a “web” of generally unsupportive parenting behaviors that are associated—albeit not always robustly—with various negative outcomes from childhood to adulthood, such as general psychological distress, depression, anxiety, and risky behaviors (Campos et al., 2013; Irons et al., 2006; Khalid & Aslam, 2012; Laurin et al., 2015; McLeod et al., 2007; Özdemir & Sağkal, 2018).

The parenting practices under the umbrella of ES are associated with, but not synonymous with, this “web” of general parenting behaviors, in that ES specifically refers to behaviors related to socializing children’s emotions through modeling, parental expressivity, and responses to youth emotion expression. This distinction between ES behaviors and general parenting behaviors was originally made by Gottman et al. (1996) in their seminal writings about meta-emotion philosophy, which encompasses parents’ beliefs about their own and their child’s emotions. In early empirical tests of their theory, they demonstrated that meta-emotion was related to, but distinct from, both positive and negative parenting practices. Specifically, they found that emotion coaching – which involves parent attunement to their child’s and their own emotions as well as the belief that negative emotions provide the opportunity for intimacy, teaching, and validation – was related to lower levels of parent criticism, intrusiveness, and derisive humor as well as with higher levels of parent enthusiasm, responsiveness, and positive structuring. In so much as ES behaviors are related to general parenting behaviors, it is hypothesized that ES will be related to self-criticism, along the lines we have seen in the general parenting literature.

## 1.4 Emotion Regulation

One factor that may underlie or explain the hypothesized relation between ES and self-criticism is emotion regulation (ER). While ER has been defined in numerous ways in the literature, the common thread across definitions is that it is a broad term for the set of processes involved in initiating and modulating one's emotional experience through intrinsic and extrinsic, conscious and unconscious practices that impact the duration, intensity, and/or frequency of emotions (Grolnick et al., 1996; Gross, 1998; Morris et al., 2007; Saarni, 1984; Thompson, 1994). Cognitive reappraisal and expressive suppression are two of the most well-defined and studied ER strategies in the literature, with the former defined as changing one's interpretation of an emotion-eliciting situation, and thus, changing the emotions attached to it (Lazarus & Alfert, 1964), and the latter involving the inhibition of one's emotional expression (e.g., facial expressions, behaviors) (Gross, 1998). While each of these strategies is employed in an effort to decrease negative emotion, only cognitive reappraisal has typically been associated with reductions in negative mood (Gross & John, 2003). Moreover, individuals who use cognitive reappraisal experience greater well-being, as indicated by higher levels of positive emotion and self-esteem and lower levels of depressive symptoms, relative to individuals who consistently suppress their emotions (Gross & John, 2003; Gross & Levenson, 1997).

ES practices, in general, are purported to impact ER because unsupportive ES practices teach a child to interrupt their process of emotion expression and increase arousal, making ER more difficult, whereas supportive ES behaviors assist children in ER and facilitate future independent ER (Eisenberg et al., 1998; Rothenberg et al., 2019; Williams & Woodruff-Borden, 2015). Extant research has demonstrated support for significant associations between ES and ER

as well as between ER and self-criticism. Given this, we propose examining the association between ES and self-criticism *through* ER.

#### ***1.4.1 Emotion Socialization and Emotion Regulation***

Adaptive ER abilities develop through both nature and nurture processes, and research suggests that interpersonal relationships such as the parent-child relationship impact adaptive ER abilities in noteworthy ways. Over the course of infancy and childhood, parents scaffold and model ER, teaching children how to regulate their emotions so that they eventually develop the critical skill of regulating their emotions independently. Two foundational models of parental ES include ER as an important mediating variable. Eisenberg et al.'s (1998) heuristic model of parental ES considers several components involved in this process, including parents' responses to children's emotions, as well as parents' discussion and expression of emotions. This model regards emotion-related socialization behaviors as having an indirect effect on youth outcomes (e.g., social competence) through youth ER abilities, and has received empirical support. The next model, Morris et al.'s (2007) tripartite model, similarly suggests that parents exert strong influence on children's development of ER. This model broadly considers the family context as well as specific ES practices that impact youth adjustment via ER and has likewise garnered strong empirical support.

The advent of these models has led to much research substantiating many of the models' key assumptions, revealing that parental ES is associated youth and adult outcomes via its influence on ER. Indeed, through multiple levels of analysis (i.e., behavioral, physiological) and study designs (i.e., cross-sectional, longitudinal), ER has been shown to mediate associations between ES and various outcomes in youth and adults, such as internalizing and externalizing symptoms, aggression, deliberate self-harm, school problems, and social skills (Buckholdt et al.,

2009; Cunningham et al., 2009; Gottman et al., 1996; Jin et al., 2017; McKee et al., 2019; Perry et al., 2020; Ramsden & Hubbard, 2002).

Data substantiating the link between ES and ER are available across developmental periods. For example, longitudinal data indicate that maternal supportive ES to negative emotions in early childhood is linked to greater observed and reported ER in middle childhood, whereas maternal unsupportive ES is associated with poorer physiological regulation as well as teacher- and mother-reported ER (Perry et al., 2020). In an ethnically and demographically-diverse sample of mothers and their seven-to-twelve-year-olds, mothers' reports of unsupportive ES of negative emotions were related to poorer ER and greater emotion dysregulation, while supportive ES of negative emotions was related to greater ER (Shaffer et al., 2012). Among young adolescents, maternal invalidation of female positive affect *and* dampening and punishing of positive affective behaviors were associated with more frequent use of maladaptive ER strategies (e.g., "talk back to parents"), whereas validation of adolescent male positive affect was related to adaptive ER (Yap et al., 2008). Most relevant to the current study, EAs who reported unsupportive ES had more dysfunctional ER abilities (Moran, 2018).

#### ***1.4.2 Emotion Regulation and Self-Criticism***

Research examining ER and self-criticism is limited, yet existing studies suggest that ER is implicated in self-criticism. For example, undergraduate students who were less likely to use complex, specific ER strategies (e.g., reappraisal) and more likely to rely on general behavioral ER strategies such as distractions were also more likely to report higher levels of self-criticism (Pascual-Leone et al., 2016). Likewise, daily diary studies conducted with undergraduate students have revealed that self-criticism is positively associated with venting and avoidance coping (e.g., denial, behavioral and mental disengagement), and negatively associated with

confidence in coping abilities and spending time with others to regulate mood (Dunkley et al., 2003; Fichman et al., 1999).

Lab-based induction studies provide additional support for the link between ER and self-criticism. For example, in a study comparing the effects of various ER strategies (i.e., responsibility reattribution, self-deflection, compassionate thinking, cognitive reappraisal, control) on reducing negative emotions associated with recalling a self-critical event, cognitive reappraisal and compassionate thinking were associated with the greatest reductions in negative emotions (Arimitsu & Hofmann, 2015). Furthermore, in a shame induction study assessing the effectiveness of various ER strategies at decreasing negative self-evaluations, undergraduates in the cognitive reappraisal group demonstrated significant reductions in negative self-evaluations relative to the other two groups (Candea & Tatar, 2020).

Taken together, empirical data suggest that a less complex repertoire of ER strategies and greater use of maladaptive, general ER strategies is related to self-criticism. These data are consistent with Gilbert's (2010, 2014) Cognitive-Evolutionary Model of self-criticism, which posits that self-criticism is involved in the ER system responsible for threat detection. His model suggests that the threat detection system explains the "negativity bias" of humans. To manage this bias toward negativity and increase well-being, the ER strategy of cognitive reappraisal is recommended, and remains a central feature of cognitive behavioral therapies. In sum, individuals with elevated self-criticism may especially benefit from developing and employing cognitive reappraisal to reduce negative emotions and cognitions (i.e., negative self-evaluations) associated with self-criticism.

## **1.5 Mindfulness**

Given the potential links among ES in childhood, ER, and self-criticism in EA, it is critical to examine factors that may buffer the associations between unsupportive ES and maladaptive and adaptive ER (i.e., expressive suppression and cognitive reappraisal, respectively) and potentially interrupt the negative cascade of unsupportive ES on ER. One such factor is mindfulness, a construct that has received considerable attention due to its association with a host of psychological benefits, such as positive associations with life satisfaction and positive affect, and inverse associations with negative affect, depression, anxiety, and stress (see Keng et al., 2011, for a review). The increased interest in mindfulness in the academic arena has led to the emergence of many theoretical conceptualizations of mindfulness. Among the proposed definitions for dispositional mindfulness (rather than state mindfulness, cultivated via mindfulness meditation, for example), there is consensus that mindfulness is composed of two elements: present-centered attention and an orientation of nonjudgmental acceptance towards one's experience (Bishop et al., 2004; Coffey et al., 2010; Keng et al., 2011). In essence, it involves purposefully attending to one's internal (i.e., cognitions, emotions, and bodily sensations) and external experiences (i.e., environmental stimuli), moment to moment, and embracing what arises with curiosity, openness, and acceptance (Kabat-Zinn, 1990).

### ***1.5.1 Mindfulness and Emotion Regulation***

As mentioned, mindfulness has been conceptualized as paying attention to sensations, thoughts, and emotions in a non-judging way. Some researchers contend that mindfulness is an ER strategy, but one that is distinct from classic cognitive ER strategies (i.e., reappraisal) since it, by definition, does not involve reappraisal; moreover, mindfulness changes the function, rather than form, of thoughts (Chambers, 2009; Hofmann & Asmundson, 2008). In other words, a mindful approach to cognitions includes noticing thoughts and naming them, without an

explicit attempt to change their content, while cognitive reappraisal includes an intentional reinterpretation of the stimuli or the emotional or cognitive response to it. However, conceptually, mindfulness and ER are inextricably linked in that present-moment awareness and an orientation of nonjudgmental acceptance often *do change* one's cognitions and emotions, even if that was not necessarily the intent while practicing mindfulness. With greater awareness and nonjudgment, individuals may feel that there is more "space" between their thoughts and subsequent emotions and behaviors (Kabat-Zinn, 1990). This "space" may enable individuals to efficiently employ other adaptive ER strategies (e.g., cognitive reappraisal) when a particular situation or emotion is well-suited for it.

Consensus about the considerable conceptual overlap between mindfulness and ER exists, yet a greater understanding of the ways in which they are linked is warranted. In fact, a recent review highlights that both dispositional and state mindfulness are associated with adaptive ER abilities through mindfulness's effects on expanding attention and increasing awareness of one's experience (Roemer et al., 2015). Specifically, mindfulness enables individuals to attend to aspects of their experience (internal and external) that would otherwise be missed, change their relation to their internal experience, and in turn, provide opportunities for new learning and associations with previously threatening stimuli.

Of note, mindfulness is a central feature of third-wave behavioral therapies (e.g., Acceptance and Commitment Therapy, Dialectical Behavior Therapy, Mindfulness-Based Cognitive Therapy, Mindfulness-Based Stress Reduction), and cultivated mindfulness in these programs has been broadly associated with reductions in ER difficulties such as experiential avoidance and rumination (Kumar et al., 2008; Robins et al., 2012). Furthermore, trait mindfulness is associated with greater adaptive coping (i.e., reappraisal, problem solving) and

lower levels of self-critical rumination (Keng et al., 2018). Among adults who are highly self-critical, novel loving-kindness meditation treatments have been particularly efficacious. For example, Shahrar et al.'s (2015) wait-list randomized-controlled trial indicated that a loving-kindness meditation intervention was associated with reductions in self-criticism and increases in self-compassion and positive emotions compared to the wait-list condition.

What is lacking in the empirical literature examining mindfulness and ER is how levels of mindfulness interact with other constructs to predict ER. Do higher levels of trait mindfulness in the context of unsupportive ES predict greater use of reappraisal and less use of suppression? And are low levels of trait mindfulness in the context of unsupportive ES predictive of greater suppression and less reappraisal? To date, these specific questions have not been answered, yet existing studies suggest that mindfulness may serve a buffering effect in this regard. Indeed, numerous studies have demonstrated that mindfulness moderates the association between many risk factors (e.g., insecure attachment, perceived stress, neuroticism, psychological distress) and indices of psychological health, such as well-being (Davis et al., 2016), alcohol use (Adams et al., 2012), emotional eating (Pidgeon et al., 2012), trait anger, depression (Feltman et al., 2009), negative affect, and global psychopathology (Bergomi et al., 2013).

These studies demonstrate that an important relationship is likely present between mindfulness and ER. In the current study, we hypothesize that mindfulness may serve as a buffer, potentially weakening the positive association between unsupportive ES and maladaptive ER (i.e., expressive suppression) and the negative association between unsupportive ES and adaptive ER (i.e., cognitive reappraisal). Theoretically, EAs who report high levels of mindfulness in the context of a history of unsupportive ES will rely on more adaptive ER

strategies (i.e., cognitive reappraisal) and fewer maladaptive ER strategies (i.e., expressive suppression) relative to EAs reporting low levels of mindfulness.

### ***1.5.2 Nonjudgmental Acceptance Component of Mindfulness***

Of the two components of mindfulness, nonjudgmental acceptance and present-centered attention, the nonjudgmental acceptance component is specifically and uniquely associated with lower levels of depression, anxiety, and stress (Cash & Whittingham, 2010; Goyer et al., 2022; McKee et al., 2019). Nonjudgmental acceptance may be particularly beneficial for those who engage in high levels of self-criticism as it enables individuals to gently acknowledge a thought without added evaluation. Furthermore, at higher levels, nonjudgmental acceptance may decrease frequency of automatic, negative thoughts of the self. Given this prior research highlighting the importance of acceptance to depression and theoretical reasons for its link to self-criticism, we focus on this component of mindfulness in our model.

### ***1.5.3 Mindfulness in Emerging Adulthood***

EAs face unique challenges, such as grappling with identity exploration and career possibilities (Arnett, 2000); however, efforts to understand mindfulness among this population have received limited attention. In one of the only studies to explore the developmental features unique to EA as it relates to mindfulness, Peer and McAuslan (2016) reported that EAs with higher levels of mindfulness had lower levels of instability and feeling “in-between” and higher levels of self-focus. Further, mindfulness buffered the relation between these developmental features (i.e., instability, feeling “in-between,” and self-focus) and self-doubt.

Because EAs face challenges related to the future as well as self-doubt, mindfulness may be a critical factor in mitigating some of these commonly occurring developmental challenges, given the centrality of present-focused attention and nonjudgmental acceptance of self in

mindfulness. In fact, Koru (Rogers, 2013), a mindfulness program specifically developed for college-attending EAs, has been shown to reduce perceived stress and sleep problems and increase mindfulness and self-compassion, with effect sizes comparable to Kabat-Zinn's Mindfulness Based Stress Reduction program (Greeson et al., 2014).

### **1.6 Gender Considerations**

Past research has documented differences in the ways men and women regulate emotion. Typically, women utilize more strategies than men and are more likely to engage in cognitive reappraisal, while men are more likely to suppress (Masumoto et al., 2016; Nolen-Hoeksema & Aldao, 2011). Furthermore, there is some suggestion in the literature that self-criticism may be more relevant to females versus males (Cunha & Paiva, 2012). Based on this body of research supporting the notion that gender is associated with ER and implicated in self-criticism, we propose to include participant gender as a covariate in our models.

### **1.7 Current Study**

EA is a time marked by substantial challenges including identity disruption, greater focus on the self and future, and instability (Arnett, 2000). EAs also evidence higher rates of depression and anxiety relative to other developmental stages. Given the challenges that mark this life stage and the accompanying higher rates of psychopathology, self-criticism may be particularly notable. Self-criticism is a trait seen in both community and clinical samples with wide-reaching effects. These effects include increased risk of psychopathology (see Werner et al., 2019, for a review), greater emotional reactivity and negative affect (Dunkley et al., 2003), difficulties with goal pursuit (Harvey et al., 2015), and hampered treatment progress (Marshall et al., 2008), to name a few. Given these range of effects, understanding factors that contribute the development of this trait is warranted. The parenting context has been linked to the development

of this trait; however, no research to date has investigated whether (and how) parental ES is associated with self-criticism. The Axis of Criticism model posits that the origin of self-criticism lies in early critically expressed emotions by parents. This model heavily informs the current study, which will examine how early parental socialization of happiness and sadness relate to self-criticism in EA, given research linking ES and depression and data suggesting associations between negative parenting practices and self-criticism. While the Axis of Criticism model is cyclical, acknowledging how youth behaviors influence parents, in the current study we only examine the role of recalled parent behavior (specifically, how parenting behavior is related to self-criticism in EA). Further, we propose to examine the indirect effects of ES on self-criticism via ER. This aim is informed by 1) research demonstrating the mediating role of ER in the link between ES and various negative outcomes, 2) Gilbert's (2010, 2014) theoretical model positing that self-criticism is involved in the ER system responsible for threat detection, and 3) extant data suggesting self-criticism and emotion dysregulation are associated. Finally, the importance of identifying factors that may protect EAs from early unsupportive ES cannot be overstated; as such, we examine mindfulness as a moderator of the relation between ES and ER. Participant gender is included as a covariate.

### ***1.7.1 Aim 1 and Hypotheses***

The primary aim of the current study was to test a model linking retrospective reports of supportive and unsupportive ES to ER and self-criticism among a sample of university-attending EAs (see Figures 1-4). As described further in the data analysis section, distinct models were created to explore these relations in the context of socializing sadness and happiness. It was hypothesized that supportive ES would have a direct, negative association with self-criticism, while unsupportive ES would have a direct, positive association with self-criticism. It was

further hypothesized that supportive ES would be positively associated with cognitive reappraisal (an adaptive ER strategy) and negatively associated with expressive suppression (typically considered a maladaptive ER strategy) and that unsupportive ES would be negatively associated with cognitive reappraisal and positively associated with expressive suppression. Third, a direct association between ER and self-criticism was hypothesized, such that cognitive reappraisal would be negatively associated with self-criticism, and expressive suppression will be positively associated with self-criticism. A significant indirect effect of ES on self-criticism through ER was hypothesized. Finally, given previous research demonstrating unique gender differences in ES, self-criticism, and ER, participant gender was included as a covariate in all models.

### ***1.7.2 Aim 2 and Hypotheses***

A second aim of the study was to consider the moderating effect of mindfulness on the association between unsupportive ES and ER (see Figures 5 and 6). It was hypothesized that mindfulness would buffer the link between unsupportive ES and ER, such that the relationships between unsupportive ES and maladaptive (i.e., expressive suppression) and adaptive ER (i.e., cognitive reappraisal) would be weaker for EAs with high levels of mindfulness relative to those with low levels of mindfulness. Again, separate models were tested to consider the emotion being socialized (i.e., sadness, happiness).

## **2 METHODS**

### **2.1 Participant Sample and Recruitment**

The current study used archival data from a project conducted between 2012 and 2014 examining the efficacy of a positive psychology intervention. Participants included 256 emerging adults (76% female;  $M_{age}=19.85$ ; 75.8% White, 10.6% East Asian, 8.2% Latino, 5.1% South

Asian, 3.1% Black, 4.7% Other). Participants were university or graduate students recruited from a mid-sized city located in the Northeast region of the USA. Inclusionary criteria included: current students over the age of 18 who own a smartphone, have an active email address, and have daily access to the internet. Recruitment methods included distribution of flyers and tabling on campus and posting flyers online. Participant compensation options included course credit for students enrolled in psychology courses or payment of up to \$53 for completing questionnaires over the course of the intervention.

## **2.2 Measures**

After providing informed consent, participants completed a battery of self-report measures including demographics, ES, ER, depressive symptoms, thoughts and feelings about oneself, and mindfulness. For the purposes of this study, we examined baseline self-report data.

### ***2.2.1 Demographics***

Participants reported on demographic variables including gender, race/ethnicity, and age.

### ***2.2.2 Self-Criticism***

Self-criticism was assessed as a latent variable with indicators drawn from the Beck Depression Inventory II (BDI-II; Beck et al., 1996) and the Self-Other Four Immeasurables Scale (SOFI; Kraus & Sears, 2009). The BDI-II is a 21-item measure examining depressive symptoms over the past two weeks. Participants responded to statements on a four-point Likert scale about aspects of depression such as pessimism, loss of pleasure, irritability, and self-criticalness. To measure the construct of self-criticism specifically, we used the “Self-Dislike” and “Self-Criticalness” items. Higher scores on these specific items indicate higher levels of self-criticism. Based on a comprehensive review on the psychometric properties of the BDI-II, internal

consistency for this measure is excellent ( $\alpha = 0.9$ ) and test-retest reliability ranges from acceptable to excellent ( $\alpha = 0.73-0.96$ ) (Wang & Gorenstein, 2013).

The SOFI is a 16-item measure designed to examine positive and negative emotions, cognitions, and behaviors relative to the self and others. Participants indicated how often, during the past week, they had “thought, felt, or acted” in accordance with each item using a five-point Likert scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). To measure the construct of self-criticism specifically, we used the “Hateful – toward myself,” “Angry – with myself,” “Cruel – toward myself,” and “Mean – toward myself” items. A higher score on each of these items indicates higher levels of self-criticism. Based on past research, internal consistency for the negative self subscale of this measure is good ( $\alpha = 0.85$ ) (Cheng & Tse, 2015).

The six items drawn from the BDI-II and SOFI were tested as indicators of the self-criticism latent construct. In the current sample, internal consistency for the chosen six indicators was good ( $\alpha = 0.88$ ).

### **2.2.3 Emotion Socialization**

ES was assessed via latent supportive and unsupportive strategy factors, as described further in the data analytic section, using the Emotions as a Child Scales (O’Neal & Magai, 2005), a 64-item measure. Participants rated how their parents typically responded to their sadness and happiness when they were a child (i.e., “When you were sad as a child, what did your mother/father do?”) on a five-point Likert scale ranging from 1 (*not at all typical*) to 5 (*very typical*). Items cover a broad range of ES strategies and are grouped into five subscales: reward (e.g., “comforted me”), punish (e.g., “expressed disapproval”), neglect (e.g., “usually didn’t notice”), magnify (e.g., “got tearful or cried”), and override (e.g., “told me not to worry”). Higher scores indicate higher likelihood of a parent responding in that way.

Past research with the current sample indicates that internal consistency for the subscales of this measure range from acceptable to good ( $\alpha = 0.63-0.89$ ) (O’Leary et al., 2019). In the current sample, for the socialization of happiness, internal consistency was acceptable in the neglect subscale ( $\alpha = 0.70-.77$ ), poor to acceptable in the override subscales ( $\alpha = 0.58-0.68$ ), poor in the punish subscales ( $\alpha = 0.55-0.57$ ), good in the reward subscales ( $\alpha = 0.81-0.84$ ), and excellent in the magnify subscales ( $\alpha = 0.89-0.91$ ). The punish ES strategy was removed from further analyses due to poor internal consistency. For the socialization of sadness, internal consistency was acceptable to good in the neglect subscales ( $\alpha = 0.75-0.81$ ), poor in the override subscales ( $\alpha = 0.58-0.63$ ), excellent in the reward subscales ( $\alpha = 0.88-0.89$ ), poor to acceptable in the magnify subscales ( $\alpha = 0.60-0.65$ ), and acceptable to good in the punish subscales ( $\alpha = 0.76-0.84$ ). The override and magnify ES strategies were included in analyses with the sad models despite the poor internal consistency; however, these strategies were not included in the final model due to poor factor loadings.

#### **2.2.4 Emotion Regulation**

ER was assessed using the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), a 10-item measure examining the tendency to regulate one’s emotions through two strategies of ER: cognitive reappraisal and expressive suppression. Items are on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The cognitive reappraisal subscale includes items such as “When I want to feel more positive emotion, I change the way I’m thinking about the situation,” whereas the expressive suppression subscale includes items such as “When I am feeling positive emotions, I am careful not to express them.” Scoring is separate for each strategy, with higher scores indicating higher levels of each strategy. Internal consistency of the cognitive reappraisal ( $\alpha = .89-.90$ ) and expressive suppression ( $\alpha = .76-.80$ )

subscales in past research range from acceptable to excellent (Preece et al., 2019). In the current sample, the internal consistency was good for the cognitive reappraisal subscale ( $\alpha = .81$ ) and acceptable for the expressive suppression subscale ( $\alpha = .77$ ).

### **2.2.5 Mindfulness**

Mindfulness was assessed using the Carolina Empirically Derived Mindfulness Inventory (CEDMI; Coffey et al., 2010), a 22-item measure assessing two factors of mindfulness (present-centered attention and nonjudgmental acceptance) based on factor analyses of scales from the Five Factor Mindfulness Questionnaire (FFMQ; Baer et al., 2006) and the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The CEDMI assesses nonjudgmental acceptance with the nonjudging subscale of the FFMQ and the acceptance subscale of the DERS (e.g., “I tell myself I shouldn’t be feeling the way I’m feeling” [reverse-scored]). Items are on a five-point Likert scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). For the current study, nonjudgmental acceptance was assessed as a latent factor indicated by the nonjudging and acceptance subscales (see factor loadings in Tables 9 and 10). Higher scores indicate higher levels of mindfulness. Based on past research, internal consistency for the nonjudgmental acceptance ( $\alpha = 0.94$ ) subscale is excellent (Catalino et al., 2014). In the current study, internal consistency was also excellent ( $\alpha = 0.94$ ).

## **2.3 Data Analysis Plan**

### **2.3.1 Preliminary Analyses**

Descriptive statistics and bivariate correlations were calculated with SPSS software, version 25. Internal consistency of assessment tools was calculated, ensuring an alpha score of at least 0.65. Prior to the primary analyses, tests of assumptions of normality, independence, linearity, and homoscedasticity were conducted to reduce the likelihood of biased coefficients

and standard errors. Violations of assumptions were remedied prior to conducting analyses. Missing data were handled using the full information maximum likelihood approach, which is standard in Mplus.

### ***2.3.2 Primary Analyses***

Primary analyses were conducted using Mplus Version 8.1 (Muthén, & Muthén, 2017) to examine the proposed models. Specifically, confirmatory factor analysis and full structural equation modeling were conducted to build and examine the models. Prior to examining the path coefficients in the structural model, model fit was assessed with a model test statistic and three fit indices. A chi-square test was used to test model accuracy, with a nonsignificant value ( $p \geq .05$ ) providing support for the model. Next, a population-based index, the Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980) was used, given that it is not sensitive to sample size and generates a 90% confidence interval. According to Browne and Cudeck (1993), values  $\leq .05$  indicate “close” fit (CFit) on this index. The Comparative Fit Index (CFI; Bentler, 1990) was used to compare the fit of the proposed model to the null model, with values closer to one indicating better fit. Finally, the Standardized Root Mean Square Residual (SRMR) was used to assess absolute fit. SRMR is the mean residual between correlations in the matrix and correlations predicted by the model, with a value of zero indicating perfect fit. Among the models demonstrating good fit, the magnitude of relationships between variables was examined with standardized path coefficients. Coefficients with values less than 0.10 represent a small effect, 0.30 represent a medium effect, and 0.50 or higher indicate a large effect. Effects with an alpha of  $\leq .05$  are considered significant. To generate a sampling distribution and confidence intervals, a nonparametric bootstrapping method with 1,000 repetitions was used.

### **2.3.3 Aim 1 Analysis**

Prior to testing the indirect effect of ES on self-criticism through ER in the structural model, a measurement model was tested to ensure good fit of the latent ES and self-criticism constructs. Latent variables for both supportive and unsupportive ES are indicated by specific subscales of the EAC (Magai, 1996) based on past literature with the current and other samples (O’Leary et al., 2019; Ramakrishnan et al., 2019). In models examining happiness, the reward and magnify subscales of the EAC were tested as indicators of supportive ES (see Figure 1), while the neglect and override subscales were tested as indicators of unsupportive ES (see Figure 2). In models examining sadness, the reward and override subscales were tested as indicators of supportive ES (see Figure 3), while the neglect, punish, and magnify subscales were tested as indicators of unsupportive ES (see Figure 4). The self-criticism latent variable was indicated by two items from the BDI-II (Beck et al., 1996) and four items from the SOFI (Kraus & Sears, 2009) measure (see Figures 1-4). Specifically, the “self-dislike” and “self-criticalness” items from the BDI-II and the “mean,” “cruel,” “hateful,” and “angry” towards self SOFI items were used. Given reasonable model fit, direct and indirect effects of ES on self-criticism through ER were examined in the structural models (see Figures 1-4).

Four models were tested separately to analyze the socialization of happiness and sadness. Participant gender was included as a covariate given previous research suggesting that ES, ER, and levels of self-criticism vary by gender.

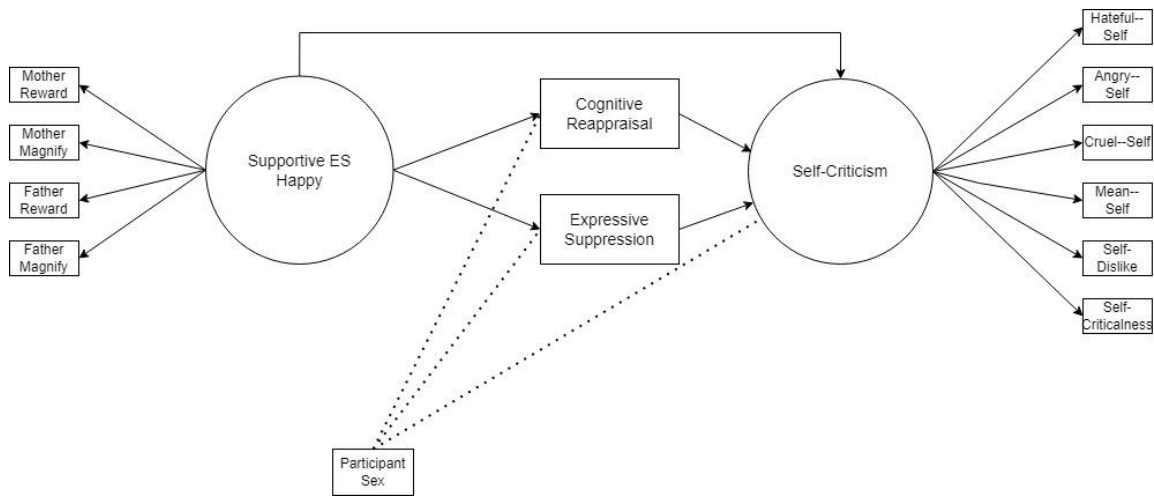


Figure 1. The indirect effect of supportive ES (happiness) on self-criticism through ER.

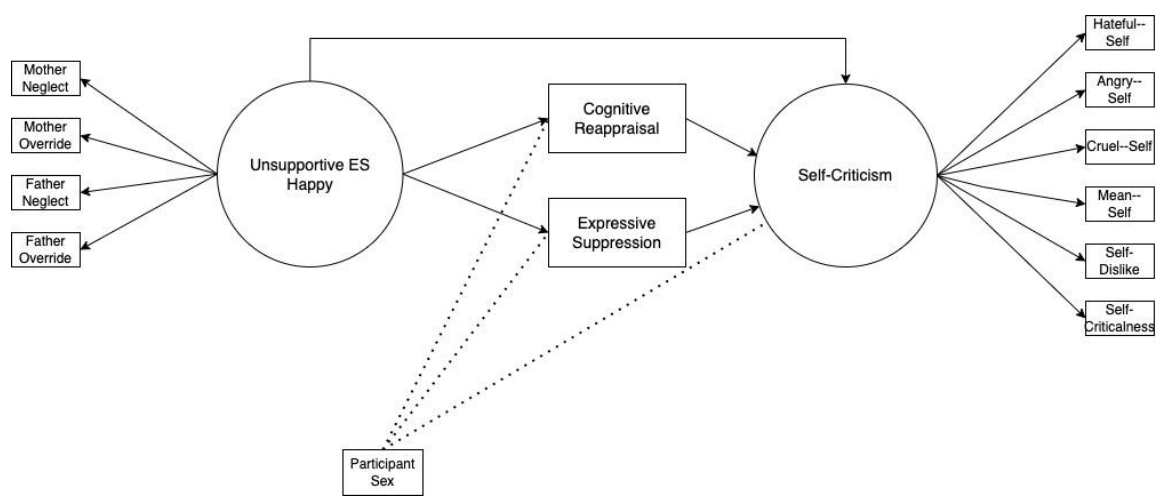


Figure 2. The indirect effect of unsupportive ES (happiness) on self-criticism through ER.

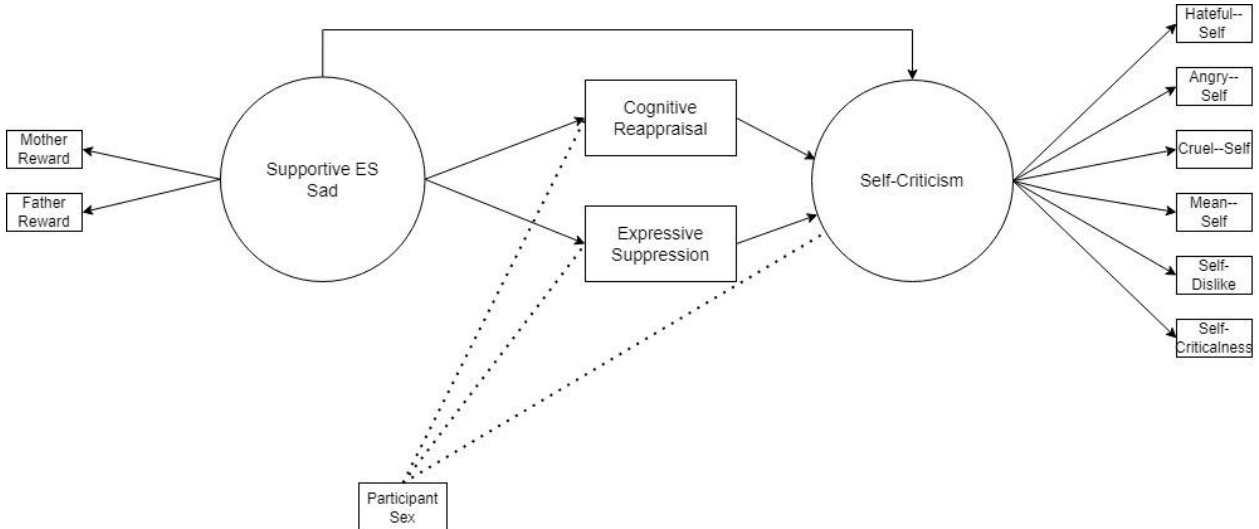


Figure 3. The indirect effect of supportive ES (sadness) on self-criticism through ER.

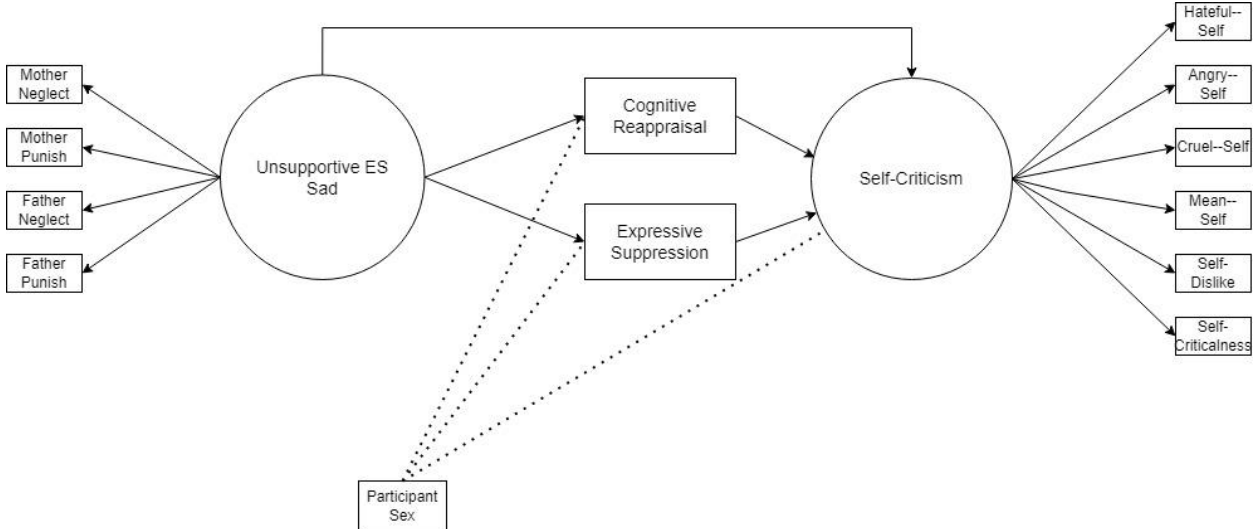


Figure 4. The indirect effect of unsupportive ES (sadness) on self-criticism through ER.

### **2.3.4 Aim 2 Analysis**

The second aim was to test the interactive effect of unsupportive ES and nonjudgmental acceptance (one facet of mindfulness) in the proposed moderated mediation models (see Figures 5 and 6). Prior to testing the interaction between unsupportive ES and nonjudgmental acceptance in the proposed structural model, a measurement model was tested to ensure good fit of the latent nonjudgmental acceptance construct. This latent variable was indicated by the nonjudgmental and acceptance subscales of the CEDMI (Coffey et al., 2010) based on past literature with the current (Goyer et al., 2022) and other samples (Catalino et al., 2014). Next, interaction terms were computed for the two models examining unsupportive ES of sadness and happiness: unsupportive ES x nonjudgmental acceptance. The interaction term was entered into the models proposed, predicting expressive suppression and cognitive reappraisal. A plot was generated to determine whether the confidence interval crossed zero, indicating a significant interaction. The point at which the confidence interval crosses zero indicates the value at which mindfulness moderates the unsupportive ES and ER link.

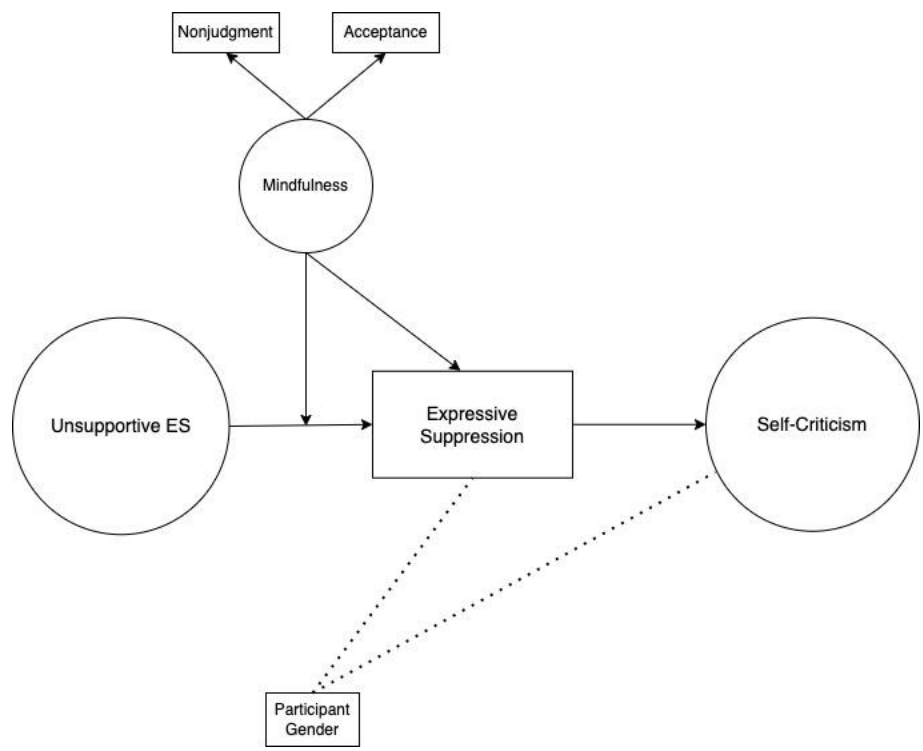


Figure 5. The moderating effect of nonjudgmental acceptance on the relationship between unsupportive ES and expressive suppression.

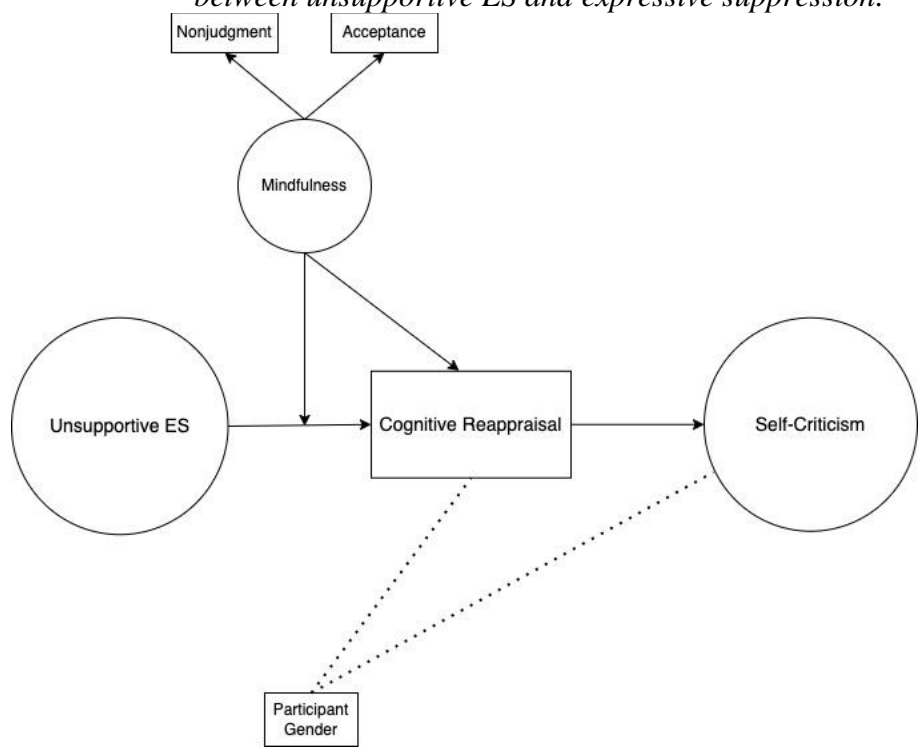


Figure 6. The moderating effect of nonjudgmental acceptance on the relationship between unsupportive ES and cognitive reappraisal.

### 2.3.5 Sample Size and Statistical Power Considerations

Sample size was considered to ensure statistical power and precision. According to recommendations by Bentler and Chou (1987), to achieve sufficient power, models should use a sample size consisting of 5 to 10 participants per parameter. Boomsma (1985) further suggests a minimum sample size of 100 or 200 for SEM. Given these considerations, and the number of parameters in the proposed models, our sample size of approximately 250 EAs was sufficient to achieve power of .80 at an alpha of .05.

## 3 RESULTS

### 3.1 Aim 1 Results

#### 3.1.1 Preliminary Analyses

Descriptive statistics (see Table 1) and bivariate correlations were calculated prior to testing the measurement and structural models. Correlations among ES (happiness) responses are indicated in Table 2, and correlations among ES (sadness) responses are in Table 3. Correlations among the remaining variables are indicated in Table 4.

Variable	Mean	SD
SOFI—Hateful Toward Self	1.82	1.02
SOFI—Angry Toward Self	2.11	1.03
SOFI—Cruel Toward Self	1.38	0.80
SOFI—Mean Toward Self	1.63	0.97
BDI—Self-Criticalness	0.74	0.88
BDI—Self-Dislike	0.66	0.94

Nonjudgment	26.8	7.86
Acceptance	21.57	5.87
Expressive Suppression	3.60	1.35
Cognitive Reappraisal	4.97	1.09
Mother Reward Happiness	3.75	1.04
Mother Punish Happiness	1.34	0.55
Mother Override Happiness	1.47	0.71
Mother Neglect Happiness	1.60	0.78
Mother Magnify Happiness	3.62	1.13
Father Reward Happiness	3.54	1.12
Father Punish Happiness	1.28	0.50
Father Override Happiness	1.41	0.60
Father Neglect Happiness	1.83	0.98
Father Magnify Happiness	3.31	1.18
Mother Reward Sadness	3.93	1.11
Mother Punish Sadness	1.44	0.83
Mother Override Sadness	3.15	0.90
Mother Neglect Sadness	1.68	0.94
Mother Magnify Sadness	1.94	0.89
Father Reward Sadness	3.36	1.22
Father Punish Sadness	1.36	0.68
Father Override Sadness	3.14	0.98
Father Neglect Sadness	1.98	1.01

Father Magnify Sadness	1.42	0.60
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Table 1. Means and standard deviations for manifest variables.

Variable	1	2	3	4	5	6	7	8	9	10
1. Mother Magnify	-	-	-.52**	.82**	-.32**	.51**	-.22**	-.28**	.42**	-.15*
2. Mother Neglect		-	.63**	-.52**	.51**	-.26**	.53**	.58**	-.26**	.37**
3. Mother Override			-	-.52**	.56**	-.14*	.31**	.60**	-.13*	.46**
4. Mother Reward				-	-.37**	.46**	-.26**	-.29**	.47**	-.17*
5. Mother Punish					-	-.07	.21**	.44**	-.05	.63**
6. Father Magnify						-	-.53**	-.33**	.83**	-
7. Father Neglect							-	.58**	-.60**	.24**
8. Father Override								-	-.32**	.51**
9. Father Reward									-	-
10. Father Punish										-

Table 2. Correlations among ES (happiness) responses.

Variable	1	2	3	4	5	6	7	8	9	10
1. Mother Magnify	-	.05	.13*	.08	.13*	.37**	.22**	.11	-.09	.20**
2. Mother Neglect		-	-.35**	-.73**	.55**	.09	.45**	-.15*	-.26**	.32**

3. Mother Override			-	.42**	-.21**	.04	.00	.52**	.12	-.04
4. Mother Reward				-	-.45**	-.07	-.29**	.26**	.37**	-.24**
5. Mother Punish					-	.31**	.34**	-.07	-.13*	.54**
6. Father Magnify						-	.07	.08	.06	.21**
7. Father Neglect							-	-.27**	-.65**	.49**
8. Father Override								-	.47**	-.17**
9. Father Reward									-	-.37**
10. Father Punish										-

*Table 3. Correlations among ES (sadness) responses.*

<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
1. Sex	-	-	-.02	-.03	-.02	-.07	-.07	.08	.06	.11	-.01
2. SOFI—Hateful Toward Self		.11									
2. SOFI—Hateful Toward Self		-	.73**	.56**	.63**	.52**	.64**	-.61**	-	.23**	-
2. SOFI—Hateful Toward Self									.50**		.28**
3. SOFI—Angry Toward Self			-	.44**	.57**	.47**	.57**	-.53**	-	.20**	-
3. SOFI—Angry Toward Self									.43**		.25**
4. SOFI—Cruel Toward Self				-	.67**	.34**	.38**	-.42**	-	.19**	-
4. SOFI—Cruel Toward Self									.37**		.24**
5. SOFI—Mean Toward Self					-	.48**	.48**	-.42**	-	.12*	-.16*
5. SOFI—Mean Toward Self									.42**		
6. BDI—Self-Criticalness						-	.53**	-.47**	-	.18**	-
6. BDI—Self-Criticalness									.49**		.30**
7. BDI—Self-Dislike							-	-.52**	-	.22**	-.33
7. BDI—Self-Dislike									.40**		

8. Nonjudgment								-	.67**	-	.20**
										.35**	
9. Acceptance									-	-	.16*
										.28**	
10. Expressive Suppression										-	-.11
11. Cognitive Reappraisal											-

Table 4. Correlations among participant sex, ER, indicators of self-criticism, and indicators of mindfulness.

### 3.1.2 Supportive Emotion Socialization (Happiness) Measurement and Structural Models

The measurement model for supportive parental ES responses to happiness had poor fit,  $\chi^2(34) = 315.19, p = \leq .001, CFI = 0.80, TLI = 0.74, RMSEA [90\% CI] = 0.18 [0.16, 0.20], SRMR = 0.08$ . Model modification indices revealed that correlations among many indicators would significantly improve model fit. As such, all suggested correlations were included in the final model which displayed excellent fit,  $\chi^2(27) = 22.09, p = .7328, CFI = 1, TLI = 1.01, RMSEA [90\% CI] = 0.000 [0.000, 0.037], SRMR = 0.02$ . Factor loadings for the measurement model are shown in Tables 1 and 2.

The SEM showed excellent fit,  $\chi^2(52, N=256) = 59.54, p = .22, TLI=.99, CFI=1$  (see Figure 7). There was a significant direct effect from supportive ES (happiness) to self-criticism ( $\beta = -0.16, p = .05$ ). Parental supportive ES (happiness) was positively associated with cognitive reappraisal ( $\beta=0.25, p \leq .001$ ) and negatively associated with expressive suppression ( $\beta = -.38, p \leq .001$ ). In other words, EAs who reported their parents rewarded and magnified their happy emotion displays also reported using reappraisal strategies more often and suppressing emotions

less often. Expressive suppression ( $\beta = 0.18, p = .01$ ) was positively associated with self-criticism, while cognitive reappraisal ( $\beta = -0.28, p \leq .001$ ) was negatively associated with self-criticism. There was a significant indirect effect from supportive ES (happiness) to self-criticism through expressive suppression ( $\beta = -0.07, p = .01$ ) and cognitive reappraisal ( $\beta = -0.07, p = .01$ ). The covariate, participant sex, was negatively associated with self-criticism such that female participants reported higher levels of self-criticism than males ( $\beta = -0.13, p = .05$ ).

<b>Indicator</b>	<b>Loading</b>	<b>SE</b>	<b>p</b>
Hateful—Self	0.89	0.03	<.001
Angry—Self	0.79	0.04	<.001
Cruel—Self	0.60	0.05	<.001
Mean—Self	0.71	0.04	<.001
Self-Dislike	0.71	0.04	<.001
Self-Criticalness	0.60	0.05	<.001

*Table 5. Factor loadings for self-criticism latent factor in supportive ES (happiness) measurement model.*

<b>Indicator</b>	<b>Loading</b>	<b>SE</b>	<b>p</b>
Maternal Reward Happiness	0.64	0.12	<.001
Maternal Magnify Happiness	0.60	0.11	<.001
Paternal Reward Happiness	0.74	0.14	<.001
Paternal Magnify Happiness	0.85	0.14	<.001

*Table 6. Factor loadings for supportive ES (happiness) latent factor in measurement model.*

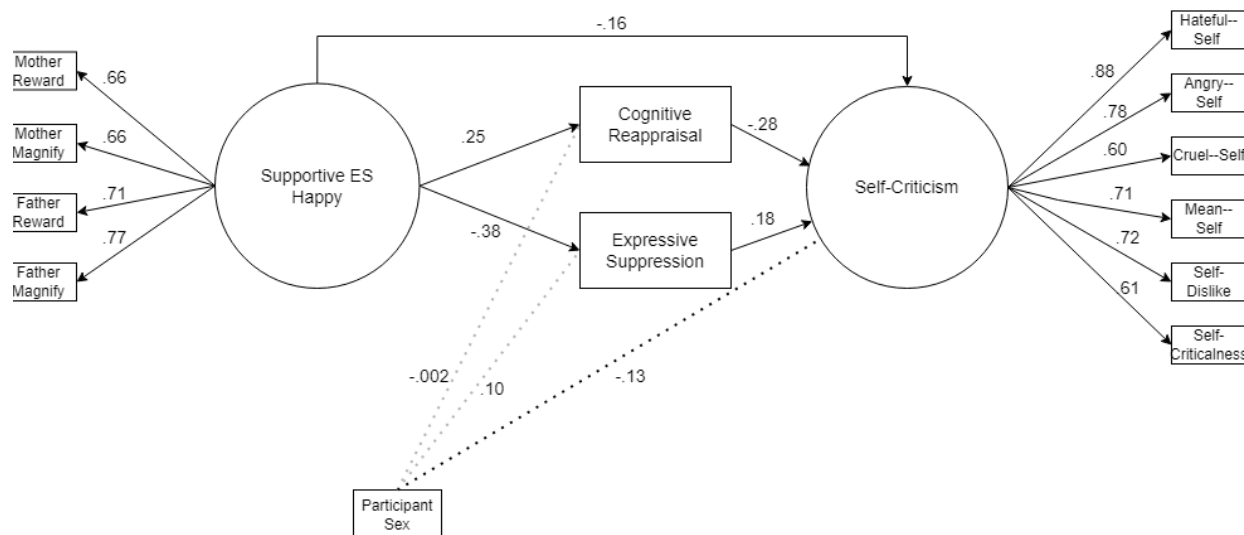


Figure 7. Supportive ES (happiness) structural model.

### 3.1.3 Unsupportive Emotion Socialization (Happiness) Measurement and Structural Models

The measurement model for unsupportive parental ES responses to happiness had good fit,  $\chi^2(34) = 150.20$ ,  $p = \leq .001$ ,  $CFI = 0.90$ ,  $TLI = 0.87$ ,  $RMSEA [90\% CI] = 0.12 [0.10, 0.14]$ ,  $SRMR = 0.06$ . To improve model fit, all suggested correlations based on the model modification indices were included in the model which displayed good fit,  $\chi^2(31) = 77.18$ ,  $p = \leq .001$ ,  $CFI = 0.96$ ,  $TLI = 0.94$ ,  $RMSEA [90\% CI] = 0.08 [0.06, 0.10]$ ,  $SRMR = 0.05$ . Correlations improved model fit, yet the factor loading of maternal override decreased below .4. Because of this, the maternal override indicator was removed from the model. The final measurement model for unsupportive ES (happiness) displayed excellent fit,  $\chi^2(23) = 28.68$ ,  $p = .1913$ ,  $CFI = 0.99$ ,  $TLI = 0.99$ ,  $RMSEA [90\% CI] = 0.03 [0.00, 0.06]$ ,  $SRMR = 0.03$ . Factor loadings for the final measurement model are shown in Tables 7 and 8.

<b>Indicator</b>	<b>Loading</b>	<b>SE</b>	<b>p</b>
Hateful—Self	0.90	0.02	<.001
Angry—Self	0.81	0.03	<.001
Cruel—Self	0.59	0.05	<.001
Mean—Self	0.71	0.04	<.001
Self-Dislike	0.70	0.04	<.001
Self-Criticalness	0.59	0.05	<.001

*Table 7. Factor loadings for self-criticism in unsupportive ES (happiness) model.*

<b>Indicator</b>	<b>Loading</b>	<b>SE</b>	<b>p</b>
Maternal Neglect Happiness	0.55	0.08	<.001
Paternal Neglect Happiness	0.98	0.12	<.001
Paternal Override Happiness	0.59	0.08	<.001

*Table 8. Factor loadings for final unsupportive ES (happiness) latent factor.*

The SEM showed good fit,  $\chi^2(45, N = 256) = 73.58, p = .0046, TLI = .96, CFI = .97$  (see Figure 8). There was a significant direct effect from unsupportive ES (happiness) to self-criticism ( $\beta = 0.32, p \leq .001$ ). Unsupportive ES (happiness) was positively associated with expressive suppression ( $\beta = 0.36, p \leq .001$ ). In other words, EAs who reported their parents responded to their happy displays by overriding or neglecting also reported suppressing emotions more often. A significant association was not found between unsupportive ES (happiness) and cognitive reappraisal. Cognitive reappraisal was negatively associated with self-criticism ( $\beta = -0.32, p \leq .001$ ), whereas expressive suppression was not significantly associated with self-criticism. There was not a significant indirect effect from unsupportive ES (happiness) to self-

criticism through expressive suppression or through cognitive reappraisal. The covariate, participant sex, was not significantly associated with ER or self-criticism in this model.

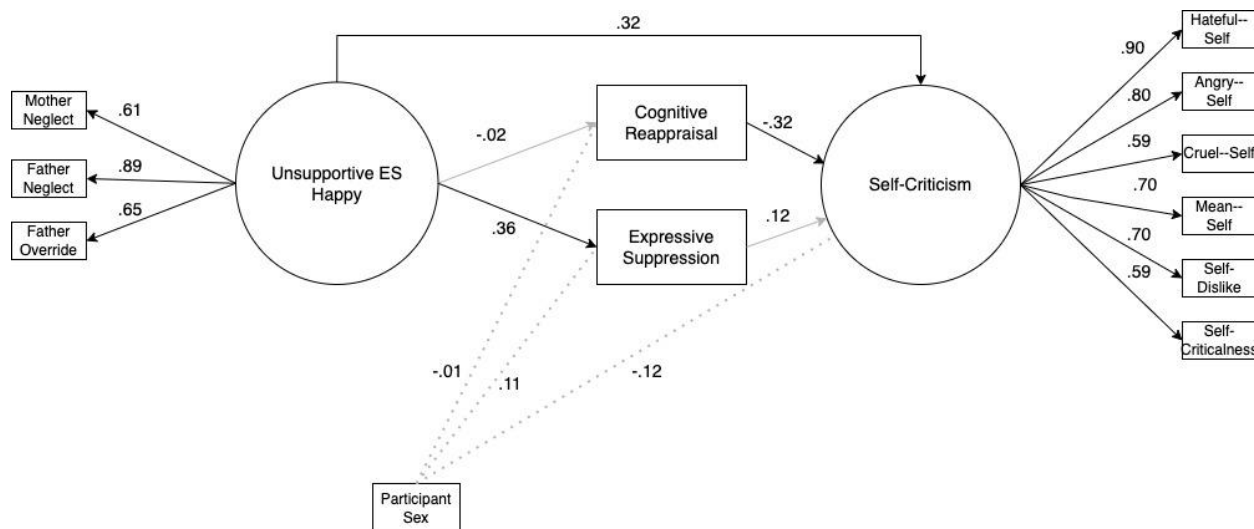


Figure 8. Unsupportive ES (happiness) structural model.

### 3.1.4 Supportive Emotion Socialization (Sadness) Measurement and Structural Models

The measurement model for supportive ES (sadness) had poor fit,  $\chi^2(34) = 163.34, p \leq .001, CFI = 0.87, TLI = 0.83, RMSEA [90\% CI] = 0.12 [0.10, 0.14], SRMR = 0.07$ . Modification indices revealed that correlations among many indicators would significantly improve model fit. All suggested correlations were included in the next model which displayed good fit,  $\chi^2(26) = 36.16, p = .0887, CFI = 0.99, TLI = 0.98, RMSEA [90\% CI] = 0.04 [0.00, 0.07], SRMR = 0.03$ . Correlations improved model fit, yet the factor loadings of maternal and paternal override decreased below the acceptable threshold of .4. Because of this, maternal and paternal override indicators were removed from the model. The final measurement model for supportive ES (sadness) displayed good fit,  $\chi^2(16) = 25.686, p = .06, CFI = 0.99, TLI = 0.98, RMSEA [90\% CI] = 0.05 [0.00, 0.08], SRMR = 0.02$ . Factor loadings for the final measurement model are shown in Tables 5 and 6.

<b>Indicator</b>	<b>Loading</b>	<b>SE</b>	<b>p</b>
Hateful—Self	0.89	0.03	<.001
Angry—Self	0.79	0.04	<.001
Cruel—Self	0.60	0.05	<.001
Mean—Self	0.71	0.04	<.001
Self-Dislike	0.70	0.04	<.001
Self-Criticalness	0.60	0.05	<.001

*Table 9. Factor loadings for self-criticism latent factor in supportive ES (sadness) model.*

<b>Indicator</b>	<b>Loading</b>	<b>SE</b>	<b>p</b>
Maternal Reward Sadness	0.59	0.12	<.001
Paternal Reward Sadness	0.63	0.13	<.001

*Table 10. Factor loadings for supportive ES (sadness) latent factor.*

The SEM showed good fit,  $\chi^2(35, N=256) = 55.55, p = .015, TLI = .96, CFI = .98$  (see Figure 9). There was a significant direct effect from supportive ES (sadness) to self-criticism ( $\beta = -0.22, p = .05$ ). Supportive ES (sadness) was positively associated with cognitive reappraisal ( $\beta = 0.19, p = .05$ ) and negatively associated with expressive suppression ( $\beta = -0.50, p \leq .001$ ). In other words, EAs who reported their parents comforted or helped them when they were sad also reported using cognitive restructuring more often and suppressing emotions less often. Cognitive reappraisal was negatively associated with self-criticism ( $\beta = -0.29, p \leq .001$ ), while expressive suppression was not significantly associated with self-criticism. There was a significant indirect effect from supportive ES (sadness) to self-criticism through cognitive reappraisal ( $\beta = -0.05, p = .03$ ). The covariate, participant sex, was positively associated with expressive suppression such that male participants reported higher levels of expressive suppression than females ( $\beta = 0.13, p = .04$ ).

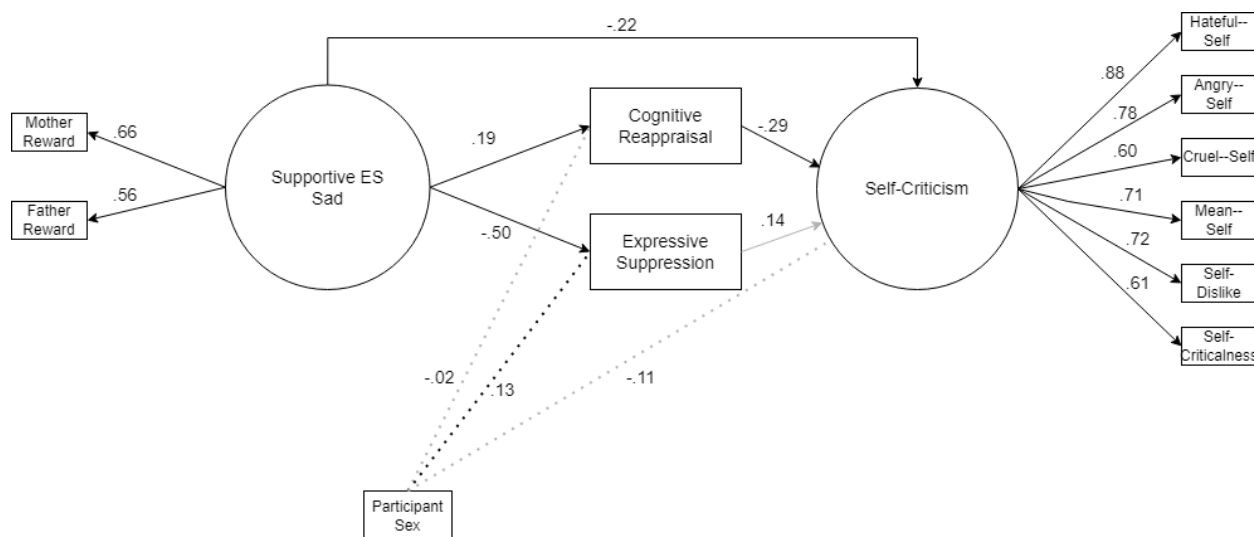


Figure 9. Supportive ES (sadness) structural model.

### 3.1.5 Unsupportive Emotion Socialization (Sadness) Measurement and Structural Models

The measurement model for unsupportive ES (sadness) had poor fit,  $\chi^2(53) = 204.16, p \leq .001, CFI = 0.86, TLI = 0.83, RMSEA [90\% CI] = 0.11 [0.09, 0.12], SRMR = 0.07$ . To improve model fit, the suggested correlations from the modification indices were included in the

next model which displayed good fit,  $\chi^2(45) = 63.23$ ,  $p = .0377$ ,  $CFI = 0.98$ ,  $TLI = 0.98$ ,  $RMSEA [90\% CI] = 0.04 [0.01, 0.06]$ ,  $SRMR = 0.04$ . Although model fit improved once correlations were added to the model, the factor loadings for the maternal and paternal magnify indicators decreased below the acceptable value of .4. As a result, maternal magnify and paternal magnify were removed from the model. The final measurement model displayed excellent fit,  $\chi^2(28) = 30.46$ ,  $p = .3415$ ,  $CFI = 1$ ,  $TLI = 1$ ,  $RMSEA [90\% CI] = 0.02 [0.00, 0.05]$ ,  $SRMR = 0.04$ . Factor loadings for the final measurement model are shown in Tables 7 and 8.

<b>Indicator</b>	<b>Loading</b>	<b>SE</b>	<b>p</b>
Hateful—Self	0.91	0.02	<.001
Angry—Self	0.80	0.03	<.001
Cruel—Self	0.59	0.05	<.001
Mean—Self	0.71	0.04	<.001
Self-Dislike	0.70	0.04	<.001
Self-Criticalness	0.59	0.05	<.001

*Table 11. Factor loadings for self-criticism latent factor in unsupportive ES (sadness) measurement model.*

<b>Indicator</b>	<b>Loading</b>	<b>SE</b>	<b>p</b>
Maternal Neglect Sadness	0.67	0.12	<.001
Maternal Punish Sadness	0.87	0.11	<.001
Paternal Neglect Sadness	0.69	0.12	<.001
Paternal Punish Sadness	0.62	0.09	<.001

*Table 12. Factor loadings for unsupportive ES (sadness) latent factor.*

The SEM showed good fit,  $\chi^2(53, N= 256) = 81.48, p = .0072, TLI=.96, CFI=.98$  (see Figure 10). There was a significant direct effect from unsupportive ES (sadness) to self-criticism ( $\beta = 0.29, p \leq .001$ ). Unsupportive ES (sadness) was positively associated with expressive suppression ( $\beta = 0.35, p \leq .001$ ). In other words, EAs who reported their parents typically neglected and punished their sad displays also reported higher levels of expressive suppression. Cognitive reappraisal was not significantly associated with unsupportive ES (sadness). Expressive suppression was positively associated with self-criticism ( $\beta = 0.14, p = .03$ ), while cognitive reappraisal was negatively associated with self-criticism ( $\beta = -0.31, p \leq .001$ ). There was a significant indirect effect from unsupportive ES (sadness) to self-criticism through expressive suppression ( $\beta = 0.05, p = .04$ ). The covariate, participant sex, was positively associated with expressive suppression such that male participants reported higher levels of expressive suppression than females ( $\beta = 0.16, p = .01$ ).

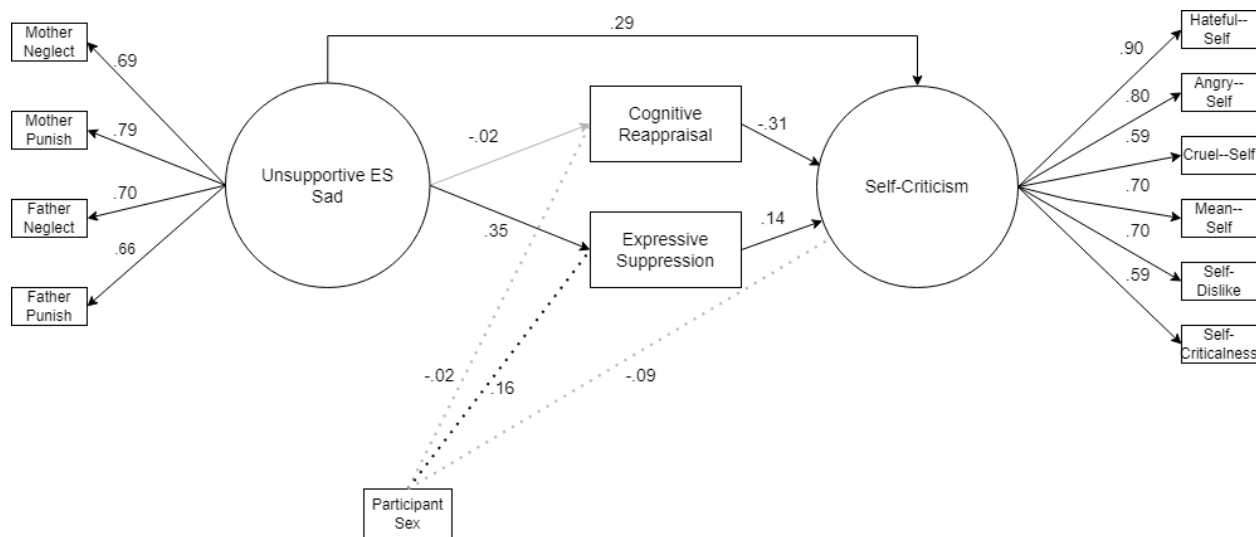


Figure 10. Unsupportive ES (sadness) model.

### 3.2 Aim 2 Results

The latent mindfulness factor was examined as a moderator in the path from unsupportive ES to ER (expressive suppression and cognitive reappraisal; tested in separate models). Factor loadings for the mindfulness latent factor are indicated in Tables 12 and 13.

Indicator	Loading	SE	p
Nonjudgment	0.88	0.03	<.001
Acceptance	0.76	0.04	<.001

*Table 13. Factor loadings for mindfulness latent factor in happiness model.*

Indicator	Loading	SE	p
Nonjudgment	0.88	0.03	<.001
Acceptance	0.77	0.04	<.001

*Table 14. Factor loadings for mindfulness latent factor in sadness model.*

#### 3.2.1 Unsupportive Emotion Socialization (Happiness) Moderated Mediation Model

Nonjudgmental acceptance was negatively associated with expressive suppression ( $\beta = -0.40, p \leq .001$ ). The interaction term (unsupportive ES x nonjudgmental acceptance) was not significantly related to expressive suppression ( $\beta = 0.28, p = .145$ ). As such, the relationship between unsupportive ES (happiness) and expressive suppression was not found to differ at varying levels of mindfulness (see Figure 11).

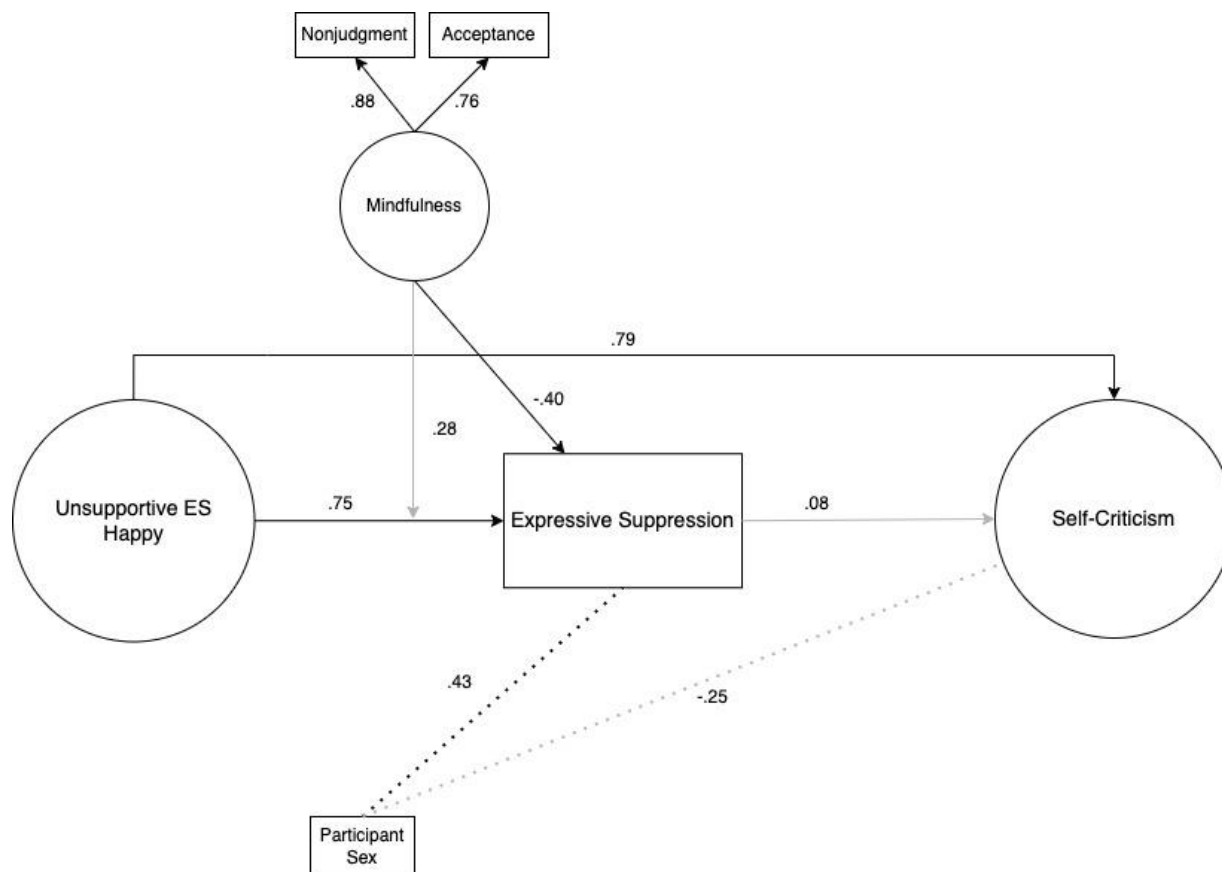


Figure 11. Unsupportive ES (happiness) moderated mediation model with expressive suppression.

### 3.2.2 Unsupportive Emotion Socialization (Happiness) Moderated Mediation Model

Nonjudgmental acceptance was positively associated with cognitive reappraisal ( $\beta = 0.34, p = .001$ ). The interaction term (unsupportive ES x nonjudgmental acceptance) was not significantly related to cognitive reappraisal ( $\beta = -0.08, p = .656$ ). As such, the relationship between unsupportive ES (happiness) and cognitive reappraisal was not found to differ at varying levels of mindfulness (see Figure 12).

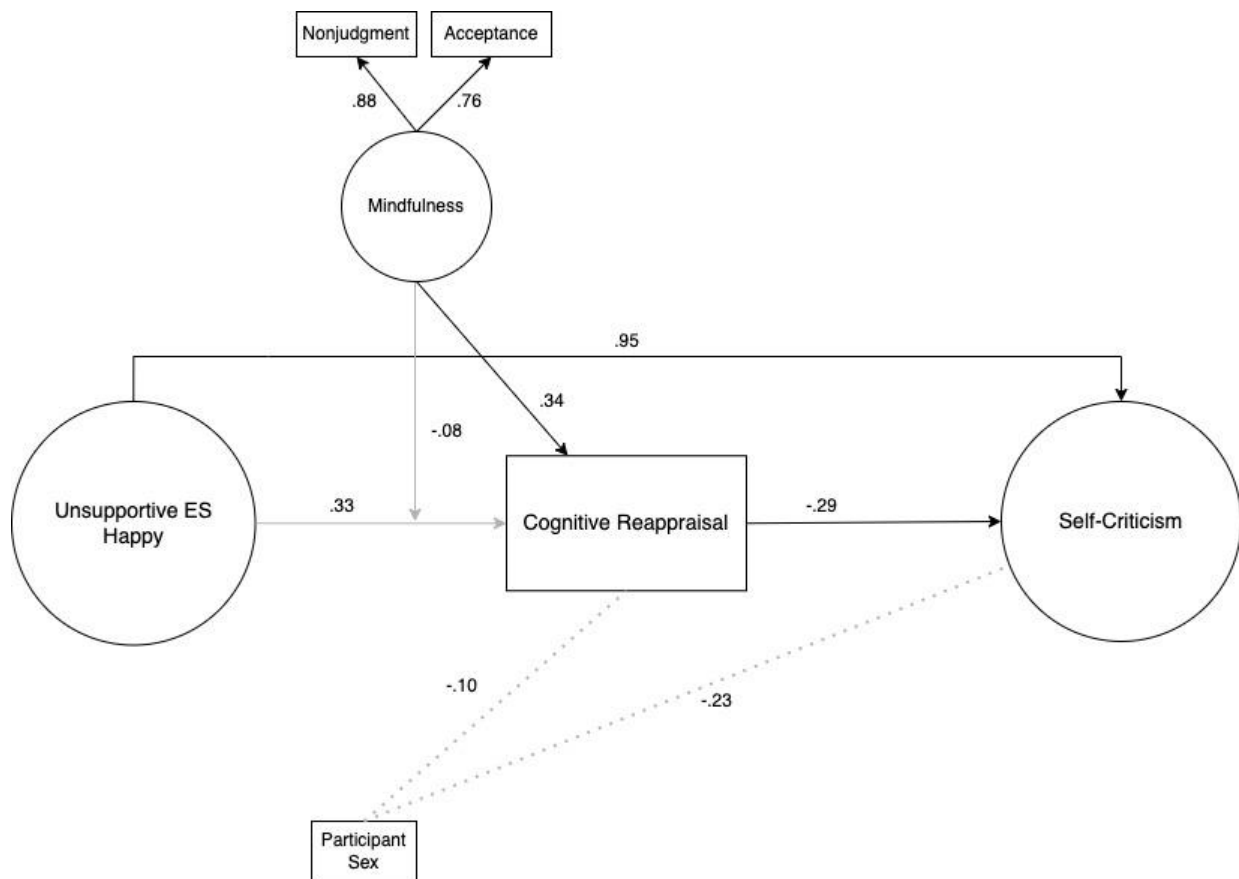


Figure 12. Unsupportive ES (happiness) moderated mediation model with cognitive reappraisal.

### 3.2.3 Unsupportive Emotion Socialization (Sadness) Moderated Mediation Model with Expressive Suppression

Nonjudgmental acceptance was negatively associated with expressive suppression ( $\beta = -0.44, p = .003$ ). The interaction term (unsupportive ES x nonjudgmental acceptance) was not significantly related to expressive suppression ( $\beta = 0.19, p = .16$ ) suggesting that the relationship between unsupportive ES (sadness) and expressive suppression does not differ at varying levels of mindfulness (see Figure 13).

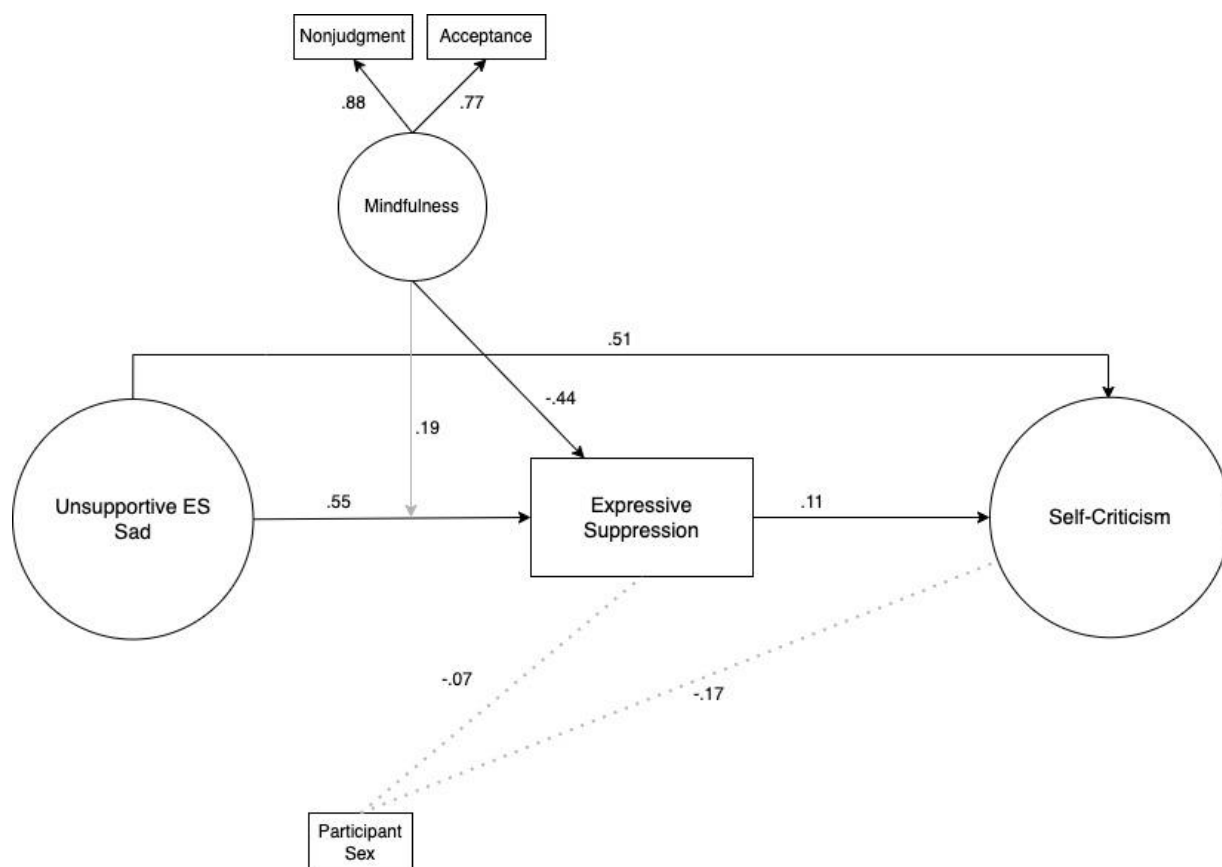


Figure 13. Unsupportive ES (sadness) moderated mediation model with expressive suppression.

**3.2.4 Unsupportive Emotion Socialization (Sadness) Moderated Mediation Model with Cognitive Reappraisal**

Nonjudgmental acceptance was positively associated with cognitive reappraisal ( $\beta = 0.32, p = .001$ ). The interaction term (unsupportive ES x nonjudgmental acceptance) was not significantly related to cognitive reappraisal ( $\beta = 0.00, p = .998$ ). As such, the relationship between unsupportive ES (sadness) and cognitive reappraisal was not found to differ at varying levels of mindfulness (see Figure 14).

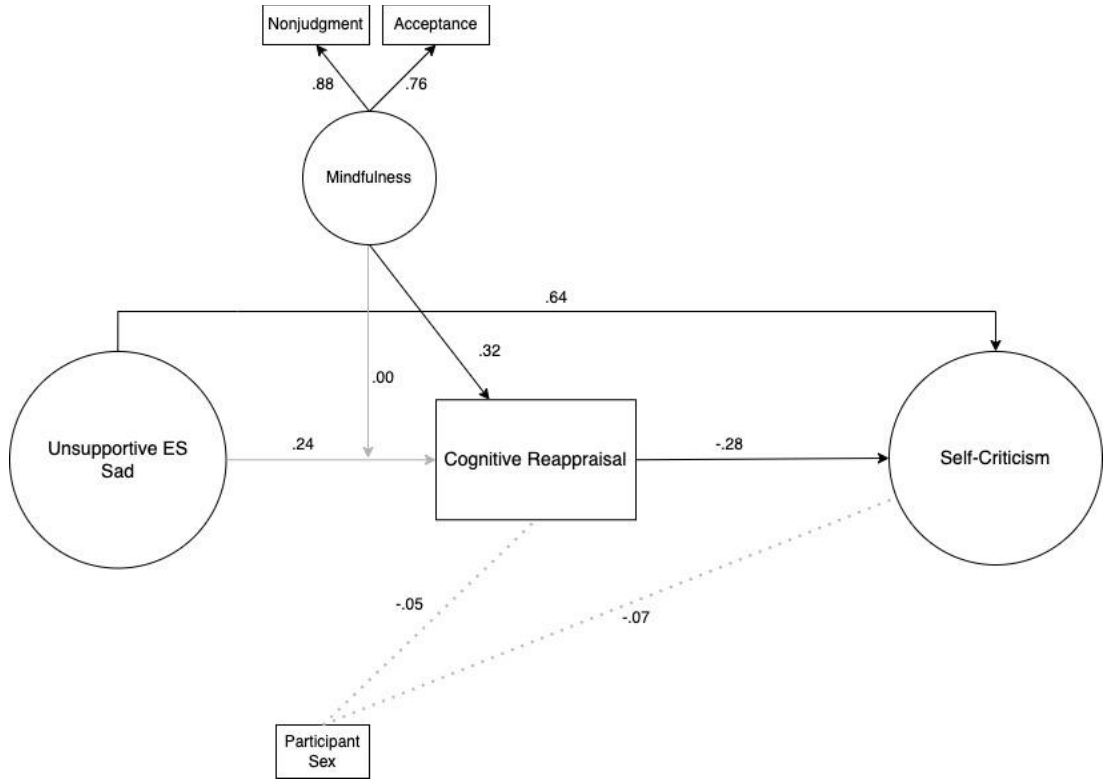


Figure 14. Unsupportive ES (sadness) moderated mediation model with cognitive reappraisal.

## 4 DISCUSSION

### 4.1 Recalled Emotion Socialization and Self-Criticism in Emerging Adulthood

The current study investigated relations among recalled parental ES, ER, mindfulness, and self-criticism in a sample of EAs. The first aim of the study was to examine the direct and indirect effects of supportive and unsupportive parental ES on self-criticism through ER (i.e., cognitive reappraisal and expressive suppression). Four models were tested: supportive ES (happiness), unsupportive ES (happiness), unsupportive ES (sadness), supportive ES (sadness). Across all four models there was a significant direct effect of parental ES on self-criticism. In the supportive models, the link between ES and self-criticism was negative, as hypothesized. This suggests that EAs who reported that their parents typically responded to their sadness with comfort and help and responded to their happiness with their own happiness and interest also reported lower levels of self-criticism. Alternatively, in the unsupportive model, the link between ES and self-criticism was positive, as hypothesized. EAs who recalled their parents typically punishing, ignoring, or neglecting their sadness also reported higher levels of self-criticism.

These findings are noteworthy for several reasons. To our knowledge, ours is the first study to report a direct association between parental ES and self-criticism in EAs, adding to a body of research demonstrating that parental ES has implications for well-being and psychopathology in adulthood (e.g., Cabecinha-Alati et al., 2020; Garside & Klimes-Dougan, 2002; Ramakrishnan et al., 2019). Furthermore, these data reveal that emotionally-laden components of early parent-child relationships may be associated with an individual's relationship with the self in later stages of development and a tendency to express dislike, meanness, and cruelty toward themselves.

#### **4.2 Recalled Emotion Socialization and Emerging Adults' Expressive Suppression**

Across all models, parental ES was significantly associated with expressive suppression in the expected directions. This effect was found across emotions (sadness and happiness) and ES contexts (supportive and unsupportive). Participants that recalled supportive ES as a child reported lower levels of expressive suppression as an EA. Conversely, in the context of unsupportive ES, EAs reported higher levels of expressive suppression. Although prior models and empirical findings have substantiated the link between ES and ER (e.g., Buckholdt et al., 2009; Morris et al., 2007; Perry et al., 2020; Shaffer et al., 2012; Yap et al., 2008), there has been limited research on ES in the context of EA. Furthermore, few studies have to date have examined the relationship between the socialization of happiness and expressive suppression. Our findings suggest that the way parents respond to their child's sadness *and* happiness, whether supportive or unsupportive, is significantly related to ER strategy use in EA. When parents respond to their child's emotions with interest, provide comfort to their sadness, and join in their happiness, they facilitate greater acceptance and expression of their child's emotion (Thompson & Meyer, 2007). On the other hand, when parents express disapproval, dismiss, or minimize their child's emotions, they disrupt a child's development of emotional awareness, understanding, and adaptive expression (Eisenberg et al., 1998; Rothenberg et al., 2019; Williams & Woodruff-Borden, 2015). This in turn, impacts opportunities for a child to learn more adaptive strategies for regulating emotions.

#### **4.3 Recalled Emotion Socialization and Emerging Adults' Cognitive Reappraisal**

Supportive ES was positively associated with the other ER strategy of interest—cognitive reappraisal—in both happiness and sadness models. EAs that recalled their parents typically meeting their sadness with comfort and help and their happiness with interest and

exploration reported higher levels of cognitive reappraisal to regulate their emotions. Given that cognitive reappraisal is generally considered an adaptive ER strategy and is predictive of better mental health outcomes (Gross & John, 2003; Gross & Levenson, 1997), it is helpful and clinically significant to identify supportive ES as a significant correlate. These findings suggest that supportive, rewarding responses to child displays of emotion may be a critical factor in facilitating development of adaptive ER skills (i.e., cognitive reappraisal). This makes sense because some of the supportive ES strategies involve problem solving, which may involve problem solving around thoughts (i.e., cognitive reappraisal).

It is also interesting to note that unsupportive ES was not significantly negatively associated with cognitive reappraisal. Our unsupportive ES models include parent responses such as dismissing, punishing, or not noticing child emotion displays. Given that cognitive reappraisal involves changing the ways one thinks about something, parent ES behaviors that include punishment or neglect may be unrelated to regulating with an explicitly cognitive strategy possibly because punishing an emotional display typically involves expression of what *not* to do rather than what *to* do. This pattern of findings—namely that supportive ES was associated with cognitive reappraisal while unsupportive ES was not—could further be explained by the fact that parents engage in a range of parenting behaviors (Romm & Metzger, 2021), some that facilitate or interrupt emotional *and* cognitive ER strategies, and some that tend to be specific to one type of strategy. The current findings have important implications for treatment and design of parenting programs as they help identify specific, positive parenting ES behaviors that support healthy emotional and psychological development.

#### **4.4 Links between Emotion Regulation Strategies and Self-Criticism**

When examining the relations between the mediators – cognitive reappraisal and emotion suppression – and EAs’ self-criticism, cognitive reappraisal was negatively associated with the self-criticism latent factor across all models. This is the first study linking cognitive reappraisal to self-criticism and suggests that cognitive reappraisal may be an important ER strategy in navigating personal challenges in life. While our findings cannot speak to directionally, if EAs consistently reframe personal losses or challenges as opportunities, for example, rather than failures, it may reduce the negative effects of self-criticism (Gilbert & Procter, 2006).

Expressive suppression was positively associated with self-criticism in all models except the supportive ES (sadness) model. Extensive research on expressive suppression indicates that individuals who rely on this strategy have poor mental health outcomes (e.g., Hu et al., 2014), so it was not surprising to find positive associations with self-criticism. Overreliance on expressive suppression may predispose individuals toward self-criticism because of the dissonance experienced with this strategy (Gross & John, 2003). It is possible that individuals suppress sadness or fear because they wish not to experience the sensations and accompanying thoughts; if done habitually, this unwillingness to accept “what is” may pave the way for a more general dissatisfaction with and dislike of the self, which are building blocks of self-criticism. In fact, one study examining the factor structure of self-criticism suggests that self-criticism involves negative beliefs about experiencing and expressing emotions (James et al., 2015). Further research is needed to understand the links and paths to the development of self-criticism.

#### **4.5 Factor Structure of Supportive and Unsupportive Emotion Socialization**

Regarding the factor structure of ES in the sad models, there were two unexpected findings with the parental responses of override and magnify. Contrary to hypotheses, parental

override responses to sadness did not load strongly onto the latent factor of supportive ES. Although some previous research suggests override can be a supportive strategy in certain contexts with certain emotions (Buckholdt et al., 2009; Klimes-Dougan et al., 2007; Miller-Slough & Dunsmore, 2019), there is also evidence that it may be unsupportive (Hughes-Scalise & Connell, 2014). One can imagine that if it were the only strategy used by a parent to respond to a child's sadness (i.e., telling him/her to cheer up; buying them something they liked), it would not provide the opportunity to develop awareness of emotions or build effective regulation skills, and could be experienced as invalidating (Malatesta-Magai, 1991). In fact, the override response has been associated with eating disorders in adolescents (Hughes-Scalise & Connell, 2014). Furthermore, much previous research has examined parental override in response to a global category of negative emotions (i.e., composite of anger, worry, and sadness) rather than discrete negative emotions. It is possible that inconsistent findings, including ours, are related to the specific emotion being socialized. Perhaps override is more supportive for anger relative to sadness. As an example, a parent giving their child something to do or distracting them may be effective as a response to anger and might be less effective for sadness.

The next unexpected finding was that maternal and paternal magnify strategies loaded poorly onto the unsupportive ES (sadness) latent factor and were thus removed from the factor. This is contrary to expectation; however, as with the ES override strategy previously discussed, there are inconsistent findings in the literature regarding how supportive or unsupportive the magnify response may be for a child's emotional development. As an example, previous research demonstrates that parental magnify responses are concurrently associated with internalizing disorders and are predictive of decreased emotion regulation skills (Briscoe et al., 2017; Klimes-

Dougan et al., 2001; Miller-Slough & Dunsmore, 2019; O’Neal & Magai, 2005; Silk et al., 2011).

Discrepant findings on the supportiveness of this strategy may be dependent on culture (Friedlmeier et al., 2011), context (Shaffer et al., 2012), and/or the familial emotional climate (Morris et al., 2007). It is also possible that the impact of magnify responses depends on the extremity of the response. For example, if a parent is empathic with a sad child who wasn’t invited to a birthday party and expresses that sadness appropriately, it could be considered supportive and validating; alternatively, if a parent is themselves triggered by such an event and sobs uncontrollably, the focus of attention could shift to the parent and feel unsupportive to the youth. In the second scenario, the parent is not modeling a regulatory strategy. However, additional research that better characterizes the magnify response (i.e., do parents dwell in sadness when their child is sad or show empathic sadness and then flexibly move on to other responses?) will help clarify its role. Finally, inconsistent findings regarding the supportiveness of magnify and override strategies may be explained in part by the issues within the measure (Emotions as a Child Scales; O’Neal & Magai, 2005) itself, as these strategies had poor internal consistency reliability in the current sample.

#### **4.6 Parent Sex Differences in Emotion Socialization**

Although we did not aim to thoroughly examine parent sex differences in ES, one difference emerged between mothers and fathers when testing the happiness model for unsupportive ES. Paternal override responses loaded strongly onto the general unsupportive happiness factor; however, maternal override did not and was dropped from the model. Previous research indicates that mothers are more involved in socializing negative emotions. Further, fathers typically are more involved in play and other contexts in which children would display

positive emotions such as happiness (Laflamme et al., 2002). Given these differences, alongside the more time children typically spend around their mothers relative to fathers (Montemayor & Brownlee, 1987), it makes sense that mothers' dismissing or overriding responses to happiness would not be viewed as unsupportive or hurtful.

#### **4.7 Mindfulness in the Relation between Emotion Socialization and Emotion Regulation**

While we did not find support for mindfulness moderating the link between unsupportive ES and expressive suppression, we did find that mindfulness was positively associated with cognitive reappraisal and negatively associated with expressive suppression. This is consistent with previous research suggesting that mindfulness and cognitive reappraisal are linked. For example, dispositional mindfulness, state mindfulness, and previous mindfulness training each are predictive of higher levels of cognitive reappraisal (Garland et al., 2015; Hayes-Skelton & Graham, 2012; Troy et al., 2013). It is possible that unsupportive ES negatively impacts an individual's capacity for dispositional mindfulness alongside adaptive ER strategies, such as cognitive reappraisal. Alternatively, in our models, mindfulness may moderate the relation between ER and self-criticism. More research is needed to understand the links between ER and mindfulness.

#### **4.8 Limitations and Future Directions**

Our findings suggest that recalled parental ES is associated with self-criticism in EA explained in part by emerging adults' ER abilities. These findings contribute to a neglected area of research and could inform the design of future studies; however, there are limitations that should be considered when interpreting our results. First, the cross-sectional nature of this study limits the conclusions that can be drawn regarding the developmental sequence from ES in childhood to self-criticism in EA. However, given that the EAs in the study were asked to report

on how their parents responded when they were children, and then reported on current ER and self-criticism, there is a temporal element with the ES relevant to childhood and the ER and self-criticism data situated in EA. Next, given that all data were obtained through participant self-report, issues of common method variance and response bias are present. As a result, these issues may have contributed to some significant relationships among our variables. Future studies including parent and youth report, for example, are warranted, and would help to extend our findings. Related to the generalizability of our findings, we are limited given that our sample was composed of primarily White and female participants. Previous research suggests that there are important gender, racial, and ethnic differences with regard to ES and ER (e.g., Brown et al., 2015; Nolen-Hoeksema, 2015).

Another limitation of the current study is the validity of self-criticism as the latent construct. While the observed variables strongly loaded onto the latent construct as hypothesized, it is unknown whether the latent construct 1) captures a unique trait, 2) is not better defined as a different construct entirely (e.g., self-esteem), or 3) whether a more comprehensive latent factor including other constructs (i.e., internalizing symptoms, neuroticism) may better represent the data. Although no previous studies have tested the BDI-II (Beck et al., 1996) and SOFI (Kraus & Sears, 2009) items as indicators of self-criticism, a recent study exploring the factor structure of the BDI-II suggests it is best characterized in some samples as a bifactor model with one general depression factor and two specific sub-factors of self-criticism and somatic symptoms (Høstmælingen et al., 2021). This study provides some initial support for using the BDI-II items as indicators of self-criticism in our study. It is also important to note that the indicators of self-criticism (considered a trait-like construct) in the current study were drawn from state measures (i.e., assessing symptoms in the past week or two weeks). However, the self-criticism latent

construct was significantly negatively correlated with self-esteem ( $\beta = -.79, p < .001$ ), providing some evidence of concurrent validity and perhaps a sense of the stability of the construct.

Finally, it is possible that a more holistic perspective of ES could yield additional insights, rather than examining ES behaviors in isolation. In fact, recent research by McKee et al. (2022) suggests that examining distinct ES *profiles* (e.g., low levels of unsupportive ES and high levels of supportive ES) could help explain nuanced findings related to ES and outcomes.

Given that self-criticism can have widespread negative effects on clinical and community populations, longitudinal research is warranted to identify risk and protective factors impacting its development. The current study is the first to our knowledge to link ES to self-criticism, and to test the indirect effects of ER on this link. Understanding the pathways that link our relationships with others to our relationship with ourselves is important work and worthy of additional study.

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## Appendix: Self-Report Measures

### Demographics

- 1) What is your sex?  Male  Female
  
- 2) How many years of education have you completed?
  - Completed High School (or GED)
  - Completed First Year of College
  - Completed Second Year of College
  - Completed Third Year of College
  - Completed Fourth Year of College
  - Earned Bachelor's Degree
  - Completed Graduate work (how many years? )
  
- 3) Are you currently in a romantic relationship?
  - No, I am currently single
  - Yes, I am dating at least one person casually
  - Yes, I am in an exclusive relationship
  - Yes, I am engaged to be married
  - Yes, I am married or in a life-long, committed partnership
  
- 4) Are you of Hispanic/Latino origin?
  - Yes
  - No
  
- 5) Which race or ethnicity do you consider yourself to be?
  - White/Caucasian
  - Black/African-American
  - East Asian (i.e. Chinese, Japanese, Vietnamese)
  - South Asian (i.e. Indian, Pakistani, Burmese)
  - American Indian or Alaskan Native
  - Pacific Islander or Native Hawaiian
  - Other (please specify )
  
- 6) Is English your primary language?
  - Yes
  - No (please specify )
  
- 7) Where were you born?
  - United States
  - Not United States
  
- 8) Where did you (primarily) grow up?
  - United States

\_\_\_ Not United States

9) How would you describe the economic situation of your household when you were in high school? [Check one]

- \_\_\_ We had barely enough to get by  
 \_\_\_ We had enough to get by but not more  
 \_\_\_ We were solidly middle class  
 \_\_\_ We had plenty of “extras”  
 \_\_\_ We had plenty of “luxuries.”

10) What is your age? \_\_\_\_\_

11) Have you ever been diagnosed with the following psychiatric disorders?

Major Depression	___ Yes	___ No
Bipolar Depression	___ Yes	___ No
Generalized Anxiety Disorder	___ Yes	___ No
Post-Traumatic Stress Disorder	___ Yes	___ No
Social Phobia	___ Yes	___ No
Specific Phobia (e.g., fear of heights, crowds, dogs, etc.)	___ Yes	___ No
Eating Disorder	___ Yes	___ No
Schizophrenia	___ Yes	___ No
Alcohol / Substance Abuse or Dependence	___ Yes	___ No

12) Have you ever received psychiatric treatment for any of the following psychiatric disorders?

Major Depression	___ Yes	___ No
Bipolar Depression	___ Yes	___ No
Generalized Anxiety Disorder	___ Yes	___ No
Post-Traumatic Stress Disorder	___ Yes	___ No
Social Phobia	___ Yes	___ No
Specific Phobia (e.g., fear of heights, crowds, dogs, etc.)	___ Yes	___ No
Eating Disorder	___ Yes	___ No
Schizophrenia	___ Yes	___ No
Alcohol/Substance Abuse or Dependence	___ Yes	___ No

13) Are you currently receiving treatment for any psychiatric disorders? \_\_\_ Yes \_\_\_ No

If so, what are you currently receiving treatment for? \_\_\_\_\_

14) Please specify which (if any) family member(s) has experienced each psychiatric disorder. Please circle all that apply. For instance, if both your mother and grandmother experience Major Depression, you would circle both “Mother” and “Grandparent.”

Major Depression

Mother	Father	Sibling	Grandparent	Aunt/Uncle	None
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Bipolar Depression

Mother	Father	Sibling	Grandparent	Aunt/Uncle	None
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Generalized Anxiety Disorder

Mother	Father	Sibling	Grandparent	Aunt/Uncle	None
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Post-Traumatic Stress Disorder

Mother	Father	Sibling	Grandparent	Aunt/Uncle	None
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Social Phobia

Mother	Father	Sibling	Grandparent	Aunt/Uncle	None
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Specific Phobia (e.g., fear of heights, crowds, dogs, etc.)

Mother	Father	Sibling	Grandparent	Aunt/Uncle	None
--------	--------	---------	-------------	------------	------

Eating Disorder

Mother	Father	Sibling	Grandparent	Aunt/Uncle	None
--------	--------	---------	-------------	------------	------

Alcohol / Substance Abuse or Dependence

Mother	Father	Sibling	Grandparent	Aunt/Uncle	None
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**BDI-II**

**Instructions:** This questionnaire consists of 20 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today**. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 15 (Changes in Sleeping Pattern) or Item 17 (Changes in Appetite).

**1. Sadness**

- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

**2. Pessimism**

- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

**3. Past Failure**

- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

**4. Loss of Pleasure**

- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

**5. Guilty Feelings**

- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all the time.

**6. Punishment Feelings**

- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

**7. Self-Dislike**

- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

**8. Self-Criticalness**

- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

**9. Crying**

- 0 I don't cry any more than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

**10. Agitation**

- 0 I am no more restless or wound up than usual.
- 1 I feel more restless or wound up than usual.
- 2 I am so restless or agitated that it's hard to stay still.
- 3 I am so restless or agitated that I have to keep moving or doing something.

**11. Loss of Interest**

- 0 I have not lost interest in other people or activities.
- 1 I am less interested in other people or things than before.
- 2 I have lost most of my interest in other people or things.
- 3 It's hard to get interested in anything.

**12. Indecisiveness**

- 0 I make decisions about as well as ever.
- 1 I find it more difficult to make decisions than usual.
- 2 I have much greater difficulty in making decisions than I used to.
- 3 I have trouble making any decisions.

**13. Worthiness**

- 0 I do not feel like I am worthless.
- 1 I don't consider myself as worthwhile and useful as I used to.
- 2 I feel more worthless as compared to other people.
- 3 I feel utterly worthless.

**14. Loss of Energy**

- 0 I have as much energy as ever.
- 1 I have less energy than I used to have.
- 2 I don't have enough energy to do very much.

- 3 I don't have enough energy to do anything.

### 15. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.

~~1a I sleep somewhat more than usual.~~

~~1b I sleep somewhat less than usual.~~

2a I sleep a lot more than usual.

~~2b I sleep a lot less than usual.~~

3a I sleep most of the day.

3b I wake up 1-2 hours early and can't get back to sleep

### 16. Irritability

0 I am no more irritable than usual.

1 I am more irritable than usual.

2 I am much more irritable than usual.

3 I am irritable all the time.

### 17. Changes in Appetite

0 I have not experienced any change in appetite

~~1a My appetite is somewhat less than usual.~~

~~1b My appetite is somewhat greater than usual.~~

2a My appetite is much less than before.

~~2b My appetite is much greater than usual.~~

3a I have no appetite at all.

3b I crave food all the time.

### 18. Concentration Difficulty

0 I can concentrate as well as ever.

1 I can't concentrate as well as usual.

2 It's hard to keep my mind on anything for very long.

3 I find I can't concentrate on anything.

### 19. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.

1 I get more tired or fatigued more easily than usual.

2 I am too tired or fatigued to do a lot of things I used to do.

3 I am too tired or fatigued to do most of the things I used to do.

### 20. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.

1 I am less interested in sex than I used to be.

2 I am much less interested in sex now.

3 I have lost interest in sex completely.

### SOFI

This scale consists of a number of words that describe different thoughts, feelings, and behaviors. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have thought, felt, or acted this way towards yourself and other *during the past week*.

	Extremely	Very slightly or not at all	A little	Moderately	Quite a bit
1. Friendly – toward myself	1	2	3	4	5
2. Friendly – toward others	1	2	3	4	5
3. Hateful – toward myself	1	2	3	4	5
4. Hateful – toward others	1	2	3	4	5
5. Angry – with myself	1	2	3	4	5
6. Angry – with others	1	2	3	4	5
7. Joyful – for myself	1	2	3	4	5
8. Joyful – for others	1	2	3	4	5
9. Accepting – toward myself	1	2	3	4	5
10. Accepting – toward others	1	2	3	4	5
11. Cruel – toward myself	1	2	3	4	5
12. Cruel – toward others	1	2	3	4	5
13. Compassionate – toward myself	1	2	3	4	5
14. Compassionate – toward others	1	2	3	4	5
15. Mean – toward myself	1	2	3	4	5
16. Mean – toward others	1	2	3	4	5

### EAC

Note: If the questions in the following sections are not applicable to your situation growing up, please skip them.

When you were **sad** as a child, what did your **mother** do?

**[If you did not have contact with your mother or a mother figure as a child, please circle N/A here and skip the mother items.]**

	Not at all typical		Somewhat typical		Very typical
1. Usually didn't notice	1	2	3	4	5
2. Told me to cheer up	1	2	3	4	5
3. Bought me something I liked	1	2	3	4	5
4. Asked me about it	1	2	3	4	5
5. Told me not to worry	1	2	3	4	5
6. Got tearful or cried	1	2	3	4	5
7. Usually wasn't around	1	2	3	4	5
8. Got sad herself	1	2	3	4	5
9. Gave me a disgusted look	1	2	3	4	5
10. Ignored me	1	2	3	4	5
11. Helped me deal with the issue	1	2	3	4	5
12. Got upset	1	2	3	4	5
13. Expressed disapproval	1	2	3	4	5
14. Comforted me	1	2	3	4	5
15. Called me a crybaby or such	1	2	3	4	5

When you were **sad** as a child, what did your **father** do?

**[If you did not have contact with your father or a father figure as a child, please circle N/A here and skip the father items.]**

	Not at all typical		Somewhat typical		Very typical
1. Usually didn't notice	1	2	3	4	5
2. Told me to cheer up	1	2	3	4	5
3. Bought me something I liked	1	2	3	4	5
4. Asked me about it	1	2	3	4	5
5. Told me not to worry	1	2	3	4	5
6. Got tearful or cried	1	2	3	4	5
7. Usually wasn't around	1	2	3	4	5

8. Got sad himself	1	2	3	4	5
9. Gave me a disgusted look	1	2	3	4	5
10. Ignored me	1	2	3	4	5
11. Helped me deal with the issue	1	2	3	4	5
12. Got upset	1	2	3	4	5
13. Expressed disapproval	1	2	3	4	5
14. Comforted me	1	2	3	4	5
15. Called me a crybaby or such	1	2	3	4	5

When you were **happy** as a child, what did your **mother** do?

	Not at all typical		Somewhat typical		Very typical
1. Usually didn't notice	1	2	3	4	5
2. Changed the subject	1	2	3	4	5
3. She told me that there were other things that were more important	1	2	3	4	5
4. Was interested in why I was happy	1	2	3	4	5
5. Noticed my feelings and quickly moved on to something else	1	2	3	4	5
6. Became very happy herself	1	2	3	4	5
7. Usually wasn't around	1	2	3	4	5
8. Joined me in my happiness	1	2	3	4	5
9. Told me to keep it to myself	1	2	3	4	5
10. Failed to ask about it	1	2	3	4	5
11. Listened to me	1	2	3	4	5
12. Said she was happy, too	1	2	3	4	5
13. Told me to settle down	1	2	3	4	5
14. Encouraged me to share my happiness	1	2	3	4	5
15. Showed she did not like my being happy	1	2	3	4	5

When you were **happy** as a child, what did your **father** do?

	Not at all typical	2	Somewhat typical	4	Very typical
1. Usually didn't notice	1	2	3	4	5
2. Changed the subject	1	2	3	4	5
3. He told me that there were other things that were more important	1	2	3	4	5
4. Was interested in why I was happy	1	2	3	4	5
5. Noticed my feelings and quickly moved on to something else	1	2	3	4	5
6. Became very happy himself	1	2	3	4	5
7. Usually wasn't around	1	2	3	4	5
8. Joined me in my happiness	1	2	3	4	5
9. Told me to keep it to myself	1	2	3	4	5
10. Failed to ask about it	1	2	3	4	5
11. Listened to me	1	2	3	4	5
12. Said he was happy, too	1	2	3	4	5
13. Told me to settle down	1	2	3	4	5
14. Encouraged me to share my happiness	1	2	3	4	5
15. Showed he did not like my being happy	1	2	3	4	5

### CEDMI

Please indicate below how often the following items are true for you:

	Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true
When I'm walking, I deliberately notice the sensations of my body moving.	1	2	3	4	5
I criticize myself for having irrational or inappropriate emotions.	1	2	3	4	5

When I take a shower or bath, I stay alert to the sensations of water on my body.	1	2	3	4	5
I tell myself I shouldn't be feeling the way I'm feeling.	1	2	3	4	5
I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.	1	2	3	4	5
I believe some of my thoughts are abnormal or bad and I shouldn't think that way.	1	2	3	4	5
I pay attention to sensations, such as the wind in my hair or sun on my face.	1	2	3	4	5
	<b>Never or very rarely true</b>	<b>Rarely true</b>	<b>Sometimes true</b>	<b>Often true</b>	<b>Very often or always true</b>
I make judgments about whether my thoughts are good or bad.	1	2	3	4	5
I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.	1	2	3	4	5
I tell myself that I shouldn't be thinking the way I'm thinking.	1	2	3	4	5

I notice the smells and aromas of things.	1	2	3	4	5
I think some of my emotions are bad or inappropriate and I shouldn't feel them.	1	2	3	4	5
I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.	1	2	3	4	5
I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.	1	2	3	4	5
When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.	1	2	3	4	5
I pay attention to how my emotions affect my thoughts and behavior.	1	2	3	4	5
I disapprove of myself when I have irrational ideas.	1	2	3	4	5
	<b>Almost never (0-10%)</b>	<b>Sometimes (11-35%)</b>	<b>About half the time (36-65%)</b>	<b>Most of the time (66-90%)</b>	<b>Almost always (91-100%)</b>
When I'm upset, I become angry with myself for feeling that way.	1	2	3	4	5
When I'm upset, I become embarrassed for feeling that way.	1	2	3	4	5
When I'm upset, I feel ashamed for feeling that way.	1	2	3	4	5
When I'm upset, I feel like I am weak.	1	2	3	4	5



